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LICHENS OF THE AREA AROUND VONITSA, NW AITOLOAKARNANIA, GREECE.

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Abstract

Study of six sites in the north west of Aitoloakarnania, in the autumn of 2019, yielded records of 120 species of lichens, lichenicolous and allied fungi. They include *Petractis crozalsii*, new to Greece. A summary of all previous reports for Aitoloakarnania is also included, and the total for the Nomos now stands at 187 taxa.

Introduction

There are rather few published reports of lichens and lichenicolous fungi for the Nomos of Aitoloakarnania. Only 94 species have previously been reported. Two-thirds of those reports are over a century old, and some of them are of doubtful reliability.

Most reports are from the southern half of the Nomos. The northern part has been almost entirely neglected. In late September and early October 2019 I spent several days in the very pleasant small town of Vonitsa, in the north west, and was able to study six sites in that region. 120 species were recorded, bringing the total for Aitoloakarnania to 187. For comparison, the present totals for other Nomoi in Sterea Ellada are: Boiotia 44, Evritanias 49, Fokidas 122, Fthiotidas 74; the total for Attica is 283. This is comparable with the total for other areas of Greece that have received some serious study but have not been studied intensively. However, given the large area of the Nomos, about 5460 km^2, it can not possibly come close to being an adequate inventory of the lichen biota. Much work undoubtedly remains to be done.

The region around Vonitsa is predominantly agricultural. Agriculture is fairly intensive, by Greek standards, and there is much nutrient enrichment, probably from a combination of dust and fertiliser. Many trees have a dense cover of *Xanthoria parietina* as a result. Lichens are generally abundant in terms of biomass, but diversity at any particular site tends to be low.

Most of the species encountered were unremarkable, but notable finds include *Caloplaca latzelii*, *Heteroplacidium imbricatum*, *Mycocalicium albonigrum* and *Petractis crozalsii*. That region of north west Aitoloakarnania did not appear to have any large areas that might possess high lichenological interest. We did not even find any small sites of unusually high lichen interest, but in a short visit, and without local knowledge, it is a matter of chance whether such sites are encountered: they may well be present.

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Materials and Methods

Six sites were studied, as below. Five were lowland sites, but site 2 was at an altitude of 1120 m, and had a more upland lichen biota, with a number of species that were not present (and not expected) at the lowland sites. The original intention was to study all substrates, but site 1 had no exposed rock, and site 6 had only some very disturbed small outcrops, so saxicolous lichens were not studied at those sites.

Latitude and longitude coordinates are for a representative point within the site. They are cited only to an accuracy of 10 seconds of arc, as they were determined from a 1: 150,000 scale map, not GPS.

All sites were on limestone. No other type of rock was encountered, not even in small inclusions.

1. South west of Cape Halki, 38°55′10″N, 21°00′20″E, altitude 20 m, 26 September 2019. Ploughed fields, with the lichen interest being on the trees, mainly *Quercus pubescens*, along the margins of fields and of tracks, and a few isolated *Olea* within the fields. The whole site was fairly disturbed, so terricolous lichens were scarce.

2. North of Psili Korifi, 38°46′50″N, 20°59′10″E, altitude 1120 m, 27 September 2019. A remnant of montane forest with mainly *Quercus coccifera*. The most mature trees, some of them very old, had a dense bryophyte cover and no lichens; the lichen interest was on the trees of intermediate age.

3. 1 km north of the village of Pogonia, 38°48′00″N, 20°50′20″E, altitude 47 m, 28 September 2019. Neglected olive grove with large boulders and small outcrops of limestone.

4. Bottom of steep valley, south west of the village of Archondohori, 38°41′30″N, 21°00′40″E, altitude 170 m, 30 September 2019. Dry river bed at bottom of steep gorge. Sides of gorge with dense scrub dominated by *Quercus coccifera*. The river bed was too unstable for lichens, and the sides of the gorge generally too shaded. The lichen interest was almost confined to a narrow band between the bed of the river and the sides of the gorge. It gave the impression of being a poor site for lichens and, for the most part, it was.

5. Cliff, and maquis below it, south west of the village of Archondohori, 38°41′50″N, 21°01′40″E, altitude 400 m, 1 October 2019. Shrubland dominated by *Quercus coccifera*. This kind of habitat is very common in Greece, and covers large areas of the country. Lichens are always present (unless the site has been burnt and lacks large rock outcrops that act as refugia), and are often abundant provided there is not too much shade, but the habitat usually supports only a limited range of species.

6. Between the villages of Trifos and Katouna, 38°48′20″N, 21°05′50″E, altitude 370 m, 2 October 2019. Very open woodland of mature *Quercus macrolepis*, heavily grazed underneath. The trees had a good cover of lichen species of nutrient enriched bark, but there was little else.

Results and Discussion

All lichens and lichenicolous fungi that could be determined to species are listed. The list includes 120 taxa, which is not a large total for six sites that were deliberately chosen to be varied in character. The low total is partly a result of the limited amount of time available for fieldwork, about 3 hours per site, but the main reason is probably the generally low lichen biodiversity of the region.

Numerous collections could not be determined reliably to species. In most cases that was a result of scanty material, but some were “interesting” collections that await additional study. They are not discussed further here.

Nomenclature follows Arcadia (2021). 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 6, as above.

A single asterisk immediately following the name means that the taxon is new to Aitoloakarnania, two asterisks mean new to Sterea Ellada (as defined in Abbott, 2009, i.e. excluding Attica), and three asterisks mean new to Greece. The large number of asterisks in the list, and their presence for some species that are very common in Greece indicates how poorly studied central Greece is for lichens.

1. ***Anaptychia ciliaris*** (L.) Flot.; * 1 on *Quercus pubescens*; 2 on *Crataegus* sp., *Quercus coccifera*.

2. ***Arthrosporum populorum*** A. Massal.; ** 1 on *Quercus coccifera*. A rare species in Greece, previously known only from islands of the Aegean and adjacent coast of the mainland. Never far from the sea.

3. ***Bacidia rosella*** (Pers.) De Not.; ** 2 on *Quercus coccifera*.

