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## A contribution to the lichen flora of Sardinia

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ABSTRACT — A contribution to the epilithic and epiphytic lichen flora of Sardinia is presented. Seventy localities from both coastal and mountain areas of western Sardinia have been investigated during four surveys from 2006 to 2008. In all, 390 taxa have been recorded. Three taxa are new to Italy (*Allarthonia hypobela*, *Bacidia biatorina*, *Catillaria subviridis*); 25 taxa are new to Sardinia. *Pannaria rubiginosa* and *Melaspilea ochrothalamia* were re-collected after one century. Distribution and substrata are presented.

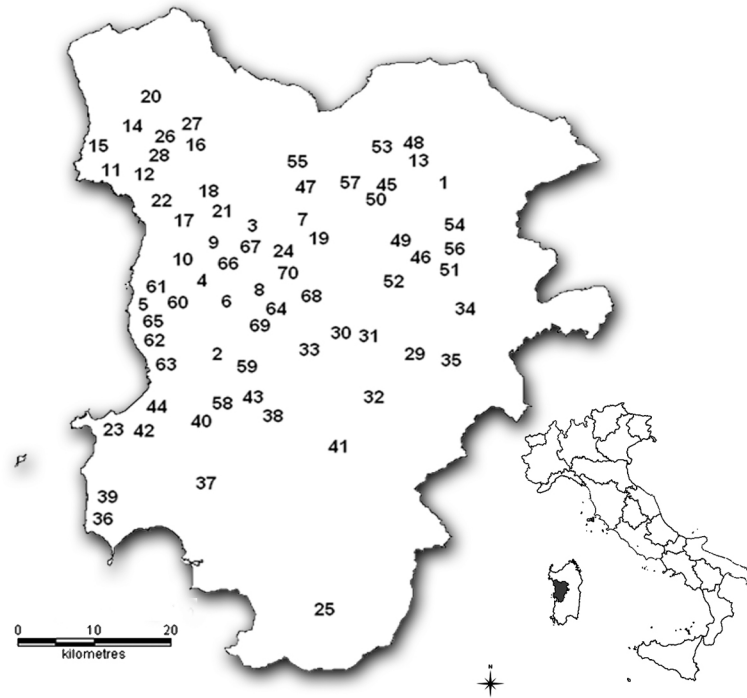
KEY WORDS — *Ascomycetes*, Italy, Mediterranean, biodiversity

### Introduction

Sardinia is the second largest island of the Mediterranean and it is a recognized, together with Corsica, as a hotspot of biodiversity (Médail & Quezel 1999), thanks to its isolation and to the variety of habitat and geologic substrata. As regards the lichen flora, Sardinia with about 1120 taxa is the third richest region in Italy, after two Alpine regions: Trentino-Alto Adige and Piedmont (Nimis & Martellos 2008, Giordani et al. 2009). Most of the previous data regard the epiphytic flora (Zedda 2002, Giordani et al. 2009, 2010) or extensive surveys of the island (Nimis & Poelt 1987). In this work, we aimed to fill some gaps in the floristic knowledge of the island, extending the investigations to overlooked areas and habitats, including coastal basaltic outcrops, dry agro-natural ecosystems and Holm oak forests of the central-western part of Sardinia.

### Material and methods

The study area (1260 km<sup>2</sup>) included the northern part of the Province of Oristano and the western part of the Province of Nuoro. The area is scarcely populated (~ 40 persons/km<sup>2</sup>) and has no local sources of air pollution. Along an altitudinal gradient ranging from the sea level to 1200 m, three bioclimatic units can be found, following the classification by Nimis & Martellos (2008): A) a Humid Mediterranean unit along the coast, dominated by Mediterranean maquis and garigue; B) a Humid sub-Mediterranean unit,



**Figure 1.** Location of 70 sampling sites in western Sardinia.

characterized by *Quercus ilex* and *Q. pubescens* forests; and C) an Oromediterranean belt, including the highest peaks of the Marghine and Montiferru mountains. A considerable part of the study area has been recently included into six Important Plant Areas (IPAs). Among them the IPA SAR12 “Catena del Marghine e del Goceano, Altopiano di Campeda” has been recognized as particularly interesting for the lichen flora (Blasi et al. 2010). Mean annual rainfall ranges from 600 to 1100 mm and mean annual temperature ranges from 15 °C along the coast to 13 °C at the higher altitudes. Lithic substrata mainly include the basalts of alkaline, transitional and sub-alkaline affinity of the Plio-Pleistocene cycle and the rhyolites and andesites of the Oligo-Miocene calcalkaline cycle (Carmignani et al. 2001).

We collected lichen samples at 70 localities (Table 1, Figure 1 ), focussing on lichen communities growing on rocks, trees and shrubs. Lichens

were identified in the laboratory using a stereo microscope (magnification up to  $\times 50$ ). For sections of thalli and fruiting bodies, a light microscope was also used, with  $\times 5$ ,  $\times 10$ ,  $\times 20$ ,  $\times 100$  objectives with possibility of oil immersion (magnification  $\times 1000$ ). When necessary, polarized light was also used for detecting crystal and granules. Chemical spot tests K, C, KC and PD were performed for most samples. Some samples belonging to the genera *Pertusaria* and *Xanthoparmelia* were analyzed by TLC according to Culberson (1972) and Culberson et al. (1981). For the identification of the species were followed the keys by Clauzade & Roux (1985), Purvis et al. (1992), Torrente & Egea (1989), Giralt (2001), Giordani et al. (2002, 2003), Halıcı (2008). Vouchers are deposited in the herbarium of the University of Trieste (TSB) and of the University of Genova (GE). Nomenclature follows Nimis & Martellos (2008). Author's abbreviations are according to Brummit & Powell (1992).

### Results

The taxonomic survey of W-Sardinia yielded 390 lichenized and lichenicolous fungi representing 113 genera in the *Ascomycota*. Of these, *Allarthonia hypobela*, *Bacidia biatorina* and *Catillaria subviridis* are new to Italy. New records from Sardinia include 23 lichenized and 2 lichenicolous fungi. The lichen taxa are listed alphabetically. New records for Italy are indicated \*, whereas # denotes taxa previously not reported for Sardinia.

### List of taxa

- Acarospora badiofusca* (Nyl.) Th.Fr. subsp. *badiofusca*, Loc. 15: on andesite.  
*Acarospora cervina* A.Massal., Loc. 16: on trachyte.  
*Acarospora fuscata* (Schr.) Th.Fr., Loc. 2, 5, 18, 21, 30, 32, 36, 41, 47, 48, 50, 52, 53, 57, 59, 60, 63, on basalt and rhyolite.  
*Acarospora insolata* H.Magn., Loc. 17, 38, 54: parasitic on *Rhizocarpon* spp.  
*Acarospora macrospora* (Hepp) Bagl., Loc. 9, 43, 60: on basalt and rhyolite.  
*Acarospora microcarpa* (Nyl.) Wedd., Loc. 3, 5, 17, 43: parasitic on *Diploschistes* spp.  
*Acarospora scotica* Hue, Loc. 8, 10, 16, 31, 36, 43, 53, 54, 57, 60, 64: on basalt, trachyte and rhyolite.  
*Acarospora smaragdula* (Wahlenb.) A.Massal. subsp. *smaragdula*, Loc. 66: on basalt.  
*Acarospora umbilicata* Bagl., Loc. 15, 16, 18, 30, 31, 33, 36, 38, 41, 47, 49, 51, 52, 54, 55, 57, 58, 59, 60, 61, 63, 64, 66: on basalt, trachyte and andesite.  
*Acarospora veronensis* A.Massal., Loc. 15: on andesite.  
*Acrocordia gemmata* (Ach.) A.Massal., Loc. 6, 24: on *Quercus pubescens*.

- Acrocordia macrospora* A.Massal., Loc. 47: on basalt.
- \* *Allarthonia hypobela* (Nyl.) Zahlbr., Loc. 1, 18: on *Quercus pubescens* and *Q. suber*.
- Amandinea punctata* (Hoffm.) Coppins & Scheid., Loc. 3, 4, 8, 9, 10, 11, 12, 18, 19, 20, 21, 22, 26, 27, 28, 29, 30, 32, 33, 34, 37, 40, 41, 43, 44, 45, 46, 47, 48, 49, 50, 52, 53, 55, 56, 57, 58, 59, 61, 63, 66: epiphytic on *Quercus pubescens*, *Q. ilex*, *Q. suber*, *Olea europaea*, Loc. 4, 15: epilithic on andesite and dacite.
- Anaptychia ciliaris* (L.) Körb., Loc. 8, 13, 24, 45, 50, 53, 59, 64, 66, 68, 69: on *Quercus pubescens*, *Q. suber* and *Fraxinus excelsior*.
- Arthonia albopulverea* Nyl., Loc. 21, 28: on *Quercus pubescens* and *Olea europaea*.
- Arthonia apatetica* (A.Massal.) Th.Fr., Loc.10: on *Prunus* sp.
- # *Arthonia didyma* Körb., Loc. 6: on *Quercus ilex*.
- Arthonia diploiciae* Catalayud & Diederich, Loc. 52: parasitic on *Diploicia canescens*.
- Arthonia glauccella* Nyl., Loc. 11: on *Olea europaea*.
- Arthonia granosa* de Lesd., Loc. 55: on *Quercus suber*.
- Arthonia melanophthalma* Dufour, Loc. 47: on *Quercus suber*.
- Arthonia punctiformis* Ach., Loc. 3, 4, 54: on *Quercus ilex* and *Olea europaea*.
- Arthonia radiata* (Pers.) Ach., Loc. 3, 4, 6, 18, 26, 41, 61, 68: on *Quercus ilex*, *Fraxinus excelsior* and *Olea europaea*.
- Arthonia varians* (Davies) Nyl., Loc. 8, 45, 48, 50, 57, 59, 64, 68: parasitic on *Lecanora rupicola*.
- Arthopyrenia cerasi* (Schröd.) A.Massal., Loc. 24: on *Quercus pubescens*.
- Arthopyrenia cinereopruinosa* (Schaer.) A.Massal., Loc. 19: on *Quercus suber*.
- # *Arthothelium spectabile* A.Massal., Loc. 2: on *Quercus ilex*.
- Aspicilia caesiocinerea* (Malbr.) Arnold, Loc. 4, 7, 10, 15, 17, 19, 22, 24, 25, 26, 28, 29, 30, 31, 32, 33, 34, 35, 38, 40, 43, 45, 46, 48, 49, 50, 52, 53, 54, 55, 56, 58, 59, 60, 61: on basalt, andesite and trachyte.
- Aspicilia calcarea* (L.) Mudd var. *calcarea*, Loc. 39: on carbonatic rock.
- Aspicilia cinerea* (L.) Körb., Loc. 3, 17, 30, 38, 47, 64, 66: on basalt.
- Aspicilia contorta* (Hoffm.) Kremp subsp. *hoffmanniana* S.Ekman & Fröberg, Loc. 6, 15, 21, 28, 43, 54, 66, 70: on basalt and trachyte.
- Aspicilia contorta* (Hoffm.) Kremp. subsp. *contorta*, Loc. 24, 29, 31, 53, 56, 58: on basalt.
- Aspicilia cupreoglauca* de Lesd., Loc. 16, 28, 46, 48, 50: on trachyte, dacite and rhyolite.

