A lichenological comparison of the Paros and Santorini island groups (Aegean, Greece), with annotated checklist

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Abstract

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A lichen inventory on the Aegean islands of Paros and Antiparos, both with a long history of land vegetation and a wide variation in bedrock, revealed the presence of 268 species. This flora is compared with the 182 species known from the nearby Santorini island group, comparable in size and surface morphology, but a volcanic archipelago with few limestone inclusions, which was completely devastated by an eruption about 3000 years ago. The higher species number of Paros is explainable by the difference in size and substrate availability. Lichen species inhabiting siliceous-crystalline rock and epiphytic lichen species are more strongly represented on Paros, while species of volcanic rock are more numerous on Santorini, in accordance with the frequency of these substrates. There is no evidence for an influence of the uninterrupted history of the plant cover of Paros on the α-diversity of its lichen flora. Differences in species composition other than those depending on substrate availability appear to be of a random type. Vegetative reproduction seems slightly less frequent on Paros, and pioneer species of lava, which, on Santorini, are restricted to young lava fields, are absent from Paros. An annotated list of lichen species for Paros and an updated checklist for Santorini are presented. Among the encountered species, 28 appear to be unrecorded for Greece. All species reported from Paros are new for this island, from where no species were reported before. *Pertusaria parotica* is described as a species new to science and the new combination *Protoparmelia psarophana* var. *reagens* is made.

Introduction

A. General

The Aegean islands are considered to be the tips of a submersed mountain system, which was connected to the Greek mainland and Asia Minor in the geological past until the Pliocene (Greuter 1970). Their vascular flora harbours traces of these past connections. A decline of European elements and an increase of Asiatic elements can be observed from west to east. In addition, long-time isolation has led to random extinctions and other floristic features characteristic of islands (Runemark 1969).

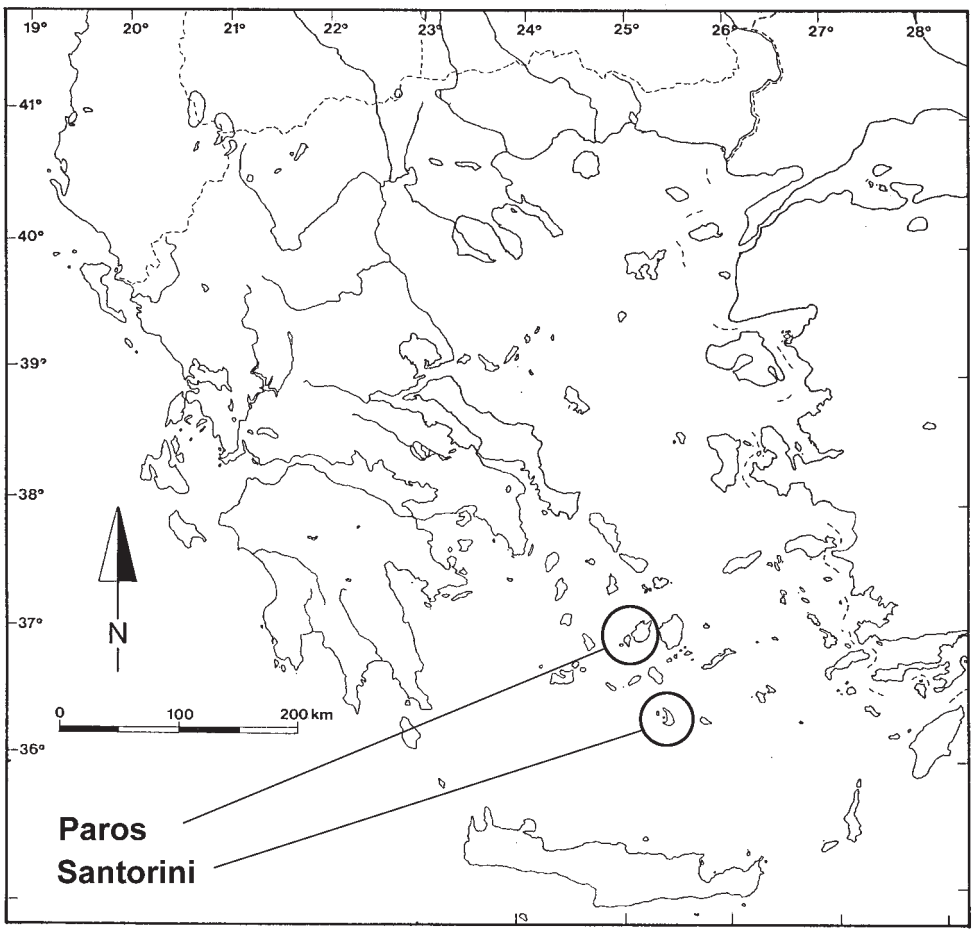

Fig. 1. Map of Greece, indicating the position of the Paros and Santorini island groups.

Lichens are known to include many relict taxa, and the presence of a well-developed lichen flora on these islands suggests that similar features as in the vascular plant flora might be observable in the lichen flora. However, available knowledge of the Aegean lichen flora is incidental only, and therefore a program was started to explore the lichen flora of selected islands in detail.

In 1990 an inventory was made for Santorini, a volcanic island group with a young lichen flora established after a major eruption about 3000 years ago (Sipman & Raus 1995). The present paper presents the results of a second inventory, made for Paros and adjacent Antiparos in 1998 (Fig. 1). It concerns an island group with a more varied geology and with an uninterrupted vegetation history since the Tertiary.

The archipelago of Paros (Fig. 1, 4) consists of two inhabited islands surrounded by a number of uninhabited small islets. The main island, Paros, measures 195 km² and occupies over 80 % of the archipelago's land surface. The second inhabited island, Antiparos, measures 38 km² and is separated from Paros by a shallow c. 5 km wide sea channel, which became flooded only after human occupation of the islands.

The bedrock of the archipelago is dominated by highly metamorphic to crystalline deposits of very variable composition. Thick layers of marble dominate in the east and south of Paros,

while schist and gneiss are dominant in the centre and north of Paros and on Antiparos. Granitic formations are exposed at Kolimvithres in northern Paros, and ultramafic rock is sometimes present in the transition zones between schist and marble. Two small volcanic intrusions are present on the east coast of Paros, while on Antiparos and its adjoining islets larger areas of volcanic rock occur in the northeast and particularly in the southwest. The bedrock is exposed in many places, in particular on cliffs along the seashore, and is mostly covered by skeletic lithosols only. Thicker layers of colluvial deposits allowing agriculture are found only in the plains. These plains are mainly limited to the east and northwest of Paros, while the rest of the archipelago consists mainly of a rugged and stony landscape.

The climate is characterised by a cool, rainy winter season and a completely dry summer season. During summer the heat is tempered through the influence of the sea, which also keeps air humidity at higher levels. Conditions for lichen growth seem largely restricted to the winter season, which probably explains the strong affinity of the lichen flora with that of W Europe.

The archipelago is almost completely deforested. No relicts of natural forest stands exist except local patches of coastal dune scrub made up by *Juniperus oxycedrus* subsp. *macrocarpa* (Sm.) Ball, *J. phoenicea* L. and *Pistacia lentiscus* L. Other available trees are all planted in cultivated fields or in and around settlements, viz. *Ceratonia siliqua* L., *Cupressus sempervirens* L., *Ficus carica* L., *Morus alba* L., *Olea europaea* L., *Pinus brutia* Ten. and *Quercus ithaburensis* subsp. *macrolepis* (Kotschy) Hedge & Yalt. The vegetation of the mountain slopes is dominated by low scrub (phrygana), and in the plains cultivated fields dominate, abandoned to an increasing extent. The scarcity of woody vegetation promotes the influence of permanently blowing sea winds, which extend all over the islands and cause even small rock outcrops and boulders to be fully exposed to high solar irradiation and wind velocity levels. Sheltered valleys with a significantly more humid climate are absent (with the single exception of Petaloudes, W Paros, an artificially planted "Butterfly Valley"), and increased humidity is available only in the cloud zone of the mountains (see also Raus 1996 for further general remarks on Paros).

Not a single lichen species had been recorded from the Paros island group before. Other sites in the Aegean have received more lichenological attention as shown by a regional checklist of 431 species by Szatala (1943). However, the area should be considered as poorly known lichenologically, which is elucidated by the fact that on Santorini, for example, Sipman and Raus (1995) found 37 species new to Greece.

B. The available lichen substrates

1. Rock

The bedrock of Paros and Antiparos consists mostly of highly metamorphic rocks with a variable lime content. The rock type with highest lime content, coarse-grained and hosting a typical calcicolous lichen flora, is called here marble (Fig. 2). Rock with low or without lime content, which hosts a lichen flora typical for siliceous rock, is available in a wide range of textures and compositions, and for the present investigation, three types based on texture have been distinguished: (1) granitic rock, for siliceous, coarse-grained rock with weakly or without layered structure; (2) gneissic rock, for siliceous, more or less coarse-grained rock with distinctly layered texture which does not split easily; and (3) schistose rock, which splits easily along the layering (Fig. 3). These types are not clearly delimited, however, and do not support very different lichen floras. The detailed mineralogical composition could not be evaluated in detail, but judging from included minerals and occasional metal content, it seems very variable. Most rocks have a clear silicicolous lichen flora. However, the lichen cover suggests that small quantities of lime may be present occasionally. Locally, a green, layered, brittle rock is present between layers of marble and siliceous rock, and has been interpreted here as ultramafic. Its lichen flora is largely similar to that of calcareous stones scattered on soil.

Marble outcrops are dominant in over half of Paros, while this sort of substrate is restricted to a few rather thin layers on Antiparos. In the eastern half of Paros and most of Antiparos, rock

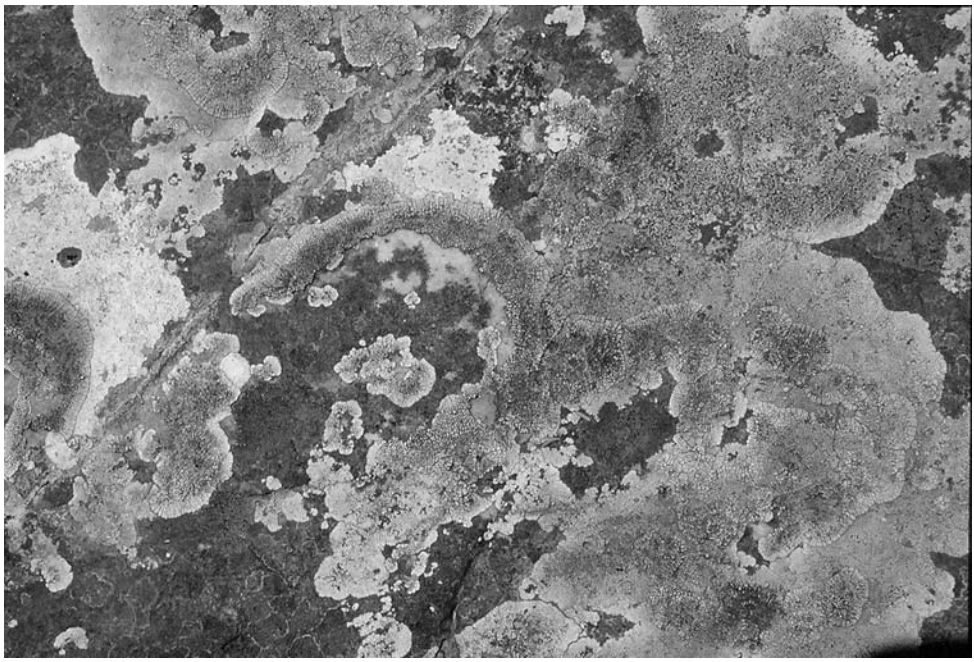

Fig. 2. Lichen vegetation on marble; *Aspicilia calcarea* dominant, in part overgrown by radiating thalli of *Aspicilia cheresina*; the dark grey, spickled patches are formed by *Rinodina immersa*.

Fig. 3. Lichen vegetation on schistose rock; spickled the xanthone-containing, yellowish thalli of *Lecidella asema*, below right the xanthone-containing, yellowish thallus of *Lecanora rupicola* subsp. sulphurata, in the center dark grey thalli of *Aspicilia intermutans*.

outcrops are predominantly schistose. Gneissic rock outcrops occur in the highest part of Paros, for example, and clearly granitic rock occurs only near Kolimvithres.

Volcanic rock is present in the northernmost and the southern part of Antiparos, and as two small cones on the east coast of Paros near Marpissa. On Paros it consists only of basalt, while in southern Antiparos extensive lava fields are also present. The lichen cover shows that the volcanic rock on Paros is siliceous.

2. Trees and shrubs
The scarcity of trees makes the area less suitable for epiphytic lichens. Moreover, most trees in cultivated areas at low elevations are devoid of lichen growth, certainly due to the dry climate of this zone. At higher altitudes, occasional trees and dwarf shrubs on exposed sites (e.g. *Rhamnus lycioides* subsp. *oleoides* (L.) Jahand. & Maire) have a marked lichen flora, which consists mainly of widespread pioneer species. An interesting flora with a marked Mediterranean character is found on the coastal juniper stands mentioned above.

3. Soil
Soils are generally poor in organic matter and consequently lichens from acid, peaty soil are scarce. Only on the highest peak an increased number of cladonioid lichens can be found, including *Cetraria aculeata*, *Cladina mediterranea* and *Cladonia furcata*. Elsewhere crustose lichen communities with *Psora decipiens* and *Fulgensia subbracteata* predominate.

Material and methods

The data for the floristic comparison were obtained during a two-week field work in June 1998. 38 localities representing the various available habitat types on Paros and Antiparos were visited (Fig. 4), mostly for 2-4 hours, during which as complete as possible an inventory of the lichen flora was made and vouchers taken from all except the most easily recognisable species. The selection of the habitats was facilitated through the detailed knowledge of the topography of the island by one of us (TR, see Raus 1996). The vouchers were investigated by usual optical and microchemical methods in the laboratory. For selected specimens, the secondary metabolite content was investigated by TLC, following White & James (1985).

As discussed by, for example, Rich & Smith (1996), the results of a botanical survey are not only dependent on the species present but also on limitations in the observations, which depend among others on the observer. As a consequence, field work is unlikely to result in a complete species list, and results of different surveys are not necessarily comparable. In order to make them comparable, a standardised survey technique is recommended. For the present study this was structured as follows: (1) The duration of the survey was limited to two successive weeks; (2) the survey concentrated on a representative selection of habitats, each of which was visited during a comparable amount of time; and (3) the observations were always made by the same person (HS).

The same procedure had been followed for the exploration of Santorini in 1990, except that for the Santorini archipelago literature reports were already available, which have been included in the evaluation. However, it can be assumed that they have little effect on the results in view of the small number of earlier published species records.

For identification, mainly the keys of Clauzade and Roux (1985) and Purvis & al. (1992) have been used. Taxonomic concepts and indications of geographical distribution are taken from Purvis & al. (1992), Nimis (1993) and Hafellner (1995), with additions and corrections from recent treatments as indicated.

Knowledge of the distribution of lichen species is still very incomplete. While Europe and, to a lesser extent, North America are fairly well-known, the rest of the world is very incompletely known, in particular as microlichens are concerned. Consequently many lichen species with a currently known distribution restricted to Europe and North America are likely to show up on other continents. This was recently demonstrated, for example, for the genera *Catapyrenium,*

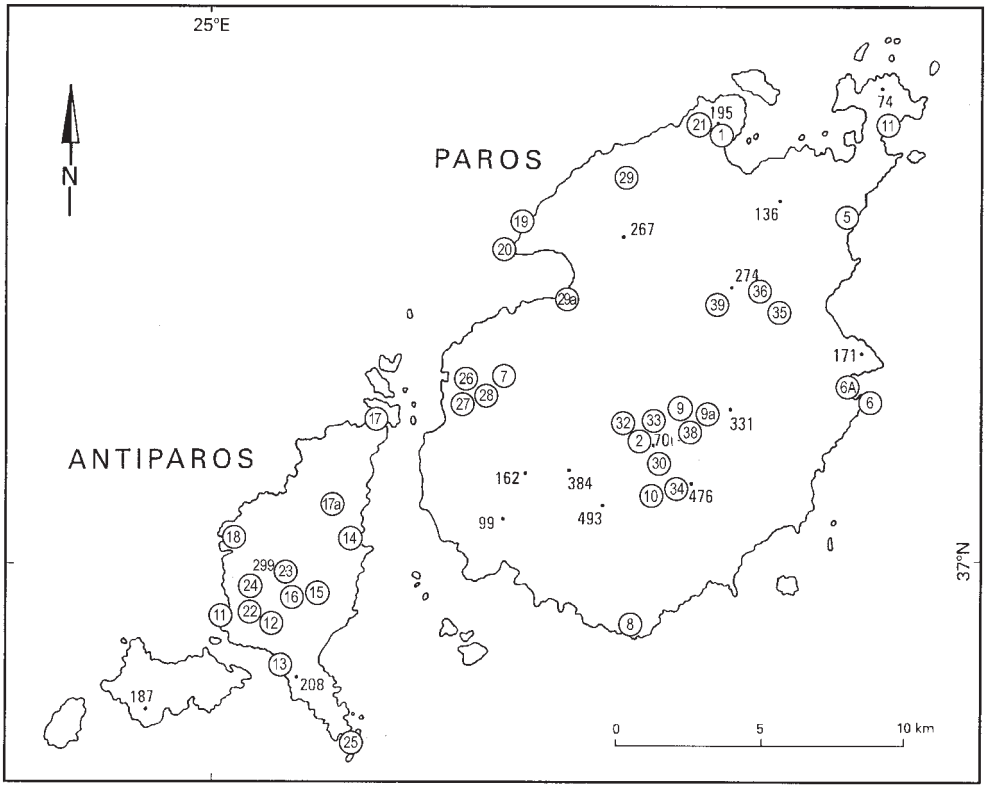

Fig. 4. Map of the Paros island group, with situation of the investigated localities.

Diploschistes and *Lecanora* (see Breuss 1990, Lumbsch 1989, 1994), in that most species were found to have a wide range spread over several continents. In the case of the Paros lichen flora, incomplete distribution knowledge is likely to cause a wrong impression of phytogeographical relations. Affinities with better-known areas, such as the oceanic coasts of Europe or the W Mediterranean will be apparent, while affinities with the E Mediterranean may remain unnoticed because pertinent species will often be unreported from that region or even undescribed. Therefore a phytogeographical analysis can be only provisional at present.

The term Mediterranean is used here for the area surrounding the Mediterranean Sea, thus including S Europe, N Africa and parts of the Near East (SW Asia).

List of collecting localities on the Paros island group

All localities are situated in Greece: Aegean Islands, Nomos Kikladon, Eparchia Parou.

(1) 12 June 1998 – Paros. Kolimvithres, c. 2 km W of Naoussa, S side of Mt Vigla; 37°07.5'N, 25°13'E; alt. c. 25 m. – Largely barren granite slope with little valleys.

(2) 13 June 1998 – Paros. Mt Ajii Pantes, highest point of island; 37°02'N, 25°11.5'E; alt. 750 m. – Tall, E facing limestone cliff; low scrub with low limestone outcrops.