4. ***Bacidia thyrrenica*** Llop; ** 1 on *Olea europea*, *Quercus coccifera, Q. pubescens*; 3 on *Pyrus* sp.

5. ***Bagliettoa baldensis*** (A. Massal.) Vězda; ** 3, 4, 5 all on limestone.

6. ***Bagliettoa calciseda*** (DC.) Gueidan & Cl. Roux; 2, 4, 5 all on limestone.

7. ***Bagliettoa marmorea*** (Scop.) Gueidan & Cl. Roux; 2, 3, 4 all on limestone.

8. ***Caloplaca aegatica*** Giralt, Nimis & Poelt; ** 5 on *Quercus coccifera*. The northernmost Greek report to date of this rather uncommon species. It always occurs within a few kilometres of the sea.

9. ***Caloplaca albopruinosa*** (Arnold) H. Olivier; 4 on limestone.

10. ***Caloplaca alnetorum*** Giralt, Nimis & Poelt; ** 2 on *Quercus coccifera*; 5 on *Q. coccifera*, 6 on *Q. macrolepis*. This species is not especially common in Greece, and its presence in this region at three sites out of six is surprising.

11. ***Caloplaca alociza*** (A. Massal.) Lettau; * 3 on limestone.

12. ***Caloplaca aurantia*** (Pers.) Hellb.; * 4 on limestone.

13. ***Caloplaca cerina*** (Hedw.) Th. Fr.; 6 on *Quercus macrolepis*.

14. ***Caloplaca cerinelloides*** (Erichsen) Poelt; ** 5 on *Phlomis fruticosa*.

15. ***Caloplaca ferruginea*** (Huds.) Th. Fr.; * 1 on *Quercus pubescens*; 2 on *Q. coccifera*; 6 on *Prunus dulcis*.

16. ***Caloplaca flavescens*** (Huds.) J. R. Laundon; * 3, 5 both on limestone.

17. ***Caloplaca holocarpa*** (Hoffm.) A. E. Wade; ** 5 on limestone.

18. ***Caloplaca latzelii*** (Servít) Clauzade & Cl. Roux; ** 5 on limestone. Second Greek report. Previously known only from Attica (Navarro-Rosinés & Hladun, 1992)

19. ***Caloplaca oasis*** (A. Massal.) Szatala; ** 5 on limestone.

20. ***Caloplaca ochracea*** (Schaer.) Th. Fr.; 4, 5 both on limestone.

21. ***Caloplaca pyracea*** (Ach.) Zwackh; 5 on *Phlomis fruticosa*; 6 on *Quercus macrolepis*.

22. ***Caloplaca variabilis*** (Pers.) Th. Fr.; 5 on limestone.

23. ***Caloplaca xantholyta*** (Nyl.) Jatta; 2, 3, 4 all on limestone; 5 overgrowing an undetermined species of *Caloplaca*.

24. ***Candelariella vitellina*** (Hoffm.) Müll. Arg.; * 6 on *Prunus dulcis*. Determination slightly tentative, as the material does not have the typical appearance of *C. vitellina*. Thallus of scattered, usually globose, corticate granules, 0.05 - 0.07 (0.2) mm diameter, only rarely spreading and becoming somewhat flattened.

25. ***Catillaria chalybeia* var. *chloropoliza*** (Nyl.) H. Kilias; ** 3, 5 both on limestone.

26. ***Catillaria lenticularis*** (Ach.) Th. Fr.; 2 on limestone.

27. ***Catillaria nigroclavata*** (Nyl.) J. Steiner; 1 on *Quercus pubescens*; 4 on *Phillyrea angustifolia*, *Quercus coccifera*; 5 on *Phlomis fruticosa*; 6 on *Prunus dulcis*.

28. ***Circinaria calcarea*** (L.) A. Nordin, S. Savić & Tibell; 5 on limestone.

29. ***Cladonia chlorophaea*** (Flörke ex Sommerf.) Spreng.; ** 3 on soil. The name is used here to refer to the entire chlorophaea aggregate, including all chemotypes.

30. ***Cladonia foliacea*** (Huds.) Willd.; * 3 on limestone. The material belonged to the large-lobed morph, sometimes called *C. convoluta*.

31. ***Cladonia pocillum*** (Ach.) Grognot; * 2 on bryophytes on limestone, on soil; 4 on bryophytes on limestone; 5 on bryophytes on soil, directly on calcareous soil.

32. ***Cladonia pyxidata*** (L.) Hoffm.; * 2 on *Quercus coccifera*.

33. ***Cladonia rangiformis*** Hoffm.; ** 3 on bryophytes on soil; 4 on limestone; 5. on calcareous soil.

34. ***Clauzadea immersa*** (Hoffm.) B. Meyer; 2, 3, 4, 5 all on limestone.

35. ***Clauzadea metzleri*** (Körb.) Clauzade & Cl. Roux ex D. Hawksw.; ** 4 on limestone.

36. ***Collema flaccidum*** (Ach.) Ach.; 1 on *Quercus pubescens*; 2 on *Crataegus* sp,, *Quercus coccifera*.

37. ***Collema furfuraceum*** (Schaer.) Du Rietz; * 6 on *Quercus macrolepis*.

38. ***Collema nigrescens*** (Huds.) DC.; 1 on *Quercus pubescens*.

39. ***Collema subflaccidum*** Degel.; * 2 on *Quercus coccifera*.

40. ***Dermatocarpon miniatum*** (L.) W. Mann; * 2 on limestone.

41. ***Diploschistes gypsaceus*** (Ach.) Zahlbr.; ** 2 on limestone. A rather rare species in Greece.

42. ***Evernia prunastri*** (L.) Ach.; * 2 on *Crataegus* sp. Very common in Greece. It occurs at all altitudes, though it is commoner in the uplands, and its absence from all the lowland sites studied may be related to their high level of nutrient enrichment.

43. ***Farnoldia jurana*** (Schaer.) Hertel; * 2 on limestone.

44. ***Heteroplacidium imbricatum*** (Nyl.) Breuss; ** 3 on limestone. Second Greek report. Previously known from western Peloponnese (Abbott, 2009).

