

LICHENS OF THE AREA AROUND KARPENISI, EVKITANIA, CENTRAL GREECE

Linda in Arcadia

Kastri, 22013, Arkadia, Greece; email: linda_in_arcadia@hotmail.com

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Abstract

Study of eight sites in the vicinity of the town of Karpenisi in the nomos of Evritanias, in September 2021, yielded records of 195 taxa of lichens and lichenicolous fungi. Nine of them: *Biatora globulosa*, *Candelariella oleaginescens* var. *glebulosa*, *Chaenothecopsis hospitans*, *Micarea globulosella*, *Taeniolella delicata*, *Toniniopsis dissimilis*, *Trapelia elacista*, *Xanthoparmelia angustiphylla* and *Xanthoparmelia sublaevis* are new to Greece. The list includes 4 species of non-lichenised, lichenicolous fungi: *Chaenothecopsis hospitans*, *Endococcus macrosporus*, *Stigmidium congestum* and *Taeniolella delicata*, which is more than is usually found in Greece in a survey of this kind. A summary of all previous reports for Evritania is also included, and the total for the nomos now stands at 211 taxa.

Introduction

The mountainous nomos of Evritanias was difficult of access until quite recent times, so it is not surprising that its lichen biota has been little studied. Only 51 species have been reported previously, in a mere 5 publications, and 33 of those species were reported in Christensen (2014).

In late September 2021 my husband and I spent 8 days in the town of Karpenisi, which is fairly centrally situated in Evritania, and were able to study 8 sites, all in or near the southern half of the nomos. The northern half remains largely unexplored for lichens. The region is clearly rich in lichens and all parts would repay further study, though thorough study will be difficult as the region is rugged and access to many parts is still quite difficult.

The nomos extends over a wide range of altitude, from about 250 m above sea level to just over 2300 m. There are therefore many vegetation types, though the most widespread appeared to be upland forests dominated by *Abies*. Deciduous woodland with species of *Quercus* also occurs. We did not find any woodland of *Fagus sylvatica*; perhaps we were a little too far south. The human population is low, agriculture is limited by the rugged topography, so the vegetation of most places is natural or semi-natural. Grazing is quite extensive, but in most places appears to be of low intensity.

– 3 –



Lichens of Karpenisi

Materials and Methods

Eight sites were studied, as below. Latitude and longitude co-ordinates are for a representative point within the site. They are cited to an accuracy of only 10 seconds of arc, as at all sites we ranged over a few hundred metres.

1. Near Agios Athanasios chapel, at highest point of road from Karpenisi to Stenoma. 38° 56' 30" N, 21° 45' 40" E. Altitude 1400 m. 22 September 2021. Woodland of *Abies cephalonica* on limestone. Saxicolous lichens not studied, as there were only a few, scattered rocks.

2. About 2 km SSE of Agios Athanasios chapel. 38° 55' 40" N, 21° 46' 20" E. Altitude 1300 m. 22 September 2021. Outcrops of siliceous rock among scrub woodland of mainly *Quercus coccifera*. Only saxicolous and terricolous lichens studied.

3. East bank of River Tavropos, near road bridge. 38° 56' 30" N, 21° 41' 00" E. Altitude 300 m. 23 September 2021. A rather disturbed site with riverine woodland, mainly of *Platanus orientalis* and *Populus nigra*. Only corticolous lichens studied. The adjacent hillside, with scrub woodland with *Quercus coccifera*, was not studied.

4. Dipotamos; junction of Karpeniositis and Krikelliotis rivers, north side of Krikelliotis river. 38° 46' 30" N, 21° 41' 00" E. Altitude 400 m. 24 September 2021. The low water level in September permitted access to the river gorge, though we could only penetrate a few hundred metres. The cliffs were almost vertical, and unfortunately their lowest 2 metres had been scoured bare of lichens by water action. In most places the remainder of the cliffs was not safely accessible without ropes, or at least ladders, neither of which we had. Many lichens were seen from a distance, but could not be collected, or even studied up close, and the inventory for this site is very incomplete. Most collections were made in the few places where there was a little sloping ground between the river and the cliff.

5. Minor summit 1 km west of main summit of Mt. Timfistos. 38° 56' 30" N, 21° 48' 35" E. Altitude 2040 m. 25 September 2021. Open area, well above the tree line, with limestone boulders and a few small outcrops, but no large outcrops. There were no woody plants to act as phorophytes.

6. South of ski centre, on road from Karpenisi. 38° 55' 35" N, 21° 48' 25" E. Altitude 1500 m. 25 September 2021. A rather disturbed patch of *Abies cephalonica* woodland. Only lichens on *Abies* studied.

7. On west side of road between Krikelo & Domnista, a few hundred metres south of bridge over Krikalopotamos River. 38° 46' 25" N, 21° 50' 50" E. Altitude 800 m. 26 September 2021. A fairly undisturbed woodland of mainly *Quercus cerris* and *Q. frainetto*. Most attention was paid to corticolous lichens, as there were only a few outcrops of rock, but some collections were made from all substrates.

8. Mega Rema, on road between Klafsi and Mouzilo. North bank of stream, east of bridge over stream Mega Rema. 38° 52' 00" N, 21° 47' 00" E. Altitude 780 m. 27, 28 and 29 September. The site consisted of abandoned terraces adjacent to a large stream. The stream was flowing at the time of our visit, and is probably permanent. There was a wide variety of habitats, and we visited the site on three days, to try to make a reasonably thorough survey. All substrates were studied.

Results and Discussion

All taxa that could be determined with certainty are listed; a few for which the determination is almost certain but there is some slight room for doubt are listed with a note that the determination is

slightly tentative. Numerous collections could not be reliably determined, including some that were juvenile or too scanty to permit a confident determination, some sterile crusts for which reliable determination requires chromatography, and a few that could not be matched to any species known to the author and which await further study. None of them are discussed further here.

Nomenclature follows the latest version of the Lichen Flora of Greece, Arcadia (2022), available at www.lichensofgreece.com. Mention of a phorophyte as substrate refers to its bark, unless wood is explicitly stated. Sites are referenced by a number in the range 1 to 8 as above. A single asterisk immediately following the name means that the taxon is new to Evritania, two asterisks mean new to Sterea Ellada (as defined in Abbott, 2009, i.e. excluding Attica), and three asterisks mean new to Greece. Nine taxa are new to Greece, as noted above, a further 57 are new to Sterea Ellada, and a further 95 new to Evritanias.