(2a) 13 June 1998 – Paros. Mt Ajii Pantes, highest point of island; 37°02'N, 25°11.5'E; alt. c. 700 m. – Low scrub with gneiss rock outcrops.

(3) 13 June 1998 – Paros. Between Lefkes and Mt Ajii Pantes; 37°03'N, 25°12.5'E; alt. 550 m. – *Ficus carica* trees in cultivated field.

(4) 14 June 1998 – Paros. Santa Maria, Ormos Alikis; 37°08.5'N, 25°17'E; alt. 1 m. – Coastal sand dunes with scrub dominated by *Juniperus oxycedrus* subsp. *macrocarpa*.
(5) 14 June 1998 – Paros. W of Ambelas; 37°06.5'N, 25°15.5'E; alt. 30 m. – Limestone wall among fields.
(6) 14 June 1998 – Paros. E flank of Mt Ajios Antonios, near Marpissa; 37°03'N, 25°16'E; alt. 80 m. – Volcanic rock outcrops in low scrub on exposed ridge at the coast.
(6a) 14 June 1998 – Paros. Ormos Molos, E of Marmara; 37°03.5'N, 25°16'E; alt. 1 m. – On 15 cm diam. trunk of *Juniperus oxycedrus* subsp. *macrocarpa* tree near the beach.
(7) 15 June 1998 – Paros. Petaloudes, "Butterfly Valley" near Psichopiana; 37°02.5'N, 25°03'E; alt. 150 m. – Orchard with shady limestone walls in humid, shallow valley.
(8) 15 June 1998 – Paros. S side, Mt Tripiti; 36°59'N, 25°11'E; alt. c. 100 m. – Open *Juniperus* scrub with low limestone outcrops on exposed hill at the coast.
(9) 15 June 1998 – Paros. Between Lefkes and Mt Ajii Pantes; 37°02.5'N, 25°12.5'E; alt. c. 450 m. – Gneiss rock outcrops in N facing slope with scarce vegetation.
(9A) 15 June 1998 – Paros. Between Lefkes and Mt Ajii Pantes; 37°02.5'N, 25°12.5'E; alt. c. 450 m. – *Cupressus sempervirens* tree trunks in vineyard in N facing valley.
(10) 15 June 1998 – Paros. Along road from Lefkes to Aspro Chorio, in Kavouropotamos valley; 37°01'N, 25°12'E; alt. c. 300 m. – Gneiss rock outcrops in S facing slope with low scrub.
(11) 16 June 1998 – Antiparos. Ajios Jeorjios, NW of the village; 36°58.5'N, 25°01.5'E; alt. c. 50 m. – Schistose rock outcrops on top of coastal hill with low scrub.
(11a) 16 June 1998 – Antiparos. Ajios Jeorjios, Cape Trachilos; 36°59'N, 25°01'E; alt. c. 10 m. – Schistose rock with patches of halophilous vegetation at the coast.
(12) 16 June 1998 – Antiparos. E of Ajios Jeorjios; 36°58.5'N, 25°02.5'E; alt. c. 100 m. – Marble rock outcrop on hill top with low scrub.
(13) 16 June 1998 – Antiparos. c. 1 km SE of Ajios Jeorjios; 36°58'N, 25°02.5'E; alt. c. 50 m. – Volcanic rock outcrops at the coast on W facing slope with low scrub.
(14) 16 June 1998 – Antiparos. At the coast c. 5 km S of Antiparos-town; 37°00'N, 25°04.5'E; alt. 1 m. – Epiphyte on *Tamarix arborea* trunk.
(15) 17 June 1998 – Antiparos. Hill above Spileo Stalaktiton; 36°59.5'N, 25°04'E; alt. 150-200 m. – Marble rock outcrops on hill top and S facing slope with low scrub.
(16) 17 June 1998 – Antiparos. Along road from Spileo Stalaktiton to central western valley; 36°59.5'N, 25°03.5'E; alt. c. 150 m. – Marble rock outcrops on N facing slope with low scrub.
(17) 17 June 1998 – Antiparos. N margin of Antiparos town; 37°03'N, 25°05'E; alt. c. 5 m. – Epiphyte on dead branches of *Juniperus oxycedrus* subsp. *macrocarpa* in open scrub on coastal sand dunes.
(17a) 17 June 1998 – Antiparos. Along road from Panajia to central western valley; 37°01'N, 25°04'E; alt. c. 50 m. – Epiphyte on *Olea europaea* in cultivated field.
(18) 17 June 1998 – Antiparos. Cape Kalojeros; 37°00.5'N, 25°01.5'E; alt. c. 150 m. – Schistose rock outcrops on exposed coastal hilltop with low scrub.
(19) 17 June 1998 – Paros. Peninsula NW of Paros town, Tilevrafos; 37°06.5'N, 25°09'E; alt. c. 50 m. – Marble rock outcrop and N facing cliff on coastal hilltop with low scrub.
(20) 17 June 1998 – Paros. Cape Ajios Fokas, NW of Paros town; 37°05.5'N, 25°08'E; alt. c. 5 m. – Marble rock outcrop with scarce halophytic vegetation at the coast; micaschist stones in low scrub.
(21) 17 June 1998 – Paros. Kolimvithres, c. 2 km W of Naoussa, S and W side of Mt Vigla; 37°08'N, 25°12.5'E; alt. c. 50-150 m. – Gneiss rock outcrops in low scrub; schistose rock outcrops on hilltop with low scrub.
(22) 19 June 1998 – Antiparos. Along road from Ajios Jeorjios to Mt Ajios Ilias chapel, about halfway; 36°59.5'N, 25°02.5'E; alt. 170 m. – Cinder heaps of ancient mining activities, on hill slope with low scrub.
(23) 19 June 1998 – Antiparos. Mt Ajios Ilias, in centre of island, near chapel; 36°59.5'N, 25°03'E; alt. c. 290 m. – Schistose rock outcrops in low scrub on hilltop.

(24) 19 June 1998 – Antiparos. Sideway towards W coast from road from Ajios Jeorjios to Mt Ajios Ilias, about halfway; 36°59.5'N, 25°02.5'E; alt. c. 150 m. – Metalliferous schist outcrops in low scrub on N facing slope; large schist outcrop in low scrub near valley bottom on S facing slope.
(25) 19 June 1998 – Antiparos. S point of the island, Cape Kavos Skilos, near Faneromeni chapel; 36°56.5'N, 25°04.5'E; alt. 5 m. – Weathered volcanic rock outcrops on low, largely barren coastal hill.
(26) 20 June 1998 – Paros. Hill W of monastery Christo Dasous; 37°03.5'N, 25°07.5'E; alt. c. 200 m. – Marble rock outcrops on hilltop with low scrub.
(26a) 20 June 1998 – Paros. Hill W of monastery Christo Dasous; 37°03.5'N, 25°07.5'E; alt. c. 200 m. – Ultramafic rock stones on E facing slope with low scrub.
(27) 20 June 1998 – Paros. Chapel c. 300 m S of monastery Christo Dasous; 37°03'N, 25°08'E; alt. c. 200 m. – Marble rock cliffs on hilltop with low scrub.
(28) 20 June 1998 – Paros. Field c. 200 m SE of monastery Christo Dasous; 37°03'N, 25°08.5'E; alt. c. 250 m. – Soil crusts in field with calcareous stones.
(29) 21 June 1998 – Paros. Hill Gorakas, c. 4 km NE of Paros town; 37°07.5'N, 25°11.5'E; alt. c. 150-200 m. – Schistose rock outcrops on W and S facing slopes and ridge of coastal hill with low scrub.
(30) 21 June 1998 – Paros. c. 500 m S of Mt Ajii Pantes; 37°02'N, 25°11.5'E; alt. c. 600 m. – Marble outcrops on W facing slope with low scrub.
(31) 22 June 1998 – Paros. Valley c. 1 km N of Lefkes; 37°04'N, 25°13'E; alt. c. 200 m. – Epiphytic on old *Olea europaea* trees in cultivated fields.
(32) 22 June 1998 – Paros. Mt Ajii Pantes, highest point of island, S side; 37°02'N, 25°11.5'E; alt. c. 700 m. – Largely barren, NE facing marble outcrop.
(32a) 22 June 1998 – Paros. Mt Ajii Pantes, highest point of island, S side; 37°02'N, 25°11.5'E; alt. c. 700 m. – Outcrops of transition rock marble-gneiss on slope with low scrub.
(33) 22 June 1998 – Paros. Near monastery Ajios Ioannis, W of road Lefkes-Ajii Pantes; 37°03'N, 25°12'E; alt. c. 500 m. – Epiphytic on *Olea europaea*, *Quercus ithaburensis* subsp. *macrolepis, Cupressus sempervirens, Morus alba*, in cultivated fields in valley.
(34) 22 June 1998 – Paros. Along road from Lefkes to Aspro Chorio, in Kavouropotamos valley; 37°01'N, 25°12'E; alt. c. 350-400 m. – Gneiss rock outcrops in S facing slope with low scrub.
(35) 22 June 1998 – Paros. Along road from Prodromos to Isternia, about halfway; 37°05'N, 25° 14.5'E; alt. c. 40 m. – Ultramafic rock stones in road bank with low scrub.
(36) 22 June 1998 – Paros. W facing hillslope near Isternia; 37°05'N, 25°14.5'E; alt. c. 50 m. – Ultramafic rock stones in road bank with low scrub.
(38) 24 June 1998 – Paros. Between Lefkes and Mt Ajii Pantes; 37°02.5'N, 25°12.5'E; alt. c. 450 m. – Gneiss rock outcrops in N facing slope with low scrub and vineyards.
(39) 24 June 1998 – Paros. Kostos, along road to Naoussa; 37°06'N, 25°14'E; alt. c. 50 m. – Ultramafic rocks and stones in road bank with low scrub.

Results

A. Analysis of the flora of the Paros group

Altogether, c. 1140 records were made, which concern 230 identified species and 38 species not as yet identified with certainty. This gives a total lichen flora of 268 species. A comparison with Capraia and Marettimo, much smaller islands in the W Mediterranean with 310 and 291 reported species respectively (Nimis & al. 1990, 1994), confirms that the Aegean islands have a less diverse lichen flora, as found before for Santorini (Sipman & Raus 1995).

Tab. 1 shows that a high percentage of the species recorded here from Paros has been found only once. Some of them may be restricted to uncommon habitats that have been visited only once, e.g. *Arthonia mediterranea* and *Opegrapha durieui* found on calcareous coastal N facing cliffs. Another explanation is that a large part of the flora is uncommon and represented in the

Tab. 1. Frequency of the lichen species observed on Paros. Occasionally found species (1×) are by far the largest category.

frequency	1×	2×	3×	4×	5×	6×	7×	8×	9×	10×
species number	100	39	23	25	12	18	12	11	7	9

Tab. 2. Substrate preference of the Paros lichen flora. The second column contains the absolute number of species found on the given substrate type; the third column the absolute number of only those species found on two or more substrate types. The figures in the third column are usually much lower than those in the second column, indicating that most lichens are substrate-specific.

substrate	all species	facultative species
epiphytic	62	15
terrestrial	37	8
saxicolous	195	24
calcareous	71	24
ultramafic	16	14
siliceous	142	33
volcanic	65	58
crystalline	130	66

Tab. 3. Correlation between species number and elevation in the Paros lichen flora. After a correction for the unequal numbers of investigated localities (third column) a gradual increase with elevation is shown.

altitudinal zone	species	localities	species per locality
0-49 m	117	10	11.7
50-200 m	174	21	8.3
201-400 m	65	5	13
401-600 m	78	6	13
601-750 m	123	5	24.6

survey only by chance. In that case, the survey of the Paros lichen flora is incomplete, since many further uncommon species will be absent by chance. Taking both explanations in consideration, it can safely be assumed that the total lichen flora of Paros is over 300 species.

Tab. 2 shows that most of the differentiated substrates have a specific flora, sharing few species with other substrate types (facultative species). The exceptions are ultramafic and volcanic rock. Ultramafic rock is colonised mainly by species that also occur on calcareous rock. Only *Caloplaca* aff. *ferrarii* was recorded only once and thus was not found on other substrata. Volcanic rock is largely colonised by the same species as occurring on crystalline rock. Not found on other substrata are *Caloplaca conglomerata, Dimelaena radiata, Lecidella chodati, Lichinella cribellifera* and *Peltula omphaliza*. However, most of these were found only once, so that little can be said about their substrate preference; *Lecidella chodati* and *Lichinella cribellifera* were found twice and three times respectively so that their preference for volcanic rock is more clear.

Tab. 3 shows that the highest species numbers were at altitudes below 200 m and above 600 m. With a correction for the somewhat unequal collecting effort at the various zones, an increasing diversity with increasing elevation becomes apparent.

Most species have a wide altitudinal range or are restricted to the zones where most species are found, i.e. below 200 m.

Preference for higher altitudes is shown by 65 species, which have been found only above 300 m. They are predominantly epiphytes and species of siliceous, crystalline rock. Those with the clearest altitudinal preference (at least three times) include *Caloplaca haematites, Haematomma*

nemetzii, Ingvariella bispora, Pertusaria lecanorodes, Phlyctis argena, Rhizocarpon geographicum, Rinodina luridescens and *Verrucaria calciseda*.

Preference for low altitudes is shown by 35 species, which have been found only below 50 m. Most of them are occasional, however, being found only once. The scarcity of obligate lowland species reflects the absence of a clear lichen zonation on maritime rocks. No lichens were found in the intertidal zone, and the lichens of the spray zone tend to spread far away from the coast and far uphill, as shown by, for example, *Roccella phycopsis* and *Dirina massiliensis*. The sometimes dramatic altitudinal extension, up to more than 100 m, of halophytic vegetation along rocky coasts is a common feature throughout the Aegean (see, e.g., Höner 1991: 143). The largest ecological group not exceeding 50 m of altitude is formed by 13 epiphytic species collected in coastal *Juniperus* scrub, which seems to have a specialised lichen flora comprising species of *Arthonia, Bacidia, Bactrospora, Opegrapha, Ramalina* and *Rinodina*. This is in accordance with the supposition that this scrub represents remnants of primary vegetation. The only species observed more than twice at low altitude, *Sarcogyne regularis,* occurred on stones in road banks. It depends probably on the more intense disturbance in this altitudinal belt where most human settlements and agricultural fields are situated. A few more, less frequent species have similar ecological preferences, such as *Lecanora crenulata*. Two species belong to the lichen flora typical of calcareous cliffs at the Mediterranean coasts, viz. *Arthonia meridionalis* and *Opegrapha durieui*. The remaining lowland species are mostly from siliceous, crystalline rock.

For a provisional phytogeographical analysis, the following categories have been distinguished:

1. Pantemperate: occurring more or less widespread on both hemispheres.
2. Holarctic: occurring on all three continents of the northern hemisphere. The species may be much more common on one continent than on the other.
3. European-North American: occurring in Europe and North America, sometimes with range extensions into adjacent Asia and Africa. The species may be much more common on one continent than on the other.
4. European: known only from a larger part of Europe, sometimes also from the extra-European Mediterranean and Macaronesia.
5. W European-Mediterranean: occurring in W Europe and the Mediterranean, sometimes with range extensions into Macaronesia, SE Europe and/or W Asia.
6. Mediterranean: restricted to this area, sometimes with range extensions into Macaronesia, SE Europe and/or W Asia.
7. E Mediterranean: Mediterranean species occurring only east of Italy, sometimes with range extensions into SE Europe and/or W Asia.
8. Aegean: occurring only in the area of the Aegean Sea.

Tab. 4 shows that over half of all Paros species have a very wide distribution, occurring world-wide or at least in various parts of the northern hemisphere. Only 40 % seem restricted to Europe and adjacent areas, and less than a third are centred in the Mediterranean. Only few species seem restricted to a part of the Mediterranean. A very similar composition is found for Santorini.

The following species are restricted to the E Mediterranean: *Caloplaca veneris*, *Dirina cretacea*, *Haematomma nemetzii* and *Neofuscelia attica*. The first three and *Neofuscelia attica* belong to recently revised groups and their restricted distribution can be considered as proven. Their range seems to centre around the Aegean.

Three species are Aegean endemics, according to current knowledge: *Lecidella aegaea*, *Pertusaria parotica* and *P. pentelici*. It is likely that they have really such a restricted distribution and are not merely overlooked. The first is a member of a recently revised group, the second produces large, conspicuous thalli, and the third is a long-known species with an unusual character, i.e. grey spores.

The Aegean endemics are equally represented on Santorini and on Paros. E Mediterranean taxa are represented only by *Haematomma nemetzii*, found on Paros.

Tab. 4. Representation of phytogeographical elements in the lichen flora of Paros and Santorini, based on species numbers (in %) with sufficiently known distribution range.

	Paros [%]	Santorini [%]
Pantemperate	27	24
Holarctic	14	16
European-North American	17	19
European	11	10
W European-Mediterranean	8	9
Mediterranean	19	18
E Mediterranean	2	3
Aegean	1	2
Total number of species	100 % = 214	100 % = 164

A comparison of the main islands of the Paros group, Paros and Antiparos, shows that the first has less than twice as many species, 268 vs. 141, while their land surfaces are 194 and 35 km², respectively (Tab. 5). This confirms a common observation that the species number does not decline proportionally with island size.

Most of the species which are present on Paros and lacking on Antiparos appear to be infrequent, their frequencies being 1× = 102; 2× = 24; 3× = 11; 4× = 5; 5× = 1; 6× = 4. This makes it plausible that most are absent from or overlooked on Antiparos by chance. Only for the absence of a minority of these species from Antiparos other explanations seem likely. 17 species may be restricted to higher altitudes since they are, on Paros, not found below 300 m, e.g. *Caloplaca haematites, Haematomma nemetzii, Pertusaria lecanorodes, Phlyctis* spp., *Rhizocarpon geographicum* and *Rinodina luridescens*. The absence of *Catapyrenium squamulosum* and *Placidiopsis cinerascens* may be explained by the scarcity of their habitat on Antiparos, namely soil on calcareous rock. In contrast, the absence of *Lecanora prominens, L. pruinosa, Parmelina tiliacea* and in particular *Aspicilia radiosa* is less easily explainable, since they are otherwise widespread species.

Few species, on the other hand, appear to be absent from Paros or at least over-represented on Antiparos. Among the absentees, only one has been found more than once, i.e. the epiphytic *Arthothelium crozalsianum*. Its presence only on Antiparos may be explainable by a preference for maritime conditions, like several of the species over-represented on Antiparos (with more than half of all records coming from Antiparos), e.g. *Buellia stellulata, Dirina cretacea, Lecidella chodatii, Roccella phycopsis* and *Solenospora vulturiensis*.

Tab. 5. Representation of the joint lichen flora (325 species) on the larger islands of the Paros and Santorini groups, specified for selected substrate groups. Species numbers in %. Paros and Antiparos belong to the Paros group, Thira and Thirasia to the Santorini group.