- Aspicilia intermutans* (Nyl.) Arnold, Loc. 3, 4, 7, 8, 12, 14, 15, 16, 17, 18, 19, 20, 21, 22, 24, 26, 28, 30, 31, 33, 34, 36, 38, 40, 41, 43, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 68, 69: on basalt, andesite, trachyte and rhyolite.
- Aspicilia laevata* (Ach.) Arnold, Loc. 19: on basalt.
- Aspicilia viridescens* (A.Massal.) Hue, Loc. 13, 14, 15, 18, 22, 30, 49, 50, 51, 53, 56, 58, 59, 61, 66: on basalt, trachyte and andesite.
- Bacidia beckhausii* Körb., Loc. 35, 37: on *Quercus pubescens* and *Olea europaea*.
- \* *Bacidia biatorina* (Körb.) Vain., Loc. 6: on *Quercus ilex*.
- Bacidia incompta* (Hook.) Anzi, Loc. 6: on *Quercus ilex*.
- Bacidia laurocerasi* (Duby) Zahlbr., Loc. 6, 8: on *Quercus ilex*.
- Bacidia rosella* (Pers.) De Not., Loc. 4, 6, 8, 20, 26, 29, 37: on *Quercus ilex*, *Q. pubescens* and *Olea europaea*.
- Bacidia rubella* (Hoffm.) A.Massal., Loc. 2, 4, 6, 22, 24, 29, 37, 41, 48, 50, 59, 66: on *Quercus ilex*, *Q. pubescens* and *Olea europaea*.
- Bagliettoa parmigera* (J.Steiner) Vězda & Poelt, Loc. 39: on carbonatic rock.
- # *Biatorella microhaema* Norman, Loc. 40: on *Malus* sp.
- # *Biatoridium monasteriense* Körb., Loc. 35: on *Quercus pubescens*.
- Bryoria fuscescens* (Gyeln.) Brodo & D.Hawksw., Loc. 16: on *Quercus suber*.
- Buellia aethalea* (Ach.) Th.Fr., Loc. 63: on basanite.
- Buellia badia* (Fr.) A.Massal., Loc. 3, 15, 16, 41, 43, 45, 46, 48, 49, 50, 54, 55, 64: parasitic on crustose lichens.
- Buellia concinna* Th.Fr., Loc. 34: on basalt.
- # *Buellia hyperbolica* Bagl., Loc. 18: on *Quercus suber*.
- Buellia ocellata* (Flot.) Körb., Loc. 55: on basalt.
- Buellia spuria* (Schaer.) Anzi, Loc. 15, 16, 19, 36, 49, 50, 57, 59: on basalt, trachyte and andesite.
- Buellia stellulata* (Taylor) Mudd, Loc. 15, 16, 18, 46: on trachyte and basalt.
- Buellia subdisciformis* (Leight.) Vain., Loc. 13: on dacite.
- Buellia tesserata* Körb., Loc. 56: on basalt.
- Calicium abietinum* Pers., Loc. 64: on *Quercus ilex*.
- Calicium viride* Pers., Loc. 6: on *Quercus ilex*.
- Caloplaca alnetorum* Giralt, Nimis & Poelt, Loc. 69: on *Quercus suber*.
- Caloplaca aractina* (Fr.) Häyrén, Loc. 46, 47, 50, 51, 58, 60: on basalt and rhyolite.
- Caloplaca arenaria* (Pers.) Müll.Arg., Loc. 3, 5, 31, 36, 43, 45, 46, 47, 51, 55, 56, 60, 63, 66: on basalt and rhyolite.

- Caloplaca atroflava* (Turner) Mong., Loc. 3, 15, 25, 36: on basalt, rhyolite and andesite.
- Caloplaca aurantia* (Pers.) Hellb., Loc. 39: on carbonatic rock.
- Caloplaca cerina* (Hedw.) Th.Fr. var. *cerina*, Loc. 30, 40, 43, 46, 47, 48, 54, 59, 63: on *Malus* sp., *Prunus* sp., *Quercus pubescens* and *Olea europaea*.
- Caloplaca cerinella* (Nyl.) Flagey, Loc. 9, 11, 29, 30, 38, 40, 51, 54: on *Olea europaea*, *Malus* sp. and *Quercus pubescens*.
- Caloplaca cerinelloides* (Erichsen) Poelt, Loc. 9, 10, 18, 45, 46, 58: on *Olea europaea*, *Malus* sp. and *Quercus suber*.
- Caloplaca citrina* (Hoffm.) Th.Fr., Loc. 25, 29, 30, 52: on basalt and rhyolite.
- Caloplaca congregiens* (Nyl.) Zahlbr., Loc. 66: on basalt.
- Caloplaca conversa* (Kremp.) Jatta, Loc. 15, 43, 54, 58, 59: on basalt and andesite.
- Caloplaca crenularia* (With.) J.R.Laundon, Loc. 3, 7, 8, 10, 12, 14, 15, 16, 17, 18, 22, 28, 30, 31, 33, 36, 38, 40, 43, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 62, 63, 64, 66, 70: on basalt, trachyte, rhyolite and andesite.
- Caloplaca crenulatella* (Nyl.) H.Olivier, Loc. 21, 47, 65: on basalt.
- Caloplaca ferrarii* (Bagl.) Jatta, Loc. 39: on carbonatic rock.
- Caloplaca ferruginea* (Huds.) Th.Fr., Loc. 4, 8, 9, 12, 14, 22, 24, 27, 45, 47, 52, 53, 61, 64, 68: on *Quercus pubescens*, *Q. ilex*, *Prunus* sp. and *Fraxinus excelsior*.
- Caloplaca flavescens* (Huds.) J.R.Laundon, Loc. 49, 52: on basalt.
- Caloplaca flavorubescens* (Huds.) J.R.Laundon, Loc. 17, 26, 45, 46, 50: on *Quercus pubescens* and *Malus* sp.
- Caloplaca fuscoatroides* J.Steiner, Loc. 41: on basalt.
- Caloplaca grimmiae* (Nyl.) H.Olivier, Loc. 14, 16, 36, 48, 64, 68: parasitic on *Candelariella vitellina*.
- Caloplaca haematites* (St.-Amans) Zwackh, Loc. 2, 14, 27, 54, 56: on *Quercus ilex*, *Q. pubescens*, *Olea europaea* and *Prunus* sp.
- Caloplaca herbidella* (Hue) H.Magn., Loc. 30, 34, 68: on *Quercus pubescens*.
- Caloplaca holocarpa* (Ach.) A.E. Wade, Loc. 3, 26, 36, 40: on basalt.
- Caloplaca hungarica* H.Magn., Loc. 8: on *Quercus pubescens*.
- Caloplaca inconnexa* (Nyl.) Zahlbr. var. *inconnexa*, Loc. 38, 40, 41, 46, 56: parasitic on crustose lichens.
- Caloplaca inconnexa* (Nyl.) Zahlbr. var. *nesodes* Poelt & Nimis, Loc. 3, 5, 7, 10, 11, 15, 18, 21, 35, 36, 38, 40, 41, 43, 45, 46, 47, 48, 54, 55, 57, 58, 60, 62, 63, 66, 68: parasitic on *Aspicilia intermutans*.
- Caloplaca interfulgens* (Nyl.) J.Steiner, Loc. 3, 10, 40, 47, 51, 55: on basalt.

- Caloplaca interna* Poelt & Nimis, Loc. 2, 4, 5, 9, 11, 12, 17, 22, 26, 29, 30, 32, 43, 47, 53, 54, 55, 59, 60, 64, 66, 70: parasitic on *Aspicilia* spp.
- Caloplaca irrubescens* (Arnold) Zahlbr., Loc. 11, 15, 29, 30, 32, 34, 36, 41, 45, 51, 60: on basalt, andesite and rhyolite.
- Caloplaca lactea* (A.Massal.) Zahlbr., Loc. 39: on carbonatic rock.
- Caloplaca obscurella* (Körb.) Th.Fr., Loc. 7, 10, 46, 53: on *Quercus suber*, *Q. pubescens*, *Prunus* sp. and *Malus* sp.
- Caloplaca oxfordensis* Hedr., Loc. 66: on basalt.
- Caloplaca pelloidella* (Nyl.) Hasse, Loc. 8, 15, 17, 34, 38, 40, 43, 46, 54, 58, 62, 63: parasitic on crustose lichens.
- Caloplaca pollinii* (A.Massal.) Jatta, Loc. 22: on *Quercus pubescens*.
- Caloplaca pyracea* (Ach.) Th.Fr., Loc. 4, 7, 9, 10, 11, 13, 18, 20, 40, 46, 47, 48, 52, 58, 63: on *Quercus pubescens*, *Q. suber*, *Malus* sp., *Pyrus* sp. and *Olea europaea*.
- Caloplaca scotoplaca* (Nyl.) H.Magn., Loc. 43: on basalt.
- Caloplaca teicholyta* (Ach.) J.Steiner, Loc. 3, 5, 11, 22, 30, 43, 55, 59, 62, 66: on basalt and andesite.
- Candelaria concolor* (Dicks.) Stein, Loc. 12, 30, 33, 48, 53, 57, 64, 66: on *Quercus suber*, *Q. pubescens*, *Q. ilex* and *Pyrus* sp.
- Candelariella reflexa* (Nyl.) Lettau, Loc. 3, 4, 9, 12, 13, 14, 17, 18, 20, 29, 30, 32, 33, 34, 35, 37, 38, 41, 43, 45, 49, 52, 55, 58, 59, 63, 64, 68, 69: on *Quercus suber*, *Q. pubescens*, *Q. ilex* and *Prunus* sp., *Olea europaea* and *Fraxinus excelsior*.
- Candelariella vitellina* (Hoffm.) Müll.Arg., Loc. 2, 3, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 24, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 38, 40, 41, 43, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70: on basalt, andesite, trachyte, dacite and rhyolite.
- Candelariella xanthostigma* (Ach.) Lettau, Loc. 3, 7, 8, 10, 13, 14, 29, 30, 31, 33, 37, 40, 41, 43, 45, 46, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 59, 66, 68, 69: on *Quercus suber*, *Q. pubescens*, *Q. ilex* and *Prunus* sp., *Olea europaea*, *Malus* sp. and *Fraxinus excelsior*.
- Carbonea vitellinaria* (Nyl.) Hertel, Loc. 3, 7, 10, 12, 15, 16, 19, 62, 63, 69: parasitic on *Candelariella vitellina*.
- Catillaria chalybeia* (Borrer) A.Massal., Loc. 9, 15, 22, 24: on andesite and basalt.
- Catillaria nigroclavata* (Nyl.) Schuler, Loc. 4, 6: on *Quercus pubescens*.
- \* *Catillaria subviridis* (Nyl.) Zahlbr., Loc. 63: on *Olea europaea*.
- Catinaria atropurpurea* (Schaer.) Vězda & Poelt, Loc. 24: on *Quercus pubescens*.
- # *Chaenotheca ferruginea* (Sm.) Mig., Loc. 24: on *Quercus pubescens*.