Abies woodland is widespread in the region, and according to Strid & Tan (1997) two taxa are present, *A. cephalonica* and *A. x borisii-regis*, the latter a hybrid between *A. cephalonica* and *A. alba*. The two are very similar, but we examined the leaves and buds of several trees carefully, and they all matched *A. cephalonica*, which is the commoner according to Strid and Tan (1997). However, we did not study every *Abies* tree from which lichens were collected, and it is possible that some references below to *A. cephalonica* as substrate might be errors for *A. x borisii-regis*.

1. *Acarospora cervina* A. Massal.; * 5 on limestone.
2. *Alectoria sarmentosa* (Ach.) Ach.; ** 1 on *Abies cephalonica*, *Crataegus* sp.
3. *Anaptychia ciliaris* (L.) Flot.; 1 on *Abies cephalonica*, *Crataegus* sp., *Juniperus oxycedrus*; 2 on bryophytes on soil; 3 on *Platanus orientalis*, *Populus nigra*; 6 on *Abies cephalonica*; 7 on *Quercus cerris*; 8 on *Alnus glutinosa*, *Cercis siliquastrum*, *Corylus avellana*, *Juglans regia*, *Prunus* sp., *Quercus cerris*, *Q. frainetto*, *Q. robur*.
4. *Arthonia fusca* (A. Massal.) Hepp; * 5 on limestone.
5. *Aspicilia cinerea* (L.) Körb.; * 2 on siliceous rock.
6. *Aspicilia cupreoglauca* de Lesd.; ** 2, 8 both on siliceous rock.
7. *Bacidia fraxinea* Lönnr.; 8 on *Corylus avellana*, *Quercus frainetto*.
8. *Bacidia parathalassica* Llop & Gómez-Bolea; ** 3 on *Populus nigra*. This species is usually strictly coastal, but the determination seems unavoidable; the abundant crystals in most of the exciple but their absence from the outermost part of the exciple excludes *B. thyrrenica*; their overall abundance in the exciple excludes *B. fraxinea*; also, ascospore length, 27 - 50 x 3 µm, fits *B. parathalassica* better than the other two species. Perhaps the presence of a fairly large river, with abundant water all year round, provides enough of the environmental characteristics that this species requires.
9. *Bacidia rubella* (Hoffm.) A. Massal.; 7 on *Quercus cerris*; 8 on *Corylus avellana*.
10. *Bagliettoa marmorea* (Scop.) Gueidan & Cl. Roux; * 8 on limestone.
11. *Biatora globulosa* (Flörke) Rabenh.; *** 1 on *Abies cephalonica*. This species prefers temperate climates, but is quite widely distributed in Italy according to Nimis (2016), so its presence at an upland site in Greece is not surprising.
12. *Blennothallia crispa* (Huds.) Otálora, P. M. Jørg. & Wedin; * 4 on limestone.
13. *Bryoria fuscescens* (Gyeln.) Brodo & D. Hawksw.; * 1 on *Abies cephalonica*.

Lichens of Karpenisi

14. *Buellia badia* (Fr.) A. Massal.; ** 2 lichenicolous on *Protoparmeliopsis bolcana*.
15. *Buellia disciformis* (Fr.) Mudd; * 8 on *Cercis siliquastrum*.
16. *Buellia triseptata* A. Nordin; ** 8 on *Cercis siliquastrum*. First Greek report from outside Peloponnese.
17. *Calicium salicinum* Pers.; * 1 on *Abies cephalonica*.
18. *Caloplaca albopruinosa* (Arnold) H. Olivier; * 5 on limestone.
19. *Caloplaca alnetorum* Giralt, Nimis & Poelt; * 3 on *Alnus glutinosa*, *Platanus orientalis*, *Populus nigra*; 8 on *Alnus glutinosa*, *Corylus avellana*.
20. *Caloplaca cerina* (Hedw.) Th. Fr.; 3 on *Platanus orientalis*; 7 on *Quercus cerris*.
21. *Caloplaca chalybaea* (Fr.) Müll. Arg.; * 5 on limestone.
22. *Caloplaca crenularia* (With.) J. R. Laundon; ** 7 on siliceous rock.
23. *Caloplaca crenulatella* (Nyl.) H. Olivier s. lat.; ** 8 on calcareous sandstone.
24. *Caloplaca ferrarii* (Bagl.) Jatta; ** 4 on limestone. Northernmost report in Greece. Previously known from two sites, one in SE Peloponnese and one on Paros; the latter report was tentative.
25. *Caloplaca flavescens* (Huds.) J. R. Laundon; * 5 on limestone.
26. *Caloplaca flavorubescens* (Huds.) J. R. Laundon var. *flavorubescens*; * 6 on *Abies cephalonica*.
27. *Caloplaca glomerata* Arup; ** 5 on limestone. Northernmost report in Greece. Previously known from one site in Peloponnese and one on Chios.
28. *Caloplaca haematites* (Chaub.) Zwackh; 1, 6 both on *Abies cephalonica*.
29. *Caloplaca herbidella* (Nyl. ex Hue) H. Magn.; * 1, 6 both on *Abies cephalonica*.
30. *Caloplaca lactea* (A. Massal.) Zahlbr.; * 8 on limestone.
31. *Caloplaca lacteoides* Nav.-Ros. & Hladun; ** 5 on limestone; 8 on calcareous sandstone.
32. *Caloplaca lithophila* H. Magn.; ** 4 on limestone. For the sense in which I use this name, see the Lichen Flora of Greece.
33. *Caloplaca oasis* (A. Massal.) Szatala; * 8 on calcareous sandstone.
34. *Caloplaca ochracea* (Schaer.) Th. Fr.; * 4 on limestone.
35. *Caloplaca pyracea* (Ach.) Zwackh; * 1 on *Abies cephalonica*, *Juniperus oxycedrus*.
36. *Caloplaca subochracea* (Wedd.) Werner; ** 8 on calcareous sandstone. Northernmost report in Greece, and first report for the mainland. Previously known from Andros and Crete.
37. *Caloplaca variabilis* (Pers.) Th. Fr.; * 5 on limestone.
38. *Caloplaca vitellinula* (Nyl.) H. Olivier; * 8 on shaded siliceous rock near stream.
39. *Caloplaca xantholyta* (Nyl.) Jatta; * 4 on limestone.
40. *Candelariella aurella* (Hoffm.) Zahlbr.; 5 on limestone.
41. *Candelariella oleaginescens* var. *glebulosa* Asta, Clauzade & Cl. Roux; *** 5 on limestone. This rather poorly known taxon differs from var. *oleaginescens* in having an areolate, not areolate to subsquamulose, thallus, and in not becoming green when wet. It is restricted to montane altitudes. For the only published description, see the protologue in Trav. Sci. Parc. Natl. Vanoise 3: 101. 1973.

