

Lichenized fungi of Golestan National Park (NE Iran)

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Abstract. Based on evaluation of literature and identification of recent collections, 137 species of lichenized fungi are listed for Golestan National Park, NE Iran; of these, one genus and 14 species are first reports for the country.

Key words: Golestan National Park, Iran, lichenized fungi, lichens, mycota

Introduction

Golestan National Park, the first natural environment in Iran designated as a National Park, is situated in the three provinces Golestan, Northern Khorassan, and Semnan, between the towns of Gorgan and Boujnord (37°16'34" to 37°31' N and 55°43' to 56°17'45" E) (Fig. 1). It is a mountainous area with valleys descending to 450 m and ridges reaching almost 2400 m. The climate is significantly affected by humidity emanating from the Caspian Sea and westerly winds bring considerable precipitation to the mountains, especially in the summer. Annual precipitation varies from 150 mm in the east to 750 mm in the west; in the highlands it varies little throughout the year. The average relative humidity of the region is 45 %, increasing to 100 % in the summer and falling to 18 % in the winter. The average annual temperature varies between 11.5 and 17.5 °C; the absolute minimum temperature is -25 °C and the reported maximum is 45 °C.

The western part of the Park is subject to relatively humid, temperate conditions, with an annual precipitation between 500 and 600 mm. Hyrcanian, deciduous forests (*Parrotia persica*, *Quercus castaneifolia*, *Carpinus betulus*, *Acer velutinum*, *A. monspessulanum*, *Celtis caucasica*, *Cornus sanguinea*, *Crataegus* spp., *Pyrus boissieriana*, *Lonicera floribunda*, *Tilia caucasica*, *Acer cappadocicum*, *Fraxinus excelsior*) are widespread in the highlands of this area. The extreme east of the Park has an annual precipitation of 400 mm or less and

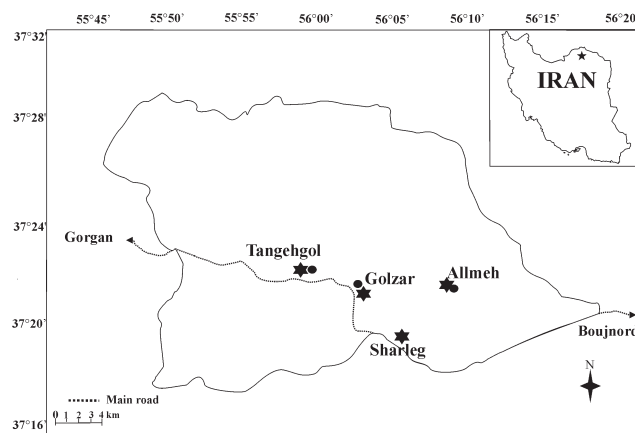


Fig. 1. Golestan National Park, Iran, with Sohrabi collecting sites marked by asterisks and those of Uotila by dots

a steppe-like vegetation cover of Irano-Turanian type (*Festuca* spp., *Acanthophyllum* spp., *Artemisia* spp.). The central, intermediate region (annual precipitation 400–500 mm), mostly covered with shrubs, conifers, and pastures, is the most diverse, containing both Hyrcanian and Irano-Turanian vegetation, with Mediterranean elements (*Juniperus excelsa*, *J. communis*, *Berberis* spp., *Astragalus* spp., *Euphorbia* spp.). The complex interaction of geomorphological, geological, hydrological, and climatic conditions provides a wide range of biotopes leading to a high biodiversity (Akhani 1998).

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The lichenized mycota of northern Iran has been studied by Boissier & Buhse (1860), Rabenhorst (1871), Szatala (1940, 1957), Oxner (1946), Weber (1965), Vězda, (1974–1980), Nimis & Tretiach (1997), Seaward *et al.* (2004), Sohrabi (2005), Ahti & Sohrabi (2006), and Sohrabi & Orange (2006), but only Nimis & Tretiach (1997), Seaward *et al.* (2004), Sohrabi (2005), Ahti & Sohrabi (2006), and Sohrabi & Orange (2006) mention exact localities situated within the boundaries of the current Golestan National Park.