- Chaenotheca furfuracea* (L.) Tibell, Loc. 24: on *Quercus pubescens*.  
*Chrysothrix candelaris* (L.) J.R.Laundon, Loc. 10, 21, 27, 29, 70: on *Prunus* sp. and *Quercus pubescens*.  
*Chrysothrix chlorina* (Ach.) J.R.Laundon, Loc. 7: on basalt.  
*Cladonia convoluta* (Lam.) Anders, Loc. 57: on basalt.  
*Cladonia fimbriata* (L.) Fr., Loc. 56: epilithic on basalt; Loc. 8, 13, 16, 24, 27: epiphytic on *Quercus ilex*, *Q. pubescens* and *Q. suber*.  
*Cladonia foliacea* (Huds.) Willd., Loc. 57: on basalt.  
*Cladonia macilenta* Hoffm. subsp. *macilenta*, Loc. 16: on *Quercus suber*.  
*Cladonia parasitica* (Hoffm.) Hoffm., Loc. 24: on *Quercus pubescens*.  
*Cladonia pyxidata* (L.) Hoffm., Loc. 6, 13, 16, 24: on *Quercus ilex*, *Q. suber* and *Q. pubescens*.  
*Cliostomum griffithii* (Sm.) Coppins, Loc. 70: on *Quercus pubescens*.  
# *Collema conglomeratum* Hoffm., Loc. 20: on *Quercus pubescens*.  
*Collema flaccidum* (Ach.) Ach., Loc. 27: on *Quercus ilex*.  
*Collema furfuraceum* (Arnold) Du Rietz, Loc. 3, 4, 6, 8, 13, 20, 35, 45, 48, 50, 59, 66: on *Quercus pubescens*, *Q. ilex*, *Q. suber*, *Olea europaea* and *Pyrus* sp.  
*Collema nigrescens* (Huds.) DC., Loc. 1, 4, 6, 13, 16, 50: on *Quercus pubescens*, *Q. ilex*, *Q. suber*, *Ilex aquifolium*.  
*Collema rysssoleum* (Tuck.) A. Schneider, Loc. 3, 15, 16, 60, 63: on trachyte, rhyolite, basanite and andesite.  
*Collema subflaccidum* Degel., Loc. 1, 6, 8, 20, 64: on *Quercus pubescens* and *Q. ilex*.  
*Collema subnigrescens* Degel., Loc. 6: on *Quercus ilex*.  
# *Cyphelium inquinans* (Sm.) Trevis., Loc. 24: on *Quercus pubescens*.  
*Cyphelium notarisii* (Tul.) Blomb. & Forssell, Loc. 24: on *Quercus pubescens*.  
# *Dactylospora parasitica* (Flörke ex Spreng.) Zopf, Loc. 50: on *Pertusaria albescens*.  
*Degelia atlantica* (Degel.) M.Jørg. & P.James, Loc. 1: on *Quercus pubescens*.  
*Degelia plumbea* (Lightf.) M.Jørg. & P.James, Loc. 2, 13, 17, 24: on *Quercus pubescens* and *Q. ilex*.  
*Dermatocarpon miniatum* (L.) W.Mann, Loc. 15: on andesite.  
*Dimerella pineti* (Ach.) Vězda, Loc. 23, 70: on *Pinus pinea* and *P. halepensis*.  
*Diploicia canescens* (Dicks.) A.Massal., Loc. 4, 26, 32, 35, 53, 56, 66: epilithic on trachyte, basalt and rhyolite; Loc. 3, 7, 9, 10, 12, 14, 17, 18, 19, 20, 21, 22, 27, 29, 30, 32, 33, 34, 35, 37, 38, 40, 41, 44, 46, 47, 49,



- 52, 53, 54, 55, 56, 57, 58, 63, 64, 66: epiphytic on *Quercus pubescens*, *Q. ilex*, *Q. suber*, *Olea europaea*, *Malus* sp., *Prunus* sp. and *Pyrus* sp.
- Diploicia subcanescens* (Werner) Hafellner & Poelt, Loc. 7, 26: on basalt and dacite.
- Diploschistes actinostomus* (Ach.) Zahlbr., Loc. 3, 4, 17, 18, 20, 22, 30, 31, 33, 34, 36, 38, 40, 43, 46, 49, 51, 52, 54, 56, 57, 58, 59, 60, 62, 65, 66, 68, 69: on basalt, trachyte, andesite and rhyolite.
- Diploschistes euganeus* (A.Massal.) J.Steiner, Loc. 36, 57: on basalt.
- Diploschistes gypsaceus* (Ach.) Zahlbr., Loc. 22: on andesite.
- Diploschistes muscorum* (Scop.) R.Sant., Loc. 41: on crustose lichens.
- Diploschistes scruposus* (Schreb.) Norman, Loc. 27, 49: on basalt and dacite.
- Diplotomma alboatrum* (Hoffm.) Flot., Loc. 3, 31, 51, 52: epilithic on basalt: Loc. 30, 35, 57: epiphytic on *Quercus pubescens*.
- Diplotomma chlorophaeum* (Leight.) Szatala, Loc. 3, 5, 7, 9, 11, 12, 14, 15, 16, 17, 18, 20, 30, 31, 32, 33, 35, 46, 47, 48, 50, 51, 52, 54, 55, 59, 60, 62, 63, 66, 68, 69: on basalt, trachyte, andesite, basanite and rhyolite.
- Evernia prunastri* (L.) Ach., Loc. 1, 2, 3, 4, 8, 13, 16, 24, 26, 27, 29, 44, 45, 47, 55, 59, 68: on *Quercus pubescens*, *Q. ilex*, *Q. suber*, *Pinus pinea*, *Olea europaea* and *Fraxinus excelsior*.
- Flavoparmelia caperata* (L.) Hale, Loc. 31, 32: epilithic on basalt; Loc. 1, 4, 6, 7, 12, 13, 16, 18, 20, 22, 25, 26, 27, 29, 33, 37, 45, 46, 47, 49, 52, 53, 55, 56, 57, 59, 67, 68: epiphytic on *Quercus pubescens*, *Q. ilex*, *Q. suber*, *Olea europaea*, *Malus* sp., *Prunus* sp. and *Pyrus* sp.
- Flavoparmelia soredians* (Nyl.) Hale, Loc. 6, 12, 16, 26, 31, 32, 33, 41, 47, 52, 55: on *Quercus suber*, *Q. pubescens* and *Olea europaea*.
- Fuscopannaria mediterranea* (Tav.) M.Jørg., Loc. 6, 8, 13: on *Quercus ilex* and *Q. pubescens*.
- Gyalecta truncigena* (Ach.) Hepp, Loc. 6, 30: on *Quercus pubescens* and *Q. ilex*.
- Haematomma ochroleucum* (Neck.) J.R.Laundon var. *ochroleucum*, Loc. 4, 58: on trachyte and basalt.
- Haematomma ochroleucum* (Neck.) J.R.Laundon var. *porphyrium* (Pers.) J.R. Laundon, Loc. 41, 59: epilithic on basalt; Loc. 4: epiphytic on *Quercus ilex*.
- Heterodermia speciosa* (Wulfen) Trevis., Loc. 2: on *Quercus ilex*.
- Hyperphyscia adglutinata* (Flörke) H.Mayrhofer & Poelt, Loc. 4, 7, 9, 10, 12, 17, 26, 29, 30, 32, 33, 35, 37, 38, 40, 41, 43, 46, 49, 52, 56, 58, 64: on *Quercus pubescens*, *Q. ilex*, *Q. suber*, *Olea europaea*, *Malus* sp., *Prunus* sp. and *Pyrus* sp.
- Hypogymnia physodes* (L.) Nyl., Loc. 2, 13, 16, 27: on *Quercus ilex* and *Q. pubescens*.

- Hypogymnia tubulosa* (Schaer.) Hav., Loc. 68, 69: on *Quercus suber* and *Fraxinus excelsior*.
- Ingvariella bispora* (Bagl.) Guderley & Lumbsch, Loc. 3, 36, 45, 52, 54, 57, 58, 63, 68: on *Aspicilia* spp.
- Lasallia pustulata* (L.) Mérat, Loc. 16, 57: on dacite and basalt.
- Lecania aipospila* (Wahlenb.) Th.Fr., Loc. 45: on rhyolite.
- Lecania cyrtella* (Ach.) Th.Fr., Loc. 4, 8, 12, 26, 29, 40, 48, 57, 68: on *Quercus pubescens*, *Q. ilex*, *Q. suber*, *Malus* sp., and *Pyrus* sp.
- Lecania koerberiana* J.Lahm, Loc. 10: on *Prunus* sp.
- # *Lecanographa amylacea* (Pers.) Egea & Torrente, Loc. 4, 6: on *Quercus pubescens*.
- Lecanora albella* (Pers.) Ach., Loc. 8, 27, 50: on *Quercus ilex* and *Q. pubescens*.
- Lecanora allophana* Nyl., Loc. 4, 8, 17, 24, 26, 27, 29, 30, 33, 37, 38, 40, 41, 49, 63, 66: on *Quercus ilex*, *Q. pubescens*, *Olea europaea* and *Malus* sp.
- Lecanora argentata* (Ach.) Malme, Loc. 6, 8, 13, 26, 57, 59, 64, 66: on *Quercus ilex* and *Q. pubescens*.
- Lecanora campestris* (Schaer.) Hue, Loc. 13, 22, 25, 31, 32, 35, 36, 38, 40, 41, 49, 52, 55, 56, 59, 60: on basalt and rhyolite.
- Lecanora carpinea* (L.) Vain., Loc. 10, 17, 26, 27, 29, 41, 47, 48, 52, 53, 55, 56, 58: on *Prunus* sp., *Quercus pubescens*, *Pyrus* sp. and *Olea europaea*.
- Lecanora chlarotera* Nyl., Loc. 3, 4, 6, 7, 8, 9, 10, 11, 12, 14, 17, 18, 19, 20, 21, 22, 26, 27, 28, 29, 30, 32, 33, 34, 37, 40, 41, 45, 46, 47, 48, 49, 50, 52, 53, 54, 55, 56, 57, 58, 59, 61, 63, 64, 66, 68, 69: on *Quercus pubescens*, *Q. ilex*, *Q. suber*, *Olea europaea*, *Malus* sp., *Fraxinus excelsior*, *Prunus* sp. and *Pyrus* sp.
- Lecanora crenulata* Hook., Loc. 29, 30, 33, 55, 59: on basalt.
- Lecanora dispersa* (Pers.) Sommerf., Loc. 2, 3, 6, 9, 11, 18, 19, 22, 29, 30, 31, 32, 33, 35, 38, 40, 41, 43, 45, 47, 48, 50, 51, 52, 53, 55, 57, 58, 59, 60, 62, 64, 65, 66, 67: on basalt, rhyolite and andesite.
- Lecanora expallens* Ach., Loc. 3, 4, 6, 7, 8, 9, 12, 13, 14, 17, 18, 19, 21, 22, 24, 26, 27, 28, 33, 37, 38, 46, 47, 48, 49, 50, 52, 53, 55, 56, 57, 58, 59, 61, 63, 64, 69, 70: on *Quercus pubescens*, *Q. ilex*, *Q. suber*, *Olea europaea*, *Malus* sp., *Fraxinus excelsior*, *Prunus* sp. and *Pyrus* sp.
- Lecanora gangaleoides* Nyl., Loc. 2, 24, 26, 30, 66: on basalt and trachyte.
- Lecanora hagenii* (Ach.) Ach., Loc. 5: epilithic on basalt; Loc. 10, 26, 30, 40, 45, 46, 51, 52, 54: epiphytic on *Prunus* sp., *Malus* sp., *Quercus pubescens* and *Olea europaea*.
- Lecanora horiza* (Ach.) Linds., Loc. 10, 22, 27, 54, 59: on *Prunus* sp., *Quercus pubescens* and *Olea europaea*.
- Lecanora leptyroides* (Nyl.) Degel., Loc. 24, 45, 50: on *Quercus pubescens*.