45. ***Hyperphyscia adglutinata*** (Flörke) H. Mayrhofer & Poelt; ** 1 on *Quercus pubescens*.

46. ***Lathagrium cristatum*** (L.) Otálora, P. M. Jørg. & Wedin; 4 on limestone.

47. ***Lathagrium undulatum*** (Laurer ex Flot.) Poetsch; ** 5 on limestone. Determination slightly tentative, as few ascospores seen. Those observed were 3-septate, with no longitudinal septa, as expected for *L. undulatum*, but it is difficult to exclude entirely the possibility of immature material of *L. cristatum*.

48. ***Lecanora chlarotera*** Nyl.; * 1 on *Cercis siliquastrum*, *Quercus coccifera*, *Q. pubescens*; 2 on *Q. coccifera*, *Q. ilex*; 3 on *Olea europea*, *Pyrus* sp.; 4 on *Olea europea*, *Quercus coccifera*; 5 on *Pyrus* sp., *Quercus coccifera*; 6 on *Prunus dulcis*.

49. ***Lecanora expallens*** Ach.; ** 3 on wood of *Olea europea*.

50. ***Lecanora horiza*** (Ach.) Linds.; * 1 on *Quercus pubescens*; 3 on *Olea europea*; 4 on *Quercus coccifera*; 6 on *Q. macrolepis*.

51. ***Lecanora leptyrodes*** (Nyl.) Degel.; ** 2 on *Quercus coccifera*.

52. ***Lecidella elaeochroma*** (Ach.) M. Choisy; * 1 on *Cistus* sp., *Quercus coccifera*, *Q. pubescens*; 2 on *Q. coccifera*, *Q. ilex*; 3 on *Pyrus* sp.; 4 on *Olea europea*, *Phillyrea angustifolia*, *Quercus coccifera*; 5 on *Pyrus* sp., *Quercus coccifera*; 6 on *Prunus dulcis*, *Quercus macrolepis*.

53. ***Lecidella stigmatea*** (Ach.) Hertel & Leuckert; * 2 on limestone.

54. ***Lepra albescens*** (Huds.) Hafellner **var. *albescens***; * 6 on *Quercus macrolepis*.

55. ***Lepra albescens* var. *corallina*** (Zahlbr.) ined.; * 6 on *Quercus macrolepis*.

56. ***Lobothallia radiosa*** (Hoffm.) Hafellner; * 3, 4, 5 all on limestone.

57. ***Mycocalicium albonigrum*** (Nyl.) Fink; ** 3 on wood of *Olea europea*. This non-lichenised species was growing on the inside of a hollow trunk of a single old olive tree, where it was abundant. Second Greek report. The previous report, also on wood of *Olea*, was from Corfu (Christensen, 1995). This species of warm-temperate to subtropical regions is widespread globally, but very rare in Europe, being known only from Greece, Crimea and the Russian Caucasus. It differs from the better known *M. subtile* in the anatomy of the exciple.

58. ***Myriolecis pruinosa*** (Chaub.) Sliwa, Z. Xin & Lumbsch; ** 5 on limestone.

59. ***Nephroma laevigatum*** Ach.; 2 overgrowing bryophytes on bark.

60. ***Ocellomma picconianum*** (Bagl.) Ertz & Tehler; ** 1 on *Cercis siliquastrum*, *Olea europea*, *Quercus coccifera*, *Q. pubescens*.

61. ***Ochrolechia balcanica*** Verseghy; ** 2 on *Crataegus* sp.

62. ***Opegrapha calcarea*** Turner ex Sm.; * 3 on limestone.

63. ***Opegrapha niveoatra*** (Borrer) J. R. Laundon; ** 6 on *Quercus macrolepis*.

64. ***Parmelina pastillifera*** (Harm.) Hale; ** 2, 5 both on *Quercus coccifera*.

65. ***Parmelina tiliacea*** (Hoffm.) Hale; * 1 on *Quercus pubescens*; 3 on *Olea europea*, *Pyrus* sp.; 6 on *Prunus dulcis*, *Quercus macrolepis*.

66. ***Pectenia plumbea*** (Lightf.) P. M. Jørg., L. Lindblom, Wedin & S. Ekman; * 2 on *Quercus coccifera*.

67. ***Peltigera neckeri*** Hepp ex Müll. Arg.; ** 2 overgrowing bryophytes on bark.

68. ***Peltigera praetextata*** (Flörke ex Sommerf.) Zopf; 2 overgrowing bryophytes on limestone.

69. ***Pertusaria heterochroa*** (Müll. Arg.) Erichsen; ** 3 on *Olea europea*. A rather uncommon species that is never found more than a few km from the coast.

70. ***Pertusaria hymenea*** (Ach.) Schaer.; 3 on *Pyrus* sp.; 6 on *Quercus macrolepis*.

71. ***Pertusaria leioplaca*** (Ach.) DC.; ** 2 on *Quercus coccifera*; 3 on *Olea europea*; 4 on *Phillyrea angustifolia*, *Quercus coccifera*.

72. ***Pertusaria pertusa*** (L.) Tuck.; 2 on *Quercus coccifera*.

73. ***Petractis crozalsii*** (de Lesd.) Clauzade & Cl. Roux; *** 4 on limestone. **New to Greece** and substantial extension of known range. This very rare species, restricted to shaded limestone in gorges, was previously known only from five sites in southern France, from one of which it has now vanished (Claude Roux, pers. comm.). It is not reported for Italy. It is undoubtedly a rare species, but may be less rare than the scarcity of reports suggests, since shaded limestone is not much studied by lichenologists. There is a good discussion of the species in Roux et al. (2008).

74. ***Phaeophyscia ciliata*** (Hoffm.) Moberg; * 2 on *Quercus coccifera*.

75. ***Phaeophyscia orbicularis*** (Neck.) Moberg; * 1 on *Olea europea*, *Quercus pubescens*; 5 on *Phlomis fruticosa*, *Pyrus* sp., *Quercus coccifera*.

76. ***Phlyctis agelaea*** (Ach.) Flot.; ** 2 on *Quercus coccifera*.