	Paros	Thira	Anrtiparos	Thirasia	
Island size [km²]	194	88	35	9	
epiphytic [%]	87	49	25	18	100 % = 71
terrestrial [%]	77	60	23	23	100 % = 48
saxicolous [%]	81	55	46	23	100 % = 240
calcareous [%]	71	64	34	2	100 % = 101
ultramafic [%]	100	–	–	–	100 % = 16
siliceous [%]	84	51	50	31	100 % = 170
volcanic [%]	60	79	39	49	100 % = 109
crystalline [%]	100	–	58	–	100 % = 109
all species [%]	83	56	44	23	100 % = 325

B. Comparison between Paros and Santorini

Tab. 5 shows that the differences in species numbers between the main islands of the Santorini and Paros island groups can be explained mostly by assuming a correlation between island size and species number.

A comparison of the main substrate types shows that most have roughly the same relation between island size and species number. The reverse is found for the flora on volcanic rock, which is richer on Santorini than on Paros, and richer on Thirasia than on Antiparos. The epiphytic lichen flora is disproportionately richer on Paros, while the terrestrial and the calcicolous flora show a lower increase in species number. In these cases apparently the availability of suitable substrate is over-ruling the island size effect. Volcanic rock is much more common on Santorini, and trees and shrubs more frequent on Paros. Terrestrial and calcareous habitats are available to a reasonable extent on both island groups and have rather similar species numbers. The slightly higher figures for Paros can be explained by the much larger area of such substrates. On Santorini, calcareous rock is restricted to three outcrops in the southeastern part of Thira, and soil over limestone is equally scarce.

The presence of two additional rock types on Paros, ultramafic and crystalline, does not contribute much to an increase in its lichen flora as compared with Santorini. As already mentioned, the flora of ultramafic rock is largely the same as on calcareous rock, while that on crystalline rock is largely the same as on volcanic rock.

At species level, differences between Paros and Santorini concern mostly species found only once or twice, of which it can be assumed that the specimen-based documentation of their presence is by chance. Among the 37 more frequent species on Paros that are absent on Santorini (Tab. 6) is one group for which the substrate seems lacking on Santorini. These are the species found only on

Tab. 6. List of more frequent differentiating species (found in >2 localities) of the lichen floras of Paros and Santorini.

Paros only

Acarospora hilaris (3)
Arthothelium crozalsianum (3)
Aspicilia cheresina var. *justii* (3)
Aspicilia radiosa (6)
Aspicilia sp. A (4)
Buellia aff. *sequax*? (8)
Buellia cf. *vilis*? (8)
Caloplaca arenaria (7)
Caloplaca cf. *flavescens* (4)
Caloplaca interna? (3)
Caloplaca cf. *marina* (11)
Clauzadea immersa (6)
Haematomma nemetzii (3)
Ingvariella bispora (3)
Lecanora bolcana (7)
Lecanora prominens (7)
Lecidea sarcogynoides (4)
Lichinella cribellifera (3)
Lichinella stipatula (5)
Miriquidica deusta (8)
Parmelina tiliacea (4)
Pertusaria lecanorodes (5)
Pertusaria cf. *pentelici* (4)
Phlyctis argena (5)
Physcia albinea (3)
*Placidiopsis cinerasc*ens (4)
Polysporina simplex (5)
Rhizocarpon geographicum subsp. *geographicum* (3)
Rinodina alba (7)
Rinodina immersa (6)
Rinodina luridescens (3)
Rinodina obnascens (8)
Squamarina lentigera (3)
Thelomma siliceum (4)
Verrucaria calciseda? (3)
Verrucaria aff. nigrescens (3)
Xanthoparmelia tinctina (4)

total 37 species, 9 poorly known

Santorini only

Acarospora umbilicata (9)
Caloplaca citrina (*10)*
Collema auriforme (3)
Lecanora conferta (4)
Lecanora gangaleoides (3)
Lecidea fuscoatra (5)
Pertusaria flavicans (3)
Solenopsora holophaea (4)
Stereocaulon vesuvianum (3)
Tornabea scutellifera (3)

10 species

granitic or siliceous crystalline rock, viz. *Acarospora hilaris, Caloplaca arenaria, Lecidea sarcogynoides* and *Physcia albinea*. The absence of the other species is less easy to understand, since they are mostly widespread in the Mediterranean and suitable substrate seems present on Santorini. Some of them are even known to be pioneers, e.g. *Polysporina simplex*.

The number of more frequent species found on Santorini but not on Paros is 10 (Tab. 6). This includes not only the pioneer species of lava as recognised by Sipman & Raus (1995), viz. *Lecanora conferta* and *Stereocaulon vesuvianum,* but also species from older lava such as *Acarospora umbilicata, Caloplaca citrina, Lecidea fuscoatra, Lecanora gangaleoides, Pertusaria flavicans* and *Tornabea scutellifera*, together with *Collema auriforme* found on limestone and *Solenopsora holophaea* found on soil. Since all these are widespread and common species in the Mediterranean, there seems to be no convincing explanation for their absence from Paros.

A weak tendency can be noted for the lichen flora of Paros to have less species with means for vegetative reproduction. While the number for Santorini is 32 species or 18 %, on Paros they are only 34 or 13 %. They include a few remarkable cases: while sorediate *Pertusaria flavicans* occurs on Santorini, a non-sorediate counterpart occurs on Paros, provisionally named here *P. lecanorodes; Rinodina obnascens* is usually isidiate in the W Mediterranean (Mayrhofer 1984), while all Paros material is non-isidiate. *Pertusaria monogona* is usually sorediate, but not the material on Paros.

Discussion

The above observations indicate that the difference in species numbers between Paros and Santorini can be explained by the differences in size of these island groups and by differences in substrate availability.

There is no evidence that the island group with a lichen cover developed only since 3500 years ago harbours less species than the island group with a vegetation cover continuous since the Tertiary. Apparently the 3500 years that have passed since the Santorini eruption were sufficient for the re-establishment of a flora of similar diversity as on neighbouring island groups in the Central Aegean. Even species with a very restricted range such as *Lecidella aegaea, Neofuscelia attica, Pertusaria parotica* and *P. pentelici* have established in this time. Perhaps this similarity in lichen flora is a result of the strong human influence on Paros, which may have led to the disappearence of the most sensitive species and the survival mainly of species which establish themselves quickly in an unstable and eroding environment.

Some of the differences in floristic composition can be related to differences in substrate availability. Paros has more shrubs and trees, in particular in the mountains where the climate is more suitable for epiphytic lichens, and accordingly more epiphytic species have been found on Paros than on Santorini. Likewise, Santorini has more species growing on volcanic rock.

For most of the differentiating species (Tab. 6) no evident explanation is found. Slight climatic differences may be responsible in some cases. This may affect more moisture-demanding species like *Solenopsora holophaea* and *Tornabea scutellifera*, which are present on Santorini and absent from Paros. However, they are widespread in the Mediterranean and there seems to be no reason why they should be not be present, albeit less frequently, in more humid sites of Paros. Another possible way of explanation would be by postulating differences in the phytogeographical origin of the flora of both islands. However, the close vicinity of these island groups, and the presence of local taxa like *Pertusaria parotica* and *P. pentelici* on both, makes this unlikely. Therefore, the most probable explanation seems to be that these floristic differences are random effects, as recorded frequently for island biota (for details with respect to the Aegean, see Runemark 1969).

Annotated species list of the Paros archipelago

The figures in brackets refer to localities specified above and shown in Fig. 4. They are followed by collection numbers *(Sipman no. & Raus)* and standard abbreviations of the herbaria where material is

deposited, unless deposited only in B. Some specimens are deposited with S. A. Pirintsos and will be included in the Herbarium of the Natural History Museum of Crete, University of Crete, Heraklion. Where the collection number is preceded by "in", the specimen is filed under another species name.

Species marked with an asterisk (*) are probably new to Greece. The statement is under reserve, since no checklist for the area exists and no complete literature survey could be made in the framework of the present study. All listed taxa are new to the Paros island group.

The incompletely identified taxa included in the evaluation above have been added in non-bold italics.

Acarospora fuscata (Nyl.) Arnold
(10) *42833;* (34) *43355*. – Paros, at 300-400 m on exposed gneiss rock outcrops on S facing slope in Kavouropotamos valley. – World distribution: widespread in the temperate and cold areas of the northern hemisphere.

Medulla C+ red; TLC: gyrophoric acid *(42833, 43355).* This species seems close to *A. umbilicata* by the shape of its apothecia and the C+ red medulla. Differences are in the more lobulate margins and the frequent white pruina in *A. umbilicata*. In contrast to the material of this group from Santorini (identified as *A. umbilicata*, Sipman & Raus 1995: 415), the Paros material completely lacks white pruina, and its areoles are not or scarcely lobulate. Therefore it has been identified with *A. fuscata*. However, some specimens from Santorini with scarce pruina and scarcely lobed areoles are very similar.

Acarospora hilaris (Dufour) Hue
(1) *42513;* (21) *43043* [ATHU, B]; (29) *43195*. – Paros, at 25-200 m on more or less vertical faces of granitic rock on the S slope of coastal hill chain NE of Paros town. – World distribution: Mediterranean, from Spain to Turkey.

TLC: rhizocarpic acid *(42513, 43043)*. The epanorin-containing strain, known from adjacent Turkey (Huneck & al. 1992), was not found. Elongated marginal lobes, quite variable in this species, are more or less absent in the Paros material.

Acarospora microcarpa (Nyl.) Weddell
(1) in *42503* [ATHU]; (11) *42872* [ATHU, B]; (29) *43224* [ATHU]; (29) *43233*. – Paros and Antiparos, at 25-200 m on slanting faces of exposed granitic or schistose rock outcrops near the coast. – World distribution: Mediterranean, mainly in the western part, but extending to the Aegean (Sipman & Raus 1995: 415).

Apparently a youth parasite on *Diploschistes euganeus,* although the host is not visible in all specimens.

****Acarospora scotica*** Hue
(29) *43246* [ATHU, B]; (34) in *43344*. – Paros, at 150-400 m, on exposed schistose or gneiss-like rock outcrops. – World distribution: S France, Spain and Italy, now also recorded for Greece, perhaps also North America.

The material differs from the description by Clauzade & Roux (1981) by the small areoles, rarely surpassing 0.5 mm, and the absence of ascocarps.

****Acarospora subrufula*** (Nyl.) H. Olivier
(11) in *42845;* (29) *43198*. – Paros and Antiparos, at 50-200 m on exposed schistose rock outcrops near the coast, on slanting faces. – World distribution: W and SW Europe, from the British Isles to Spain and Sardinia, now also recorded for Greece.

Acarospora veronensis Massal.
(6) *42712* [ATHU, B]; (22) *43063*. – Paros and Antiparos, at 80-170 m on exposed volcanic rock and cinder, on slanting faces. – World distribution: widespread circumboreal-temperate.

The identification of no. *43063* is somewhat uncertain, because the areoles have strongly lobulate margins, somewhat like in *A. umbilicata*.

Acarospora sp. div.? indet.
(1) in *42484* [ATHU], in *42501,* in *42508,* in *42517,* in *42531;* (10) in *42832;* (11) *42856* (c. ap.); (13) *42923* (c. ap.); (23) *43080* (c. ap.); (29) *43249* (c. ap.), *43213*. – Paros and Antiparos, at 25-300 m on exposed schistose, granitic or volcanic rock, usually overgrowing other lichens.
Medulla C-. The material is very variable and may belong to several species.

Anaptychia ciliaris (L.) Massal.
(2) *42592* [ATHU]; (18) *42994;* (32) *43291;* (38) *43404*. – Paros and Antiparos, at (150-) 450-750 m, on strongly wind-exposed, schistose or gneiss-like rock outcrops or epiphytic in exposed dwarf shrubs *(Rhamnus lycioides* subsp. *oleoides)*. – World distribution: temperate Europe, southward to the Canary Islands, N Africa and eastward to the Caucasus.

Anaptychia runcinata (With.) J. R. Laundon
(10) *42834;* (38) *s.n.* – Paros, at 300-450 m, on exposed, gneiss-like rock outcrops in the interior. – World distribution: Mediterranean-Atlantic, from Norway to the Canary Islands and Turkey.

Anema prodigula (Nyl.) Henssen
(22) *43062*. – Antiparos, at 170 m on cinder stones on the soil in open dwarf scrub.
The identification is provisional.

Anthracocarpon virescens (Zahlbr.) O. Breuss
(35) *43380* [ATHU, B]. – Paros, at c. 40 m on soil in heath-land with ultramafic stones. – World distribution: Mediterranean (Breuss 1990: 133). The identification was provided by O. Breuss.

****Arthonia caesiella*** Nyl.
(4) *42668* [ATHU, B]; (4) *42672*. – Paros, at sea level on branches *(Pistacia lentiscus, Juniperus oxycedrus* subsp. *macrocarpa)* in scrub on coastal sand dunes. – World distribution: known so far from Mediterranean France, now also recorded for Greece.

Arthonia meridionalis Zahlbr.
(19) *43025*. – Paros, at 50 m on N facing coastal marble cliff. – World distribution: coastal rocks in the Mediterranean from Portugal to Greece (Egea 1989: 85).

****Arthonia muscigena*** Th. Fr.
(4) *42666a*. – Paros, at sea level on *Pistacia lentiscus* branches in scrub on coastal sand dunes. – World distribution: lowland of W Europe, now also recorded for Greece.

Arthonia varians (Davies) Nyl.
(1) in *42509* [ATHU, B, herb. Pirintsos]; (11) *42841;* (21) *43055* [ATHU]; (29) *43202*. – Paros and Antiparos, at 25-200 m on slanting faces of exposed granitic or schistose rock outcrops. – World distribution: widespread in Europe, North America.
A widespread parasite on the apothecia of both subspecies of *Lecanora rupicola*.

****Arthothelium crozalsianum*** (B. de Lesd.) B. de Lesd.
(15) *42966;* (17) *42986;* (17a) *42992* [ATHU, B]. – Antiparos, at 5-200 m as epiphyte on (often dead) branches and wood of scattered shrubs and trees *(Juniperus oxycedrus* subsp. *macrocarpa, Olea europaea)*. – World distribution: Mediterranean (Grube & Giralt 1996: 20).

Aspicilia calcarea (L.) Mudd
(2a) in *42648;* (8) *42777* [ATHU]; (12) *42894;* (15) in *42960;* (16) *42973* [ATHU, B]; (23) in *43078;* (26) *43142;* (27) in *43174* [ATHU, B]. – Paros and Antiparos, at 100-700 m on more or less horizontal faces of exposed marble rock outcrops. – World distribution: widespread in the warm-temperate zone of the northern hemisphere.

****Aspicilia cheresina*** var. ***justii*** (Servit) Clauz. & Roux
(8) *42776;* (26) *43143;* (27) *43174* [ATHU, B]. – Paros, at 100-200 m on horizontal faces of exposed

marble outcrops, a youth parasite on *Aspicilia calcarea*. – World distribution: Mediterranean.

TLC: trace of norstictic, stictic, ?cryptostictic acids *(42776, 43143, 43174)*.

Aspicilia coronata (Massal.) B. de Lesd.
(39) *43405*. – Paros, at 50 m on a calcareous stone on soil of road bank. – World distribution: Mediterranean, extending to S Sweden.

Aspicilia cupreoglauca B. de Lesd.
(1) *42509* [ATHU, B, herb. Pirintsos], *42531;* (34) *43366* [ATHU, B]. – Paros, at 25-400 m on more or less horizontal faces of exposed granitic or gneiss-like rock outcrops. – World distribution: S Europe, from Spain to Bulgaria.

TLC: norstictic, trace of connorstictic acids *(42509, 43366)*. See also note under *A. intermutans*. Probably reported before from Greece under the invalid name *Lecanora reticulata*, e.g. in Steiner 1919.

Aspicilia intermutans (Nyl.) Arnold
(1) *42478, 42480* [ATHU, B] (cf.), *42487, 42489, 42490, 42516;* (2a) *42617;* (6) *42713, 42722;* (11) *42838, 42839;* (13) *42917;* (15) *42953;* (18) *43012;* (23) *43074, 43076, 43081, 43085;* (24) *43097;* (25) *43125;* (29) *43208, 43212, 43218, 43219, 43227, 43238, 43247* [ATHU, B]; (32a) *43313* [B] (cf.), in *43314* [ATHU, B]; *(34) 43363, 43370* [ATHU, B], *43371;* (38) in *43398*. – Paros and Antiparos, at 5-700 m on more or less horizontal faces of exposed granitic, schistose or gneiss-like rock, common and widespread. – World distribution: Mediterranean region and Canary Islands.

Under this name the great majority of the *Aspicilia* specimens from siliceous substrate has been included. They show the pycnospore and ascospore size and usually also the K-reactions indicated by Clauzade & Roux (1985), as far as observed. The thallus morphology of the material is very variable, and adjacent plants often form a mosaic of different-looking individuals. This suggests that genetic differences occur and that more than one species may be involved. However, the available material did not allow a clear separation into distinct taxa. The areoles may be grey-brown to greenish grey, with or without a narrower or wider pale grey rim; sometimes this rim seems to occupy the whole surface and the areoles are completely grey. The areoles may be convex, flat or concave, with a more or less inflated margin. The apothecia are equally variable, immersed or sooner or later raised to sessile, epruinose or, less often, pruinose. Some forms are close to *A. cupreoglauca* in areole colour and presence of grey ridges and margins. However, in *A. cuproglauca* the ridges are sharper and the surface of the areoles between the ridges is more strongly concave. The available specimens were easily separable from the material of *A. intermutans* and agree well with a specimen from Sardinia in B.

The material from Santorini referred to *A. reticulata* var. *contortoides* in Sipman & Raus (1995: 415) belongs to this taxon.

While in most specimens the cortex reacts K-, K+ yellow, turning red was found in *42480* and *43313*. – TLC shows that most specimens contain norstictic and connorstictic acids, both such with K+ surface and medulla *(43313, 42480)* and such with K- surface and K+ medulla *(43074, 42478)*. A few specimens are without lichen substances *(42487, 43097, 43218),* while two samples contain stictic acid *(42953, 43212)*. There seem to be no significant morphological differences correlated with this chemical variation, therefore all three chemotypes have been included in a single species. Specimen *42516,* containing norstictic and a trace of connorstictic acids, deviates because it has the K-reactions of *A. cupreogrisea* (Th. Fr.) Hue (cf. Clauzade & Roux 1985: 178), cortex K+ and medulla K-. It has been included here because it does not differ otherwise.

Aspicilia radiosa (Hoffm.) Poelt & Leuckert
(8) *42767;* (9) *42797;* (29) *43261;* (32) *43298;* (32a) *43310* [ATHU, B]; (34) *43348* [ATHU, B]. – Paros, at 150-700 m on slanting faces of exposed weakly calcareous rock and limestone outcrops. – World distribution: holarctic, from the Boreal to the Mediterranean zone.

The material is rather variable. Plants on gneiss have shorter, flattened, blackish marginal

lobes, while plants on limestone have longer and thicker, often strongly white-pruinose marginal lobes. These variations seem to agree with type A and B of Buschardt (1979: 66). The extreme of type A is represented by *43348*, which grows as a parasite on *Aspicilia intermutans* and *A. cupreoglauca*.