42. *Candelariella vitellina* (Hoffm.) Müll. Arg.; * 2 on siliceous rock; 6 on *Abies cephalonica*.
43. *Candelariella xanthostigma* (Ach.) Lettau; ** 1 on *Abies cephalonica*; 3 on *Alnus glutinosa*; 6 on *Abies cephalonica*; 8 on *Alnus glutinosa*.
44. *Catillaria chalybeia* (Borrer) A. Massal. var. *chalybeia*; ** 7, 8 on siliceous rock.
45. *Catillaria chalybeia* var. *chloropoliza* (Nyl.) H. Kiliass; * 2 on siliceous rock.
46. *Catillaria lenticularis* (Ach.) Th. Fr.; * 4 on limestone.
47. *Catillaria nigroclavata* (Nyl.) J. Steiner; * 8 on *Corylus avellana*.
48. *Catinaria atropurpurea* (Schaer.) Vězda & Poelt; * 8 on *Quercus cerris*.
49. *Cetraria aculeata* (Schreb.) Fr.; * 2 on soil.
50. *Chaenothecopsis hospitans* (Th. Fr.) Tibell; *** 8 lichenicolous on thallus and apothecia of *Lecanora carpinea*. All species of the genus *Chaenothecopsis* are rather uncommon, and some are very rare and/or restricted to specialised habitats. Three species are now known for Greece, but each is represented by only a single collection. *C. hospitans* is widely distributed in Eurasia, but nowhere common. It is an obligate parasite of *Lecanora carpinea*.
51. *Circinaria caesiocinerea* (Nyl. ex Malbr.) A. Nordin, S. Savić & Tibell; * 7 on siliceous rock.
52. *Circinaria calcarea* (L.) A. Nordin, S. Savić & Tibell f. *calcarea*; * 5 on limestone.
53. *Circinaria contorta* (Hoffm.) A. Nordin, S. Savić & Tibell; * 5 on limestone; 8 on calcareous sandstone.
54. *Cladonia chlorophaea* (Flörke ex Sommerf.) Spreng. s. lat., including all chemotypes; * 1 on *Juniperus oxycedrus*; 2 on bryophytes on soil; 4 on bryophytes on decaying tree root; 7 on bryophytes on soil.
55. *Cladonia fimbriata* (L.) Fr.; * 1 on *Abies cephalonica*.
56. *Cladonia foliacea* (Huds.) Willd.; * 2 on bryophytes on soil.
57. *Cladonia parasitica* (Hoffm.) Hoffm.; ** 7 on wood of *Quercus cerris*. Southernmost report in Greece. Previously known only from three sites in the northern half of the country.
58. *Cladonia pocillum* (Ach.) Grognot; * 5 on calcareous soil.
59. *Cladonia pyxidata* (L.) Hoffm.; * 1 on *Juniperus oxycedrus*; 4 on bryophytes on soil; 7 on bryophytes on rock. At site 7 the material was scanty, so that determination is slightly tentative.
60. *Cladonia rangiformis* Hoffm.; * 2, 4 both on bryophytes on soil; 7 on soil.
61. *Collema flaccidum* (Ach.) Ach.; * 7 on *Quercus cerris*, siliceous rock; 8 on *Alnus glutinosa*, limestone.
62. *Collema furfuraceum* (Schaer.) Du Rietz; 1 on *Abies cephalonica*; 3 on *Populus nigra*; 7 on *Quercus cerris*; 8 on *Juglans regia*, *Prunus cocomilia*, *Quercus cerris*, *Q. frainetto*.
63. *Collema nigrescens* (Huds.) DC.; 3 on *Platanus orientalis*, *Populus nigra*; 8 on *Alnus glutinosa*.
64. *Collema subflaccidum* Degel.; 8 on *Alnus glutinosa*, *Corylus avellana*.
65. *Diplotomma ambiguum* (Ach.) Flagey; ** 8 on calcareous sandstone.
66. *Diplotomma chlorophaeum* (Hepp ex Leight.) K. P. Singh & S. R. Singh; ** 8 on calcareous sandstone.