- Lecanora meridionalis* H.Magn., Loc. 2, 3, 8, 18, 19, 20, 22, 27, 30, 37, 43, 48, 55, 57, 58, 63, 68: on *Quercus pubescens*, *Q. ilex*, *Q. suber*, *Olea europaea*, *Malus* sp., *Fraxinus excelsior*, *Prunus* sp. and *Pyrus* sp.
- Lecanora polytropa* (Hoffm.) Rabenh. var. *polytropa*, Loc. 46: on basalt.
- Lecanora praepostera* Nyl., Loc. 46: on basalt.
- Lecanora pseudistera* Nyl., Loc. 12, 17, 52, 54, 56: on basalt and trachyte.
- Lecanora pulicaris* (Pers.) Ach., Loc. 11, 68, 69: on *Olea europaea*, *Quercus pubescens* and *Q. suber*.
- Lecanora puniceofusca* Bagl., Loc. 16, 29: on dacite and basalt.
- Lecanora rupicola* (L.) Zahlbr. subsp. *rupicola* var. *rupicola*, Loc. 18, 31, 35, 38: on basalt and rhyolite.
- Lecanora rupicola* (L.) subsp. *subplanata* (Nyl.) Leuckert & Poelt, Loc. 3, 8, 13, 14, 20, 22, 24, 30, 32, 33, 35, 36, 40, 45, 46, 47, 48, 49, 50, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 66, 68, 69: on basalt, rhyolite, andesite and trachyte.
- Lecanora rupicola* (L.) Zahlbr. subsp. *sulphurata* (Ach.) Leuckert, Loc. 5, 8, 14, 20, 34, 36, 41, 43, 45, 46, 48, 49, 50, 52, 53, 54, 56, 58, 59, 60, 61, 62, 63, 64, 68: on basalt, trachyte, rhyolite, andesite and basanite.
- # *Lecanora saligna* (Schrad.) Zahlbr., Loc. 4, 54: on *Quercus ilex* and *Olea europaea*.
- Lecanora salina* H.Magn., Loc. 65: on basalt.
- Lecanora sambuci* (Pers.) Nyl., Loc. 40: on *Malus* sp.
- # *Lecanora strobilina* (Spreng.) Kieff., Loc. 26: on *Quercus pubescens*.
- Lecanora subcarnea* (Lilj.) Ach., Loc. 13: on dacite.
- Lecanora sulphurea* (Hoffm.) Ach., Loc. 36: parasitic on *Tephromela atra*.
- Lecanora symmicta* (Ach.) Ach., Loc. 4, 22, 27, 52, 58: on *Quercus ilex* and *Q. pubescens*.
- # *Lecanora umbrina* (Ach.) A.Massal., Loc. 4, 17: on *Quercus pubescens*.
- Lecanora umbrosa* Degel., Loc. 55: on basalt.
- Lecidea atrobrunnea* (Lam. & DC.) Schaer., Loc. 10: parasitic on *Lecidea* spp.
- Lecidea fuscoatra* (L.) Ach., Loc. 3, 8, 12, 13, 16, 18, 20, 30, 31, 33, 36, 38, 40, 41, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 57, 58, 59, 61, 62, 63, 64, 68: on basalt, trachyte, rhyolite and basanite.
- Lecidella asema* (Nyl.) Knoph & Hertel var. *asema*, Loc. 3, 4, 13, 25, 33, 36, 40, 49, 52, 58, 60, 62, 63: on basalt, trachyte, rhyolite and basanite.
- Lecidella asema* (Nyl.) Knoph & Hertel var. *elaeochromoides* (Nyl.) Nimis & Tretiach, Loc. 6, 57, 60: on basalt and rhyolite.
- Lecidella carpathica* Körb., Loc. 2, 3, 7, 8, 12, 14, 15, 16, 17, 18, 20, 26, 28, 30, 31, 33, 36, 38, 41, 43, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 58, 59, 60, 62, 64, 66, 68, 69, 70: parasitic on crustose lichens.

- Lecidella elaeochroma* (Ach.) M.Choisy, Loc. 1, 2, 3, 4, 6, 8, 9, 10, 14, 16, 17, 18, 19, 20, 21, 22, 24, 26, 27, 28, 29, 30, 35, 37, 38, 40, 41, 42, 43, 45, 46, 47, 49, 50, 52, 53, 54, 55, 56, 57, 58, 59, 61, 63, 64, 67, 68, 69: on *Quercus pubescens*, *Q. ilex*, *Q. suber*, *Olea europaea*, *Malus* sp., *Fraxinus excelsior*, *Prunus* sp. and *Pyrus* sp.
- Lecidella elaeochroma* (Ach.) M.Choisy f. *soralifera* (Erichsen) D. Hawksw, Loc. 29, 37, 40, 41: on *Quercus pubescens*, *Olea* sp. and *Malus* sp.
- Lecidella scabra* (Taylor) Hertel & Leuckert, Loc. 6, 9, 13, 14, 18, 24, 51, 54, 56, 59: on basalt and trachyte.
- Lecidella vorax* Leuckert & Poelt, Loc. 68: parasitic on *Lecanora rupicola*.
- Leprocaulon microscopicum* (Vill.) Gams, Loc. 13, 49: epilithic on basalt and trachyte; Loc. 16, 24, 30, 35: epiphytic on *Quercus pubescens* and *Q. suber*.
- Leptogium lichenoides* (L.) Zahlbr., Loc. 4: on epiphytic mosses.
- Leptogium teretiusculum* (Wallr.) Arnold, Loc. 66: on *Quercus pubescens*.
- Lichinella robusta* Henssen, Loc. 16 on dacite.
- Lichinella stipatula* Nyl., Loc. 15, 18, 43, 48, 53, 58, 60, 63: on basalt, trachyte, rhyolite, andesite and basanite.
- Lobaria amplissima* (Scop.) Forssell, Loc. 24: on *Quercus pubescens*.
- Lobaria amplissima* (Scop.) Forssell var. *umhausensis* (Auersw.) Nimis, Loc. 13: on *Quercus pubescens*.
- Lobaria pulmonaria* (L.) Hoffm., Loc. 6, 13, 24, 35, 68: on *Quercus pubescens*, *Q. ilex* and *Fraxinus excelsior*.
- Lobarina scrobiculata* (Scop.) Nyl., Loc. 13, 24: on *Quercus pubescens*.
- Lobothallia parasitica* (de Lesd.), Loc. 3, 22, 24, 36, 40, 43, 45, 50, 51, 56, 58, 63, 64, 68: parasitic on crustose lichens.
- Lobothallia radiosa* (Hoffm.) Hafellner, Loc. 6, 14, 15, 24, 36, 40, 46, 52, 54, 68: on basalt and andesite.
- Megalaria grossa* (Nyl.) Hafellner, Loc. 24: on *Quercus pubescens*.
- Melanelixia fuliginosa* (Duby) O.Blanco, A.Crespo, Divakar, Essl., D. Hawksw. & Lumbsch, Loc. 6: epilithic on basalt; Loc. 4, 6, 7, 8, 13, 19, 20, 22, 26, 27, 47, 49, 50, 55, 59, 66, 68, 69: epiphytic on *Quercus pubescens*, *Q. ilex*, *Q. suber*, *Olea europaea* and *Fraxinus excelsior*.
- Melanelixia subaurifera* (Nyl.) O.Blanco, A.Crespo, Divakar, Essl., D. Hawksw. & Lumbsch, Loc. 6, 8, 16, 26, 55, 68, 69: on *Quercus ilex*, *Q. pubescens* and *Q. suber*.
- Melanohalea elegantula* (Zahlbr.) O.Blanco, A.Crespo, Divakar, Essl., D.Hawksw. & Lumbsch, Loc. 6, 7, 55: on *Quercus pubescens* and *Q. suber*.
- Melanohalea exasperata* (De Not.) O.Blanco, A.Crespo, Divakar, Essl., D.Hawksw. & Lumbsch, Loc. 28: on *Mespilus germanica*.