Material and Methods

The first collections of lichenized fungi from the Park to our knowledge were made in May and August 1972 during a Finnish expedition (Kukkonen & Uotila 1976), mainly by Pertti Uotila, near Tangehbol and Allmeh. These collections are deposited in H and remained unstudied until now. Thanks to the attentiveness of Teuvo Ahti, they were made available to us for study. Akhiani (1998) collected 50 specimens of lichenized fungi, but these appear to have remained unidentified and unfortunately were not made accessible to us. Additional material became available when the first author visited the Park in July 1999, May 2002, and August 2003. Areas visited then included the Allmeh valley, Golzar field station, Sharleg, and Tangehbol, being representative of the lower zones (below *ca* 1600 m) of the Park. Of the 250 specimens collected, details of 41 have already been published (Sohrabi 2005). As a consequence of the present study, all but five samples (belonging to poorly-known groups) have been identified, resulting in 137 infrageneric taxa, of which 95 are newly reported here from Golestan National Park, while the genus *Seirophora* and 14 infrageneric taxa are newly reported for Iran.

The following list contains mainly epiphytic and terrestrial lichenized fungi from lower elevations; saxicolous habitats and higher elevations are still largely unexplored, and can be expected to support many additional crustose species. Reference specimens for all species collected by M. Sohrabi are stored in his private herbarium in Jolfa, East Azerbaijan (Iran) and those collected by Pertti Uotila are housed in the Botanical Museum of Helsinki (H).

For identification, Magnusson (1929, 1940, 1944), Poelt (1958), Blum (1969), Kopaczewskaja *et al.* (1971), Barkhalov (1975), Hale (1976, 1986), Esslinger (1977, 1978, 1992), Mayrhofer & Poelt (1979), Steiner & Poelt (1982, 1984), Mayrhofer (1984), Matskevitch *et al.* (1987), Lumbsch (1989), Breuss (1990), Timdal (1991), Hertel (2001), Frödén & Lassen (2004), and Frödén & Litterski (2005) were consulted. Some critical specimens were sent to specialists for identification or confirmation: specimens deposited in UPS were studied by R. Moberg, in F by T. Lumbsch, in KW by N. Federanko, in TSN by H. Kashiwadani, and those in herb. Aptroot by A. Aptroot. Nomenclature follows Blanco *et al.* (2004a, b), Hafellner & Türk (2001), Nimis & Martellos (2003), and Santesson *et al.* (2004). Newly reported taxa for Iran are marked with an asterisk (*).

List of collecting sites

- (1) Almeh, steppe along the road to Mirza-Baylu Lodge, 1500 m, 30 April 1972.
- (2) Almeh, near Mirza-Baylu Lodge, hills close to snowline, 1600 m, 30 April 1972.
- (3) Almeh, near Mirza-Baylu Lodge, hills close to snowline, 1800 m, 30 April 1972.
- (4) Tangehbol, mountains just N of tourist lodge buildings, deciduous dry *Quercus castaneifolia* forest, 900–1200 m, 1 May 1972.
- (5) Tangehbol, W of tourist lodge, old, rather open *Acer* forest by the river, *ca.* 600 m, 1 May 1972.
- (6) Tangehbol, yard of tourist lodge, 650 m, 3 August 1972.
- (7) Tangehbol, brooklet ravine just N of tourist lodge, luxuriant mixed deciduous forest, 650 m, 3 August 1972.
- (8) Almeh, *Artemisia*-cushion plant steppe on hill sides just S of Mirza-Baylu Lodge, 1600 m, 4 August 1972.
- (9) 10 km E of Tangehbol, 950 m, 4 August 1972.
- (10) 3–5 km E of Tangehbol, Golzar, 800–900 m, 37°21' N, 56°01' E, 1999.
- (11) Allmeh valley, 7–8 km from Mirza-Baylu Lodge, 1300–1500 m, 37°21' N, 56°11' E, 2003.
- (12 & 12a) Golzar tourist lodge, by the main road, 800–900 m, 37°20' N, 56°01' E, 2003.
- (13) Sharleg, 1000–1200 m, 37°20' N, 56°03' E, 2003.
- (14) Allmeh valley, 2 km from Mirza-Baylu Lodge, near Allmeh main road, 1300 m, 37°21' N, 56°11' E, 2003.