Chemistry: 1. norstictic, salazinic acids (*42767,* type B); 2. salazinic acid (*42797,* type A); 3. norstictic, trace of connorstictic acids (*43348,* type A; *43310,* type A; *43298,* type B); none (*43261,* type A).

Aspicilia cf. *radiosa*
(34) *43343*. – Paros, at 350-400 m on exposed gneissic rock outcrop.

TLC: no substances found *(43343)*. The material deviates by the presence of fine, white, more or less radiate and reticulate ridges on the lobes.

Aspicilia sp. A
(1) *42523* [ATHU, B]; (23) in *43080;* (29) *43211, 43237;* (34) in *43355*. – Paros and Antiparos, at 25-400 m on exposed schistose, gneissic or granitic rock outcrops, on more or less horizontal faces.

This species is recognised by its dark grey thallus areoles with thick whitish margins. Apothecia are absent, and the medulla reacts K-. – TLC: no substances found *(42523, 43211)*. It looks like a modification of *A. intermutans*, but was clearly separable from that species.

Bacidia circumspecta (Norrlin & Nyl.) Malme
(4) *42685a* [ATHU, B]. – Paros, at sea level on branches of *Juniperus oxycedrus* subsp. *macrocarpa* in scrub on coastal sand dunes. – World distribution: W and Central Europe, now also recorded for Greece, North America.

Bacidia rosella (Pers.) De Not.
(2) *42596,* in *42597;* (24) *43108* [ATHU, B]. – Paros and Antiparos, at 150-700 m as epiphyte in dwarf scrub, e.g., on *Pistacia lentiscus*. – World distribution: Central Europe, Mediterranean, North America.

Bactrospora patellarioides (Nyl.) Almq. var. ***patellarioides***
(4) *42673* [ATHU, B], *42683*. – Paros, at sea level on *Juniperus oxycedrus* subsp. *macrocarpa* branches in scrub on coastal sand dunes. – World distribution: Mediterranean from Spain to Greece, Libya and the Canary Islands.

42673 is aberrant because of its concave discs and edged margins (in dry state).

Bagliettoa cf. *baldensis* (Massal.) Vězda
(8) *42779;* (16) *42979* [ATHU], *42980;* (19) *43020;* (26) *43150*. – Paros and Antiparos, at 50-200 m on exposed calcareous rock outcrops.

Under this name a number of specimens is provisionally included with few perithecia, which are mostly in poor condition. The best developed ones show a small, carbonised, shield-like involucrellum, while the involucrum is largely uncarbonised or weakly carbonised. The rock surface is very uneven, unlike in most endolithic *Verrucariaceae,* and shows many black pycnidia with rod-shaped pycnospores c. 4 × 0.5 µm. In some specimens only the rough surface and pycnidia are present. Similar specimens were available from Santorini.

In view of the poor condition of the material it is unclear whether it represents a single species, or perhaps degradation stages of several species.

Buellia aff. *aethalea* (Ach.) Th. Fr.
(11) *42864*. – Antiparos, at c. 50 m on exposed schistose rock outcrop, seemingly parasitic on *Buellia fimbriata*. – TLC: norstictic acid.

Buellia alboatra (Hoffm.) Th. Fr.
(1) in *42508;* (2) *42597;* (6) *42733, 42737;* (7) *42743;* (9) *42804;* (9A) in *42829;* (11) in *42869;* (11a) *42880;* (13) in *42924* [ATHU]; (15) *42954;* (18) *43003;* (20) *43039* [ATHU]; (22) *43070;*

(23) *43087, 43088;* (24) in *43101;* (25) *43126* [herb. Pirintsos]; (26a) *43172;* (29) *43252;* (33) in *43330* [ATHU]; (33) *43337a*. – Paros and Antiparos, at 10-750 m on various (siliceous) rock types and as epiphyte (on, e.g., *Cupressus sempervirens*, *Quercus ithaburensis* subsp. *macrolepis*), also on decorticated wood, common. – World distribution: widespread in the temperate zones of both hemispheres.

TLC: norstictic acid *(42804, 43087).* The species concept of Nordin (1996) has been followed, who includes both K+ and K-, and saxicolous as well as corticolous specimens in this species. This includes *Diplotomma ambiguum* (Ach.) Flagey, reported previously from Santorini (Sipman & Raus 1995: 420).

Buellia badia (Fr.) Massal.
(1) *42541* [ATHU, B]; (34) in *43365*. – Paros, at 25-400 m on exposed granitic or gneiss-like rock outcrops. *42541* on *Neofuscelia* sp. – World distribution: widespread in the temperate zones of both hemispheres.

Buellia fimbriata (Tuck.) Sheard
(1) *42485* [ATHU], *42494, 42497* [herb. Pirintsos]; (6) in *42715, 42719;* (9) *42803, 42820;* (11) in *42842;* (11) *42863;* (11a) *42883;* (13) *42915;* (18) *43013;* (21) *43051;* (23) *43082* [ATHU]; (25) *43115;* (29) *43263;* (34) *43345;* (38) *43395*. – Paros and Antiparos, at 10-450 m on various siliceous rock types, mainly on well-lit, steep to perpendicular, N exposed faces, often abundant. – World distribution: Mediterranean, California.

TLC: diffractaic acid, unidentified traces *(42494, 42820, 42863, 42883, 43013, 43082).*

Buellia punctata (Hoffm.) Massal.
(3) in *42663* [ATHU, B]; (29) *43199*. – Paros, at 150-550 m as epiphyte *(Ficus carica)* and on schistose rock. – World distribution: widespread in the temperate zones of both hemispheres.

Buellia sequax (Nyl.) Zahlbr.
(15) *42948;* (15) *42960*. – Antiparos, at 150-200 m on exposed marble rock outcrop on S facing slope. – World distribution: Mediterranean, Channel Islands.

TLC: norstictic acid (*42948*).

Buellia aff. *sequax?*
(1) *42526;* (6) in *42725;* (11a) *42878, 42882;* (13) *42928;* (20) *43042;* (25) *43132;* (26a) *43171;* (35) *43377*. – Paros and Antiparos, at 5-50(-200) m on various siliceous rock types, on exposed outcrops or scattered stones.

TLC: norstictic acid *(43042, 43377).*

The material deviates, because it does not grow on calcareous rock and the apothecia are not pruinose.

Buellia stellulata (Taylor) Mudd
(11) in *42837* [ATHU, B]; (13) *42914;* (21) *43054;* (24) *43098;* (29) *43206, 43216* [ATHU, B]. – Paros and Antiparos, at 50-200 m on exposed schistose and volcanic rock outcrops. – World distribution: Central Europe, Mediterranean, extending to the Canary Islands, North America.

TLC: 2 unidentified depsides, atranorin *(43206, 43216).*

Buellia subdisciformis (Leighton) Vainio
(2a) *42633* [ATHU]; (9) *42806* [B, herb. Pirintsos]; (11) *42843;* (18) *43000* [ATHU]; (29) *43262*. – Paros and Antiparos, at 50-450 m on exposed schistose or gneiss-like rock outcrops. – World distribution: S and W Europe, North America.

TLC: atranorin, norstictic acid, 2 unidentified spots *(42633, 42806, 42843, 43000, 43262).*

Buellia venusta (Körb.) Lettau
(8) *42774;* (15) *42951;* (19) in *43030;* (26) *43148;* (32) *43296* [ATHU]; (32a) in *43319;* (39) *43408, 43410* [ATHU]. – Paros and Antiparos, at 50-700 m on exposed calcareous rock outcrops or ultra-

mafic stones on the soil. – World distribution: throughout Europe, but chiefly Mediterranean.

The species concept of Nordin (1996) has been followed.

Buellia cf. *vilis* Th. Fr.
(1) *42521;* (6) in *42729;* (11a) in *42884;* (13) in *42913;* (20) *43040* [ATHU]; (21) *43050;* (24) *43101;* (29) *43215*. – Paros and Antiparos, at 5-200 m on schistose, granitic or volcanic rock, usually close to the soil and somewhat sheltered by surrounding vegetation.

The specimens resemble *B. vilis* by being athalline; they differ particularly in ecology.

Caloplaca
This genus is represented by a considerable number of what seem to be well-separated species. However, several of these groups do not agree well with species presented in the available literature. It is unclear whether they represent poorly known or undescribed species or locally deviating populations. Here they have been classified provisionally in order to make them available for floristic comparisons.

Caloplaca agardhiana (Massal.) Clauz. & Roux
(26) *43146*. – Paros, at c. 200 m on exposed marble rock outcrop, vertical face. – World distribution: Mediterranean?

Caloplaca alociza (Massal.) Migula
(8) *42771;* (16) *42981* [ATHU, B]; (19) *43019;* (26) *43155* [ATHU]; (32) *43302;* (39) in *43411* [ATHU]. – Paros and Antiparos, at 50-700 m on exposed marble rock outcrops and calcareous stones, on rather horizontal faces, frequent. – World distribution: Mediterranean, extending to Central Europe and Iran.

Caloplaca aractina (Fr.) Häyrén
(1) *42491* [ATHU], *42500;* (6) *42714* [B, herb. Pirintsos]; (9) *42811;* (11) *42849;* (11) *42851* [ATHU, B]; (29) *43235;* (34) *43350* [ATHU, B]. – Paros and Antiparos, at 25-450 m on exposed granitic, schistose, gneissic or volcanic rock outcrops. – World distribution: coastal regions from Scandinavia to the W Mediterranean, now also recorded for Greece, also in dry interalpine valleys.

In two specimens *(42851, 42849)* the apothecium discs are black; their epithecium is (pale) brown and the pigment reacts K+ pale violet (not dissolving, not K+ red-violet).

Caloplaca arenaria (Pers.) Müll. Arg.
(1) *42495, 42506* [ATHU], *42527;* (11) in *42838;* (13) *42921* [ATHU]; (24) *43095;* (29) *43250, 43255;* (32a) *43308;* (34) in *43355*. – Paros and Antiparos, at 25-700 m on exposed granitic, schistose or gneissic rock outcrops, often on horizontal surfaces near the soil. – World distribution: widespread in the boreal-montane zone of the northern hemisphere.

The material deviates from arctic/alpine plants by the slightly more raised apothecia with somewhat brighter red discs, and is included in this species with some hesitation.

Caloplaca aurantia (Pers.) J. Steiner
(2) in *42547;* (2a) *42650;* (8) *42781* [ATHU]; (12) *42893;* (19) *43030;* (26) *43140;* (27) in *43174* [ATHU, B]; (32) in *43298*. – Paros and Antiparos, at 50-700 m on exposed marble rock outcrops. – World distribution: Central Europe and Mediterranean, extending to North America and Asia.

Caloplaca cerina (Hedw.) Th. Fr.
(7) *42742;* (9A) *42827* [ATHU, B]. – Paros, at 150-450 m as epiphyte on tree trunks in gardens, mainly on *Cupressus sempervirens*. – World distribution: Holarctis, South America.

Caloplaca cerinelloides (Erichsen) Poelt
(4) *42665;* (4) *42680* [ATHU, B], *42687*. – Paros, at sea level on branchlets in *Juniperus oxycedrus* subsp. *macrocarpa* scrub on coastal sand dunes, mainly on *Juniperus* and *Pistacia*

lentiscus, so far known from a single locality, where it was abundant. – World distribution: widespread throughout Europe.

See also remark under *C. holocarpa*.

Caloplaca circumalbata var. ***candida*** (Stiz.) Wunder
(24) *43100*. – Antiparos, at c. 150 m on large, exposed schist outcrop. – World distribution: Mediterranean.

The species is similar to *C. variabilis* and the most conspicuous difference is the well developed, white, areolate thallus with flat or slightly convex areoles. However, one individual plant in collection *43100* shows a poorly developed thallus, which is white and areolate in part, but mostly brownish and areolate with irregular surface as in *C. variabilis*. A similar plant next to it, with a pure *variabilis*-type thallus has been identified as *C. variabilis*.

Caloplaca conglomerata (Bagl.) Jatta
(6) *42720* [ATHU, B]. – Paros, at 80 m on exposed volcanic rock outcrop on hilltop near the coast. – World distribution: Mediterranean, extending into the Alps.

The Paros specimen agrees well with material from Sardinia in B: it has a blackish, short-squamulose thallus and orange apothecium discs. The specimen reported from Thira (Sipman & Raus 1995: 416) is now considered to be a deviating form of *C. aractina* with brown apothecia.

Caloplaca coronata (Körb.) J. Steiner
(11) in *42853*. – Antiparos, at c. 50 m on exposed schistose rock outcrop on hill top. – World distribution: Mediterranean, extending to S Scandinavia and Siberia.

Caloplaca crenularia (With.) J. R. Laundon
(11) *42858* [ATHU, B]; (34) *43367*. – Paros and Antiparos, at 50-400 m on exposed schistose and gneissic rock outcrops. – World distribution: widespread in Europe, North America.

Similar to specimens from Thira treated provisionally as *Caloplaca scotoplaca* (Sipman & Raus 1995: 418). Arup (in lit.) after study of *43367* indicated that the material is closest to *Caloplaca crenularia* (With.) J. R. Laundon.

Caloplaca erythrocarpa (Pers.) Zwackh
(1) *42512;* (2a) *42618;* (2a) *42648;* (8) in *42774;* (13) *42916;* (22) *43058* [ATHU]; (24) in *43100;* (26a) *43173;* (32a) in *43307;* (32a) *43319*. – Paros and Antiparos, at 50-700 m on various rock types, gneissic, calcareous, cinder, volcanic, ultramafic, usually on loose, seemingly metalliferous stones on the soil. – World distribution: Mediterranean and Central Europe.

The material from Paros (and Thira) deviates by its thinner thallus and usually sessile, not immersed apothecia; it also grows on mineral-rich, lime-containing rock rather than on pure limestone. In this way it is different from typical *C. erythrocarpa* from W Europe.

From the picture in Wirth (1995) *C. albolutescens* looks rather similar. However, in this species the apothecia seem to have a white outer part of their margin from an early stage, while in our material such a white outer margin is present only in old apothecia.

Caloplaca aff. *ferrarii* (Bagl.) Jatta
(39) *43406*. – Paros, at c. 50 m on ultramafic stones in road bank.

The identification is uncertain, since the specimen lacks properly developed spores.

Caloplaca flavescens (Hudson) J. R. Laundon
(15) *42943a*. – Antiparos, at 150-200 m on exposed marble outcrop on hill top. – World distribution: widespread in Europe but more common in the Mediterranean.

Caloplaca* cf. *flavescens
(11) *42845;* (24) *43093;* (25) *43129;* (29) *43204* [ATHU, B]. – Paros and Antiparos, at 5-200 m on exposed schistose or volcanic rock outcrops.

The material is somewhat intermediate between *C. flavescens* and *C. saxicola*, with rather short, not very closely attached marginal lobes. It approaches *C. subsoluta* (Nyl. ex Wedd.) Zahlbr. in external morphology, differing by its more strongly developed marginal lobes. The spores measure about 12-15 × 9-10 µm with strongly swollen septa after KOH-treatment. Contrary to the available material of *C. flavescens* and *C. saxicola*, it was not found on limestone.

Caloplaca flavorubescens (Hudson) J. R. Laundon
(24) *43107* [ATHU, B]. – Antiparos, at c. 150 m as epiphyte on isolated small tree of *Pistacia lentiscus*. – World distribution: widespread in Europe, North America.

Caloplaca fuscoatroides J. Steiner
(2a) *42639* [ATHU]; (13) *42919;* (21) *43052;* (24) in *43091* [ATHU, B]; (29) *43194, 43200, 43253* (cf., no thallus.); (32a) *43314* [ATHU, B]; (34) in *43349*. – Paros and Antiparos, at 50-700 m on exposed schistose, volcanic or gneissic rock outcrops. – World distribution: Mediterranean, from Turkey to Italy.

Caloplaca grimmiae (Nyl.) H. Olivier
(34) *43349*. – Paros, at c. 350-400 m on an exposed gneissic rock outcrop. – World distribution: Holarctis.

Caloplaca haematites (Saint-Amans) Zwackh
(2) *42604* [ATHU]; (3) *42656;* (32) *s.n.;* (33) *43336* [ATHU, B]. – Paros, at 500-750 m as epiphyte on cultivated trees in gardens or on dwarf shrubs, e.g. on *Ficus carica*, *Rhamnus lycioides* subsp. *oleoides* and *Cupressus sempervirens*. – World distribution: Mediterranean, extending to W Europe, perhaps also Asia and South America.

Caloplaca holocarpa (Ach.) Wade
The name is used for a species complex that is still poorly understood (cf. Nimis 1993: 172). Here it is applied to a much smaller group than in Sipman & Raus (1995: 417). Excluded are (1) epiphytic forms with yellow-orange discs and partly grey margins containing algae, here treated provisionally as *C. pyracea;* (2) epiphytic forms with smaller, more yellowish apothecia and completely concolorous margins, here treated as *C. cerinelloides;* (3) calcicolous specimens with reddish apothecia, here included in *C.* cf. *marmorata;* (4) silicicolous specimens with indistinctly lobulate thallus margins, here included in *C.* cf. *marina;* and (5) calcicolous specimens with endolithic thallus and yellowish apothecia, here included in *C.* cf. *lactea*.

Somewhat similar species reported from Greece include *C. veneris* Roux & Nav.-Ros. (Roux & Navarro-Rosinés 1992), *C. aquensis* Houmeau & Roux (Navarro-Rosinés & Hladun 1996) and *C. navasiana* Nav.-Ros. et Roux (Navarro Rosinés & Roux 1995). No exactly similar specimens were available in our material from Paros.

Caloplaca cf. *holocarpa* A
(5) *42693;* (13) *42922*. – Paros and Antiparos, at 30-50 m on calcareous rock.

The specimens have a scarce thallus and large, reddish apothecia.

Caloplaca cf. *holocarpa* B
(5) *42689*. – Paros, at 30 m on marble stone on staple wall among fields.

This group includes specimens with scarce thallus and small, yellowish apothecia.

Caloplaca inconnexa (Nyl.) Zahlbr.
(1) *42483* [ATHU, B]; (2) *42542* [ATHU, B]; (6) in *42722;* (8) in *42766;* (24) in *43097;* (25) *43130;* (29) *43223, 43257, 43260;* (34) *43361* [ATHU]; (34) *43364*. – Paros and Antiparos, at 5-750 m on exposed calcareous, granitic, volcanic, schistose and gneissic rock outcrops. – World distribution: Mediterranean, from Morocco to Turkey.

There is no significant morphological difference among the available material between specimens on limestone (var. *inconnexa*, *42542*, *42766*) and on siliceous rock (var. *nesodes* Poelt &

Nimis, the other specimens). The host on limestone is *Aspicilia calcarea*. On siliceous rock the preferred host is a brownish form of *Aspicilia intermutans*, but seemingly different forms (species?) of *Aspicilia* may be colonized as well as *Rinodina* sp. *(43364)* and *Lecanora sulphurata*. However, the parasitic relationship is not always clear.

Caloplaca interna Poelt & Nimis?
(1) *42482;* (21) *43056;* (29) in *43199*. – Paros, at 25-200 m on exposed granitic or schistose rock outcrops. – The identification is uncertain.