- Melanohalea exasperatula* (Nyl.) O.Blanco, A.Crespo, Divakar, Essl., D.Hawksw. & Lumbsch, Loc. 6: on *Quercus pubescens*.
- Melanohalea laciniatula* (H.Olivier) O.Blanco, A.Crespo, Divakar, Essl., D.Hawksw. & Lumbsch, Loc. 26, 69: on *Quercus pubescens* and *Q. suber*.
- # *Melaspilea ochrothalamia* Nyl., Loc. 2, 14: on *Quercus ilex* and *Prunus* sp.
- Micarea lignaria* (Ach.) Hedl. var. *lignaria*, Loc. 12, 16, 26: on *Quercus suber*.
- Micarea prasina* Fr., Loc. 25: on *Quercus ilex*.
- Miriquidica deusta* (Stenh.) Hertel & Rambold, Loc. 16, 43, 45, 48, 58, 63: parasitic on crustose lichens.
- Mycomicrothelia confusa* D.Hawksw., Loc. 59: on *Quercus pubescens*.
- # *Mycoporum antecellens* (Nyl.) R.C.Harris, Loc. 2, 37: on *Quercus ilex* and *Olea* sp.
- Naetrocymbe punctiformis* (Pers.) R.C.Harris, Loc. 14, 27, 48, 50, 61, 62, 68: on *Quercus pubescens*, *Q. suber*, *Olea europaea*, *Pyrus* sp. and *Prunus* sp.
- Nephroma laevigatum* Ach., Loc. 2, 13, 24, 68: on *Quercus ilex* and *Q. pubescens*.
- Normandina pulchella* (Borrer) Nyl., Loc. 2, 6, 24, 25: on *Quercus ilex* and *Q. pubescens*.
- # *Ochrolechia alboflavescens* (Wulfen) Zahlbr., Loc. 23: on *Pinus pinea*.
- Ochrolechia androgyna* (Hoffm.) Arnold, Loc. 24, 68: on *Quercus pubescens*.
- Ochrolechia arborea* (Kreyer) Almb., Loc. 9, 20, 35, 66, 68: on *Quercus pubescens*.
- Ochrolechia balcanica* Versegly, Loc. 13: on *Quercus pubescens*.
- Ochrolechia pallescens* (L.) A.Massal., Loc. 6, 8, 10, 20, 24, 27, 28, 37, 47, 49, 50, 53, 54, 55, 59, 64, 66, 68, 69: on *Quercus pubescens*, *Q. suber* and *Olea europaea*.
- Ochrolechia parella* (L.) A.Massal., Loc. 4, 6, 8, 10, 14, 16, 17, 18, 20, 24, 26, 27, 33, 36, 40, 41, 45, 46, 49, 50, 52, 53, 56, 57, 59, 60, 62, 64, 66, 68, 69: on *Quercus pubescens*, *Q. suber*, *Q. ilex*, *Olea europaea*, *Malus* sp., *Pyrus* sp. and *Prunus* sp.
- Ochrolechia subviridis* (Høeg) Erichsen, Loc. 20: on *Quercus pubescens*.
- Opegrapha atra* Pers., Loc. 12, 70: on *Quercus suber* and *Q. pubescens*.
- Opegrapha niveoatra* (Borrer) J.R.Laundon, Loc. 64: on *Quercus ilex*.
- Opegrapha varia* Pers., Loc. 6, 24, 25, 30, 35, 69: on *Quercus ilex*, *Q. pubescens* and *Q. suber*.
- Pachyphiale carneola* (Ach.) Arnold, Loc. 6: on *Quercus ilex*.
- Pannaria rubiginosa* (Ach.) Bory, Loc. 24: on *Quercus pubescens*.

- Parmelia saxatilis* (L.) Ach., Loc. 2, 4, 13, 22, 27, 45: epilithic on basalt, trachyte, andesite and rhyolite; Loc. 2, 8, 13, 24, 69: epiphytic on *Quercus ilex*, *Q. pubescens* and *Q. suber*.
- Parmelia submontana* Hale, Loc. 1, 2, 13, 16, 27: on *Quercus pubescens*, *Q. ilex* and *Q. suber*.
- Parmelia sulcata* Taylor, Loc. 13, 24, 27: epilithic on trachyte and basalt; Loc. 1, 2, 4, 6, 7, 8, 13, 16, 24, 26, 27, 55, 68: epiphytic on *Quercus ilex*, *Q. pubescens* and *Q. suber*.
- Parmelina pastillifera* (Harm.) Hale, Loc. 69: epiphytic on *Quercus suber*.
- Parmelina quercina* (Willd.) Hale, Loc. 1, 12, 27, 47, 52, 56, 59, 68: on *Quercus pubescens* and *Q. suber*.
- Parmelina tiliacea* (Hoffm.) Hale, Loc. 3, 4, 6, 8, 12, 13, 24, 27, 31, 56, 66, 68: epilithic on basalt and trachyte; Loc. 1, 3, 4, 6, 8, 10, 12, 13, 14, 16, 17, 20, 21, 22, 24, 26, 27, 29, 33, 41, 45, 47, 49, 50, 51, 52, 55, 56, 57, 59, 64, 66, 67, 68, 69: epiphytic on *Quercus pubescens*, *Q. suber*, *Q. ilex*, *Olea europaea*, *Malus* sp., *Pyrus* sp. and *Prunus* sp.
- Parmotrema perlatum* (Huds.) M.Choisy, Loc. 6, 25: epilithic on basalt and rhyolite; Loc. 2, 4, 7, 8, 13, 16, 22, 24, 25, 26, 27, 29, 32, 33, 37, 45, 53, 55, 59, 64, 68, 69: epiphytic on *Quercus ilex*, *Q. pubescens*, *Q. suber* and *Olea europaea*.
- Parmotrema reticulatum* (Taylor) M.Choisy, Loc. 6: epilithic on basalt; Loc. 2, 4, 16, 29, 68 epiphytic on *Quercus ilex*, *Q. pubescens* and *Q. suber*.
- # *Parmotrema stuppeum* (Taylor) Hale, Loc. 2, 8, 27: on *Quercus ilex*.
- Peltigera praetextata* (Sommerf.) Zopf, Loc. 25: on *Quercus ilex*.
- Peltula euploca* (Ach.) Poelt, Loc. 15, 16, 58: on trachyte, basalt and andesite.
- Peltula obscurans* (Nyl.) Gyeln., Loc. 34: on basalt.
- Pertusaria albescens* (Huds.) M.Choisy & Werner, Loc. 1, 2, 6, 8, 13, 20, 24, 30, 33, 35, 49, 50, 53, 57, 64, 68, 69: on *Olea europaea*, *Quercus ilex*, *Q. pubescens* and *Q. suber*.
- Pertusaria amara* (Ach.) Nyl., Loc. 4, 6, 8, 13, 16, 17, 20, 24, 26, 50, 59, 66, 68: on *Quercus ilex*, *Q. pubescens* and *Q. suber*.
- Pertusaria amara* (Ach.) Nyl. var. *flotowiana* (Flörke) Erichsen, Loc. 20: on dacite.
- Pertusaria coccodes* (Ach.) Nyl., Loc. 13, 24, 27, 50, 68: on *Quercus pubescens*.
- Pertusaria corallina* (L.) Arnold, Loc. 13, 24, 57: on basalt and trachyte.
- # *Pertusaria coronata* (Ach.) Th.Fr., Loc. 64, 69: on *Quercus pubescens* and *Q. suber*.
- Pertusaria digrediens* Nyl., Loc. 3, 22, 45, 50, 68: on rhyolite, andesite and basalt.

- Pertusaria excludens* Nyl., Loc. 4, 50: on trachyte and rhyolite.
- Pertusaria flavicans* Lamy, Loc. 16, 27, 50: on trachyte and rhyolite.
- Pertusaria flavida* (DC.) J.R.Laundon, Loc. 2, 20, 49: on *Quercus ilex*, *Q. pubescens* and *Olea europaea*.
- Pertusaria hemisphaerica* (Flörke) Erichsen, Loc. 24, 43, 48, 56, 57, 68: on *Quercus pubescens*, *Prunus sp.* and *Pyrus sp.*
- Pertusaria heterochroa* (Müll.Arg.) Erichsen, Loc. 68: on *Fraxinus excelsior*.
- Pertusaria hymenea* (Ach.) Schaer., Loc. 24, 30, 57, 64, 68: on *Quercus pubescens*.
- Pertusaria lactea* (L.) Arnold, Loc. 24: on basalt.
- Pertusaria leioplaca* DC., Loc. 4, 8, 17, 20, 48, 68: on trachyte and basalt.
- Pertusaria multipuncta* (Turner) Nyl., Loc. 49, 53, 68: on *Olea sp.* and *Quercus pubescens*.
- Pertusaria pertusa* (Weigel) Tuck., Loc. 2, 4, 6, 8, 13, 14, 24, 27, 50, 54, 57, 59, 64, 68, 69: on *Quercus ilex*, *Q. pubescens*, *Q. suber*, *Prunus sp.* and *Olea europaea*.
- Pertusaria pertusa* (Weigel) Tuck. var. *rupestris* (DC.) Dalla Tor, Loc. 24, 53: on basalt.
- Pertusaria pluripuncta* Nyl., Loc. 68, on basalt.
- Pertusaria pseudocorallina* (Lilj.) Arnold, Loc. 4: on trachyte.
- Pertusaria pustulata* (Ach.) Duby, Loc. 2, 4, 8, 64: on *Quercus ilex* and *Q. pubescens*.
- Pertusaria rupicola* (Fr.) Harm., Loc. 66: on basalt.
- # *Phaeophyscia chloantha* (Ach.) Moberg, Loc. 2, 47, 48, 67, 69: on *Quercus ilex*, *Q. pubescens*, *Q. suber* and *Pyrus sp.*
- Phaeophyscia ciliata* (Hoffm.) Moberg, Loc. 68: on *Fraxinus excelsior*.
- Phaeophyscia hirsuta* (Mereschk.) Essl., Loc. 3, 4, 7, 10, 12, 19, 26, 29, 30, 33, 35, 37, 41, 48, 49, 50, 51, 52, 53, 54, 56, 64, 66, 68: on *Quercus pubescens*, *Q. suber*, *Q. ilex*, *Olea europaea*, *Malus sp.*, *Pyrus sp.*, *Fraxinus excelsior* and *Prunus sp.*
- # *Phaeophyscia nigricans* (Flörke) Moberg, Loc. 3, 7, 9, 11, 14, 48, 52, 63, 66: on *Quercus pubescens*, *Q. suber*, *Prunus sp.*, *Pyrus sp.* and *Olea europaea*.
- Phaeophyscia orbicularis* (Neck.) Moberg, Loc. 3, 10, 14, 17, 20, 22, 29, 30, 32, 35, 37, 38, 45, 46, 48, 51, 52, 54, 57, 59, 63, 66, 68: on *Quercus pubescens*, *Q. suber*, *Prunus sp.*, *Pyrus sp.*, *Malus sp.* and *Olea europaea*.
- Phaeophyscia pusilloides* (Zahlbr.) Essl., Loc. 68: on *Fraxinus excelsior*.
- Phlyctis agelaea* (Ach.) Flot., Loc. 2, 6, 8, 16, 22, 68: on *Quercus pubescens*, *Q. ilex* and *Q. suber*.
- Phlyctis argena* (Spreng.) Flot., Loc. 1, 2, 6, 8, 13, 24, 29, 68, 69: on *Quercus pubescens*, *Q. ilex* and *Q. suber*.