List of species

The figures in brackets refer to the list of collecting sites above; the collector names are abbreviated as: S = Sohrabi; U = Uotila. Unless otherwise indicated, specimens collected by Sohrabi are kept in his private herbarium, those collected by Uotila in H.

- Acarospora cervina* A. Massal. — (11) on calcareous rock, S 1353.
Acarospora laqueata Stizenb. — Sohrabi (2005: 106).
Acarospora strigata (Nyl.) Jatta — (11) on calcareous rock, S 1332.
Anaptychia setifera Räsänen — (5) on *Crataegus*, U 16 191, 19 125.
 Sohrabi (2005: 105) reported *A. ciliaris* (L.) Körb. However, all apothecia-bearing specimens of this group from northern Iran appear to belong to *A. setifera*, and it seems likely that the sterile material, on which the record of *A. ciliaris* was based, also belongs here.
Anaptychia ulotrichoides (Vain.) Vain. — Sohrabi (2005: 105). — (2) on *Acer cf. monspessulanum*, U 16 063.
Arthonia cinnabarina (DC.) Wallr. — (12) on *Quercus castaneifolia*, S 1674.
 **Arthonia muscigena* Th. Fr. — (2) on *Acer cf. monspessulanum*, U 16 064.
Aspicilia cinerea (L.) Körb. — (13) on calcareous rock, S 2843.
Aspicilia contorta (Hoffm.) Kremp. — (13) on calcareous rock, S 2906.
Aspicilia farinosa (Flörke) Arnold — (11) on calcareous rock, S 1344.



Fig. 2. Hyrcanian forest in the region of Golzar (trees up to 25 m high)



Fig. 3. View of Sharleg valley, showing a mixed vegetation of grasslands and shrubs up to 3 or 5 m tall, characteristic of the intermediate moisture region

- **Aspicilia oxneriana* O.B. Blum – (13) on calcareous rock, S 2849.
This is a very distinct, foliose species, unusual for the genus. In Iran it is frequent from Abrouz range mountains to the Azerbaijan Mountains near the border with Turkey. Chakimov *et al.* (1986) showed that it had a wider distribution than previously known, being found not only in Turkmenistan, but also in Kazakhstan. The first author has collected it from the high mountains of Azerbaijan in Mianeh, Gaflankoh Mt. and Kiamaki-dagh Jolfa in the northwest of Iran. It was recorded erroneously as *A. emiliae* by Sohrabi (2005). The morphologically very similar *A. caesiascens* differs in the shape and colour of its thallus and in spore size (Pišút 1978).
- Caloplaca aurantia* (Pers.) Hellb. – (1) U 16 052; (11) on calcareous rock, S 1319.
- Caloplaca cerina* (Ehrh. ex Hedw.) Th. Fr. – (4) on *Quercus castaneifolia* trunk, U 14 932, 16 165; (5) on *Crataegus*, U 14 898; (6) on branch of dead deciduous tree, U 19 127; (12) on *Quercus castaneifolia*, S 1588.
- Caloplaca decipiens* (Arnold) Blomb. & Forssell – (13) S 2919.
- Caloplaca flavorubescens* (Huds.) J.R. Laundon – (4) on *Quercus castaneifolia* trunk, U 14 656; (12) on *Quercus castaneifolia*, S 2325.
- **Caloplaca haematites* (Saint-Amans) Zwackh – (9) on *Ephedra*, U 19 133.
- Caloplaca holocarpa* (Hoffm. ex Ach.) A.E. Wade – (6) on branch of dead deciduous tree, U 19 123; (8) on *Acer monspessulanum* twigs, U 19 187.
- **Caloplaca lobulata* (Flörke) Hellb. – (2) on *Acer cf. monspessulanum*, U 16 064, 16 066; (8) on *Acer monspessulanum* twigs, U 19 187, 19 188; (9) on *Ephedra*, U 19 133.
- Caloplaca persica* (J. Steiner) M. Steiner & Poelt – Sohrabi (2005: 106).
- Caloplaca polycarpoides* (J. Steiner) M. Steiner & Poelt – (2) on *Acer cf. monspessulanum*, U 14 913, 16 064, 16 066; (3) on *Salix*, U 16 072; (8) on *Acer monspessulanum* twigs, U 19 187, 19 192.