77. ***Phlyctis argena*** (Spreng.) Flot.; * 2 on *Quercus coccifera*.

78. ***Physcia adscendens*** H. Olivier; * 3 on *Pyrus* sp., limestone; 5 on *Phlomis fruticosa*, *Quercus coccifera*; 6 on *Prunus dulcis*, *Quercus macrolepis*.

79. ***Physcia biziana*** (A. Massal.) Zahlbr. **var. *biziana*** ; * 1 on *Quercus pubescens*; 3 on *Olea europea*, limestone; 4 on *Olea europea*, *Phillyrea angustifolia*; 5 on *Phlomis fruticosa*, *Pyrus* sp., *Quercus coccifera*; 6 on *Prunus dulcis*, *Quercus macrolepis*.

80. ***Physcia biziana* var. *leptophylla*** Vězda; ** 3 on *Olea europea*.

81. ***Physcia leptalea*** (Ach.) DC.; * 4 on *Phillyrea angustifolia*.

82. ***Physcia stellaris*** (L.) Nyl.; * 3 on *Pyrus* sp.

83. ***Physciella chloantha*** (Ach.) Essl.; ** 1 on *Quercus pubescens*. A rare species, otherwise known in Greece only from the island of Skyros and a single site in Epiros.

84. ***Physconia distorta*** (With.) J. R. Laundon; 6 on *Quercus macrolepis*.

85. ***Placolecis opaca*** (Dufour) Hafellner; * 3, 4 both on limestone.

86. ***Pleurosticta acetabulum*** (Neck.) Elix & Lumbsch; * 2 on *Crataegus* sp., *Quercus coccifera*; 6 on *Prunus dulcis*.

87. ***Porina aenea*** (Körb.) Zahlbr.; 3 on *Pyrus* sp. Very scanty material, so determination slightly tentative.

88. ***Porina ginzbergeri*** Zahlbr.; ** 4 on limestone. Most ascospores were 7-septate, but some sections had a few 8- and 9-septate ascospores, and a single 10-septate ascospore was observed. Although this overlaps with the range of ascospore septa reported for *P. oleriana* (7 - 12 -septate), that species prefers sunny limestone, and would not be expected to occur at the generally shaded site 4.

89. ***Protoblastenia cyclospora*** (Hepp ex Körb.) Poelt; ** 2 on limestone. The northernmost report in Greece of this rather uncommon species, otherwise known only from Crete and Peloponnese.

90. ***Protoblastenia lilacina*** Poelt & Vězda; ** 4 on limestone.

91. ***Ramalina canariensis*** J. Steiner; ** 3 on *Pyrus* sp.

92. ***Ramalina farinacea*** (L.) Ach.; * 2, 5 both on *Quercus coccifera*.

93. ***Ramalina fastigiata*** (Pers.) Ach.; ** 2 on *Crataegus* sp., *Quercus coccifera*.

94. ***Ramalina fraxinea*** (L.) Ach.; 2 on *Crataegus* sp., *Quercus coccifera*.

95. ***Rinodina guzzinii*** Jatta; ** 5 on limestone.

96. ***Rinodina immersa*** (Körb.) J. Steiner; 2, 5 both on limestone.

97. ***Rinodina sophodes*** (Ach.) A. Massal.; * 2 on *Quercus ilex*; 5 on *Q. coccifera*.

98. ***Romjularia lurida*** (Ach.) Timdal; * 2, 3 both on limestone.

99. ***Sclerococcum parasiticum*** (Flörke) Ertz & Diederich; 3 lichenicolous on *Pertusaria heterochroa*; 6 lichenicolous on *Pertusaria hymenea*. This is a rare species in Greece, and it was surprising to find it at two sites out of six.

100. ***Scytinium gelatinosum*** (With.) Otálora, P. M. Jørg. & Wedin; * 2 overgrowing bryophytes on soil.

101. ***Scytinium palmatum*** (Huds.) Gray; ** 2 on bryophytes.

102. ***Scytinium subaridum*** (P. M. Jørg. & Goward) P. M. Jørg. & Wedin; ** 4 on calcareous soil; 5 overgrowing terricolous bryophytes.

103. ***Solenopsora candicans*** (Dicks.) J. Steiner; ** 2, 3 both on limestone.

104. ***Solenopsora olivacea*** (Fr.) H. Kilias **subsp. *olivacea***; ** 4, 5 both on limestone.

105. ***Solenopsora olivacea* subsp. *olbiensis*** (Nyl.) Clauzade & Cl. Roux; * 2, 4, 5 all on limestone.

106. ***Sphinctrina turbinata*** (Pers.) De Not.; ** 6 lichenicolous on *Pertusaria hymenea*.

107. ***Squamarina cartilaginea*** (With.) P. James; 3 on limestone.

108. ***Squamarina gypsacea*** (Sm.) Poelt; ** 3, 4 both on limestone.

109. ***Squamarina oleosa*** (Zahlbr.) Poelt; ** 2 on limestone. First report in Greece from outside Peloponnese. Probably often overlooked, as it can only be separated reliably from the common *S. cartilaginea* and *S. gypsacea* by ascospore characters.

110. ***Tephromela atra*** (Huds.) Hafellner; 5 on limestone.

111. ***Thalloidima sedifolium*** (Scop.) Kistenich, Timdal, Bendiksby & S. Ekman; * 2 overgrowing bryophytes on limestone.

112. ***Verrucaria apatela*** (A. Massal.) Trevis.; * 2 on limestone. Last reported for Greece by Steiner (1919).

113. ***Verrucaria fuscoatroides*** Servít; ** 5 on limestone.

114. ***Verrucaria muralis*** Ach.; ** 3 on limestone.

115. ***Verrucaria nigrescens*** Pers.; 2, 3, 4, 5 all on limestone.

116. ***Verrucaria pinguicula*** A. Massal.; ** 2 on limestone.

117. ***Verrucaria polysticta*** Borrer; ** 3, 5 both on limestone.

118. ***Vouauxiella lichenicola*** (Linds.) Petr. & Syd.; ** 2 lichenicolous on *Lecanora chlarotera*. Previous Greek reports are all from islands of the Aegean.