- Physcia adscendens* (Fr.) H.Olivier, Loc. 1, 2, 4, 6, 7, 8, 13, 22, 30, 31, 32, 35, 48, 49, 50, 52, 53, 55, 66, 67, 68: epilithic on basalt, rhyolite and trachyte; Loc. 2, 3, 4, 6, 7, 8, 9, 10, 11, 12, 14, 16, 17, 18, 19, 20, 21, 22, 23, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 37, 38, 40, 41, 43, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 61, 62, 63, 64, 66, 67, 68, 69: epiphytic on *Quercus pubescens*, *Q. suber*, *Q. ilex*, *Olea europaea*, *Malus* sp., *Pyrus* sp., *Fraxinus excelsior* and *Prunus* sp.
- Physcia aipolia* (Humb.) Fűrnrh., Loc. 8, 20, 45, 49, 54, 59, 68, 69: on *Quercus pubescens*, *Q. suber* and *Olea* sp.
- Physcia biziana* (A.Massal.) Zahlbr. var. *biziana*, Loc. 3, 4, 6, 10, 14, 17, 21, 28, 30, 33, 38, 40, 43, 45, 46, 47, 48, 49, 50, 51, 52, 53, 56, 58, 64: on *Quercus pubescens*, *Q. suber*, *Q. ilex*, *Olea europaea*, *Malus* sp., *Pyrus* sp., *Fraxinus excelsior* and *Prunus* sp.
- Physcia biziana* (A.Massal.) Zahlbr. var. *leptophylla* Vězda, Loc. 3, 15, 38: on basalt and andesite; Loc. 11, 17, 21, 30, 31, 32, 33, 34, 35, 40: epiphytic on *Quercus pubescens*, *Q. suber*, *Malus* sp. and *Olea europaea*.
- Physcia caesia* (Hoffm.) Fűrnr. var. *caesia*, Loc. 7, 15, 24, 31, 33, 35, 38, 40, 63: on basalt, andesite, rhyolite and basanite.
- Physcia caesia* (Hoffm.) Fűrnr. var. *caesiella* (de Lesd.) Clauzade & Cl. Roux, Loc. 3, 7, 16, 17, 48, 50, 57, 64, 66, 68: on basalt, rhyolite and dacite.
- Physcia dimidiata* (Arnold) Nyl., Loc. 21: on *Quercus pubescens*.
- Physcia dubia* (Hoffm.) Lettau, Loc. 19: on *Quercus suber*.
- Physcia leptalea* (Ach.) DC., Loc. 4, 7, 8, 13, 20, 22, 24, 29, 45, 46, 48, 50, 53, 56, 57, 59, 64, 68, 69: on *Quercus pubescens*, *Q. suber*, *Q. ilex*, *Malus* sp., *Pyrus* sp., *Fraxinus excelsior* and *Prunus* sp.
- Physcia tenella* (Scop.) DC., Loc. 24, 29, 30, 32, 66: epilithic on basalt; Loc. 3, 6, 7, 9, 11, 14, 18, 19, 20, 22, 28, 29, 32, 33, 37, 41, 43, 45, 48, 49, 51, 53, 54, 55, 57, 58, 64, 66, 68: epiphytic on *Quercus pubescens*, *Q. suber*, *Olea europaea*, *Malus* sp., *Pyrus* sp., *Fraxinus excelsior* and *Prunus* sp.
- # *Physcia vitii* Nád., Loc. 11, 20, 22: on *Olea europaea* and *Quercus pubescens*.
- Physconia detersa* (Nyl.) Poelt, Loc. 24: on *Quercus pubescens*.
- Physconia distorta* (With.) J.R.Laundon, Loc. 3, 66: epilithic on basalt; Loc. 1, 3, 4, 6, 7, 8, 9, 13, 14, 20, 21, 22, 24, 27, 29, 30, 38, 41, 48, 49, 50, 53, 55, 56, 57, 59, 64, 66, 68: epiphytic on *Quercus pubescens*, *Q. suber*, *Olea europaea*, *Malus* sp., *Pyrus* sp., *Fraxinus excelsior* and *Prunus* sp.
- Physconia enteroxantha* (Nyl.) Poelt, Loc. 10, 52: epilithic on basalt; Loc. 47, 53, 55, 59, 68: epiphytic on *Quercus pubescens* and *Q. suber*.



- Physconia grisea* (Lam.) Poelt subsp. *algeriensis* (Flagey) Poelt, Loc. 30, 66: epilithic on basalt; Loc. 46, 59, 52, 54, 57: epiphytic on *Malus* sp., *Olea* sp. and *Quercus pubescens*.
- Physconia grisea* (Lam.) Poelt subsp. *grisea*, Loc. 3, 52, 55, 68: epilithic on basalt; Loc. 3, 6, 7, 9, 12, 18, 19, 20, 30, 32, 33, 34, 35, 37, 38, 40, 43, 47, 48, 54, 55, 56, 57, 58, 59, 63, 64, 66, 69: epiphytic on *Quercus pubescens*, *Q. suber*, *Olea europaea*, *Malus* sp., *Pyrus* sp., *Fraxinus excelsior* and *Prunus* sp.
- Physconia muscigena* (Ach.) Poelt var. *muscigena*, Loc. 20, 45, 68: on *Quercus pubescens*.
- Physconia perisidiosa* (Erichsen) Moberg, Loc. 68: epilithic on basalt; Loc. 3, 6, 8, 10, 12, 19, 20, 21, 27, 30, 34, 35, 38, 47, 48, 49, 51, 53, 54, 64, 66, 67, 68: epiphytic on *Quercus pubescens*, *Q. suber*, *Q. ilex*, *Olea europaea*, *Pyrus* sp., *Fraxinus excelsior* and *Prunus* sp.
- Physconia petraea* (Poelt) Vězda & Poelt, Loc. 15, 24, 30, 32, 35, 55, 59: on basalt, rhyolite and andesite.
- Physconia servitii* (Nádv.) Poelt, Loc. 26, 29, 53, 69: on *Quercus pubescens* and *Q. suber*.
- Physconia subpulverulenta* (Szatala) Poelt var. *subpulverulenta*, Loc. 12: on *Q. suber*.
- Physconia venusta* (Ach.) Poelt, Loc. 3, 6: epilithic on basalt; Loc. 1, 2, 4, 6, 7, 8, 9, 10, 13, 14, 16, 20, 24, 25, 27, 29, 35, 45, 48, 50, 51, 53, 55, 58, 59, 64, 66, 68, 69: epiphytic on *Quercus ilex*, *Q. pubescens*, *Q. ilex* and *Pyrus* sp.
- Piccolia ochrophora* (Nyl.) Hafellner, Loc. 39: on *Quercus ilex* and *Olea europaea*.
- Placolecis opaca* (Fr.) Hafellner, Loc. 10, on basalt.
- Pleurosticta acetabulum* (Neck.) Elix & Lumbsch, Loc. 13, 68: epilithic on trachyte; Loc. 1, 4, 7, 8, 12, 13, 24, 26, 45, 46, 47, 49, 50, 55, 57, 59, 64, 68, 69: epiphytic on *Quercus pubescens*, *Q. suber*, *Q. ilex*, *Olea europaea*, *Fraxinus excelsior* and *Malus* sp.
- Polysporina lapponica* (Schaer.) Degel., Loc. 38, 47, 53, 54: parasitic on *Acarospora* spp.
- Porina aenea* (Wallr.) Zahlbr., Loc. 4: on *Quercus ilex*.
- Porina chlorotica* (Ach.) Müll.Arg., Loc. 26: on dacite.
- Porpidia cinereoatra* (Ach.) Hertel & Knoph, Loc. 6, 25, 41, 45, 56, 61, 64, 70: on basalt, rhyolite and trachyte.
- Porpidia crustulata* (Ach.) Hertel & Knoph, Loc. 2, 22, 25, 26, 49, 54: on basalt, trachyte, rhyolite and andesite.
- Porpidia macrocarpa* (DC.) Hertel & A.J.Schwab, Loc. 27, 61: on trachyte.
- Porpidia platycarpoides* (Bagl.) Hertel, Loc. 13, 24: on basalt and trachyte.

- Protoparmelia montagnei* (Fr.) Poelt & Nimis, Loc. 10, 14, 16, 50: on rhyolite, dacite and andesite.
- Protoparmeliopsis bolcana* (Pollini) §, Loc. 8, 15, 20, 24, 31, 33, 34, 38, 40, 41, 45, 47, 48, 50, 51, 53, 54, 55, 56, 57, 58, 60, 61, 63, 64, 66, 68: on basalt, dacite, rhyolite, basalt and andesite.
- Protoparmeliopsis laatokkaensis* (Räsänen) Moberg & R. Sant., Loc. 12, 17, 46, 47, 48, 50, 54, 55, 66: on basalt, dacite and rhyolite.
- Protoparmeliopsis muralis* (Schreb.) M.Choisy subsp. *muralis*, Loc. 3, 8, 9, 12, 13, 14, 15, 18, 20, 22, 24, 29, 30, 31, 32, 33, 34, 35, 36, 38, 40, 41, 43, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 66, 67, 68, 69, 70: on basalt, trachyte, rhyolite, andesite and basanite.
- Protoparmeliopsis muralis* var. *dubyi* (Müll. Arg.) Hafellner & Türk, Loc. 5, 5, 7, 9, 10, 11, 17, 21, 26, 27, 28, 32, 56: on basalt, trachyte and andesite.
- Punctelia subrudecta* (Nyl.) Krog, Loc. 24, 26, 30, 33, 59: on *Quercus pubescens* and *Q. suber*.
- Pyrenula chlorospila* Arnold, Loc. 6, 10, 18: on *Quercus pubescens*, *Q. suber* and *Prunus* sp.
- Pyrrhospora quernei* (Dicks.) Körb., Loc. 8, 48: on *Quercus ilex* and *Pyrus* sp.
- Ramalina canariensis* J.Steiner, Loc. 32, 37, 44, 47: on *Quercus suber*, *Pinea* sp. and *Olea europaea*.
- Ramalina capitata* (Ach.) Nyl. var. *capitata*, Loc. 3: on basalt.
- Ramalina farinacea* (L.) Ach., Loc. 68: epilithic on basalt; Loc. 1, 2, 3, 4, 6, 7, 8, 9, 12, 13, 16, 18, 20, 27, 29, 32, 33, 41, 45, 46, 47, 48, 49, 50, 52, 53, 55, 56, 58, 59, 64, 66, 68, 69: epiphytic on *Quercus pubescens*, *Q. suber*, *Q. ilex*, *Olea europaea*, *Fraxinus excelsior* and *Malus* sp.
- Ramalina fastigiata* (Pers.) Ach., Loc. 2, 4, 6, 7, 8, 9, 13, 14, 16, 26, 27, 37, 41, 43, 45, 47, 49, 52, 55, 57, 59, 64, 68, 69: on *Quercus pubescens*, *Q. suber*, *Q. ilex*, *Olea europaea*, *Fraxinus excelsior*, *Prunus* sp. and *Malus* sp.
- Ramalina fraxinea* (L.) Ach., Loc. 3, 4, 8, 13, 18, 20, 24, 26, 27, 33, 38, 41, 42, 45, 47, 55, 64, 66, 68, 69: on *Quercus pubescens*, *Q. suber*, *Q. ilex*, *Olea europaea*, *Fraxinus excelsior*, *Prunus* sp. and *Malus* sp.
- Ramalina lacera* (With.) J.R.Laundon, Loc. 9, 47: on *Quercus pubescens* and *Q. suber*.
- Ramalina subfarinacea* (Cromb.) Nyl., Loc. 14: on andesite.
- Ramalina subgeniculata* Nyl., Loc. 2: on *Quercus ilex*.
- # *Ramonia chrysophaea* (Pers.) Vězda, Loc. 2, 6: on *Quercus ilex*.
- Rhizocarpon atroflavescens* Lynge, Loc. 17: parasitic on *Pertusaria flavicans*.