Caloplaca cf. *lactea* (Massal.) Zahlbr.
(8) *42778* (no ripe spores); (12) *42891* [ATHU, B] (no ripe spores); (19) *43023;* (20) *43033;* (26) *43147;* (35) *43378*. – Paros and Antiparos, at 5-200 m on exposed calcareous and ultramafic rock outcrops and loose stones scattered on the soil.

The available specimens resemble *C. lactea* by the absence of thallus and the presence of yellow apothecia but differ by having rather thick septa which occupy about one third of the spore length. Two specimens *(43033* and *43378)* have rather brownish apothecia and seem somewhat intermediary between this species and *C.* cf. *marmorata*.

Caloplaca limitosa (Nyl.) H. Olivier
(2a) *42627;* (6) *42705;* (9) *42799;* (18) *42998* [ATHU, B]; (21) *43048;* (38) *43397* [ATHU, B]. – Paros and Antiparos, at 50-700 m on exposed gneissic, schistose or volcanic rock outcrops. – World distribution: Mediterranean, from Portugal to Italy, now also recorded for Greece.

The identification was suggested by Arup (in lit.) after study of *43048* and *43397*. The species occurs in the salt spray-belt of the Mediterranean coasts (Nimis 1993: 175). *42705* has conspicuously pruinose apothecia; it might be a shade form of this species. The species was recorded from Thira under the provisional name *C. percrocata* (Arnold) J. Steiner by Sipman & Raus (1995: 418). However, there are slight differences: the Thira material has generally more prominently yellowish apothecium margins and a more yellowish thallus.

Caloplaca cf. *marina* (Wedd.) Du Rietz
(11) *42868;* (11a) *42877* [ATHU]; (13) *42910, 42926;* (20) *43036;* (21) *43049;* (22) *43066;* (23) *43086;* (24) in *43100;* (26a) *43169* [ATHU]; (29) in *43198, 43236;* (34) *43351*. – Paros and Antiparos, at 5-400 m on exposed schistose, sometimes volcanic or ultramafic rock outcrops, usually close to the soil and sheltered by the surrounding vegetation, most frequent close to the seashore.

The material differs from coastal N European material of *C. marina* since the apothecia are somewhat larger, to c. 0.8 instead of 0.6 mm, and usually have a brownish yellow rather than orange-yellow colour. The thallus margin is usually indeterminate. On the same specimen, however, sometimes individuals occur that differ by well developed margins only. *Caloplaca subsoluta* (Nyl.) Zahlbr. is fairly similar but has reddish apothecia. Another rather close relative may be the little known *C. interfulgens* (Nyl.) J. Steiner (Arup 1997).

Part of the material from Thira included in *C. holocarpa* (Sipman & Raus 1995: 417) is very similar in morphology but its apothecia have a thicker margin and its thallus is more yellowish, contrasting with the discs. Moreover it grows on lava, while the Paros material grows mainly on schist. It seems more close to *C. maritima* (B. de Lesd.) Arup by its yellowish thallus (Arup 1997). *43066* is aberrant by its more reddish apothecia and is tentatively placed here.

Caloplaca cf. *marmorata* (Bagl.) Jatta
(12) *42890* [ATHU, B]; (16) *42975;* (27) *43182* [ATHU, B]; (35) *43373*. – Paros and Antiparos, at 40-200 m on exposed marble rock outcrops and stones.

The available specimens differ by having rather thick septa occupying about one third of the spore length. They fit well the description in Nimis & Poelt (1987: 69) by their reddish apothecia without or with scarcely visible thallus on limestone. They resemble *C.* cf. *lactea* except for the apothecium colour. However, some seemingly intermediate plants have been found, see note under *C.* cf. *lactea*.

Caloplaca polycarpa (Massal.) Zahlbr.
(32) *43300*. – Paros, at c. 700 m on exposed NE facing marble rock outcrop. – The determination is provisional.

Caloplaca pyracea (Ach.) Th. Fr.
(2) *42601;* (3) in *42662* [ATHU, B]; (4) *42675;* (8) *42760* [ATHU, B]; (8) *42782;* (9A) in *42829;* (13) *42939* [ATHU]; (17) *42984;* (33) *43335*. – Paros and Antiparos, at 1-750 m as epiphyte on twigs and trunks in various vegetation types, e.g., on *Ficus carica*, *Juniperus oxycedrus* subsp. *macrocarpa*, *J. phoenicea*, *Ceratonia siliqua*, *Cupressus sempervirens*. – World distribution: probably widespread in the temperate zone of the northern hemisphere.

See remark under *C. holocarpa*.

Caloplaca saxicola (Hoffm.) Nordin
(5) *42691;* (12) *42892;* (15) *42943* [ATHU]; (19) *43029;* (27) *43178*. – Paros and Antiparos, at 30-200 m on exposed marble rock outcrops and wall stones. – World distribution: widespread in the temperate zone of both hemispheres.

Caloplaca variabilis (Pers.) Müll. Arg.
(2a) in *42648;* (8) in *42767;* (24) in *43100;* (32a) in *43319;* (39) *43407*. – Paros and Antiparos, at 50-700 m on exposed calcareous, sometimes ultramafic or schistose, rock outcrops. – World distribution: widespread in temperate regions of the northern hemisphere.

Caloplaca velana (Massal.) Du Rietz?
(2a) *42634;* (2a) *42653*. – Paros, at 700 m on exposed calcareous rock outcrops.

The determination is uncertain, since no properly developed apothecia are present. The two poorly developed specimens have a yellow, crustose, areolate thallus and scarce, somewhat concolorous, unripe apothecia, and grew on steep faces of limestone cliffs. They are probably conspecific with the taxon called *Caloplaca dolomiticola* in Sipman & Raus (1995: 417).

Caloplaca sp. A
(1) *42528* [ATHU, B]. – Paros, at c. 25 m on exposed granitic rock outcrop, parasitic on *Aspicilia intermutans*.

This species resembles *C. inconnexa* by its apothecia but differs by the larger, indistinct thallus, which seems to destruct the *Aspicilia* thallus.

Caloplaca sp. B
(5) *42692*. – Paros, at 30 m on top of a marble stone of staple wall among fields.

A lobate species reminiscent of *C. saxicola,* but with a conspicuous, brownish thallus colour.

Candelariella aurella (Hoffm.) Zahlbr.
(2a) in *42648;* (5) *42688;* (6) in *42706, 42726* [ATHU]; (13) in *42913;* (20) in *43039* [ATHU]; (22) *43069* [ATHU]; (23) *43084;* (24) in *43101;* (35) *43376*. – Paros and Antiparos, at 5-700 m on all available rock types. – World distribution: widespread in the Mediterranean, the rest of Europe, the Canary Islands, and in North America; also known from New Zealand (Galloway 1985: 73).

Candelariella vitellina (Ehrh.) Müll. Arg.
(1) *42517;* (2a) *42641;* (6) *42717* [ATHU], *42723* [ATHU]; (11) in *42840;* (13) *42913;* (18) in *43011;* (20) in *43039* [ATHU]; (22) *43061;* (24) in *43101;* (25) in *43125;* (29) *43225*. – Paros and Antiparos, at 5-700 m on siliceous rock (granitic, gneissic, volcanic, schistose). – World distribution: widespread in the Mediterranean, the rest of Europe, extending to the Canary Islands, and in North America; also known from New Zealand (Galloway 1985: 73).

Catapyrenium psoromoides (Borrer) R. Sant.
(13) *42936*. – Antiparos, at c. 50 m as epiphyte on branches of isolated *Juniperus phoenicea* on W facing slope at the coast. – World distribution: Mediterranean, extending to S Sweden, Japan, W North America, Tanzania, New Zealand (Breuss 1995).

Catillaria atomarioides (Müll. Arg.) Kilias
(9) *42794a*. – Paros, found once at c. 450 m on exposed gneissic rock outcrop on N facing slope, overgrowing *Protoparmelia psarophana* var. *reagens*. – World distribution: Europe, S Africa.

Catillaria chalybeia (Borrer) Massal.
(1) in *42512;* (2a) in *42639* [ATHU]; (6) in *42738;* (8) *42762a* [ATHU]; (9A) *42829;* (11) in *42857;* (13) *42920;* (15) *42957* [ATHU]; (32) *43292*. – Paros and Antiparos, at 25-750 m on various rock types and as epiphyte on shrubs and tree trunks, e.g. of *Juniperus phoenicea*, *Cupressus sempervirens*, *Rhamnus lycioides* subsp. *oleoides*. – World distribution: widespread in the temperate zones of both hemispheres.

Catillaria praedicta Tretiach & Haf.
(3) *42661;* (17) *42983* [ATHU, B]. – Paros and Antiparos, at 5-550 m as epiphyte on *Ficus carica* trees in cultivated field and on dead *Juniperus oxycedrus* subsp. *macrocarpa* branches in coastal, open scrub. – World distribution: W Mediterranean, from Italy to Spain (Tretiach & Hafellner 1998), now also recorded for Greece.

Cetraria aculeata (Schreb.) Fr
(2) *42551* [ATHU, B]. – Paros, at 750 m on soil in low scrub on exposed hill top. – World distribution: widespread in the temperate zones of both hemispheres, extending into tropical mountains, the Arctic and Antarctica.

Cladina mediterranea (Duvign. & des Abb.) Follm. & Hern.-Padr.
(2) *42549*. – Paros, at 750 m on soil in low scrub on exposed hill top. – World distribution: Mediterranean, from Morocco to Turkey, extending into W Europe (British Isles) and the Canary Islands.

Cladonia cervicornis (Ach.) Flotow
(1) *42519;* (2a) *42615* [ATHU, B]; (25) *43113* [ATHU]; (33) *43341a*. – Paros and Antiparos, at 5-700 m on soil in dwarf shrub vegetation over siliceous rock types. – World distribution: widespread in the temperate zones of both hemispheres.

TLC: fumarprotocetraric and a trace of ?protocetraric acids *(42615, 43113, 43341a).*

Cladonia firma (Nyl.) Nyl.
(13) *42930*. – Antiparos, at c. 50 m on soil in dwarf shrub vegetation over volcanic rock. – World distribution: Mediterranean, Macaronesia and British Isles.

Cladonia foliacea (Hudson) Willd.
(1) *42536* [ATHU]; (2) *42554* [ATHU]; (2a) *42614;* (8) in *42754;* (11) *s.n.;* (13) *s.n.;* (15) in *42968;* (25) *43111;* (26) in *43165* [ATHU]; (28) in *43187* [ATHU]. – Paros and Antiparos, at 5-750 m on soil in dwarf shrub vegetation over siliceous or calcareous rock types. – World distribution: temperate Europe, Mediterranean and Macaronesia.

Cladonia furcata (Hudson) Schrad.
(2) *42548* [ATHU, B]. – Paros, at 750 m on soil in low scrub on exposed hill top. – World distribution: widespread in the temperate zones of both hemispheres and in tropical mountains.

Cladonia pyxidata (L.) Hoffm.
(1) in *42538;* (2) *42553;* (8) in *42754;* (13) *s.n.;* (15) in *42968;* (28) *43187* [ATHU]; (33) *43341*. – Paros and Antiparos, at 25-750 m on soil over siliceous or calcareous rock in dwarf shrub vegetation. – World distribution: widespread in the temperate zones of both hemispheres and extending into cold and tropical areas.

Specimens occur with *(43341)* and without atranorin *(42553, 43187).* Podetia are generally short and without apothecia, so that the possibility cannot be ruled out that *C. dimorpha* Hammer is present. Only *43341* has small apothecia, which do not show the typical ring-shape of *C. pyxidata*, but are too small to show the split apothecium stalks of *C. dimorpha*.

Cladonia rangiformis Hoffm.
(1) *42534;* (2) *42550* [ATHU, B]; (13) *s.n.;* (25) *s.n.;* (28) in *43187* [ATHU]. – Paros and Antiparos, at 5-750 m on soil over calcareous or siliceous rock in dwarf shrub vegetation. – World distribution: temperate Europe, Mediterranean and Macaronesia. Reports from elsewhere are probably all incorrect, see, e.g., Esslinger & Egan (1995: 485).

TLC: atranorin, fumarprotocetraric, trace of protocetraric, ?rangiformic acid, indetermined fatty acids *(42534, 42550).* Like on Santorini (Sipman & Raus 1995: 419), the strain with furmarprotocetraric acid ("f. *aberrans*") is present.

Clauzadea immersa (Hoffm.) Haf. & Bellem.
(8) *42773;* (15) *42949;* (16) *42974* [ATHU]; (26) *43149;* (27) *43176, 43177* [ATHU]; (32) *43301*. – Paros and Antiparos, at 100-700 m on exposed marble rock outcrops. – World distribution: temperate zone of the northern hemisphere.

Clauzadea monticola (Ach.) Haf. & Bellem.
(32) *43304*. – Paros, at c. 700 m on exposed marble rock outcrop. – World distribution: temperate zone of the northern hemisphere.

Collema crispum (Hudson) Wigg.
(2) *42564b;* (9) *42785*. – Paros, at 450-750 m on soil in low scrub over calcareous and gneissic rock. – World distribution: widespread in the temperate zones of both hemispheres.

Collema cristatum (L.) Wigg.
(2) *42565*. – Paros, at 750 m on soil over marble. – World distribution: widespread in the temperate zone of the northern hemisphere.

Collema flaccidum (Ach.) Ach.
(21) *43044* [ATHU, B]. – Paros, at c. 50-150 m in temporary water flow on gneissic rock outcrop. – World distribution: widespread in the temperate zone of the northern hemisphere.

Collema polycarpon Hoffm. var. ***corcyrense*** (Arnold) Harm.
(34) *43347a*. – Paros, at c. 350-400 m on exposed gneissic rock outcrop on S facing slope. – World distribution: N Mediterranean from Spain to Turkey, Czech Republic.

Collema ryssoleum (Tuck.) A. Schneider
(1) *42520*. – Paros, at c. 25 m on granitic rock in narrow little valley, near the soil, sheltered by surrounding herbs. – World distribution: Mediterranean, Canary Islands, India, North America.

Collema tenax (Sw.) Ach.
(2) *42564* [ATHU]; (8) in *42756;* (15) *42971;* (26) *43165* [ATHU]; (27) in *43180;* (28) *43188;* (32a) *43321*. – Paros and Antiparos, at 100-700 m on soil over calcareous rock, in waste fields and low scrub. – World distribution: widespread in the temperate zone of the northern hemisphere.

Dermatocarpon miniatum (L.) Mann
(9) *42789* [ATHU, B]. – Paros, at c. 450 m on exposed gneissic rock outcrop on N facing slope, in temporarily wet rainwater channel. – World distribution: widely distributed in the temperate to subtropical zones of the northern hemisphere; a record from Australia is incorrect (Filson 1996: 44).

Dimelaena oreina (Ach.) Norman
(34) *43344*. – Paros, at c. 350-400 m on exposed gneissic rock outcrop on S facing slope in Kavouropotamos valley. – World distribution: widely distributed in the northern hemisphere.

The very scarce material did not allow to determine the secondary metabolites.

****Dimelaena radiata*** (Tuck.) Hale & W. L. Culb.
(6) *42699* [ATHU, B]. – Paros, at 80 m on exposed vertical face of volcanic rock outcrop near the

coast. – World distribution: S California and adjacent Mexico, the Canary Islands, Madeira and the W Mediterranean from Spain to Corsica (Matzer & al. 1996), now also recorded from Greece.

Diploicia canescens (Dickson) Massal.
(2) *42587;* (2a) in *42641;* (4) *42679* [ATHU]; (6) *42706;* (9A) *42823;* (11) *42869, 42870;* (11a) *42879* [ATHU]; (13) *42905;* (17) in *42988* [ATHU]; (25) *43126a;* (29) *43244;* (29) *43248;* (33) *43327;* (34) *43353*. – Paros and Antiparos, at 1-750 m on various substrates: epilithic on gneissic, volcanic, schistose and marble rock outcrops; epiphytic, mainly on trunks, of *Juniperus oxycedrus* subsp. *macrocarpa, Cupressus sempervirens, Morus alba, Quercus ithaburensis* subsp. *macrolepis*. – World distribution: widely distributed in the warm-temperate zones of the northern hemisphere and of Australasia (Elix & al. 1988).

Two chemotypes were found by TLC: (1) atranorin and two pale, high spots, probably diploicin and dechlorodiploicin *(43237);* (2) atranorin, gyrophoric acid and two pale, high spots, probably diploicin and dechlorodiploicin *(43244, 43353)*. Chemotype 2 has a weak C+ pink and KC+ pink reaction on the surface, suggesting that gyrophoric acid is deposited in the cortex. Morphologically the material can also be divided in two types. Thalli on limestone and on bark have long marginal lobes and usually finer soredia. They belong always to chemotype 1. Plants from siliceous rock are distinguished by short marginal lobes and often coarse soredia. They belong mostly to chemotype 2. In part they seem to belong to chemotype 1, judging from the negative C-reaction. The presence of gyrophoric acid was considered by Elix & al. (1988) as a character for *D. subcanescens* (Werner) Haf. & Poelt, a non-sorediate species. Our results are more in agreement with Clauzade & Roux (1985: 209), who report C-positive specimens in *D. canescens*.

Diploschistes actinostomus (Pers. ex Ach.) Zahlbr.
(6) *42711;* (11) *42846* [ATHU]; (29) *43214, 43259;* (34) *43358* [ATHU]. – Paros and Antiparos, at 50-400 m on exposed schistose, gneissic or volcanic rock outcrops. – World distribution: widely distributed in the warm-temperate zones of both hemispheres.

The spore size of the available specimens is often c. 30 × 18 µm, and the thallus colour grey rather than whitish grey. Therefore they seem to be somewhat intermediate between *D. actinostomus* and *D. caesioplumbeus* (Nyl.) Vainio (cf. Lumbsch 1989). Likewise are the specimens from Santorini (Sipman & Raus 1995: 420).

****Diploschistes aeneus*** (Müll. Arg.) Lumbsch
(1) *42502* [ATHU, B, herb. Pirintsos]; (34) *43360*. – Paros, at 25-400 m on exposed granitic or gneissic rock outcrops. – World distribution: warm-temperate to dry-tropical zones of America, S Africa, Japan and Spain, now also recorded from Greece.

Medulla C+ red. This species was recently found in the Mediterranean (Spain, Lumbsch & al. 1993) and S Africa (Guderley & Lumbsch 1996).

Diploschistes diacapsis (Ach.) Lumbsch
(30) *43275* [ATHU, B]. – Paros, at c. 600 m on soil over marble. – World distribution: widespread in the warm-temperate zones of both hemispheres.

Diploschistes euganeus (Massal.) J. Steiner
(1) *42481;* (9) in *42818;* (11) in *42846* [ATHU]; (29) *43231* [ATHU, B], *43232*. – Paros and Antiparos, at 50-450 m on exposed schistose, granitic or gneissic rock outcrops, usually on horizontal faces. World distribution: widespread in the subtropical zones of both hemispheres.

Medulla C-.

Diploschistes muscorum (Scop.) R. Sant. subsp. ***muscorum***
(2) *42570;* (8) *42752, 42759;* (24) *43104* [ATHU]; (28) in *43187* [ATHU]; (32a) *43322* [ATHU, B]. – Paros and Antiparos, at 100-750 m on soil over calcareous or siliceous rock in waste fields and dwarf scrub. – World distribution: widespread from the boreal to the subtropical zone in the northern hemisphere.