- Caloplaca teicholyta* (Ach.) J. Steiner – (11) on calcareous rock, S 1336.
- Caloplaca transcaspica* (Nyl.) Zahlbr. – (13) on calcareous rock, S 2914.
- Candelaria concolor* (Dicks.) Stein – (5) on *Crataegus*, U 14 897; (12) on *Quercus castaneifolia*, S 1590.
- Candelariella aurella* (Hoffm.) Zahlbr. – (1) U 16 052; (11) on calcareous rock, S 1288B.
- Candelariella vitellina* (Hoffm.) Müll. Arg. – (11) on calcareous rock, S 1335B.
- Cladonia furcata* (Huds.) Schrad. – Ahti & Sohrabi (2006:141).
- Cladonia pocillum* (Ach.) Grognot – Sohrabi (2005: 106). – (10) terricolous, S 1679; (13) terricolous, S 2880.
- Cladonia rangiformis* Hoffm. – Ahti & Sohrabi (2006: 142).
- Collema auriforme* (With.) Coppins & J.R. Laundon – Sohrabi (2005: 106).
- Collema crispum* (Huds.) F.H. Wigg. – (13) terricolous, S 2887.
- Collema cristatum* (L.) Weber ex. F.H. Wigg. – (11) terricolous, S 1274.
- Collema fuscovirens* (With.) J.R. Laundon – Sohrabi (2005: 106).
- Collema tenax* (Sw.) Ach. – (11) terricolous, S 1290.
- Dermatocarpon miniatum* (L.) W. Mann – (10) saxicolous, S 1696.
- Dermatocarpon velleum* Zschacke – (10) saxicolous, S 2470, 1604.
- Diploshistes diacapsis* (Ach.) Lumbsch – Sohrabi (2005: 106).
- Diploshistes ocellatus* (Vill.) Norman – (10) terricolous & saxicolous, S 1569, 1690, 1653 (F. herb. Sohrabi); (11) terricolous & saxicolous, S 2327.
- Diplotomma venustum* Körb. – (11) on calcareous rock, S 1329.
- Evernia prunastri* (L.) Ach. – (12) on *Quercus castaneifolia*, S 6500.