Lichens of Karpenisi

67. *Enchylium conglomeratum* (Hoffm.) Otálora, P. M. Jørg. & Wedin; ** 7 on *Quercus cerris*.
68. *Endococcus macrosporus* (Hepp ex Arnold) Nyl. ex Lamy; ** 2 lichenicolous on thallus of *Rhizocarpon geographicum* subsp. *geographicum*. An obligate parasite of species of *Rhizocarpon*. It is widely distributed in cold and temperate regions of all continents except Antarctica, but is not very common.
69. *Evernia prunastri* (L.) Ach.; * 1 on *Abies cephalonica*; 3 on *Alnus glutinosa*; 7 on *Quercus cerris*; 8 on *Alnus glutinosa*, *Cercis siliquastrum*, *Prunus* sp., *Quercus frainetto*, *Q. robur*.
70. *Fuscopannaria mediterranea* (Tav.) P. M. Jørg.; 8 on *Alnus glutinosa*, *Quercus cerris*, *Q. frainetto*.
71. *Fuscopannaria olivacea* (P. M. Jørg.) P. M. Jørg.; 7 on *Abies cephalonica*, *Quercus cerris*; 8 on *Quercus frainetto*.
72. *Gyalecta derivata* (Nyl.) Vain.; ** 7 on *Quercus cerris*. The material was scanty and the ascospores immature, without well developed septation, so the determination is slightly tentative. However, ascospores were too long and thin for *G. truncigena*.
73. *Hypogymnia physodes* (L.) Nyl.; ** 7 on *Quercus cerris*.
74. *Hypogymnia tubulosa* (Schaer.) Hav.; * 1 on *Abies cephalonica*, *Crataegus* sp., *Juniperus oxycedrus*; 7 on *Quercus cerris*; 8 on *Prunus* sp.
75. *Lathagrium cristatum* (L.) Otálora, P. M. Jørg. & Wedin; * 4 on limestone.
76. *Lathagrium fuscovirens* (With.) Otálora, P. M. Jørg. & Wedin; * 5, 8 both on limestone. Material at site 5 was sterile, making it difficult to exclude *L. undulatum* var. *granulosum* with certainty, but the lobes were 4 - 5 mm wide, which seems too broad for that taxon.
77. *Lecania cyrtella* (Ach.) Th. Fr.; ** 7 on *Quercus cerris*.
78. *Lecanora carpinea* (L.) Vain.; 8 on *Alnus glutinosa*.
79. *Lecanora cenisia* Ach.; ** 2 on siliceous rock.
80. *Lecanora chlarotera* Nyl.; * 1 on *Abies cephalonica*, *Crataegus* sp., *Juniperus oxycedrus*; 3 on *Platanus orientalis*; 6 on *Abies cephalonica*; 7 on *Quercus cerris*; 8 on *Alnus glutinosa*, *Cercis siliquastrum*, *Juglans regia*.
81. *Lecanora horiza* (Ach.) Linds.; 3 on *Populus nigra*; 8 on *Juglans regia*.
82. *Lecanora leptyroides* (Nyl.) Degel.; * 1 on *Abies cephalonica*, *Juniperus oxycedrus*; 3 on *Platanus orientalis*; 6 on *Abies cephalonica*; 7 on *Quercus cerris*; 8 on *Corylus avellana*.
83. *Lecanora marginata* (Schaer.) Hertel & Rambold; ** 2 on siliceous rock. Southernmost report in Greece. There are two previous reports, one for Epiros and a doubtful one for Macedonia (Athos).
84. *Lecanora rugosella* Zahlbr.; ** 8 on *Quercus frainetto*.
85. *Lecanora rupicola* (L.) Zahlbr. var. *rupicola*; * 2, 7 both on siliceous rock.
86. *Lecanora subcarpinea* Szatala; ** 8 on *Juglans regia*, *Prunus cocomilia*, *Quercus cerris*. First Greek report from outside Peloponnese.
87. *Lecidea erythrophaea* Flörke ex Sommerf.; ** 8 on *Corylus avellana*.
88. *Lecidella carpathica* Körb.; * 8. on shaded non-calcareous sandstone at edge of stream.

89. *Lecidella elaeochroma* (Ach.) M. Choisy f. *elaeochroma*; 3 on *Alnus glutinosa*, *Platanus orientalis*, *Populus nigra*; 6 on *Abies cephalonica*; 7 on *Quercus cerris*; 8 on *Alnus glutinosa*, *Cercis siliquastrum*, *Corylus avellana*, *Juglans regia*, *Prunus cocomilia*, *P. sp.*, *Quercus cerris*, *Q. frainetto*, *Q. robur*.
90. *Lecidella euphorea* (Flörke) Kremp.; * 1 on *Abies cephalonica*, *Juniperus oxycedrus*.
91. *Lecidella stigmatea* (Ach.) Hertel & Leuckert; 5 on limestone; 8 on calcareous sandstone.
92. *Lepra albescens* (Huds.) Hafellner var. *albescens*; 1 on *Abies cephalonica*, *Juniperus oxycedrus*; 3 on *Populus nigra*; 7 on *Quercus cerris*; 8 on *Alnus glutinosa*, *Prunus cocomilia*, *Quercus frainetto*.
93. *Lepra albescens* var. *corallina* (Zahlbr.) ined.; 2 on bryophytes on rock, bryophytes on soil; 6 on *Abies cephalonica*. A collection from site 2 on siliceous rock resembled this taxon, but siliceous rock would be an unusual substrate.
94. *Leptochidium albociliatum* (Desm.) M. Choisy; ** 2 on bryophytes on siliceous rock. First Greek report from outside Peloponnese.
95. *Leptogium saturninum* (Dicks.) Nyl.; 7 on *Quercus cerris*.
96. *Lethariella intricata* (Moris) Krog; ** 1 on *Abies cephalonica*.
97. *Lobaria amplissima* (Scop.) Forssell; * 1 on *Abies cephalonica*. Free living cephalodia only, sometimes called *Dendrisocaulon umhausense*.
98. *Lobaria pulmonaria* (L.) Hoffm.; 1 on *Abies cephalonica*; 7 on *Quercus cerris*; 8 on *Alnus glutinosa*.
99. *Lobaria scrobiculata* (Scop.) DC.; ** 7 on bryophytes on old tree stump.
100. *Lobothallia radiosa* (Hoffm.) Hafellner; * 5 on limestone; 8 on sandstone.
101. *Megaspora verrucosa* (Ach.) Arcadia & A. Nordin var. *verrucosa*; * 7 on bryophytes on bark.
102. *Megaspora verrucosa* var. *mutabilis* (Ach.) Nimis & Cl. Roux; ** 6 on *Abies cephalonica*.
103. *Melanelixia glabra* (Schaer.) O. Blanco et al.; 3 on *Populus nigra*; 7 on *Quercus cerris*; 8 on *Corylus avellana*.
104. *Melanelixia glabratula* (Lamy ex Nyl.) Sandler & Arup; * 1 on *Abies cephalonica*; 7 on *Quercus cerris*; 8 on *Alnus glutinosa*.
105. *Melanelixia subaurifera* (Nyl.) O. Blanco et al.; 8 on *Juglans regia*, *Prunus cocomilia*.
106. *Melanohalea elegantula* (Zahlbr.) O. Blanco et al.; ** 1 on *Crataegus sp.*, *Juniperus oxycedrus*.
107. *Melanohalea exasperata* (De Not.) O. Blanco et al.; * 1 on *Crataegus sp.*; 6 on *Abies cephalonica*; 7 on *Quercus cerris*.
108. *Melanohalea exasperatula* (Nyl.) O. Blanco et al.; * 6 on *Abies cephalonica*.
109. *Melanohalea laciniatula* (Flagey ex H. Olivier) O. Blanco et al.; ** 1 on *Crataegus sp.*; 6 on *Abies cephalonica*.
110. *Micareia globulosella* (Nyl.) Coppins; *** 1 on *Abies cephalonica*. Characterised by the 3-septate, fairly long ascospores (18 - 25 x 2 - 2.5 µm in the Greek collection), and the presence of sedifolia-grey pigment in the upper hymenium. Widely distributed in cold and temperate regions of the Northern Hemisphere. In southern Europe rare and probably confined to the uplands.