Diploschistes ocellatus (Vill.) Norman
(32a) *43320* [ATHU, B]. – Paros, at c. 700 m on exposed calcareous rock outcrop. – World distribution: widespread in the warm-temperate to subtropical zones of both hemispheres.

Thallus K+ yellow turning red.

Dirina ceratoniae (Ach.) Fr.
(7) *42746*; (13) *42932*. – Paros and Antiparos, at 50-150 m as epiphyte on trees and shrubs, e.g. *Juniperus phoenicea*. – World distribution: coasts of the Mediterranean, extending into the Canary Islands.

Thallus C+ red.

Dirina cretacea (Zahlbr.) Tehler
(12) *42888;* (15) *42944;* (16) *42972* [ATHU]; (19) *43021* [ATHU]. – Paros and Antiparos, at 50-200 m on exposed marble rock outcrops. – World distribution: E Mediterranean.

Dirina massiliensis Durieu & Mont.
(6) *42710* [ATHU]; (11) *42876;* (12) *42889;* (15) *42945;* (19) *43032* [ATHU, herb. Pirintsos]; (26) *43137*. – Paros and Antiparos, at 50-200 m on exposed marble rock outcrops, occasionally on schistose or volcanic rock, on hill tops, mostly in fissures on N faces. – World distribution: Mediterranean, extending to the British Isles and the Canary Islands.

Dirina massiliensis f. ***sorediata*** (Müll. Arg.) Tehler
(6) *42703;* (6) *42704* [ATHU]; (11) in *42876;* (18) in *43013;* (24) *43089;* (34) *43352*. – Paros and Antiparos, at 50-400 m on exposed schistose or volcanic rock outcrops on hill tops, mostly in fissures on N faces. – World distribution: Mediterranean, extending to Central Europe and throughout Macaronesia.

Evernia prunastri (L.) Ach.
(2) *42589* [ATHU]; (32) *43290*. – Paros, at c. 750 m as epiphyte on low shrubs, e.g. on *Rhamnus lycioides* subsp. *oleoides*, only observed on top of Mt Ajii Pantes. – World distribution: widespread in temperate Europe, the Mediterranean, extending into the Canary Islands, with apparently disjunct occurrences in W North America and Japan.

Fulgensia fulgida (Nyl.) Szat.
(2) *42557*. – Paros, at 750 m in rock fissures of marble cliff. – World distribution: Mediterranean.

Fulgensia subbracteata (Nyl.) Poelt
(2) *42556* [ATHU]; (8) *42756;* (15) *42968;* (28) *43185;* (30) *43274* [ATHU]; (35) *43381*. – Paros and Antiparos, at 40-750 m on soil over calcareous rock in dwarf scrub and waste fields. – World distribution: Mediterranean.

Haematomma nemetzii J. Steiner
(2a) *42630* [ATHU, B, herb. Pirintsos]; (3) *42663a;* (9) *42791*. – Paros, at 450-700 m on exposed gneissic rock outcrops and on old *Ficus carica* tree trunk in cultivated field. – World distribution: NE Mediterranean, from Croatia to Turkey (Staiger & Kalb 1995: 138).

Remarkable is the occurrence of this usually saxicolous species on a well-lit *Ficus carica* trunk. Here it was accompanied by *Ochrolechia parella* and *Tephromela atra*, species also often occurring on rock. – TLC showed that the epiphytic sample has the same secondary chemistry as the epilithic samples and probably belongs to the same population.

Hafellia leptoclinoides (Nyl.) Scheid. & H. Mayrh.
(38) *43396*. – Paros, at c. 450 m on exposed gneissic rock outcrop on N facing slope. – World distribution: (mainly W) Mediterranean, extending to the British Isles and the Canary Islands, Greece. – Evidently much less common on Paros than on Santorini.

Heppia solorinoides (Nyl.) Nyl.
(8) *42749*. – Paros, at c. 100 m on soil over limestone in dwarf scrub. – World distribution: S Mediterranean, extending to the Canary Islands and the Irano-Turanian region.

Hymenelia prevostii (Duby) Krempelh.
(8) *42775* [ATHU]; (26) *43144*. – Paros, at 100-200 m on exposed marble outcrops. – World distribution: Mediterranean, extending to Scandinavia.

Hypogymnia physodes (L.) Nyl.
(32) *43289*. – Paros, at c. 750 m as epiphyte on low shrub of *Rhamnus lycioides* subsp. *oleoides*. – World distribution: widespread and common in Europe, the Mediterranean and North America, extending to Central Asia and the tropical African mountains.

Immersaria athroocarpa (Ach.) Rambold & Pietschm.
(32a) *43317* [ATHU, herb. Pirintsos], *43318*. – Paros, at c. 700 m on exposed outcrop of transition rock marble-gneiss, only observed on Mt Ajii Pantes. – World distribution: widespread in the warm-temperate zones of both hemispheres.

Ingvariella bispora (Bagl.) Guderley & Lumbsch
(9) *42792* [ATHU, B]; (34) in *43349;* (38) *43398*. – Paros, at c. 350-450 m on exposed gneissic rock outcrops. – World distribution: widespread in the warm-temperate zones of both hemispheres.

This species was recently transferred from *Diploschistes* to the new genus *Ingvariella* (Guderley & al. 1997). One specimen is on *Aspicilia intermutans*, apparently a new host.

Lecania cyrtella (Ach.) Th. Fr.
(3) *42662a;* (4) *42682;* (6a) *42740* [ATHU, B]; (7) in *42742;* (32) *43293;* (33) *43334*. – Paros, at 1-750 m as epiphyte on tree trunks and shrubs in various vegetation types, e.g. on *Ficus carica*, *Juniperus oxycedrus* subsp. *macrocarpa*, *Phlomis fruticosa*, *Cupressus sempervirens*. – World distribution: probably widespread in the temperate zones of both hemispheres.

Lecania inundata (Körb.) M. Mayrh.
(6) in *42699* [ATHU, B]; (11a) *42886* [ATHU]; (15) *42961, 42962;* (20) *43041;* (29) *43207, 43264* [ATHU]. – Paros and Antiparos, at 5-200 m on exposed schistose, volcanic or calcareous rock outcrops. – World distribution: Central Europe and Mediterranean.

The material from Paros, as well as that from Santorini (Sipman & Raus 1995: 421), seems not to completely conform with the definitions in Mayrhofer (1988) or Boom (1992). Therefore a short characterisation is presented: apothecia rather large, c. 0.5-1 mm diam., with brown to dark-brown disc and distinct thalline margin, mostly flat or slightly convex; thallus scarce, pale grey, areolate; areoles with warty surface; on siliceous rock.

Lecania koerberiana Lahm
(2) *42603*. – Paros, at c. 750 m as epiphyte on low shrub. – World distribution: Mediterranean and Central Europe.

Lecania naegelii (Hepp) Diederich & P. P. G. v. d. Boom
(4) *42666* [ATHU, B]; (8) in *42782*. – Paros, at 1-100 m epiphytic on branches of *Pistacia lentiscus* and *Ceratonia siliqua* in open *Juniperus* scrub. – World distribution: Europe and the Mediterranean, extending to the Canary Islands; North America.

Lecania spadicea (Flotow) Zahlbr.
(12) *42887;* (15) *42947;* (19) *43026;* (26) *43138* [ATHU]. – Paros and Antiparos, at 50-200 m on exposed marble rock outcrops on hill tops, usually on N faces. – World distribution: Mediterranean.

Lecania turicensis (Hepp) Müll. Arg.
(5) *42694;* (8) in *42768;* (12) in *42890* [ATHU, B]; (15) *42963* [ATHU, B]; (19) *43028;* (20) *43034* [ATHU]; (20) *43038;* (22) *43068;* (26) *43152, 43153* [ATHU, B]; (26a) in *43170;* (27) *43183;* (32) in *43299;* (35) *43379;* (36) *43384;* (39) *43412*. – Paros and Antiparos, at 5-700 m on exposed marble or weakly calcareous rock outcrops. – World distribution: Mediterranean, extending into Central Europe, also in Asia and North America.

For the same reasons as in *L. inundata* a short characterisation is provided: apothecia c. 0.3-0.5 mm diam., dark brown, sometimes pruinose, usually soon convex to globular and with inapparent margin; thallus often scarce or absent, consisting of pale brownish areoles, sometimes pruinose; on calcareous rock.

Lecanographa grumulosa (Dufour) Egea & Torrente
(6) in *42704* [ATHU]; (15) *42942;* (19) *43018a, 43024* [ATHU]. – Paros and Antiparos, at 50-200 m on N facing cliffs, on marble or volcanic rock. – World distribution: Mediterranean, extending to the British Isles, the Canary Islands, the Cape Verde Islands, and a few localities in Central Europe; also in Baja California and the Antilles.

43018a is a parasite on *Roccella phycopsis*.

Lecanora albescens (Hoffm.) Branth & Rostr.
(2a) in *42648;* (5) *42690;* (15) *42959;* (20) *43035* [ATHU]; (20) *43037* (cf.); (22) in *43072;* (24) in *43100;* (26a) *43170;* (32a) in *43319;* (39) *43411* [ATHU]. – Paros and Antiparos, at 5-700 m on exposed outcrops and stones of marble or weakly calcareous rock. – World distribution: widespread in the Mediterranean and Europe, and in North America.

TLC: trace of 2,7-dichlorolichexanthone? (*42690, 43035; Sipman 28944* from Thira).

The species has been interpreted here in a narrower sense than before (Sipman & Raus 1995: 421). It is restricted to plants with a distinct, white thallus with flat, marginal lobes to c. 1 mm wide and areolate in the centre; the apothecia are scattered to dense, immersed when young, with grey-brown to black disc. The plants often form rosettes c. 1 cm diam.

The identification is uncertain because the marginal lobes are larger than in Central European plants (cf. Poelt & Leuckert 1995: 315, fig. 7c).

43037 deviates because the thallus is less well developed and the apothecia are constricted at the base already in an early stage. Unlike the other specimens, it occurs on schistose rock.

Lecanora cf. *albescens*
(15) *42955, 42958;* (19) *43027*. – Paros and Antiparos, at 50-200 m on exposed marble outcrops on hill tops.

TLC: 2,7-dichlorolichexanthone (*42955, 43027, Sipman 28917* from Santorini). The specimens included in this taxon resemble *L. albescens* by their chemistry and the presence of a well-developed thallus. However, the apothecia are basally constricted from an early stage and the thallus is thick with convex areoles.

Lecanora bolcana (Poll.) Poelt
(1) *42484* [ATHU], *42508;* (9) *42807;* (10) *42832;* (24) *43094* [ATHU, herb. Pirintsos]; (29) *43210, 43251;* (32a) in *43314* [ATHU, B]; (34) *43356*. – Paros and Antiparos, at 25-700 m on granitic, gneissic or schistose rock outcrops. – World distribution: Mediterranean, extending into the Canary Islands.

Lecanora crenulata Hook.
(5) *42695;* (35) *43374* [ATHU, B]. – Paros, at 30-40 m on marble wall stones and loose stones on road bank. – World distribution: widespread in the northern hemisphere.

The available material contains only small apothecia without mature spores and its identification is somewhat uncertain.

Lecanora dispersa (Pers.) Sommerf.
(1) *42488* [ATHU]; (2) *42602;* (2a) in *42639* [ATHU]; (3) in *42657* [ATHU, B]; (7) *42744a;* (10)

in *42834;* (11a) *42884;* (22) *43071, 43072;* (23) *43079* [ATHU, B]; (26a) *43167;* (29) in *43198;* (32) *43286;* (32a) *43307;* (33) in *43325*. – Paros and Antiparos, at 10-750 m on siliceous rock and as epiphyte on tree trunks and branches of, e.g., *Ficus carica*, *Rhamnus lycioides* subsp. *oleoides*, *Olea europaea*. – World distribution: widespread in the northern hemisphere and probably also southern hemisphere.

The species is treated here in a wide sense, including corticolous specimens. – TLC: (1) trace of 2,7-dichlorolichexanthone (*43079*); (2) pannarin, trace of 2,7-dichlorolichexanthone, undetermined spots *(43071, 43307)*. The second chemotype is slightly different in morphology as well. It has paler and more numerous apothecia, which often become aggregated.

Lecanora cf. *dispersa*
(9) *42812*. – Paros, at c. 450 m on exposed gneissic rock outcrop.

TLC: trace of 2,7-dichlorolichexanthone *(42812)*. The specimen deviates by its somewhat larger apothecia with thicker margins. It resembles to some extent *L. flotowiana* Spreng., but deviates from that species by growing on siliceous stone.

Lecanora horiza (Ach.) Lindsay
(2) *42591* [ATHU]; (2) in *42597;* (3) in *42662* [ATHU, B]; (4) *42678;* (7) *42741;* (8) *42761;* (9A) *42822;* (17) *42985;* (24) *43109* [ATHU]; (33) *43328; 43332; 43338*. – Paros and Antiparos, at 1-750 m as epiphyte on branches and trunks of various trees and shrubs, e.g. *Ficus carica, Juniperus oxycedrus* subsp. *macrocarpa, J. phoenicea, Cupressus sempervirens, Pistacia lentiscus, Morus alba, Quercus ithaburensis* subsp. *macrolepis,* in various vegetation types. – World distribution: widespread in the warm-temperate to subtropical zones of both hemispheres.

TLC: 3 undetermined substances, probably Lgr-1, Lgr-2 and Lcm-1 (Brodo 1984) *(42591, 42741, 42761, 42822, 43109).*

Lecanora hybocarpa (Tuck.) Brodo
(7) *42744;* (22) in *43057;* (33) *43325;* (33) *43330* [ATHU]. – Paros and Antiparos, at 150-500 m on tree trunks of, e.g., *Olea europaea* and *Quercus ithaburensis* subsp. *macrolepis*. – World distribution: North America (Brodo 1984: 135), recently discovered in Europe (Fos 1998: 181).

TLC: atranorin, roccellic acid *(42744, 43325).* The specimens are very similar to *L. charotera* Nyl. and differ by the absence of gangalenidin and by the granules in the epithecium, which are not soluble in concentrated HNO_3. The same chemistry was found in *Sipman 28641b* p.p., *29100* from Santorini.

Lecanora meridionalis H. Magn.
(3) *42657* [ATHU, B]. – Paros, at 550 m as epiphyte on *Ficus carica* tree in cultivated field. – World distribution: Mediterranean, extending to the Canary Islands, North America.

TLC: gangaleoidin *(42657).* This result is in accordance with Ibáñez & Burgas (1998) for Spain. Roccellic acid, indicated by Brodo (1984: 145), was not found. A specimen from Santorini *(Sipman 29079)* contains roccellic acid instead of gangaleoidin.

Lecanora muralis (Schreb.) Rabenh.
(2a) *42642*. – Paros, at 700 m on exposed gneissic, mossy rock outcrop. – World distribution: Mediterranean, the rest of Europe, extending into the Canary Islands, North America.

The specimen differs from the material identified as *L. bolcana* because it has strongly developed marginal lobes and lacks the black rims around the areoles. It grows over mosses at higher elevation and the differences with *L. bolcana* might be caused by this different habitat.

Lecanora polytropa (Hoffm.) Rabenh.
(29) in *43210;* (38) *43399* [ATHU, B]. – Paros, at 150-450 m on exposed schistose and gneissic rock outcrops, on steep faces. – World distribution: widespread in the northern hemisphere, New Zealand (Galloway 1985: 217).

TLC: usnic, rangiformic acids, undetermined traces *(43399)*.

Lecanora prominens Clauz. & Vězda
(2) in *42547;* (2a) *42651;* (26) *43137a;* (27) in *43178;* (30) in *43279;* (32) in *43298;* (32) *43306* (cf.). – Paros, at 200-750 m on exposed, calcareous rock outcrops. – World distribution: S European (Spain, France, Italy, now also recorded from Greece).

TLC: trace of 2,7-dichlorolichexanthone?, pannarin (*43137a*). The material included in this species is rather close to *L. albescens* by its chemistry and its conspicuous thallus. It differs by its rather thin, white, flat, finely cracked-areolate thallus, and raised apothecia with thick margins. The positive P-reaction indicated by, e.g. Clauzade & Roux (1985: 415) is apparently caused by the presence of pannarin. *43306* is aberrant because a thallus is almost lacking. It deviates also chemically by the absence of lichen substances. It is considered as a damaged stage.

Lecanora pruinosa Chaub.
(2) *42546* [B, herb. Pirintsos]; (26) *43139;* (30) *43278* [ATHU]; (32) *43299*. – Paros, at 200-750 m on exposed calcareous rock outcrops. – World distribution: Mediterranean, with some outposts northward. Thallus C+ orange.

Lecanora puniceofusca Bagl.
(1) *42522* [ATHU, B]. – Paros, at c. 25 m on exposed granitic rock outcrop. – World distribution: known so far only from Italy, now also from Greece, probably Mediterranean.

TLC: atranorin, 2-O-methylperlatolic acid (teste Th. Lumbsch). Det. by Th. Lumbsch.

Lecanora rupicola (L.) Zahlbr. subsp. ***rupicola***
(1) *42515* [ATHU, herb. Pirintsos]; (2) in *42544;* (2a) in *42620* [ATHU]; (9) *42814;* (11) *42862;* (18) in *43007* [ATHU, B]; (21) in *43053* [herb. Pirintsos]; (29) *43221;* (34) *43362*. – Paros and Antiparos, at 25-750 m on exposed siliceous (granitic, gneissic, schistose) rock outcrops, usually on more or less horizontal faces. – World distribution: Europe, incl. Mediterranean, extending into the Canary Islands; North America.

Thallus cortex and medulla C-. – TLC: atranorin, sordidone, roccellic acid, indetermined traces *(42515, 42814, 42862).*

Lecanora rupicola subsp. ***sulphurata*** (Ach.) Leuckert & Poelt
(1) *42510* [ATHU, herb. Pirintsos], *42486;* (2) *42543;* (2) *42544;* (2a) in *42633* [ATHU]; (6) *42701;* (9) *42815;* (10) in *42836;* (11) *42848;* (13) *42909;* (21) in *43055* [ATHU]; (23) in *43082* [ATHU]; (25) *43135;* (29) *43226* [ATHU]; (34) *43368*. – Paros and Antiparos, at 5-750 m on exposed siliceous rock outcrops, usually on more or less horizontal faces, often dominant. – World distribution: Mediterranean.

TLC: atranorin, thiophanic acid, trace of asemone? *(42468, 42543, 42544, 42909, 43226, 43368).* Sordidone was found in apothecia of *42543*, *42909*.

One specimen *(42909)* shows soredia-like structures, which may be similar to the ones described for *Lecanora rupicola* subsp. *rupicola* var. *efflorescens* (Leuckert & Poelt 1989: 151). Their distribution on the thalli suggests that it may concern a fungal infection. This is the first time that they are recorded for subsp. *sulphurata*.