119. ***Xanthoria parietina*** (L.) Th. Fr.; * 1 on *Cercis siliquastrum*, *Quercus coccifera*, *Q. pubescens*; 2 on *Q. coccifera*; 3 on *Pyrus* sp.; 4 on *Phillyrea angustifolia*, *Quercus coccifera*; 5 on *Phlomis fruticosa*, *Quercus coccifera*; 6 on *Prunus dulcis*, *Pyrus* sp., *Quercus macrolepis*.

120. ***Xanthoriicola physciae*** (Kalchbr.) D. Hawksw.; ** 6 lichenicolous on *Xanthoria parietina*. Given the abundance of *Xanthoria parietina* in the region, I expected *X. physciae* to be common, and searched for it at every site, but failed to find it in the field. Just two parasitised apothecia were observed in the laboratory. The scarcity of this parasite is hard to explain.

Previous reports for Aitoloakarnania

The literature on Greek lichens is scattered, and the older literature is often very difficult to work with. A summary of previously published information for Aitoloakarnania is therefore provided here as an aid to future workers on Greek lichens. It is largely based on Abbott (2009), but includes substrate and other data that Abbott had to omit for reasons of space.

Only seven previous publications include reports of lichens from Aitoloakarnania: Christensen (2014), Harmand & Maire (1909), Lumbsch (1989), Steiner (1894, 1898), Vondrák et al. (2012, 2016). Between them they list 94 species, as below.

The status of many old reports is difficult to assess without examining the original collections, which I have not been able to do. Some are likely to be unreliable, especially in taxonomically difficult groups.

Names of places are listed with the spelling used in the original publication.

If an altitude is cited in this list of species, it is more precise for that species than the representative altitude for the whole site in the list of localities below.

1. ***Agonimia tristicula*** (Nyl.) Zahlbr. Christensen (2014): Evinos, on bark of *Platanus*.

2. ***Arthonia lapidicola*** (Taylor) Branth & Rostrup. Steiner (1898): Andronis, as *Coniangium lapidicola*. Treated by Abbott (2009) as *Arthonia muscigena*.

3. ***Aspicilia cinerea*** (L.) Körb. Steiner. (1898): Liapochori, on schist, as *Lecanora cinerea*.

4. ***Bacidia rubella*** (Hoffm.) A. Massal. Christensen (2014): Ladikon, on bark of *Platanus*.

5. ***Bagliettoa calciseda*** (DC.) Gueidan & Cl. Roux. Harmand & Maire (1909): Romvo. on calcareous rock, as *Verrucaria rupestris* var. *calciseda*. Treated by Abbott (2009) as *Verrucaria calciseda*.

6. ***Bagliettoa marmorea*** (Scop.) Gueidan & Cl. Roux. (1) Steiner (1894): Chalkis, on limestone, as *Verrucaria marmorea* f. *purpurascens*; (2) Harmand & Maire (1909), Mytikas, on calcareous rock, as *Verrucaria purpurascens*. Treated by Abbott (2009) as *Verrucaria marmorea*.

7. ***Blennothallia crispa*** (Huds.) Otálora, P. M. Jørg. & Wedin. Steiner (1898): Andronis, on limestone, as *Collema furvum* f. *conchilobum*. Treated by Abbott (2009) as *Collema crispum*.

8. ***Caloplaca albopruinosa*** (Arnold) H. Olivier. (1) Steiner (1894): Chalkis, as *Caloplaca intercedens* f. *minuta*; (2) Steiner (1898): Andronis, on limestone, as *Caloplaca agardhiana* f. *albopruinosa*; (3) Steiner (1898): Agrinion, on calcareous rock, as *Caloplaca agardhiana* f. *minuta*. Old reports of black fruited species of *Caloplaca* probably include many incorrect determinations.

9. ***Caloplaca arenaria*** (Pers.) Müll. Arg. Steiner (1898): Agrinion, on sandstone. This appears to be the same collection that Steiner (1894) reported as *Caloplaca arenaria* f. *teicholyta*, and which is listed below under *Caloplaca teicholyta*.

10. ***Caloplaca austrocitrina*** Vondrák et al. Vondrák et al. (2016): Nafpaktos, on limestone, as *Flavoplaca austrocitrina*.

11. ***Caloplaca biatorina*** (A. Massal.) J. Steiner. Steiner (1898): Liapochori, on limestone, as *Caloplaca nideri*.

12. ***Caloplaca cerina*** (Hedw.) Th. Fr. Vondrák et al. (2012): Astakos, on bark of *Olea*.

13. ***Caloplaca chalybaea*** (Fr.) Müll. Arg. Steiner (1898): Andronis, on limestone. Old reports of black fruited species of *Caloplaca* probably include many incorrect determinations.

14. ***Caloplaca dalmatica*** (A. Massal.) H. Olivier. (1) Steiner (1898): Andronis, on limestone, as *Caloplaca aurantiaca* var. *velana* (A. Massal.) Flagey; (2) Harmand & Maire (1909), Romvo, on calcareous rock, as *Lecanora aurantiaca*. The report by Harmand & Maire may be incorrect: see Abbott (2009).

15. ***Caloplaca flavocitrina*** (Nyl.) H. Olivier. Vondrák et al. (2016): Nafpaktos, on limestone, as *Flavoplaca flavocitrina*.

16. ***Caloplaca fulgens*** (Sw.) Körb. Harmand & Maire (1909): Romvo, on calcareous rock, as *Lecanora fulgens*. The report might be correct, but is quite likely to be an incorrect determination of the more common *C. fulgida*. Treated by Abbott (2009) as *Fulgensia fulgens*.

17. ***Caloplaca geleverjae*** Khodos. & S. Y. Kondr. Vondrák et al. (2016): Nafpaktos, on limestone, as *Flavoplaca geleverjae*.

18. ***Caloplaca ochracea*** (Schaer.) Th. Fr. Harmand & Maire (1909): Romvo, on calcareous rock, as *Lecanora aurantiaca* var. *ochracea*.

19. ***Caloplaca pyracea*** (Ach.) Zwackh. (1) Steiner (1898): Liapochori, on limestone; (2) Christensen (2014): Evinos, on bark of *Platanus*.