Lichens of Karpenisi

111. *Mycobilimbia berengeriana* (A. Massal.) Hafellner & V. Wirth; ** 7 on bryophytes on bark.
112. *Myriolecis hagenii* (Ach.) Sliwa, Z. Xin & Lumbsch; * 1 on *Abies cephalonica*.
113. *Myriolecis pruinosa* (Chaub.) Sliwa, Z. Xin & Lumbsch; * 4 on limestone.
114. *Myriolecis semipallida* (H. Magn.) Sliwa, Z. Xin & Lumbsch; ** 5 on limestone; 8 on calcareous sandstone.
115. *Neofuscelia glabrans* (Nyl.) Essl.; ** 2 on siliceous rock. Northernmost report in Greece of this species, otherwise known only for Crete and Peloponnese.
116. *Neofuscelia loxodes* (Nyl.) Essl.; ** 7 on siliceous rock.
117. *Nephroma laevigatum* Ach.; 1 on *Abies cephalonica*; 7 on siliceous rock; 8 on *Alnus glutinosa*, *Quercus frainetto*, bryophytes on dead tree stump.
118. *Ochrolechia androgyna* (Hoffm.) Arnold; ** 7 on *Quercus cerris*; 8 on *Alnus glutinosa*.
119. *Ochrolechia balcanica* Verseghy; * 8 on *Cercis siliquastrum*.
120. *Ochrolechia parella* (L.) A. Massal.; * 7 on siliceous rock.
121. *Ochrolechia szatalaensis* Verseghy; ** 1 on *Juniperus oxycedrus*.
122. *Opegrapha rupestris* Pers.; * 8 on limestone.
123. *Opegrapha varia* Pers.; * 3 on *Populus nigra*; 8 on *Quercus frainetto*.
124. *Parmelia serrana* A. Crespo, M. C. Molina & D. Hawksw.; ** 2 on siliceous rock, on bryophytes on soil.
125. *Parmelia submontana* Hale; * 1 on *Abies cephalonica*, *Crataegus sp.*; 6 on *Abies cephalonica*.
126. *Parmelia sulcata* Taylor; * 7 on *Quercus cerris*; 8 on *Alnus glutinosa*, *Cercis siliquastrum*, *Corylus avellana*, *Prunus cocomilia*, *Quercus cerris*, *Q. frainetto*.
127. *Parmelina pastillifera* (Harm.) Hale; * 8 on *Juglans regia*.
128. *Parmelina quercina* (Willd.) Hale; 7 on *Quercus cerris*.
129. *Parmelina tiliacea* (Hoffm.) Hale; 1 on *Abies cephalonica*; 3 on *Alnus glutinosa*, *Populus nigra*; 6 on *Abies cephalonica*; 8 on *Alnus glutinosa*, *Quercus frainetto*.
130. *Parmotrema perlatum* (Huds.) M. Choisy; * 8 on *Alnus glutinosa*.
131. *Pectenaria atlantica* (Degel.) P. M. Jørg., L. Lindblom, Wedin & S. Ekman; ** 7 on *Juniperus oxycedrus*, *Quercus cerris*. One collection lacked any blue-black pigment in the rhizines, which is unusual. The determination of that collection as *P. atlantica* is certainly correct, as other material at the site did have blue-black rhizines and was identical in all other respects.
132. *Peltigera collina* (Ach.) Schrad.; 7 on *Quercus cerris*.
133. *Peltigera neckeri* Hepp ex Müll. Arg.; * 1 on bryophytes on soil.
134. *Peltigera praetextata* (Flörke ex Sommerf.) Zopf; * 1 on *Juniperus oxycedrus*, bryophytes on soil; 2 on bryophytes on soil; 7 on bryophytes on soil; 8 on *Alnus glutinosa*, bryophytes on dead tree stump.
135. *Pertusaria coccodes* (Ach.) Nyl.; ** 1 on *Abies cephalonica*, *Juniperus oxycedrus*; 3 on *Populus nigra*; 6 on *Abies cephalonica*; 8 on *Alnus glutinosa*, *Corylus avellana*, *Quercus frainetto*. One of the collections from *Abies* at site 1 had isidia that were distinctly dark brown at the tips, rather

like those of *P. pseudocorallina*, but that species is invariably saxicolous and has larger isidia.