Lecanora schistina (Nyl.) Nyl. ex Cromb.
(1) *42498;* (2) *42545;* (6) *42707* [ATHU, herb. Pirintsos]; (9) *42808;* (11) *42847;* (18) in *43004;* (29) *43258;* (38) in *43393*. – Paros and Antiparos, at 50-750 m on exposed outcrops of siliceous (schistose, granitic, gneissic) rock. – World distribution: Mediterranean, extending to the Canary Islands and the British Isles.
Thallus K+ yellow turning red. – TLC: atranorin, norstictic, trace of connorstictic acids *(42498, 42545, 42707, 42808, 42847, 43258).* This species has mostly applanate to immersed apothecia with black discs. Specimens from the W Mediterranean seem to have somewhat more raised apothecia, as material in B from Sardinia and Spain shows.

Lecanora sulphurea (Hoffm.) Ach.
(2a) *42632;* (6) *42734;* (9) *42819;* (11) in *42865;* (13) *42908;* (15) *42946* [ATHU]; (29) *43193*

[ATHU]; (32a) *43312* [B, herb. Pirintsos]. – Paros and Antiparos, at 50-700 m on exposed outcrops of siliceous (gneissic, volcanic, schistose) or occasionally calcareous rock. – World distribution: widespread in the temperate zone of the northern hemisphere.

TLC: (1) usnic acid, zeorin, undetermined fatty acids *(42734, in 42865, 42908, 42946, 43193, 43312);* (2) *atranorin, usnic acid, zeorin, undetermined fatty acids, undetermined spots (42632, 42819).* The apothecia are usually very strongly pigmented and sometimes completely black from early stages. Such specimens may resemble *Lecidella asema* closely (e.g. *42734*, *42865*).

Lecanora sp. A
(18) *43009*. – Antiparos, at c. 150 m on exposed schistose rock outcrop on hill top.

TLC: trace of 2,7-dichlorolichexanthone?, fatty substance, undetermined traces. This species resembles *L. dispersa*, but its apothecia are much larger, with a bluish margin.

Lecidea sarcogynoides Körb.
(2a) *42623* [ATHU, herb. Pirintsos]; (11) *42875;* (23) *43077;* (29) *43234*. – Paros and Antiparos, at 50-700 m on exposed outcrops of siliceous (schistose or gneissic) rock. – World distribution: widespread in the temperate zones of both hemispheres.

Lecidella aegaea Knoph & Sipman
(6) *42721;* (11a) *42881;* (13) *42912;* (25) *43120a;* (29) *43222*. – Paros and Antiparos, at 5-150 m on exposed outcrops of siliceous (schistose or volcanic) rock near the coast. – World distribution: known so far only from the Aegean.

TLC: aotearone, capistratone *(42721, 42881, 43120a, 42912, 43222)*. This species is superficially very similar to *L. asema*, see note below. For more details see Knoph & Sipman (1999).

Lecidella asema (Nyl.) Knoph & Hertel
(1) *42499;* (2a) *42620* [ATHU]; (9) *42816;* (11) *42852, 42854* [ATHU]; (13) *42927;* (18) *43010;* (21) *43053* [herb. Pirintsos]; (29) *43201, 43256;* (34) in *43349*. – Paros and Antiparos, at 25-200(-700) m on exposed outcrops of siliceous (gneissic, schistose or volcanic) rock. – World distribution: Mediterranean, extending throughout Macaronesia and into the British Isles; also in North America.

TLC: thiophanic acid, trace of asemone (all specimens analysed). Yellowish *Lecidella* thalli form a common and conspicuous element on siliceous rock on Paros. Chemically they fall into three types: (1) thiophanic acid as dominant substance; (2) aotearone and capistratone as dominant substances; (3) arthothelin as dominant substance, usually with granulosin. Thalli with chemotype 1 are sometimes recognisable by sight, since their thallus tends to be more intensely yellow and with more convex areoles, of a more granular appearance than the others; also they tend to have a more strongly pigmented subhymenium in their apothecia. They are included in *L. asema*, while the other chemotypes are treated as *L. aegaea* and *L. chodatii*.

Specimens of *Lecanora sulphurea* with small, strongly pigmented apothecia may resemble *L. asema* and related species closely. They differ by the presence of usnic acid instead of xanthones (thallus C- instead of C+ orange, KC+ yellow instead of orange).

Lecidella chodati (G. Samp.) Knoph & Leuckert
(6) *42718* [ATHU, B], *42735;* (25) *43120*. – Paros and Antiparos, at 5-80 m on exposed outcrops of volcanic rock near the coast. – World distribution: widespread in the dry, warm-temperate zones of both hemispheres.

TLC: granulosin, arthothelin, trace of ?thiophanic acid, undetermined traces (all specimens analysed). This species is superficially very similar to *L. asema*, see note above. The subhymenium tends to be somewhat brown below in the available material, so that its colour is not very helpful to separate it from *L. asema*.

Lecidella elaeochroma (Ach.) M. Choisy
(2) *42599* [ATHU], *42600;* (3) *42659, 42660;* (4) *42684;* (8) *42765;* (9A) *42828;* (13) *42938* [ATHU]; (17) *42989;* (22) *43057;* (33) *43326;* (33) *43337*. – Paros and Antiparos, at 1-750 m as

epiphyte on trunks and branches of various shrubs and trees such as *Ficus carica, Juniperus oxycedrus* subsp. *macrocarpa, J. phoenicea, Cupressus sempervirens* and *Olea europaea* in various vegetation types. – World distribution: widespread in Europe, the Mediterranean, Macaronesia, North America; also New Zealand.

TLC: granulosin, arthothelin, ?trace of thiophanic acid *(42659, 42660, 42828, 42938, 42989, 43337).* The available material is variable in colour: some plants have a conspicuous yellow-green tinge (e.g. *42659, 42765*), others *(42828)* are white. Chemically no differences between these plants were found: all contain granulosin and arthothelin as dominant substances, with traces probably of thiophanic acid (chemotype B of Knoph & al. 1995: 314).

Inspersion in the hymenium was not a clearly distinguishing character, as it is always present in the subhymenium and extends into the hymenium to a variable extent. Therefore it seemed not appropriate to separate *L. elaeochroma* from *L. achristotera* (Nyl.) Hertel & Leuckert, contrary to the treatment for Santorini (Sipman & Raus 1995: 422).

Lecidella scabra (Taylor) Hertel & Leuckert
(2a) in *42637;* (24) *43091* [ATHU, B]; (32a) *43311*. – Paros and Antiparos, at 150-700 m on gneissic rock outcrops and on cinder. – World distribution: Europe, Azores and North America.

Thallus C+ orange. – TLC: (1) trace of atranorin, thuringione, arthothelin, indetermined traces (*Sipman 28966*, Thirasia); (2) thuringione, arthothelin, undetermined trace (*43091*). The material has blue-greenish soralia, like on Santorini.

Lepraria nivalis J. R. Laundon
(1) *42537;* (2) *42559a;* (24) *43105*; (30) *43273* [ATHU, B]; (33) *43340* [ATHU, B]. – Paros and Antiparos, at 25-750 m on soil over siliceous rock or directly on such rock (granitic, schistose). – World distribution: Mediterranean, extending to NW Europe and the Canary Islands, Himalayas, North America.

TLC: atranorin, ?roccellic, fumarprotocetraric, protocetraric acids *(42537, 42559a, 43105, 43273, 43340).* The determinations of roccellic and protocetraric acids are not completely certain.

Morphologically this taxon is very variable. Characteristic is probably the thick, white medulla below the algiferous layer and the lobed margins with narrow, raised rim. Some specimens are more or less sorediate, in others the "soredia" tend to be more swollen and sometimes wart-like to almost isidiate. The latter have been described as var. *isidiata* Llimona. The difference seems to depend to some extent on the humidity. In Paros, specimens from the dry lowlands are rather sorediate, while such from the mountain tops are warty.

Leprocaulon microscopicum (Vill.) D. Hawksw.
(1) *42538;* (18) *43015;* (24) *43102, 43106* [ATHU]. – Paros and Antiparos, at 25-150 m on soil over or in fissures of siliceous rock (granitic, schistose). – World distribution: widespread in warm-temperate areas of the northern hemisphere and Australia.

TLC: usnic acid, undetermined terpenoid, zeorin, indetermined traces (*43015, 43102, Sipman 28675* from Santorini). In this chemically variable species (Lamb & Ward 1974: 529) both island groups appear to be colonised by closely related populations with the same chemotype.

Leprolecanora leuckertiana, ined.
(31) *43283*. – Paros, at c. 200 m as epiphyte on trunk of old *Olea europaea* tree in cultivated fields. – World distribution: known so far from several parts of the Mediterranean.

Superficially very similar to *Lepraria incana* (L.) Ach. but differing in chemistry. To be published by Zedda (in press).

Leptogium schraderi (Ach.) Nyl.
(2) *42562a*. – Paros, at 750 m on soil over limestone. – World distribution: S and Central Europe, North America.

Lichinella cribellifera (Nyl.) Moreno & Egea
(6) *42728;* (13) *42895* [ATHU, B]; (25) *43131* [ATHU, B]. – Paros and Antiparos, at 5-80 m on exposed volcanic rock outcrops. – World distribution: Mediterranean, extending to the Canary Islands and Mesopotamia, also in North America. – Determination confirmed by M. Schultz, 1998.

Lichinella nigritella (Lettau) Moreno & Egea
(34) *43347* [ATHU, B]. – Paros, at c. 350-400 m on exposed gneissic rock outcrop. – World distribution: Central Europe and N Mediterranean, extending into the Canary Islands, also in North America. – Determination confirmed by M. Schultz, 1998.

Lichinella stipatula Nyl.
(6) *42708, 42731;* (13) *42899;* (21) *43045* [ATHU, B]; (25) *43110;* (29) *43240*. – Paros and Antiparos, at 5-200 m on exposed outcrop of siliceous (mainly volcanic, also gneissic or schistose) rock. – World distribution: Mediterranean, extending into the Canary Islands, and North America. – Determination confirmed by M. Schultz, 1998.

Miriquidica deusta (Stenh.) Hertel & Rambold
(1) *42525;* (2a) *42619* [ATHU]; (9) *42805;* (10) *42831;* (11) *42860* [ATHU]; (25) *43114;* (29) *43269* [herb. Pirintsos]; (34) in *43344*. – Paros and Antiparos, at 5-700 m on exposed outcrops of siliceous (granitic, gneissic, schistose, volcanic) rock. – World distribution: Mediterranean to N Europe, Australia.

TLC: miriquidic acid, traces of undetermined depsides *(42525, 42619, 42860, 43114, 43269,* in *43344)*.

Neofuscelia attica (Leuckert & al.) Essl.
(6) *42700* [ATHU]; (9) *42795, 42796* [herb. Pirintsos]; (11) *42861, 42865* [B]; (13) *42903* [ATHU]; (18) *43005;* (23) *43075;* (25) in *43125;* (29) *43241*. – Paros and Antiparos, at 5-450 m on exposed outcrops of siliceous (gneissic, schistose, volcanic) rock. – World distribution: Greece, Cyprus (Esslinger 1977).

TLC: norstictic, trace of lecanoric, gyrophoric acids, 2 undetermined substances *(42700, 42795, 42796, 42861, 42865, 42903, 43005, 43075, 43241)*. The two undetermined substances are probably PP1 and PP2 of Esslinger (1977). In the available material norstictic acid is present in variable amounts, sometimes in traces only, and in two specimens *(42865, 43241)* it seems completely lacking. In one specimen PP1 & PP2 seem to be absent *(43075)*. The material from Santorini upon re-examination appeared to have the same chemical variation; no alectoronic acid was found.

Neofuscelia pulla (Ach.) Essl.
(1) *42501, 42503* [ATHU]; (2a) in *42644*. – Paros, at c. 25 m on exposed outcrops of granitic rock, perhaps also at 700 m on gneiss. – World distribution: Europe, N and S Africa, Australasia.

TLC: divaricatic acid, undetermined trace. Discovered by TLC, morphologically indistinguishable from *N. attica*.

Ochrolechia parella (L.) Massal.
(2a) *42624* [ATHU, B]; (3) *42663* [ATHU, B]; (9A) *42826;* (11) *42874;* (25) *43133;* (29) *43196;* (33) *43331*. – Paros and Antiparos, at 5-700 m on exposed outcrops of siliceous (gneissic, schistose, volcanic) rock and as epiphyte on tree trunks of *Ficus carica*, *Cupressus sempervirens*, *Quercus ithaburensis* subsp. *macrolepis*. – World distribution: widespread in Europe, the Mediterranean, Macaronesia, North America and Australasia.

Disc and hymenium are C+ red, the rest of the plants C-.

Ochrolechia tartarea (L.) Massal.
(2a) *42626* [ATHU, B]. – Paros, at 700 m on exposed gneissic rock outcrops. – World distribution: circumboreal, extending south to the Mediterranean, Madeira and the Canary Islands.

Cortex and medulla react C+ red.

Opegrapha calcarea Sm.
(2a) in *42634;* (15) *42952;* (16) *42976;* (19) *43022;* (26) *43145;* (27) *43181* [ATHU, B]. – Paros and Antiparos, at 50-700 m on limestone cliffs. – World distribution: W and S Europe, N Africa, North America.

****Opegrapha celtidicola*** (Jatta) Jatta
(4) *42686*. – Paros, at sea level on *Juniperus oxycedrus* subsp. *macrocarpa* in scrub on coastal sand dunes. – World distribution: W Mediterranean, now also recorded for Greece.

Opegrapha durieui Mont.
(19) *43031* [ATHU, B]. – Paros, at 50 m on N facing limestone cliff at the coast. – World distribution: Mediterranean, adjacent Atlantic coasts of Morocco and Portugal (Egea 1989: 91).

Opegrapha sp. A
(13) *42937*. – Antiparos, at c. 50 m as epiphyte on *Juniperus phoenicea* shrub.
A tiny, unidentifiable specimen, evidently not belonging to the species listed above.

Opegrapha sp.?
(2a) *42649*. – Paros, at 700 m on marble outcrop.
A parasitic plant without spores, of which the genus attribution is not completely certain.

Parmelia saxatilis (L.) Ach.
(2a) *42606* [ATHU]; (38) *43402*. – Paros, at 450-700 m in fissures of exposed gneissic rock outcrops. – World distribution: widely distributed in the temperate to cold zones of both hemispheres.
TLC: atranorin, salazinic acid (*42606*, *43402*).

Parmelina tiliacea (Hoffm.) Hale
(1) *42540;* (2a) *42612* [ATHU]; (4) *42671;* (34) *43354*. – Paros, at 1-700 m in fissures of exposed gneissic and granitic rock outcrops and as epiphyte on *Juniperus oxycedrus* subsp. *macrocarpa*. – World distribution: Europe and the Mediterranean, extending southward to Macaronesia and Sudan (Elshafie & Sipman 1999) as well as Asia (Kashmir).

Peltula euploca (Ach.) Poelt
(1) in *42508*. – Paros, at c. 25 m on granitic rock outcrop in seepage water run-off channel. – World distribution: widespread in all warm, arid regions of the world, in Europe reaching S Scandinavia in the north and spread around the Mediterranean.

****Peltula omphaliza*** (Nyl.) Wetmore
(6) *42729*. – Paros, at 80 m on exposed volcanic rock outcrop. – World distribution: SW Europe, adjacent Africa, Central and South America and Australia, now also recorded for Greece.

Pertusaria albescens (Huds.) Choisy & Werner
(2) *42585*. – Paros, at 750 m as epiphyte in low shrubs on top of tall cliff. – World distribution: widespread in temperate areas of Europe, incl. Mediterranean, W Asia, N Africa and SW North America.
Medulla K-, C-, KC-.

Pertusaria lecanorodes Erichs.
(2a) *42628, 42643;* (3) *42664;* (9) *42790* [ATHU, B], *42800* [ATHU]; (10) *42830;* (38) *43394*. – Paros, at 300-700 m on exposed outcrops of gneissic rock and as epiphyte on *Ficus carica* tree in cultivated field. – World distribution: unclear, because of difficulties in the delimitation of this taxon.
TLC: thiophaninic, trace of norstictic, stictic, ?cryptostictic, menegazziaic acids *(42643, 42664, 42628, 42790, 42830); 42628* with trace of hypostictic acid?
The name is used here provisionally for specimens similar to *P. hymenea* (Ach.) Schaerer but with black apothecium discs; epilithic specimens have an intensely yellowish colour. They seem to be the non-sorediate morph of *P. flavicans* Lamy, known from Santorini.

Pertusaria monogona Nyl.
(1) *42514* [ATHU, B]; (25) *43128*. – Paros and Antiparos, at 5-25 m on granitic and volcanic rock outcrops. – World distribution: W Mediterranean, extending to the Canary Islands and the British Isles.

TLC: norstictic, connorstictic acids *(42514, 43128)*. The material lacks apothecia or any kind of vegetative reproduction, so that the identification is tentative. Morphologically it resembles *P. parotica*, a species with a different chemistry.

Pertusaria parotica Sipman, **sp. nova** – Fig. 5
Holotype: Greece, Cyclades archipelago, Paros, between Lefkes and Mt Ajii Pantes, 37°02.5'N, 25°12.5'E, c. 450 m, gneissic rock outcrops in N facing slope with low scrub and vineyards, 24.6.1998, *Sipman & Raus 43392* [B, isotype: ATHU].

Thallus saxicola, cinereoalba, areolis parvis, c. 0.3-0.6(-10) mm latis, papilliformibus vel plicatis; ascomatis disciformibus in arealis elevatis, 1-2 mm latis; ascosporis binis, 120-150 × 50-60 µm, thallo acidum salacinicum et substantias alphaticas continente.

Thallus saxicolous, greyish white (becoming pale brown in the herbarium), dull, large, often over 10 cm across, areolate-papillose; areoles c. 0.3-0.6(-1.0) mm wide, intitially rather flat but soon vaulted and finally strongly raised and forming a papilla or fold to over 0.5 mm tall, sometimes split by partial cracks; largest areoles sometimes extending to almost 2 mm wide and producing one or more ascomata; thallus margin usually thick and zoned over a narrow zone 0.5-1 mm wide, with dark hypothallus, occasionally radiately cracked. – TLC: salazinic acid and two fatty substances resembling lichesterinic and protolichesterinic acid by their Rf values *(42636, 42793, 42906, 43004, 43118, 43217, 43392)*.

Ascomata discoid, immersed in expanded, raised, 1-2 mm wide and c. 0.5-1 mm tall areoles, with 0.1-0.5 mm wide, whitish-pruinose disc, seemingly short-lived and leaving yellowish scars; these scars 1-4 per areole, rounded or lobed; ascospores 2 per ascus, ellipsoid, c. 120-150 × 50-60 µm, smooth-walled *(43118, 43392)*.

Pycnidangia immersed on top op c. 0.5 mm wide, vaulted areoles, with blackish, impressed ostiole; conidia elongate-ellipsoid, c. 7 × 1 µm *(42906)*.

(2a) *42636;* (9) *42793;* (13) *42906;* (18) *43004;* (25) *43118* [ATHU, B]; (29) *43217*. – Paros and Antiparos, at 5-700 m on exposed outcrops of gneissic, volcanic and schistose rock. – World distribution: so far known only from the Paros and Santorini island group, Aegean, Greece.