20. (??) ***Caloplaca teicholyta*** (Ach.) J. Steiner. Steiner (1894): Agrinion, on sandstone, as *Caloplaca arenaria* f. *teicholyta*. The report is probably incorrect, as *C. teicholyta* is uncommon in Greece. See note under *Caloplaca arenaria*.

21. ***Caloplaca variabilis*** (Pers.) Th. Fr. Harmand & Maire (1909): Romvo, on calcareous rock, as *Lecanora variabilis* var. *subimmersa*. Old reports of black fruited species of *Caloplaca* probably include many incorrect determinations.

22. ***Caloplaca xantholyta*** (Nyl.) Jatta. Harmand & Maire (1909): Romvo, on calcareous rock, as *Lecanora xantholyta*.

23. ***Catillaria lenticularis*** (Ach.) Th. Fr. Steiner (1898): Andronis, on limestone, as *Catillaria lenticularis* var. *erubescens*.

24. (??) ***Catillaria nigroclavata*** (Nyl.) J. Steiner. Steiner (1898): Andronis, on limestone, as *Catillaria nigroclavata* var. *ochracea*. This species is usually corticolous, though it can occur very occasionally on rock. Steiner's report may refer to *Catillaria lenticularis*.

25. ***Cercidospora epipolytropa*** (Mudd) Arnold. Steiner (1894): Agrinion, lichenicolous on unidentified crustose lichen.

26. ***Circinaria calcarea*** (L.) A. Nordin, S. Savić & Tibell. (1) Steiner (1898) Andronis: on limestone, as *Lecanora calcarea* var. *concreta*; (2) Steiner (1898): Megas Laikos, on limestone, as *Lecanora calcarea* var. *concreta*; (3) Harmand & Maire (1909): Romvo, on calcareous rock, as *Lecanora calcarea*; (4) Harmand & Maire (1909): Romvo, on calcareous rock, as *Lecanora calcarea* f. *opegraphoides*. Treated by Abbott (2009) as *Aspicilia calcarea*.

27. ***Circinaria contorta*** (Hoffm.) A. Nordin, S. Savić & Tibell. Steiner (1894): Agrinion, on sandstone, as *Lecanora concreta* var. *viridescens*. Treated by Abbott (2009) as *Aspicilia contorta*.

28. ***Cladonia monomorpha*** Aptroot, Sipman & van Herk. Harmand & Maire (1909): Stratos, as *Cladonia pyxidata* var. *neglecta*. The report was cited by Abbott (2009) under *Cladonia pyxidata*. However, many Greek reports of *C. pyxidata* var. *neglecta* are thought to belong to the recently described *C. monomorpha*, and Harmand & Maire's report is now tentatively placed here.

29. ***Clauzadea immersa*** (Hoffm.) B. Meyer. (1) Harmand & Maire (1909): Mytikas, on calcareous rock, as *Lecidea calcivora*; (2) Harmand & Maire (1909): Romvo, on calcareous rock, as *Lecidea calcivora*.

30. ***Clauzadea monticola*** (Ach.) Hafellner & Bellem. Steiner (1898): Andronis, on limestone, as *Lecidea fuscorubens*.

31. ***Collema flaccidum*** (Ach.) Ach. Christensen (2014): Ladikon, overgrowing corticolous bryophytes.

32. ***Collema nigrescens*** (Huds.) DC. (1) Steiner (1898): Liapochori, on sandstone, as *Synechoblastus nigrescens*; (2) Christensen (2014): Evinos, on bark of *Platanus*.

33. ***Collema subnigrescens*** Degel. Christensen (2014): Evinos, on bark of *Platanus*.

34. ***Diploschistes actinostoma*** (Ach.) Zahlbr. Steiner (1898): Liapochori, on schist. The report can perhaps be accepted, though it is disjunct. All other Greek reports are from around the Aegean.

35. ***Diploschistes caesioplumbeus*** (Nyl.) Vain. Lumbsch (1989): Liapochori. This may refer to the collection that Steiner determined as *Diploschistes actinostoma*.

36. ***Diploschistes diacapsis*** (Ach.) Lumbsch. (1) Steiner (1894) Agrinion, on sandstone, as *Diploschistes gypsaceus* var. *coloratus*; (2) Lumbsch (1989): Agrinion, perhaps just re-citing Steiner's report.

37. ***Diploschistes muscorum*** (Scop.) R. Sant. (1) Steiner (1898): Liapochori, lichenicolous on *Lecanora muralis*, as *Polyschistes subclausus*; (2) Harmand & Maire (1909): Stratos, on non-calcareous soil, as *Urceolaria scruposa* var. *dealbata*.

38. (??) ***Diplotomma nivale*** (Bagl. & Car.) Hafellner. (1) Steiner (1894): Agrinion, on sandstone, as *Buellia alboatra* var. *margaritacea*; (2) Steiner (1898): Agrinion, as *Diplotomma epipolium* f. *margaritaceum*, probably just re-citing the earlier report. Given the low altitude of the site, the report is doubtful.

39. ***Enchylium ligerinum*** (Hy) Otálora, P. M. Jørg. & Wedin. Christensen (2014): Evinos, on bark of *Platanus*, as *Collema ligerinum*.

40. ***Heterodermia leucomelos*** (L.) Poelt. Steiner (1898): Liapochori, on bark, as *Physcia leucomelos*. One of only two Greek reports of this species. Since the other dates from 1816, its presence in Greece is in need of confirmation.

41. (??) ***Hymenelia prevostii*** (Duby) Kremp. (1) Steiner (1898): Andronis, on limestone, as *Lecanora prevostii* var. *affinis*; (2) Harmand & Maire (1909): Romvo, on calcareous rock, as *Lecidea prevostii*. The status of these reports is unclear. Abbott (2009) did not consider the species to be reliably reported for Greece, but there is a recent confirmed report for the island of Chios.

42. ***Koerberia biformis*** A. Massal. Christensen (2014): Ladikon, on bark of *Platanus*.