136. *Pertusaria dalmatica* Erichsen; * 1, 6 both on *Abies cephalonica*.
137. *Pertusaria leioplaca* (Ach.) DC.; * 3 on *Alnus glutinosa*.
138. *Petractis clausa* (Hoffm.) Kremp.; * 4 on limestone. Northernmost report in Greece
139. *Phaeophyscia ciliata* (Hoffm.) Moberg; * 3 on *Populus nigra*.
140. *Phaeophyscia orbicularis* (Neck.) Moberg; * 3 on *Populus nigra*.
141. *Phlyctis agelaea* (Ach.) Flot.; * 3 on *Alnus glutinosa*, *Platanus orientalis*, *Populus nigra*; 8 on *Corylus avellana*.
142. *Phlyctis argena* (Spreng.) Flot.; 1 on *Abies cephalonica*; 7 on *Quercus cerris*.
143. *Physcia adscendens* H. Olivier; 3 on *Platanus orientalis*, *Populus nigra*; 7 on *Quercus cerris*; 8 on *Prunus cocomilia*.
144. *Physcia aipolia* (Ehrh. ex Humb.) Fűrnr.; ** 3 on *Populus nigra*; 7 on *Quercus cerris*; 8 on *Cercis siliquastrum*, *Corylus avellana*, *Juglans regia*, *Prunus cocomilia*.
145. *Physcia caesia* var. *caesiella* (de Lesd.) Clauzade & Cl. Roux; ** 2 on siliceous rock. First report for the mainland. Previously reported for Crete and several smaller Aegean islands.
146. *Physcia leptalea* (Ach.) DC.; 3 on *Platanus orientalis*; 6 on *Abies cephalonica*; 7 on *Quercus cerris*; 8 on *Corylus avellana*, *Juglans regia*, *Prunus cocomilia*, *Quercus robur*.
147. *Physcia stellaris* (L.) Nyl.; * 6 on *Abies cephalonica*.
148. *Physcia tenella* (Scop.) DC.; 1 on *Abies cephalonica*.
149. *Physciella chloantha* (Ach.) Essl.; * 7 on *Quercus cerris*.
150. *Physconia distorta* (With.) J. R. Laundon; 1 on *Abies cephalonica*, *Crataegus sp.*; 3 on *Populus nigra*; 6 on *Abies cephalonica*; 7 on *Quercus cerris*; 8 on *Alnus glutinosa*, bryophytes on rock.
151. *Physconia perisidiosa* (Erichsen) Moberg; 3 on *Populus nigra*; 8 on *Quercus frainetto*.
152. *Physconia servitii* (Nàdv.) Poelt; ** 3 on *Alnus glutinosa*, *Platanus orientalis*, *Populus nigra*; 7 on *Quercus cerris*.
153. *Physconia venusta* (Ach.) Poelt; * 6 on *Abies cephalonica*.
154. *Placolecis opaca* (Dufour) Hafellner; * 4 on limestone.
155. *Placynthium nigrum* (Huds.) Gray; * 4 on limestone.
156. *Pleurosticta acetabulum* (Neck.) Elix & Lumbsch; * 1 on *Abies cephalonica*, *Crataegus sp.*; 6 on *Abies cephalonica*; 7 on *Quercus cerris*; 8 on *Cercis siliquastrum*, *Juglans regia*, *Prunus cocomilia*, *P. sp.*, *Quercus frainetto*, *Q. robur*.
157. *Porina aenea* (Körb.) Zahlbr.; * 8 on *Alnus glutinosa*, *Corylus avellana*.
158. *Porina linearis* (Leight.) Zahlbr.; ** 4 on limestone.
159. *Protoblastenia lilacina* Poelt & Vězda; * 4 on limestone.
160. *Protoparmeliopsis bolcana* (Pollini) Lumbsch; ** 2 on siliceous rock.

Lichens of Karpenisi

161. *Protoparmeliopsis muralis* (Schreb.) M. Choisy var. *muralis*; 5 on limestone; 8 on sandstone, hard siliceous rock.
162. *Pseudevernia furfuracea* (L.) Zopf var. *furfuracea*; * 1 on *Abies cephalonica*, *Crataegus* sp., *Juniperus oxycedrus*; 6 on *Abies cephalonica*.
163. *Ramalina calicaris* (L.) Fr.; * 3 on *Platanus orientalis*
164. *Ramalina farinacea* (L.) Ach.; * 1 on *Abies cephalonica*, *Crataegus* sp.; 3 on *Platanus orientalis*, *Populus nigra*; 6 on *Abies cephalonica*; 7 on *Quercus cerris*; 8 on *Alnus glutinosa*, *Cercis siliquastrum*, *Corylus avellana*, *Juglans regia*, *Prunus* sp., *Quercus frainetto*, *Q. robur*.
165. *Ramalina fastigiata* (Pers.) Ach.; * 1 on *Abies cephalonica*; 7 on *Quercus cerris*.
166. *Ramalina fraxinea* (L.) Ach. var. *fraxinea*; * 1 on *Abies cephalonica*; 6 on *Abies cephalonica*; 8 on *Cercis siliquastrum*, *Juglans regia*, *Quercus cerris*.
167. *Ramalina fraxinea* var. *calicariformis* Nyl.; ** 6 on *Abies cephalonica*; 7 on *Quercus cerris*; 8 on *Alnus glutinosa*, *Quercus cerris*. At site 6, what appeared to be apothecia of a parasite were present on some lobes. They were 0.25 - 0.6 mm diam, convex, not pruinose; disc pale brown when young, darkening with age and becoming almost black; exciple absent or poorly developed. Unfortunately, they lacked ascospores, so could not be determined.
168. *Rhizocarpon geographicum* (L.) DC. subsp. *geographicum*; * 2, 8 both on siliceous rock.
169. *Rhizocarpon petraeum* (Wulf.) A. Massal.; * 2 on siliceous rock. Determination slightly tentative, as I was unable to demonstrate the presence of stictic acid. (Apothecia and ascospores were both rather too large for *R. reductum*.)
170. *Rinodina bischoffii* (Hepp) A. Massal.; * 8 on calcareous sandstone. The sessile apothecia, *bischoffii* type ascospores, and abundant oil droplets in the hymenium mean that the material can only belong to *R. bischoffii*, but the immersed thallus and the absence of a thalline margin are unusual for that species.
171. *Rinodina immersa* (Körb.) J. Steiner; * 5, 8 both on limestone.
172. *Rinodina plana* H. Magn.; ** 1 on *Abies cephalonica*; 3 on *Platanus orientalis*; 6 on *Abies cephalonica*. The material at site 1 was scanty, and that determination is slightly tentative.
173. *Rostania occultata* (Bagl.) Otálora, P. M. Jørg. & Wedin; ** 8 on *Quercus frainetto*.
174. *Scytinium lichenoides* (L.) Otálora, P. M. Jørg. & Wedin; * 7 on *Quercus cerris*; 8 on bryophytes on dead tree stump, sandstone.
175. *Solenopsora grisea* (Bagl.) Kotlov; ** 4 on limestone. First report for the mainland.
176. *Solenopsora olivacea* (Fr.) H. Kiliyas; * 4 on limestone.
177. *Squamarina gypsacea* (Sm.) Poelt; * 4 on limestone.
178. *Staurolemma omphaliarioides* (Anzi) P. M. Jørg. & Henssen; 3 on *Platanus orientalis*.
179. *Stigmidium congestum* (Körb.) Triebel; ** 6 lichenicolous on *Lecanora chlarotera*.
180. *Taeniolella delicata* M. S. Christ. & D. Hawksw.; *** 2 lichenicolous on apothecia of *Lecanora rupicola* var. *rupicola*. Conidia are dark brown, subglobose to ellipsoid, usually with flattened ends, 5 - 12 x 5 µm in size. They form chains which extend deep into the apothecia of the host. The chains do not easily separate into individual conidia. Conidia are usually 1-septate, occasionally 2-septate, but the septa are faint and easy to overlook so conidia may appear simple. Most European reports

are from north of the Alps and Pyrenees. This species is very rare in southern Europe, and probably restricted to the uplands.