- Rhizocarpon distinctum* Th.Fr., Loc. 50: on rhyolite.
- Rhizocarpon geographicum* (L.) DC. subsp. *geographicum*, Loc. 3, 7, 12, 13, 14, 15, 16, 17, 26, 36, 45, 48, 50, 53, 54, 57, 61, 63, 64: on basalt, trachyte, rhyolite, andesite and basanite.
- Rhizocarpon hochstetteri* (Körb.) Vain., Loc. 61: on trachyte.
- Rhizocarpon petraeum* (Wulfen) A.Massal., Loc. 64: on basalt.
- Rhizocarpon richardii* (Nyl.) Zahlbr., Loc. 16: on dacite.
- Rhizocarpon tinei* (Tornab.) Runemark, Loc. 15: on andesite.
- Rimularia insularis* (Nyl.) Rambold & Hertel, Loc. 3, 48, 57: parasitic on *Lecanora rupicola*.
- Rinodina colobina* (Ach.) Th.Fr., Loc. 48, 56: on *Pyrus* sp. and *Quercus pubescens*.
- Rinodina confragosa* (Ach.) Körb., Loc. 18, 31, 33, 34, 36, 38, 40, 41, 50, 54, 58, 63, 64: on basalt, rhyolite and basanite.
- Rinodina exigua* (Ach.) Gray, Loc. 4, 22, 26, 40, 43, 52, 57, 63: on *Quercus pubescens*, *Malus* sp., *Prunus* sp. and *Olea europaea*.
- Rinodina fimbriata* Körb., Loc. 34: on basalt.
- Rinodina gennarii* Bagl., Loc. 3, 9, 11, 17, 22, 30, 31, 32, 33, 35, 41, 47, 48, 51, 52, 55, 60, 66: on basalt, rhyolite and andesite.
- Rinodina guzzinii* Jatta, Loc. 3, 11, 29, 31, 32: on basalt and andesite.
- Rinodina immersa* (Körb.) Zahlbr., Loc. 39: on carbonatic rock.
- Rinodina luridescens* (Anzi) Arnold, Loc. 13: on trachyte.
- Rinodina milvina* (Wahlenb.) Th.Fr., Loc. 66: parasitic on crustose lichens.
- Rinodina oxydata* (A.Massal.) A.Massal., Loc. 45, 56, 63, 68: on basalt, basanite and rhyolite.
- Rinodina pyrina* (Ach.) Arnold, Loc. 4, 9, 17, 18, 21, 43, 46, 47, 49, 52, 54, 58, 63: on *Quercus ilex*, *Q. pubescens*, *Q. suber*, *Prunus* sp., *Malus* sp. and *Olea europaea*.
- Rinodina roboris* (Nyl.) Arnold, Loc. 22, 69: on *Quercus pubescens* and *Q. suber*.
- Rinodina sophodes* (Ach.) A.Massal., Loc. 26: on *Quercus pubescens*.
- Rinodina teichophila* (Nyl.) Arnold, Loc. 43, 47, 63: on basalt and basanite.
- Rinodina trachytica* (A.Massal.) Bagl. & Carestia, Loc. 15, 31, 34, 40, 50, 54, 66, 68, 70: on basalt, trachyte, rhyolite and andesite.
- Roccella phycopsis* Ach., Loc. 4: on trachyte.
- Sarcogyne regularis* Körb. var. *regularis*, Loc. 39: on carbonatic rock.
- # *Scoliciosporum chlorococcum* (Stenh.) Vězda, Loc. 18, on *Quercus suber*.
- Scoliciosporum umbrinum* (Ach.) Arnold, Loc. 6, 7: epilithic on basalt; Loc. 6, 19: epiphytic on *Quercus pubescens* and *Q. suber*.
- Solenopsora vulturiensis* A.Massal., Loc. 10: on basalt.
- Sphinctrina tubiformis* A.Massal., Loc. 20: parasitic on *Pertusaria* spp.

- Sphinctrina turbinata* (Pers.: Fr.) De Not., Loc. 2, 13: parasitic on *Pertusaria* spp.
- Squamarina cartilaginea* (With.) P.James f. *pseudocrassa* Mattick, Loc. 16: on dacite.
- Strigula ziziphi* (A.Massal.) Cl.Roux & Sérus., Loc. 8: on *Quercus ilex*.
- Tephromela atra* (Huds.) Hafellner var. *atra*, Loc. 4, 5, 7, 9, 10, 12, 13, 14, 18, 20, 22, 26, 27, 28, 36, 41, 45, 50, 52, 54, 56, 57, 60, 62, 64, 65, 68, 69: on basalt, trachyte, dacite and rhyolite.
- Tephromela atra* (Huds.) Hafellner var. *calcareo* (Jatta) Clauzade & Cl.Roux, Loc. 36, 40: on sandstone.
- Tephromela atra* (Huds.) Hafellner var. *torulosa* (Flot.) Hafellner, Loc. 3, 4, 8, 9, 12, 14, 17, 18, 22, 28, 38, 52, 55, 57, 58, 62, 64, 68, 69: on *Quercus ilex*, *Q. pubescens*, *Q. suber*, *Fraxinus excelsior* and *Olea europaea*.
- Thelidium papulare* (Fr.) Arnold, Loc. 66: on basalt.
- Toninia cinereovirens* (Schaer.) A.Massal., Loc. 15, 63: on basanite and andesite.
- Umblicaria deusta* (L.) Baumg., Loc. 16: on dacite.
- Usnea ceratina* Ach., Loc. 2: on *Quercus ilex*.
- Verrucaria aethiobola* Wahlenb., Loc. 49, 59, 66, 70: on basalt.
- Verrucaria aspiciliicola* R.Sant., Loc. 5, 11, 16, 34: parasitic on *Aspicilia* spp.
- Verrucaria dolosa* Hepp, Loc. 66: on basalt.
- Verrucaria fuscella* (Turner) Winch, Loc. 31, 38, 41, 47, 52, 63, 66: on basalt and basanite.
- Verrucaria lecideoides* (A.Massal.) Trevis., Loc. 22: on andesite.
- Verrucaria maura* Wahlenb., Loc. 39: on carbonatic rock.
- Verrucaria muralis* Ach., Loc. 29: on basalt.
- Verrucaria murina* Leight., Loc. 7: on basalt.
- Verrucaria nigrescens* Pers., Loc. 2, 4, 8, 9, 12, 19, 22, 28, 35, 39, 41, 45, 47, 49, 50, 51, 52, 53, 54, 55, 59, 62, 63, 64, 67, 70: on basalt, trachyte, rhyolite, carbonatic rock and basanite.
- Verrucaria sphaerospora* Anzi, Loc. 15, 33, 52, 53, 57, 58: on basalt and andesite.
- Verrucaria viridula* (Schr.) Ach., Loc. 4: on trachyte.
- Waynea stoechadiana* (Abassi & Cl.Roux) Cl.Roux & P.Clerc, Loc. 30, 34, 35: on *Quercus pubescens*.
- Xanthoparmelia angustiphylla* (Gyeln.) Hale, Loc. 15, 18, 48, 60: on basalt, trachyte, rhyolite and andesite.
- Xanthoparmelia conspersa* (Ach.) Hale, Loc. 3, 4, 7, 8, 12, 14, 16, 18, 20, 22, 28, 33, 34, 40, 41, 48, 49, 53, 54, 55, 56, 58, 61, 64: on basalt, trachyte and andesite.

- Xanthoparmelia cumberlandia* (Gyeln.) Hale, Loc. 11, 12, 26, 27: on dacite, trachyte and andesite.
- Xanthoparmelia delisei* (Duby) O.Blanco, A.Crespo, Elix, D.Hawksw. & Lumbsch, Loc. 22, 61, 63: on andesite, basanite and trachyte.
- Xanthoparmelia loxodes* (Nyl.) O.Blanco, A.Crespo, Elix, D.Hawksw. & Lumbsch, Loc. 3, 7, 8, 10, 14, 15, 18, 20, 24, 27, 36, 40, 41, 43, 45, 46, 48, 49, 50, 52, 53, 54, 56, 57, 58, 63, 64, 66, 68: on basalt, trachyte, andesite, basanite and rhyolite.
- Xanthoparmelia mexicana* (Gyeln.) Hale, Loc. 12, 26, 43, 54: on dacite and basalt.
- Xanthoparmelia protomatrae* (Gyeln.) Hale, Loc. 4, 49: on trachyte and basalt.
- Xanthoparmelia pulla* (Ach.) O.Blanco, A.Crespo, Elix, D.Hawksw. & Lumbsch., Loc. 3, 4, 5, 7, 8, 10, 11, 12, 13, 14, 15, 16, 17, 18, 20, 21, 22, 24, 26, 27, 28, 31, 33, 34, 36, 38, 40, 41, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 66, 67, 68: on basalt, trachyte, andesite and rhyolite.
- Xanthoparmelia stenophylla* (Ach.) Ahti & D.Hawksw., Loc. 3, 8, 11, 14, 15, 16, 21, 26, 38, 41, 45, 46, 49, 58: on andesite, trachyte, dacite and basalt.
- Xanthoparmelia tinctina* (Maheu & A. Gillet) Hale, Loc. 3, 4, 7, 8, 10, 11, 12, 14, 15, 16, 18, 20, 21, 26, 31, 33, 34, 38, 40, 41, 43, 45, 46, 47, 48, 49, 50, 54, 55, 56, 57, 58, 60, 61, 63, 64, 68: on basalt, trachyte, andesite, rhyolite, dacite and basanite.
- Xanthoparmelia verrucigera* (Nyl.) Hale, Loc. 10, 14, 16, 18, 28, 63: on trachyte, basalt, andesite and basanite.
- Xanthoparmelia verruculifera* (Nyl.) O.Blanco, A.Crespo, Elix, D.Hawksw. & Lumbsch, Loc. 4, 7, 10, 12, 14, 15, 17, 18, 22, 26, 33, 38, 40, 41, 43, 48, 50, 54, 57, 68: on basalt, trachyte, andesite and rhyolite.
- Xanthoria calcicola* Oksner, Loc. 3, 10, 11, 12, 14, 15, 16, 17, 29, 30, 31, 36, 38, 40, 41, 47, 52, 58, 60, 62, 63: on basalt, trachyte, andesite, rhyolite, dacite and basanite.
- # *Xanthoria fallax* (Hepp) Arnold, Loc. 17, 40, 49: on *Quercus pubescens*, *Malus* sp., and *Olea europaea*.
- Xanthoria parietina* (L.) Th.Fr., Loc. 6, 13, 14, 22, 24, 29, 31, 32, 35, 36, 40, 49, 65, 66, 67: epilithic on basalt, andesite, trachyte and rhyolite; Loc. 3, 4, 6, 7, 8, 9, 10, 11, 12, 13, 14, 17, 18, 19, 20, 21, 22, 24, 28, 29, 30, 32, 33, 34, 35, 37, 38, 40, 41, 43, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 61, 63, 64, 66, 67, 68, 69: epiphytic on *Quercus pubescens*, *Q. suber*, *Q. ilex*, *Olea europaea*, *Malus* sp., *Pyrus* sp., *Fraxinus excelsior* and *Prunus* sp.