43. ***Lathagrium auriforme*** (With.) Otálora, P. M. Jørg. & Wedin. (1) Christensen (2014): Evinos, overgrowing corticolous bryophytes, as *Collema auriforme*; (2) Christensen (2014): Ladikon, overgrowing corticolous bryophytes, as *Collema auriforme*.

44. ***Lathagrium cristatum*** (L.) Otálora, P. M. Jørg. & Wedin. Harmand & Maire (1909): Romvo, on calcareous rock, as *Collema multifidum*. Treated by Abbott (2009) as *Collema cristatum*.

45. ***Lecanora saligna*** (Schrad.) Zahlbr. Steiner (1898): Messolonghi, as *Lecanora prosechoides* f. *obscurior*. Overlooked by Abbott (2009).

46. ***Lecanora sulphurea*** (Hoffm.) Ach. Steiner (1898): Liapochori, on sandstone, as *Lecanora sulphurea* f. *tumidula*.

47. (??) ***Lecidella carpathica*** Körb. Steiner (1898): Liapochori, on rock, as *Lecidea latypea*. The name *Lecidea latypea* has been (mis)applied to several species. It is not known to which species Steiner was applying the name, but the common *Lecidella carpathica* seems the most likely possibility.

48. ***Lepraria vouauxii*** (Hue) R. C. Harris. Christensen (2014): Ladikon, on corticolous bryophytes.

49. ***Lobaria pulmonaria*** (L.) Hoffm. Christensen (2014) Ladikon: on corticolous bryophytes.

50. ***Melaspilea proximella*** (Th. Fr.) Nyl. Steiner (1898): Staktias, on bark, as *Melaspilea proximella* var. *graeca*.

51. ***Muellerella erratica*** (A. Massal.) Hafellner & V. John. Harmand & Maire (1909): Romvo, lichenicolous on *Verrucaria glaucina*, as *Endococcus erraticus*.

52. ***Myriolecis dispersa*** (Pers.) Sliwa, Z. Xin & Lumbsch. (1) Steiner (1898): Andronis, as *Lecanora dispersa*; (2) Harmand & Maire (1909): Romvo, on calcareous rock, as *Lecanora dispersa*. Treated by Abbott (2009) as *Lecanora dispersa*.

53. ***Nephroma laevigatum*** Ach. Christensen (2014): Ladikon, on bark of *Platanus*.

54. ***Ochrolechia parella*** (L.) A. Massal. Steiner (1898): Liapochori, on schist.

55. ***Opegrapha rupestris*** Pers. Harmand & Maire (1909): Romvo, on calcareous rock, as *Opegrapha saxicola*.

56. ***Opegrapha varia*** Pers. (1) Steiner (1898): Staktias, on bark as *Opegrapha varia* var. *diaphora*; (2) Christensen (2014): Evinos, on bark of *Platanus*.

57. ***Parabagliettoa cyanea*** (A. Massal.) Gueidan & Cl. Roux. Harmand & Maire (1909): Romvo, on calcareous rock, as *Verrucaria limitata*. Treated by Abbott (2009) as *Verrucaria cyanea*.

58. ***Peltigera praetextata*** (Flörke ex Sommerf.) Zopf. Christensen (2014): Ladikon, on corticolous bryophytes.

59. ***Pertusaria chiodectonoides*** Bagl. ex A. Massal. Steiner (1898): Liapochori, on schist, as *Pertusaria personata*.

60. ***Pertusaria hymenea*** (Ach.) Schaer. (1) Steiner (1898): Liapochori, on bark, as *Pertusaria*

wulfenii; (2) Harmand & Maire (1909): Mytikas, on bark of *Pyrus amygdalifolia* at an altitude of 800 m, as *Pertusaria wulfenii*.

61. ***Pertusaria pertusa*** (L.) Tuck. Harmand & Maire (1909): Mytikas, on bark of *Pyrus amygdalifolia* at an altitude of 800 m, as *Pertusaria communis*.

62. ***Physconia distorta*** (With.) J. R. Laundon. Christensen (2014): Ladikon, on corticolous bryophytes.

63. ***Placidium lacinulatum*** (Ach.) Breuss. (1) Steiner (1894) Agrinion, on sandstone, as *Placidium tapeziforme*; (2) Steiner (1898): Agrinion, on sandstone, as *Placidium rufescens* var. *trapeziiforme*, perhaps just a re-citation of the earlier report.

64. ***Polycoccum marmoratum*** (Kremp.) D. Hawksw. Steiner (1894) Chalkis: on limestone, as *Microthelia marmorata*.

65. ***Porina aenea*** (Körb.) Zahlbr. Christensen (2014): Evinos, on bark of *Platanus*.

66. ***Protoblastenia calva*** (Dicks.) Zahlbr. Harmand & Maire (1909): Romvo, on calcareous rock, as *Lecanora rupestris* var. *calva*.

67. ***Protoblastenia incrustans*** (DC.) J. Steiner. Steiner (1898): Andronis, on limestone, as *Lecidea rupestris* var. *incrustans*.

68. ***Protoparmeliopsis muralis*** (Schreb.) M. Choisy. (1) Steiner (1898) Liapochori, on siliceous rock, as *Lecanora muralis*; (2) Steiner (1898): Liapochori, on siliceous rock, as *Lecanora muralis* var. *diffracta*; (3) Harmand & Maire (1909): Romvo, on calcareous rock, as *Lecanora saxicola* var. *albopulverulenta*. Treated by Abbott (2009) under *Lecanora muralis* and *Lecanora muralis* var. *versicolor*; those two names are now regarded as synonyms.

69. ***Psora decipiens*** (Hedw.) Hoffm. Harmand & Maire (1909): Stratos, on non-calcareous soil, as *Lecidea decipiens*.

70. ***Ramalina calicaris*** (L.) Fr. Harmand & Maire (1909): Romvo, on bark.

71. ***Ramalina fraxinea*** (L.) Ach. Harmand & Maire (1909): Romvo, on bark of *Crataegus orientalis*.

72. ***Rinodina dubyana*** (Hepp) J. Steiner. Steiner (1898): Andronis, as *Buellia lygaeodes*.