181. *Tephromela atra* (Huds.) Hafellner; * 3 on *Platanus orientalis*; 7 on siliceous rock; 8 on *Alnus glutinosa*.

182. *Thalloidima opuntioides* (Vill.) Kistenich, Timdal, Bendiksby & S. Ekman; ** 4 on soil.

183. *Toninia athallina* (Hepp) Timdal; * 5 on limestone.

184. *Toniniopsis dissimilis* Gerasimova & A. Beck; *** 1 on *Abies cephalonica*. Recently segregated from *T. separabilis* in Gerasimova et al. (2021) on the basis of rather subtle differences in the relation between the hypothecium and exciple: see the photographs in that publication. Determination of the Greek collection is considered to be reliable, but the material was scanty and the single apothecium was destroyed in the course of study. *T. dissimilis* has a somewhat northern distribution, but was reported from *Abies* at an altitude of 1500 m in Romania, so its presence in the uplands of central Greece near the tree line does not seem unreasonable.

185. *Toniniopsis separabilis* (Nyl.) Gerasimova & A. Beck; ** 8 on *Alnus glutinosa*. The determination is considered to be reliable, but the material was scanty and all was used up during study; no voucher material remains.

186. *Trapelia elacista* (Ach.) Orange; *** 7 on siliceous rock. A rather uncommon species of central and northern Europe. Not present in regions of truly Mediterranean climate, and here certainly at the southern limit of its range. The collection was determined by Dr. Claude Roux.

187. *Usnea barbata* (L.) F. H. Wigg.; ** 1 on *Abies cephalonica*, *Crataegus sp.*, *Juniperus oxycedrus*; 6 on *Abies cephalonica*.

188. *Usnea dasopoga* (Ach.) Nyl.; ** 7 on *Quercus cerris*.

189. *Verrucaria foveolata* (Flörke) A. Massal.; ** 5 on limestone.

190. *Verrucaria fuscoatroides* Servit; * 8 on weakly calcareous sandstone.

191. *Verrucaria hochstetteri* Fr.; * 4 on limestone.

192. *Verrucaria polysticta* Borrer; * 5 on limestone.

193. *Xanthoparmelia angustiphylla* (Gyeln.) Hale; *** 4 on limestone that appeared somewhat leached (only weak fizz in hydrochloric acid). Characterised by the absence of vegetative propagules, a lower surface that is black everywhere, rather narrow marginal lobes, and a K+ orange (not red) medulla. This species seems to be quite widely distributed in Europe, but there are not many records,

194. *Xanthoparmelia sublaevis* (Cout.) Hale; *** 2 on siliceous rock. Characterised by the absence of vegetative propagules, a mostly brown (not black) lower surface, an upper surface without macules, and the presence of salazinic acid (K+ dark red, forming small, irregular red crystals in section). A species of temperate and southern Europe, and also Macaronesia. There are a few reports from other continents, but their reliability is unclear.

Species of *Xanthoparmelia* have been delimited on very narrow grounds, and over 800 species have been recognised (nearly 1000 if *Neofuscelia* is merged into *Xanthoparmelia*). There has undoubtedly been a radiation in this genus in warm, dry regions of the Southern Hemisphere, mainly Australia and South Africa, but even allowing for that the number of described species seems excessive to me. In Europe, only about 22 species are recognised, but even here they are delimited very narrowly. It seems to have been customary in this group to define a species whenever *any* chemical difference

Lichens of Karpenisi

can be demonstrated, without attempting to show that the difference is of biological significance, a practice that seems to me as unwise in lichens as it would be in humans. For practical reasons, in the Lichen Flora of Greece I accept these narrowly defined species, though I do so reluctantly.

195. *Xanthoria parietina* (L.) Th. Fr.; 1 on *Abies cephalonica*; 3 on *Alnus glutinosa*, *Platanus orientalis*, *Populus nigra*; 6 on *Abies cephalonica*; 7 on *Quercus cerris*; 8 on *Alnus glutinosa*, *Corylus avellana*, *Juglans regia*, *Prunus cocomilia*, *P. sp.*, *Quercus frainetto*, *Q. robur*.

Previous reports for Evritania

Only 5 previous publications include reports of lichens for Evritania: Bungartz et al. (2020), Christensen (2014), Runemark (1956), Steiner (1898) and Szatala (1940). The species previously reported are as below. Interpretation of reports in the old literature can be difficult, and some of them may be unreliable.

Names of places are listed with the spelling used in the original publication. Most reports in Christensen (2014) were from Mikron Chorion on bark of *Platanus*, and that information should be understood if no place or substrate is cited.

1. *Anaptychia ciliaris* (L.) Flot. Christensen (2014).
2. *Arctomia fascicularis* (L.) Otálora & Wedin. Christensen (2014); as *Collema fasciculare*.
3. *Bacidia fraxinea* Lönnr. Christensen (2014).
4. *Bacidia rubella* (Hoffm.) A. Massal. Christensen (2014).
5. *Caloplaca cerina* (Hedw.) Th. Fr. Szatala (1940); Karpenision, substrate not specified, as *Caloplaca cerina* var. *ehrhartii*.
6. *Caloplaca dalmatica* (A. Massal.) H. Olivier. Steiner (1898); Kaliakuda, on limestone, as *Caloplaca aurantiaca*.
7. *Caloplaca haematites* (Chaub.) Zwackh. Szatala (1940); Karpenision, substrate not specified.
8. *Candelariella aurella* (Hoffm.) Zahlbr. Steiner (1898); Kaliakuda, on limestone, as *Candelaria subsimilis* f. *alpina*.
9. *Cladonia symphycarpa* (Ehrh. ex Schrad.) Fr. Burgaz et al. (2020); Velouchi Ski Centre, substrate not specified.
10. *Collema furfuraceum* (Schaer.) Du Rietz. Christensen (2014).
11. *Collema nigrescens* (Huds.) DC. Christensen (2014).
12. *Collema subflaccidum* Degel. Christensen (2014)
13. *Collema subnigrescens* Degel. Christensen (2014).
14. *Fuscopannaria mediterranea* (Tav.) P. M. Jørg. Christensen (2014).
15. *Fuscopannaria olivacea* (P. M. Jørg.) P. M. Jørg. Christensen (2014).
16. *Lecanora carpineae* (L.) Vain. Szatala (1940); Karpenision, substrate not specified.
17. *Lecanora horiza* (Ach.) Linds. Christensen (2014).
18. *Lecidella elaeochroma* (Ach.) M. Choisy. Szatala (1940); Karpenision, substrate not specified, as *Lecidea elaeochroma* f. *geographica*, and as *Lecidea parasema*.