- Flavoparmelia caperata* (L.) Hale — (4) on *Quercus castaneifolia* trunk, U 16 128; (10) on *Quercus* sp., S 2425.
- Fulgensia fulgens* (Sw.) Elenkin — (10) terricolous, S 1736.
- Glypholecia scabra* (Pers.) Müll. Arg. — (11) on calcareous rock, S 1327B.
- Graphis scripta* (L.) Ach. — (12) on *Carpinus betulus*, S 2336.
- Hyperphyscia adglutinata* (Flörke) H. Mayrhofer & Poelt — (5) on *Crataegus*, U 14 897; (10) on *Quercus*, S 1688A.
- **Lecania fuscella* (Schaer.) A. Massal. — (9) on *Ephedra*, U 19 132.
- Lecania triseptata* (Vain.) Zahlbr. — (1) U 16 052; (2) on *Acer cf. monspessulanum*, U 14 913, 16 066; (3) on *Salix*, U 16 072; (8) on *Acer monspessulanum* twigs, U 19 187, 19 191, 19 192; (9) on *Ephedra*, U 19 133.
- Lecania turicensis* (Hepp) Müll. Arg. — (1) U 16 052.
- Lecanora allophana* Nyl. — (4) on *Quercus castaneifolia* trunk, U 14 843, 14 931, 16 141, 16 162, 14 933.
- Lecanora argentata* (Ach.) Malme — (4) on *Quercus castaneifolia* trunk, U 14 934.
- Lecanora crenulata* auct. — (9) on *Ephedra*, U 19 132.
- Lecanora dispersa* (Pers.) Sommerf. — Seaward *et al.* (2004: 558). — (2) saxicolous, U 14 913, 16 064; (8) saxicolous, U 19 187, 19 188; (9) on *Ephedra*, U 19 131; (11) on calcareous rock, S 1335A.
- Lecanora flotoviana* Spreng. — Sohrabi (2005: 106).
- Lecanora garovaglii* (Körb.) Zahlbr. — (1) U 16 059; (2) U 16 073.
- Lecanora hagenii* (Ach.) Ach. — Sohrabi (2005: 106).
- Lecidella elaeochroma* (Ach.) M. Choisy — (4) on *Quercus castaneifolia* trunk, U 16 141, 16 142, 16 160, 16 165; (6) on branch of dead deciduous tree, U 19 126; (10) corticolous, S 2437.
- Lepraria diffusa* (J.R. Laundon) Kukwa — Sohrabi & Orange (2006).
- Lepraria lobificans* Nyl. — Sohrabi & Orange (2006).
- Lepraria vouauxii* (Hue) R.C. Harris — Sohrabi & Orange (2006).
- Leptogium lichenoides* (L.) Zahlbr. — (10) muscicolous, S 1683.
- Leptogium saturninum* (Dicks.) Nyl. — (12) on *Quercus castaneifolia*, S 2321.
- Lobothallia alphoplaca* (Wahlenb.) Hafellner — (11) on calcareous rock, S 1327a.
- Melanelixia glabra* (Schaer.) O. Blanco *et al.* — Seaward *et al.* (2004: 561, as *Melanelia glabra*). — (11) on *Juniperus* sp., S 1259, 1264.
- Melanelixia subargentifera* (Nyl.) O. Blanco *et al.* — Seaward *et al.* (2004: 561, as *Melanelia subargentifera*). — (4) on *Quercus castaneifolia* trunk, U 16 161; (11) on *Juniperus* sp., S 1269.
- Melanohalea elegantula* (Zahlbr.) O. Blanco *et al.* — Sohrabi *et al.* (in prep.).
- Melanohalea exasperata* (De Not.) O. Blanco *et al.* — (10) on *Quercus* sp., S 1688C.
- Melanohalea infumata* (Nyl.) O. Blanco *et al.* — Seaward *et al.* (2004: 561, as *Melanelia infumata*).
- Mycobilimbia lurida* (Ach.) Hafellner & Türk — Seaward *et al.* (2004: 561). — (10) saxicolous, S 1719.
- Opegrapha varia* Pers. — (10) on *Quercus castaneifolia*, S 1635.