73. ***Rinodina immersa*** (Körb.) J. Steiner. (1) Harmand & Maire (1909): Mytikas, on calcareous rock as *Lecanora bischoffii* var. *immersa*; (2) Harmand & Maire (1909): Romvo, on calcareous rock, as *Lecanora bischoffii* var. *immersa*.

74. ***Sclerococcum parasiticum*** (Flörke) Ertz & Diederich. Steiner (1898): Liapochori, lichenicolous on *Pertusaria wulfenii*, as *Leciographa inspersa*. Treated by Abbott (2009) as *Dactylospora parasitica*.

75. ***Scytinium intermedium*** (Arnold) Otálora, P. M. Jørg. & Wedin. Christensen (2014): Ladikon, on bark of *Platanus*, as *Leptogium intermedium*.

76. ***Scytinium lichenoides*** (L.) Otálora, P. M. Jørg. & Wedin. Christensen (2014): Ladikon, on corticolous bryophytes, as *Leptogium lichenoides*.

77. ***Scytinium microphylloides*** auct. Christensen (2014): Evinos, on bark of *Platanus*, as *Leptogium microphylloides*.

78. ***Scytinium pulvinatum*** (Hoffm.) Otálora, P. M. Jørg. & Wedin. Christensen (2014): Ladikon, on bryophytes, as *Leptogium pulvinatum*.

79. ***Scytinium quercicola*** (Otálora, Aragón, I. Martinéz & Molina) ined. (1) Christensen (2014): Evinos, on bark of *Platanus*, as *Leptogium pulvinatum* var. *quercicola*; (2) Christensen (2014): Ladikon, on bark of *Platanus*, as *Leptogium pulvinatum* var. *quercicola*.

80. ***Scytinium subtile*** (Schrad.) Otálora, P. M. Jørg. & Wedin. Christensen (2014): Evinos, on bark of *Platanus*, as *Leptogium subtile*.

81. ***Scytinium teretiusculum*** (Wallr.) Otálora, P. M. Jørg. & Wedin. Christensen (2014): Evinos, on bark of *Platanus*, as *Leptogium teretiusculum*.

82. ***Squamarina cartilaginea*** (With.) P. James. Harmand & Maire (1909): Romvo, on calcareous rock, as *Lecanora crassa*.

83. ***Staurolemma omphalarioides*** (Anzi) P. M. Jørg. & Henssen. Christensen (2014): Ladikon, on bark of *Platanus*.

84. (??) ***Staurothele caesia*** (Arnold) Arnold. Steiner (1898): Andronis, on limestone. The report was not accepted by Abbott (2009), and is probably incorrect. This is a northern species.

85. ***Tephromela atra*** (Huds.) Hafellner. (1) Steiner (1898): Liapochori, on sandstone, as *Lecanora atra*; (2) Harmand & Maire (1909): Romvo, on calcareous rock, as *Lecanora atra* f. *flavescens*.

86. ***Thelidium incavatum*** (Nyl.) Mudd. Harmand & Maire (1909): Romvo, on calcareous rock, as *Verrucaria incavata*.

87. ***Toninia acarnanica*** (Harm.) Zahlbr. Harmand & Maire (1909): Romvo, on calcareous rock, as *Lecidea acarnanica*. Known only from the type collection, which can not now be located. The name is of uncertain application.

88. ***Verrucaria buschirensis*** J. Steiner. Steiner (1898): Liapochori, on limestone, as *Amphoridium buschirense*. This is a poorly known species, and the name appears to be of uncertain application.

89. (??) ***Verrucaria caesiopsila*** Anzi. Harmand & Maire (1909): Romvo, on calcareous rock, as *Verrucaria integrella*. Harmand & Maire stated that their determination was slightly uncertain.

90. ***Verrucaria coerulea*** DC. Harmand & Maire (1909): Romvo, on calcareous rock, as *Verrucaria glaucina*. Treated by Abbott (2009) as *Verrucaria caerulea*.

91. ***Verrucaria nigrescens*** Pers. Harmand & Maire (1909): Romvo, on calcareous rock.

92. ***Verrucaria viridula*** (Schrad.) Ach. Steiner (1894): Antirrhion, on limestone.

93. ***Xanthoria aureola*** (Ach.) Erichsen. Steiner (1898): Messolunghi, on limestone, as *Xanthoria parietina* var. *aureola*.

94. ***Xanthoria sorediata*** (Vain.) Poelt. Harmand & Maire (1909): Romvo, on calcareous rock, as *Lecanora elegans* var. *compacta*.

Localities cited in old reports

Listed below are all the places in Aitoloakarnania for which there are previously published lichen reports. Co-ordinates and altitudes are my best estimate from the often scanty published information. They may differ slightly from the actual collection site.

Agrinio. (or Agrinion). 38°39′20″N, 21°23′50″E. Altitude 100 m.

Andronis. Precise locality uncertain. Cited by Steiner (1898).

Antirio. (or Antirrhion). 38°20′30″N, 21°44′40″E. Altitude 0 m,

Astakos 38°32′00″N, 21°05′10″E. Altitude 0 m.

Chalkis 38°42′50″N, 21°38′10″E. Altitude 917 m.

Evinos 38°24′00″N, 21°36′00″E. Altitude 75 m.

Ladikou. (or Ladikon). 38°41′00″N, 21°41′00″E. Altitude 980 m.

Liapochori. Precise locality uncertain. Cited by Steiner (1898). Altitude 695 m,

Megas Laikos. Precise locality uncertain. Cited by Steiner (1898). Altitude 600 m,

Messolonghi. (or Messolunghi). 38°23′20″N, 21°24′30″E. Altitude 0 m.

Mitikas. (or Mytikas). 38°42′20″N, 20°56′10″E. Altitude 50 m.

Nafpaktos 38°24′00″N, 21°56′00″E. Altitude 10 m.

Rombou. (or Romvo). 38°49′30″N, 20°58′20″E. Altitude 1100 m.

Staktias. Precise locality uncertain. Cited by Steiner (1898). Altitude 715 m,

Stratos 38°41′40″N, 21°18′40″E. Altitude 50 m.

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