19. *Lecidella stigmatea* (Ach.) Hertel & Leuckert. Steiner (1898); Kaliakuda, on rock (unspecified type), as *Lecidea enteroleuca*.
20. *Lepra albescens* (Huds.) Hafellner. Christensen (2014); as *Pertusaria albescens*.
21. *Lepra albescens* var. *corallina* (Zahlbr.) ined. Christensen (2014); as *Pertusaria albescens* var. *corallina*.
22. *Leptogium saturninum* (Dicks.) Nyl. Christensen (2014).
23. *Lobaria pulmonaria* (L.) Hoffm. Christensen (2014); Mikron Chorion, on bryophytes on bark.
24. *Lobothallia farinosa* (Flörke) A. Nordin, S. Savić & Tibell. Steiner (1898); Kaliakuda, on limestone, as *Lecanora farinosa*.
25. *Melanelixia glabra* (Schaer.) O. Blanco et al. Christensen (2014).
26. *Melanelixia subaurifera* (Nyl.) O. Blanco et al. Szatala (1940); Karpenision, substrate not specified, as *Parmelia subaurifera*.
27. *Micarea prasina* Fr. Christensen (2014).
28. *Myriolecis agardhiana* (Ach.) Sliwa, Z. Xin & Lumbsch. Steiner (1898); Kaliakuda, on limestone, as *Lecanora agardhiana*.
29. *Nephroma laevigatum* Ach. Christensen (2014).
30. *Parmelina quercina* (Willd.) Hale. Christensen (2014).
31. *Parmelina tiliacea* (Hoffm.) Hale. Christensen (2014).
32. *Peltigera collina* (Ach.) Schrad. Christensen (2014).
33. *Peltigera rufescens* (Weiss) Humb. Szatala (1940); Hagios Athanasios, substrate not specified, as *Peltigera rufescens* var. *incusa*.
34. *Phlyctis argena* (Spreng.) Flot. Christensen (2014).
35. *Physcia adscendens* H. Olivier. Christensen (2014).
36. *Physcia biziana* (A. Massal.) Zahlbr. Christensen. (2014).
37. *Physcia leptalea* (Ach.) DC. Christensen (2014).
38. *Physcia tenella* (Scop.) DC. Christensen (2014).
39. *Physconia distorta* (With.) J. R. Laundon. Christensen (2014); Mikron Chorion, on bryophytes on bark.
40. *Physconia perisidiosa* (Erichsen) Moberg. Christensen (2014).
41. *Polyblastia sepulta* A. Massal. Steiner (1898); Kaliakuda, on limestone, as *Thelidium quinquesepatum*.
42. *Polysporina urceolata* (Anzi) Brodo. Steiner (1898); Kaliakuda, on limestone, as *Sarcogyne urceolata*.
43. *Protoparmeliopsis muralis* (Schreb.) M. Choisy. Steiner (1898); Kaliakuda, on limestone, as *Lecanora albomarginata*.

Lichens of Karpenisi

44. *Rhizocarpon macrosporum* Räsänen. Runemark (1956); Karpenisi, substrate not specified.
45. *Rostania multipunctata* (Degel.) Otálora, P. M. Jørg. & Wedin. Christensen (2014); as *Collema multipunctatum*
46. *Scytinium microphyloides* auct. Christensen (2014); as *Leptogium microphyloides* auct.
47. *Scytinium subtile* (Schrad.) Otálora, P. M. Jørg. & Wedin. Christensen (2014); as *Leptogium subtile*
48. *Scytinium teretiusculum* (Wallr.) Otálora, P. M. Jørg. & Wedin. Christensen (2014); as *Leptogium teretiusculum*.
49. *Staurolemma omphalarioides* (Anzi) P. M. Jørg. & Henssen. Christensen (2014).
50. *Verrucaria murina* Leight. Steiner (1898); Kaliakuda, on limestone, as *Verrucaria myriocarpa*.
51. *Xanthoria parietina* (L.) Th. Fr. (1) Szatala (1940); Karpenision, substrate not specified, as *Xanthoria parietina* var. *adpressa*. (2) Christensen (2014).

Localities cited in previous publications

Agios Athanasios. Precise locality uncertain. (I have no evidence that it is the same Agios Athanasios as my own Site 1.)

Hagios Athanasios = Agios Athanasios.

Kaliakouda 38° 48' 58" N, 21° 45' 28" E. Altitude 2098 m.

Kaliakuda = Kaliakouda.

Karpenisi 38° 54' 59" N, 21° 48' 00" E. Altitude 1000 m.

Karpenision = Karpenisi.

Mikro Chorio 38° 51' 00" N, 21° 44' 00" E. Altitude 590 m.

Mikron Chorion = Mikro Chorio.

Velouchi Ski Centre 38° 56' 33" N, 21° 48' 22" E. Altitude 1850 m.

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Claude Roux kindly determined the collection of *Trapelia elacista*. The visit to Karpenisi would not have been possible without substantial assistance from my husband, Reay Sutherland, both in the preparation and the fieldwork.

Our work at site 8 was enlivened by meeting, on two consecutive days, the priest from the nearby village of Mouzílio, who was out with his goats. His knowledge of the local flora and fauna proved to be substantial - even extending to some lichens - and he was happy to share some of it with us. We send our best wishes to Spíros, and we hope that the wolves haven't eaten any more of his goats.

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