- Opegrapha vermicellifera* (Kunze) J.R. Laundon — (10) corticolous, S 1688B.
- Parmelia sulcata* Taylor — (10) corticolous, S 1704.
- Parmelina tiliacea* (Hoffm.) Hale — Seaward *et al.* (2004: 562).
- Peccania terricola* H. Magn. — Sohrabi (2005: 563).
- Peltigera lepidophora* (Nyl. ex Vain.) Bitter — (10) terricolous, S 1711.
- Peltigera praetextata* (Flörke ex Sommerf.) Zopf — (10) terricolous, S 6503.
- Peltigera rufescens* (Weiss) Humb. — Sohrabi (2005: 107).
- Pertusaria albescens* (Huds.) M. Choisy & Werner — Sohrabi (2005: 107). — (4) on *Quercus castaneifolia* trunk, U 16 164.
- Pertusaria amara* (Ach.) Nyl. — (10) corticolous, S 1610.
- Pertusaria pertusa* (Weigel) Tuck. — (10) corticolous and lignicolous, S 1733.
- Phaeophyscia ciliata* (Hoffm.) Moberg — (6) on branch of dead deciduous tree, U 19 124.
- Phaeophyscia endophoenicea* (Harm.) Moberg — (10) corticolous, S 2452.
- **Phaeophyscia nigricans* (Flörke) Moberg — (2) on *Acer cf. monspessulanum*, U 16 066.
- Phaeophyscia orbicularis* (Neck.) Moberg — (2) on *Acer cf. monspessulanum*, U 16 065; (3) on *Salix*, U 16 072; (10) corticolous, S 2427.
- Phlyctis argena* (Spreng.) Flot. — Sohrabi (2005: 107).
- Physcia adscendens* (Fr.) H. Olivier — Seaward *et al.* (2004: 563). — (3) on *Salix*, U 16 072; (8) on *Acer monspessulanum* twigs, U 19 189; (11) corticolous, S 1352 (herb. Sohrabi, UPS).
- Physcia aipolia* (Ehrh. ex Humb.) Fűrnr. — Seaward *et al.* (2004: 564).
- Physcia biziana* (A. Massal.) Zahlbr. — (2) on *Acer cf. monspessulanum*, U 16 064, 16 065, 16 066; (11) corticolous, S 1301 (herb. Sohrabi, UPS).
- Physcia caesia* (Hoffm.) Fűrnr. — (13) on calcareous rock, S 2857.
- **Physcia clementei* (Turner) Lyngby — (10) corticolous, S 1947 (herb. Sohrabi, UPS); (11) corticolous, S 1309.
- **Physcia dimidiata* (Arnold) Nyl. — (10) corticolous, S 1943, 1324 (herb. Sohrabi, UPS).
- **Physcia poeltii* Frey — (12a) corticolous, S 1568 (herb. Sohrabi, UPS).
- Physcia stellaris* (L.) Nyl. — (10) corticolous, S 2442.
- Physcia tenella* (Scop.) DC. — Seaward *et al.* (2004: 564).
- Physcia tribacia* (Ach.) Nyl. — Sohrabi (2005: 107).
- Physconia distorta* (With.) J.R. Laundon — Seaward *et al.* (2004: 564). — (4) on *Quercus castaneifolia* trunk, U 14 843, 14 931; (8) on *Acer monspessulanum* twigs, U 19 187; (12a) corticolous, S 2466 (herb. Sohrabi, UPS).
- Physconia grisea* (Lam.) Poelt — Sohrabi (2005: 107).
- Physconia perisidiosa* (Erichsen) Moberg — Seaward *et al.* (2004: 564). — (11) corticolous, S 1275 (herb. Sohrabi, UPS).
- Placidium lachneum* (Ach.) de Lesd. — (10) muscicolous, S 1571.
- Placidium lacinulatum* (Ach.) Breuss — (13) on soil and in trunk on calcareous rock, S 2878.
- Placidium pilosellum* (Breuss) Breuss — (13) terricolous, S 2908.
- Placidium squamulosum* (Ach.) Breuss — (13) terricolous, S 2895.
- Placocarpus schaeferi* (Fr.) Breuss — (13) on calcareous rock, S 2921.