### Discussion

We found 390 taxa of lichenized and lichenicolous fungi, corresponding to more than 1/3 of the known Sardinian lichen flora (Nimis & Martellos 2008). Three species have been reported for the first time for Italy. *Allarthonia hypobela* has been mainly found both from cold-humid areas of N-Europe (Coppins 2002) and from humid warm habitats of southern California (Hertel et al. 2007), this latter being ecologically comparable with our findings in Sardinia. *Bacidia biatorina* occurred on old trunks in an ancient *Quercus ilex* forests with diffuse solar radiation. The species was previously known for similar habitats in Spain (Llimona & Hladun 2001), but also in humid areas of N-Europe. We found *Catillaria subviridis* in a low-impacted agroforestral landscape. The species usually grows on nutrient-enriched substrata and it has been previously reported for United Kingdom (Coppins 2002), France and Spain (Llimona & Hladun 2001).

Crustose lichens were by far the most common growth form in the study area, colonising a wide variety of substrata. *Caloplaca* and *Lecanora* were the most represented genera, accounting 36 and 31 infrageneric taxa, respectively. Among the macrolichens, *Xanthoparmelia* showed a remarkable diversity (12 taxa), confirming that W-Sardinia is one of the most favourable European area for this genus (Giordani et al. 2002, 2003). About 7% of taxa represents new records for Italy or the regional flora, suggesting that there are still many overlooked habitats which may deserve further investigations. Among them, mature *Quercus ilex* forests of the Montiferru massif, in the central part of the study area, hosted remarkable species of *Lobarion* communities (including rare crustose, such as *Piccolia ochrophora* and *Ramonia chrysophaea*). Interestingly, some other species, such as *Fuscopannaria mediterranea* and *Melaspilea ochrothalamia*, have been re-collected in the island for the first time after more than one century.

Twenty-five taxa occurred both on trees and lithic substrata, whereas 183 were exclusively epiphytic and 182 epilithic. On exposed lithic substrata with high direct solar radiation, we found a considerable set of 26 taxa growing parasitic mainly on crustose lichens in open areas with high direct solar radiation (e.g., *Lobothallia parasitica*, *Sphinctrina turbinata*, *S. tubiformis*). Among the others, *Dactylospora parasitica* was reported for the first time in Sardinia. The species is rare but spread throughout Northern and Western Europe, including Mediterranean areas in Spain (Llimona & Hladun 2001) and in Southern Italy (Puntillo & Puntillo 2004, Grillo & Caniglia 2004). Moreover, many relatively common species (e.g., *Xanthoria fallax*, *Phaeophyscia chloantha*, *P. nigricans* and *Physcia vitii*) belonging to *Xanthorion* communities have been recorded for the first time in Sardinia. These species are known to be associated to altered areas with relevant level

of eutrophication and are supposed to spread in the island according to an increasing nitrogen and dust emissions (Zedda 2002, Giordani et al. 2010).

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	Locality	Coordinates		Elevation (m)	Date
		(UTM 32T)	WGS84		
1	Bolotana: Badde Salighes, Tres funtanas, <i>Quercus pubescens</i> forest.	490953E, 4466336N		1043	23/06/2006
2	Santulussurgiu: Ovile Corona, Cascina Onni, <i>Quercus pubescens</i> forest.	465231E, 4441359N		832	01/07/2006
3	Sindia: Nuraghe Ziu Mameli, pastureland.	469515E, 4459022N		438	28/03/2007
4	Scano Montiferro: Monte Pizzinos, <i>Quercus pubescens</i> forest.	463247E, 4451536N		321	25/06/2006
5	Tresnuraghes: Funtana Binzale e Garbu, arable land.	454655E, 4448223N		78	29/06/2006
6	Scano Montiferro: S'Abba Sutturada, mixed <i>Quercus</i> spp. Forest.	466341E, 4448671N		622	01/04/2007
7	Sindia: Stagno di Bara, arable land.	475788E, 4459952N		607	02/07/2006
8	Santulussurgiu: Crastu Accas, mixed <i>Quercus</i> spp. Forest.	471375E, 4449106N		745	03/04/2007
9	Scano Montiferro: Nuraghe Nuracale, arable land.	464837E, 4453556N		391	29/06/2006
10	Sennariolo: Nuraghe sa Mandra, arable land.	462178E, 4451929N		284	25/06/2006
11	Bosa: Porto Managù, Mediterranean maquis.	451145E, 4465428N		54	27/06/2006
12	Bosa: Mata de Nughe, pastureland.	456111E, 4466256N		482	27/06/2006
13	Bolotana: near Badde Salighes, <i>Quercus pubescens</i> forest.	490145E, 4468124N		942	19/09/2007
14	Montresta: Su Gregu, pastureland.	457628E, 4471481N		279	27/03/2007
15	Bosa: Sa Tanca de su Dottore, garigue.	450200E, 4468463N		355	27/03/2007
16	Bosa: Punta su Casteddu, garigue.	459805E, 4471110N		312	28/06/2006
17	Suni: along the road, agroforestral landscape.	460986E, 4459757N		313	24/06/2006
18	Suni: Nuraghe Nuradeo, garigue.	464041E, 4463806N		322	26/03/2007
19	Sindia: Nodos Lados, <i>Quercus suber</i> plantation.	475551E, 4459355N		642	02/07/2006
20	Montresta: Pala Dolla, Nuraghe sa Rughe, garigue.	458024E, 4474689N		254	26/03/2007
21	Sindia: Ponte Furrighesu, <i>Quercus suber</i> plantation.	468231E, 4459992N		425	24/06/2006
22	Bosa: Cascina Littala, <i>Quercus pubescens</i> forest.	459996E, 4462043N		74	03/07/2006
23	San Vero Milis: Is Arenas, conifer wood.	455180E, 4434320N		20	05/09/2008
24	Macomer: Monte Sant'Antonio, <i>Quercus ilex</i> forest.	472877E, 4454110N		791	28/09/2007
25	Ales: Monte Arci, <i>Quercus ilex</i> forest.	479356E,		600	04/09/2008

		4401926N		
26	Bosa: Bena e Ghiu, conifer wood.	458718E, 4471502N	290	26/06/2006
27	Bosa: Bena e Ghiu, conifer wood.	458703E, 4471552N	280	28/06/2006
28	Montresta: Cascina su Palattu, agricultural area.	458003E, 4468840N	380	03/07/2006
29	Soddi: Zuri, along the road to the lake Omodeo, <i>Quercus pubescens</i> forest.	489633E, 4441330N	217	03/09/2008
30	Abbasanta: Tanca Regia, <i>Quercus suber</i> plantation.	480464E, 4444276N	358	02/09/2008
31	Norbello: along the road Carlo Felice, <i>Quercus suber</i> plantation.	484048E, 4443754N	328	03/09/2008
32	Ghilarza: Trempu, <i>Quercus suber</i> plantation.	484676E, 4435423N	235	07/09/2008
33	Paulilatino: Sant'Agostino, <i>Quercus pubescens</i> forest.	476536E, 4441982N	366	02/09/2008
34	Sedilo: near Santu Antine, pastureland.	495886E, 4447612N	167	31/08/2008
35	Bidoni: San Pietro church, agricultural area.	494169E, 4440424N	230	07/09/2008
36	Cabras: Maimoni, garigue.	450307E, 4418576N	50	06/09/2008
37	Nurachi: along the provincial road, olive yards.	463847E, 4423423N	6	01/09/2008
38	Bauladu: basaltic plateau close to the village, Mediterranean maquis.	472123E, 4432745N	60	31/08/2008
39	Cabras: Is Arutas, garigue.	450393E, 4421524N	37	06/09/2008
40	Narbolia: close to the village along the road to Seneghe, pastureland.	464346E, 4434046N	100	05/09/2008
41	Villanova Truschedu: along the Tirso river, <i>Quercus pubescens</i> forest.	480180E, 4428501N	87	01/09/2008
42	San Vero Milis: Is Arenas, conifer wood.	454830E, 4432818N	20	05/09/2008
43	Milis: Cascina Muscas, agricultural area.	469549E, 4435318N	140	23/09/2007
44	Narbolia: Is Arenas, conifer wood.	455560E, 4434651N	9	02/04/2007
45	Bortigali: Santa Maria de Sauccu, pastureland.	486140E, 4464707N	952	18/09/2007
46	Dualchi: close to the village, pastureland.	490392E, 4454724N	330	18/09/2007
47	Macomer: Campeda plateau, pastureland.	476207E, 4464443N	579	24/09/2007
48	Bolotana: Campeda plateau, pastureland.	489609E, 4470564N	673	18/09/2007
49	Dualchi: Nuraghe Cubas, agroforestral landscape.	489832E, 4455006N	315	18/09/2007
50	Bortigali: Mt. Baddemanna, garigue.	484900E, 4462700N	823	18/09/2007
51	Noragugume: along the SS 131 Carlo Felice, pastureland.	493989E, 4453019N	190	26/09/2007

52	Borore: along the provincial road, <i>Quercus suber</i> plantation.	487054E, 4451315N	356	22/09/2007
53	Macomer: Campeda plateau, Mediterranean maquis.	485603E, 4470033N	732	18/09/2007
54	Lei: Dorzi Oinu, agroforestral landscape.	494582E, 4459154N	273	26/09/2007
55	Macomer: Nuraghe Elighe, <i>Quercus suber</i> plantation.	476190E, 4464968N	587	24/09/2007
56	Dualchi: Ponte Verru, Nuraghe Pirizzada, agricultural area.	491942E, 4454666N	208	28/09/2007
57	Macomer: Padru Mannu, garigue.	481669E, 4465107N	653	19/09/2007
58	Seneghe: along the road to Narbolia, Mediterranean maquis.	465773E, 4434555N	138	23/09/2007
59	Seneghe: above Bonarcado, olive yards.	468833E, 4439618N	467	18/09/2007
60	Sennariolo: Sa Fabbrica, garigue.	456906E, 4449596N	104	21/09/2007
61	Sennariolo: Santa Vittoria, garigue.	457732E, 4450625N	222	21/09/2007
62	Cuglieri: Podere Sias, Mediterranean maquis.	455412E, 4443152N	70	31/03/2007
63	Cuglieri: Mt. Laonna, agroforestral landscape.	458851E, 4439940N	112	02/04/2007
64	Santulussurgiu: Colonia Orafos, pastureland.	472568E, 4447542N	647	03/04/2007
65	Cuglieri: Capo Nieddu tower, basaltic cliff.	453914E, 4445048N	30	31/03/2007
66	Scano Montiferro: S. Antioco, pastureland.	466608E, 4453897N	422	29/03/2007
67	Scano Montiferro: Nuraghe Curadores, <i>Quercus suber</i> plantation.	468350E, 4455219N	505	28/03/2007
68	Santulussurgiu: Nuraghe Elighe Onna, archaeological area.	472472E, 4449818N	738	30/03/2007
69	Santulussurgiu: San Leonardo de Siete Fuentes, agricultural area.	471680E, 4447302N	693	29/03/2007
70	Macomer: Fattoria Comunale, conifer wood.	474000E, 4452600N	688	30/03/2007

**Table 1.** Collecting localities.