Pleurosticta acetabulum (Neck.) Elix & Lumbsch – Sohrabi (2005: 107).

Protoparmeliopsis muralis (Schreb.) M. Choisy – S 2910; (1) U 16 059; (2) U 16 073; (13) on calcareous rock.

Psora decipiens (Hedw.) Hoffm. – (10) S 1709, 1706.

Punctelia subrudecta (Nyl.) Krog – (12) on *Quercus castaneifolia*, S 2322, 1686.

Pyrenula laevigata (Pers.) Arnold – (10) S 1601.

**Ramalina canariensis* J. Steiner – (4) on *Quercus castaneifolia* trunk, U 16 163.

Ramalina farinacea (L.) Ach. – (10) corticolous, S 1660, 1721; (4) on *Quercus castaneifolia* trunk, U 16 163.

Ramalina pollinaria (Westr.) Ach. – Sohrabi (2005: 107). – (11) on *Juniperus* sp., S 1297 (herb. Sohrabi, TSN).

Ramalina sinensis Jatta – Seaward *et al.* (2004: 567). – (10) corticolous and lignicolous, S 1659.

Rhizocarpon geographicum (L.) DC. – Sohrabi (2005: 106). – (13) on calcareous rock, S 2860.

Rhizoplaca chrysoleuca (Sm.) Zopf – Sohrabi (2005: 106).

Rhizoplaca melanophthalma (Ramond) Leuckert & Poelt – (11) on calcareous rock, S 1333, 1285.

Rinodina bischoffii (Hepp) A. Massal. – (12), S 2315.

Rinodina immersa (Körb.) Zahlbr. – (12), S 2313.

Sarcogyne clavus (DC.) Kremp. – (10) saxicolous, S 1581.

Sarcogyne regularis Körb. – (10) saxicolous, S 2422, 5 (herb. Sohrabi, herb. Aptroot).

**Seiophora contortuplicata* (Ach.) Frödén – (14) saxicolous, S 1263.

**Seiophora orientalis* Frödén – (2) on *Acer cf. monspessulanum*, U 16 067; (11) on *Juniperus* sp., S 1275.

Squamarina cartilaginea (With.) P. James – (10) saxicolous, S 1732, 1718.

Squamarina gypsacea (Sm.) Poelt – Seaward *et al.* (2004: 570).

Tephromela atra (Huds.) Hafellner – (11) on calcareous rock, S 1334.

Thyrea confusa Henssen – (10) saxicolous, S 6501.

Toninia candida (Weber) Th. Fr. – Seaward *et al.* (2004: 571).

Toninia cinereovirens (Schaer.) A. Massal. – (10) saxicolous, S 6502.

Toninia diffracta (A. Massal.) Zahlbr. – (10) saxicolous, S 2409.

Toninia taurica (Szatala) Oxner – Sohrabi (2005: 107).

Tornabea scutellifera (With.) J.R. Laundon – Nimis & Tretiach (1997: 218) – (2) on *Acer cf. monspessulanum*, U 16 068; (4) on *Quercus castaneifolia* trunk, U 16 140; (7) Korhonen 1123 (H); (8) on *Acer monspessulanum* twigs, U 19 186, 19 190; (13) on *Crataegus* sp., S 2861, 2893, 2911.

Verrucaria fuscula Nyl. – (11) on calcareous rock, S 1273.

Verrucaria marmorea (Scop.) Arnold – Sohrabi (2005: 107).

Verrucaria nigrescens Pers. – (13) 1000-1200 m, 37°20' N, 56°03' E, 2003, on calcareous rock, S 2848.

Xanthomendoza fulva (Hoffm.) Söchting, Kärnefelt & S. Kondr. – Sohrabi (2005: 107 as *Xanthoria fulva*). – (2) on *Acer cf. monspessulanum*, U 16 066.

**Xanthomendoza ulophyllodes* (Räsänen) Söchting, Kärnefelt & S. Kondr. – (2) on *Acer cf. monspessulanum*, U 16 065.

Xanthoparmelia pulla (Ach.) O. Blanco *et al.* – (10) on *Quercus castaneifolia*, S 2423.

Xanthoria elegans (Link) Th. Fr. – (11) on calcareous rock, S 1320, 1341.

**Xanthoria papillifera* (Vain.) Poelt – (13) on calcareous rock, S 4000, (herb. Sohrabi, KW).

Xanthoria parietina (L.) Th. Fr. – Seaward *et al.* 2004: 573. – (2) on *Acer cf. monspessulanum*, U 16 069; (4) on *Quercus castaneifolia* trunk, U 14 933; (6) on branch of dead deciduous tree, U 19 122; (9) on *Ephedra*, U 19 131, 19 134; (13) corticolous, S 2858.

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