The new species is close to *P. monogona* by its bisporous asci, but differs by the presence of salazinic instead of norstictic acid. Moreover it differs from all other large saxicolous *Pertusariae* on Paros by the small areoles each forming a single papille or fold: in *P. pentelici*, e.g., the thallus is less intensely cracked, and the separate areoles bear usually several papillae and folds and measure c. 1-2 mm. Ascoma scars are present on many specimens, but functional hymenia are usually lacking.

It is somewhat surprizing that such a large and conspicuous species should have remained undescribed. However, its main secondary metabolite, salazinic acid, is an uncommon substance in *Pertusaria*, and no similar species containing this substance is listed by Archer (1993). Boqueras (1997) does not report a similar species.

Pertusaria pentelici J. Steiner (≡ *Melanaria pentelici* (J. Steiner) Erichsen).
(6) *42730;* (9) in *42808,* in *42816;* (18) *43007* [ATHU, B]; (25) in *43120*. – Paros and Antiparos, at 5-450 m on exposed outcrops of gneissic, volcanic and schistose rock. – World distribution: known so far only from Greece.

TLC: norstictic, gyrophoric and connorstictic acids *(42730, 43007, Zahlbr. Lich. Rar. 147)*. The Paros material differs somewhat from Zahlbr. *147* by its thicker thallus with immersed apothecia with irregularly elongated to stellately branched discs; however, thinner thallus patches resemble Zahlbr. *147* more.

The chemistry also sets the species apart from other *Pertusaria* species, as no species with

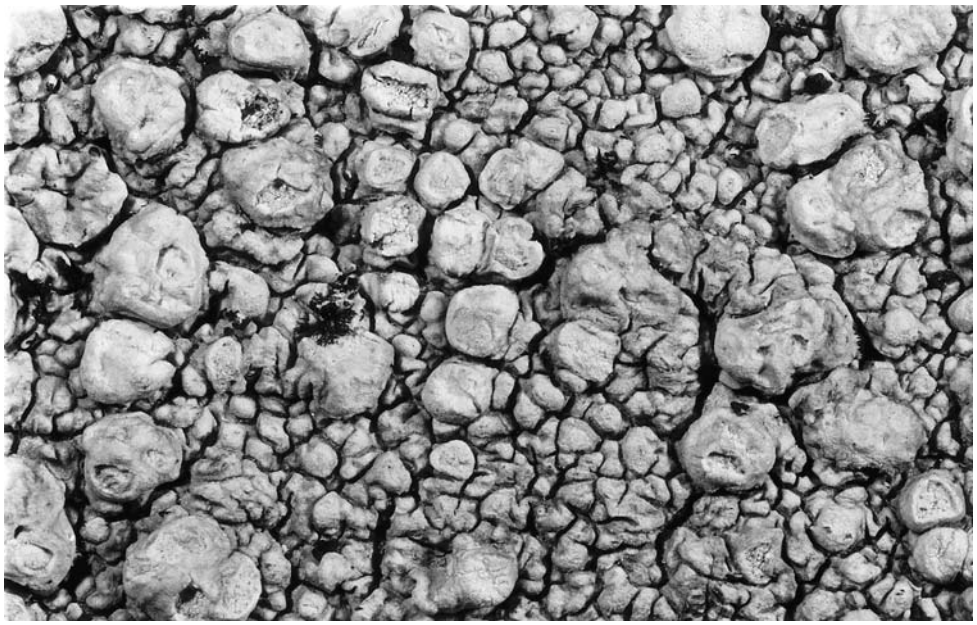

Fig 5. *Pertusaria parotica,* part of holotype. Note the larger fertile warts with one or a few discs or their scars, and the finely divided areoles. Bottom = 16 mm.

this chemistry is mentioned in Archer (1993). Formally the species might be included in the genus *Melanaria*. However, the difference of this genus to *Pertusaria*, viz. the (finally) browned spores, seems less significant than the differences between the main groupings within *Pertusaria*.

Pertusaria cf. *pentelici* J. Steiner
(2a) in *42631;* (11) *42871;* (18) *43011;* (29) *43265*. – Paros and Antiparos, at 50-200 m on exposed outcrops of schistose and gneissic rock.

TLC: norstictic, salazinic acids, indetermined spot *(42631* pp, *42871, 43011, 43265).* The specimens look fairly similar to *P. pentelici* and differ mainly by their chemistry. Ascospores were not found. The pycnoconidia are bacillar, c. 10 × 0.5 µm *(42871).* The combination of norstictic and salazinic acids is apparently not yet recorded in the genus *Pertusaria* (Archer 1993).

Pertusaria pertusa var. ***rupestris*** (DC.) Dalla Torre & Sarnth.
(38) *43391* [ATHU, B]. – Paros, at c. 450 m on large, exposed, gneissic rock outcrop. – World distribution: humid areas of the Eurosiberian region, incl. Mediterranean, Madeira and the Canary Islands.

TLC: coronaton, stictic, ?constictic acids.

Pertusaria sp. A
(2a) *42622*. – Paros, at 700 m on exposed gneissic rock outcrop.

TLC: no substances found. The thallus is densely papillose, with several papillae swollen to 1-2 mm in width and bearing a monomurata-type ascocarp, without ripe spores. The specimen concerns probably a deficient chemotype of a species normally containing lichen substances, but the absence of spores and lichen substances makes it difficult to attribute to any described species.

Pertusaria sp. B
(2) *42593*. – Paros, at 750 m as epiphyte on low shrub on top of tall cliff.

A small crustose lichen containing coronaton, stictic and ?constictic acids (TLC), with a

warty surface, without ripe ascomata or means for vegetative reproduction. The absence of ripe ascomata make it indeterminable, while the chemistry shows that it is different from the other *Pertusaria* species reported.

Pertusaria sp. C
(32) *43285*. – Paros, at 750 m as epiphyte on *Rhamnus lycioides* subsp. *oleoides* on low shrub on top of tall cliff.

A small crustose lichen containing a trace of norstictic acid and producing discoid, elongate ascomata with two spores per ascus measuring 130-160 × 80 µm. Norstictic acid alone is an uncommon chemistry in the genus *Pertusaria*. However, because of the small size of the specimen the chemistry may be incompletely known. Therefore the specimen is provisionally left unnamed.

Phaeophyscia orbicularis (Necker) Moberg
(9A) in *42829*. – Paros, at c. 450 m as epiphyte on *Cupressus sempervirens* tree trunk in vineyard. – World distribution: widespread in the temperate zone of the northern hemisphere and Australasia.

Phlyctis agelaea (Ach.) Flot.
(2) *42595;* (32) *43284* [ATHU, B]. – Paros, at 750 m as epiphyte on low shrubs on top of tall cliff, e.g. on *Rhamnus lycioides* subsp. *oleoides*. – World distribution: Mediterranean, extending to Macaronesia and northward to S Scandinavia, also in North America.

Phlyctis argena (Spreng.) Flot.
(2) *42559, 42586* [ATHU, B]; (2a) *42637;* (9) in *42818;* (32a) *43315a*. – Paros, at 450-750 m on exposed gneissic rock outcrops and as epiphyte on low shrubs. – World distribution: Europe from SW Scandinavia to the Mediterranean mountains, Canary Islands, North America.

TLC: norstictic, connorstictic acids *(42559, 42586, 42637). 42559* is unusual because it grew over moss in a rock fissure on a very exposed site and has an unusually thick thallus. *42637* and *43315a* are equally unusual since they grew directly on rock and are hardly sorediate, their propagules being coarse and looking like isidia.

Physcia adscendens (Fr.) H. Olivier
(2) *42590;* (4) *42677;* (6) in *42706;* (8) 4*2763* [ATHU]; (9A) *42825;* (11) *42857;* (13) in *42905;* (13) *42934;* (17) *42987;* (22) in *43057;* (23) in *43084;* (29) in *43205;* (31) *43282* [ATHU]; (33) in *43327*. – Paros and Antiparos, at 1-750 m on volcanic and schistose rock and as epiphyte on trunk and branches of various trees and shrubs, e.g. *Juniperus oxycedrus* subsp. *macrocarpa*, *J. phoenicea*, *Cupressus sempervirens*, *Olea europaea*, *Morus alba*. – World distribution: widespread in the cold to temperate zones of both hemispheres, occasional in tropical mountains.

Physcia albinea (Ach.) Nyl.
(1) *42530;* (24) *43090* [ATHU]; (29) *43266*. – Paros and Antiparos, at 25-200 m on exposed outcrops of granitic and schistose rock. – World distribution: Europe, North America; distribution not clearly known because of delimitation problems. – A duplicate of *42530* identified by R. Moberg, 1998.

Physcia biziana (Massal.) Zahlbr.
(1) *42518* [ATHU]; (8) *42764;* (9A) *42824;* (11) in *42870;* (29) *43230;* (33) *43333, 43339* [ATHU]. – Paros and Antiparos, at 25-500 m on granitic and schistose rock outcrops and as epiphyte on *Juniperus phoenicea*, *Cupressus sempervirens* and *Quercus ithaburensis* subsp. *macrolepis* trunks and branches. – World distribution: Mediterranean, Canary Islands, W North America, occasional in the mountains of tropical Africa and the Andes.

Physcia semipinnata (J. F. Gmel.) Moberg
(2) *42594*. – Paros, at 750 m as epiphyte on low shrubs on exposed top of cliff. – World distribution: Mediterranean, extending to W Europe, also in North America and India.

Physconia distorta (With.) J. R. Laundon
(33) *43329*. – Paros, at c. 500 m as epiphyte on *Quercus ithaburensis* subsp. *macrolepis* tree trunk in cultivated fields. – World distribution: widespread in temperate Europe and the Mediterranean, also throughout Macaronesia, in W North America, the Himalayas, Australia and occasionally in the mountains of tropical Africa.

Physconia cf. ***enteroxantha*** (Nyl.) Poelt
(2a) *42644*. – Paros, at 700 m on top of exposed gneissic rock outcrop.
The material lacks clear soredia and produces granules mixed with lobules instead.

****Placidiopsis custnani*** (Massal.) Körb.
(8) *42751*. – Paros, at c. 100 m on soil over limestone in open *Juniperus* scrub on hill top. – World distribution: Mediterranean, northward to S Scandinavia.
The spores are partly 3-septate.

Placidiopsis cinerascens (Nyl.) O. Breuss
(2) *42569;* (8) *42755* [ATHU]; (26) *43162;* (28) *43184* [ATHU, B]. – Paros, at 100-750 m on soil over calcareous rock in dwarf scrub and abandoned fields. – World distribution: Mediterranean, extending eastward to Mongolia; also in California and Baja California.

Placidium tenellum (O. Breuss) O. Breuss
(1) *42535* [ATHU, B]. – Paros, at c. 25 m on soil on granitic rock. – World distribution: arid regions, in Europe known from the SE part (Breuss 1991: 126). The identification was provided by O. Breuss.

Placidium squamulosum (Ach.) O. Breuss
(2) *42568;* (8) *42753;* (9) in *42785;* (26) *43161* [ATHU, B]; (28) *43186;* (30) *43271*. – Paros, at 100-750 m on soil over marble, occasionally over gneissic rock. – World distribution: widespread in the warm-temperate zones of both hemispheres, with scattered occurrences in tropical mountains and the arctic (Breuss 1995). The identification was confirmed by O. Breuss.

Placopyrenium trachyticum (Haszl.) O. Breuss
(18) *43014*. – Antiparos, at c. 150 m on schistose rock outcrop on coastal hill top. – World distribution: S and SE Europe, extending into Central Europe? The distribution is poorly known since no recent revision is available. The identification was confirmed by O. Breuss.

Placynthium nigrum (Hudson) Gray
(15) *42941* [ATHU]; (26) *43166;* (27) *43179*. – Paros and Antiparos, at 150-200 m on soil and adjacent limestone. – World distribution: circumpolar in the temperate zone of the northern hemisphere, Australasia.

Polyblastia sp.
(8) *42758*. – Paros, at c. 100 m among mosses on soil over calcareous rock on exposed hill top near the coast.
The spores are muriform, 8 per ascus, colourless, measuring 22-25 × 12 µm, and are composed of c. 6 × 3 cells in optical section; hymenial gonidia are absent. The genus is unlikely to occur in lowland Mediterranean vegetation, and no species was found to fit this material even approximatively.

Polysporina simplex (Davies) Vězda
(1) *42507;* (6) *42702* [herb. Pirintsos], *42709;* (11) *42873*; (24) *43092* [ATHU]; (29) *43203*. – Paros and Antiparos, at 25-200 m on exposed outcrops of siliceous (granitic, volcanic, schistose) rock. – World distribution: temperate zones of both hemispheres.

Porina linearis (Leighton) Zahlbr.
(26) *43153;* (29) *43230a* [B] (cf.). – Paros, at 150-200 m on marble and schistose rock outcrops.

– World distribution: Europe and North America.

The determination is not certain because the material deviates by its small perithecia. It agrees with *Sipman 28923* from Thira. In *43230a* the spores are 5-septate.

Porpidia macrocarpa (DC.) Hertel & A. J. Schwab
(2a) *42647;* (22) *43064* [ATHU], *43065*. – Paros and Antiparos, at 170-700 m on cinder heaps and on exposed gneissic rock outcrop. – World distribution: widespread in the temperate zone of the northern hemisphere, Australasia.

TLC: stictic, ?cryptostictic, ?menegazziaic acids *(43064, 43065)*.

Protoparmelia psarophana (Nyl.) Sancho & Crespo var. ***psarophana***
(1) in *42525;* (2a) *42631;* (6) *42698;* (11) *42840;* (13) *42918* [ATHU]; (18) *43002* [ATHU]; (23) in *43085;* (25) *43134*. – Paros and Antiparos, at 25-700 m on exposed outcrops of siliceous (granitic, gneissic, volcanic, schistose) rock. – World distribution: Mediterranean, extending to the Canary Islands.

TLC: lobaric acid, indetermined fatty acids *(42631, 42698, 42840, 42918, 43002)*. *42698* and *43002* have in addition a trace of norstictic acid.

Protoparmelia psarophana var. ***reagens*** (J. Steiner) Sipman, **comb. nova** ≡ *Lecanora psarophana* var. *reagens* J. Steiner in Ann. Naturhist. Mus. Wien 1931: 85.
(1) *42529;* (9) *42794* [ATHU]; (9) *42817;* (18) *42999* [ATHU]; (25) *43124;* (29) *43229;* (32a) *43316*. – Paros and Antiparos, at 5-700 m on exposed outcrops of siliceous (granitic, gneissic, volcanic, schistose) rock. – World distribution: probably the same as the typical variety.

TLC: trace of lecanoric, gyrophoric acids, indetermined fatty acids *(42529, 42794, 42817, 42999, 43229, 43316)*. No. *43124* deviates by its very uneven, almost lobulate thallus.

The available material of this species contains two chemotypes: one characterised by the presence of gyrophoric acid, the other by lobaric acid. Gyrophoric acid-containing plants tend to have more coarsely areolate, brown thalli with brown, sometimes slightly lobulate margins, while lobaric acid-containing plants tend to have more finely areolate, whitish thalli, sometimes with zoned margin (caused by prominent black hypothallus and more brownish marginal thallus parts). The former seem to correspond to *Lecanora psarophana* var. *aquilina* Clauzade & Roux (Ménard & Roux 1991: 105), proposed by Clauzade & Roux (1985: 427) without formal description, and with *Lecanora psarophana* var. *reagens* of Steiner.

Psora decipiens (Hedw.) Hoffm.
(1) *42533;* (2) *42562;* (2a) *42655;* (8) *42757* [ATHU]; (13) *42900;* (26) in *43165* [ATHU]; (34) *43342;* (35) in *43383*. – Paros and Antiparos, at 25-750 m on soil over siliceous rock, volcanic rock or limestone. – World distribution: widespread in all warm-temperate to cold zones of the world, in the tropics in the mountains.

Psora testacea Hoffm.
(30) *43277* [ATHU, B]. – Paros, at c. 600 m on marble rock outcrop. – World distribution: Mediterranean, extending with scattered localities to S Scandinavia.

Psorotichia sp.?
(34) *43346* [ATHU, B]. – Paros, at c. 350-400 m on gneissic rock outcrop.

A black, areolate, crustose lichen of uncertain systematic position with cyanobacteria as photobiont.

Pyrenopsis subareolata Nyl.
(1) *42505* [ATHU, B]. – Paros, at c. 25 m on granitic rock outcrop. – World distribution: Europe, probably more widespread, but poorly known.

Ramalina breviuscula Nyl.
(1) *42539* [ATHU, B]; (2a) *42609, 42610, 42645, 42646;* (9) *42787;* (18) *42996;* (25) *43117*

[herb. Pirintsos]; (29) in *43267* [herb. Pirintsos]; (38) *43403*. – Paros and Antiparos, at 25-700 m on exposed outcrops of siliceous (granitic, gneissic, schistose, volcanic) rock. – World distribution: Mediterranean.

TLC: trace of usnic, evernic acids, undetermined traces *(42539, 42609, 42646, 42996, 43403)*.

Ramalina canariensis J. Steiner
(2) *42584;* (13) *42931, 42933;* (17) *42990*. – Paros and Antiparos, at 5-750 m on exposed outcrops of volcanic rock and as epiphyte on live or dead branches of low shrubs, e.g. *Juniperus oxycedrus* subsp. *macrocarpa*, *J. phoenicea*, in open scrub. – World distribution: Mediterranean, extending northward to S Scandinavia and westward throughout Macaronesia; also in W North America and Australasia.

TLC: divaricatic acid, indetermined traces *(42548, 42931, 42990)*.

Ramalina farinacea (L.) Ach.
(2) *42582;* (32) *43287*. – Paros, at 750 m as epiphyte in low, exposed scrub, e.g. on *Rhamnus lycioides* subsp. *oleoides*. – World distribution: Europe, incl. the Mediterranean and Macaronesia, North America.

TLC: usnic, salazinic and norstictic (minor) acids *(42582, 43287)*. The two available epilithic specimens from this species complex contain usnic and norstictic without salazinic acid and are included here in *R. subfarinacea*. The Thira material of this species *(Sipman 28617)* contains protocetraric acid and belongs thus to a different chemical strain.

Ramalina fastigiata (Pers.) Ach.
(2) *42583;* (32) *43288*. – Paros, at 750 m as epiphyte in low, exposed scrub, e.g. on *Rhamnus lycioides* subsp. *oleoides*. – World distribution: widespread in the temperate zone of the northern hemisphere.

TLC: evernic acid, indetermined traces *(42583, 43288)*.

Ramalina lacera (With.) J. R. Laundon
(4) *42676*. – Paros, at sea level as epiphyte on *Juniperus oxycedrus* subsp. *macrocarpa* in open low scrub on coastal sand dunes. – World distribution: Mediterranean, extending northward to S Scandinavia and westward to Madeira and the Canary Islands; also in W North America.

****Ramalina protecta*** H. Magn.
(2a) *42608*. – Paros, at 700 m on exposed gneissic rock outcrop. – World distribution: Mediterranean.

TLC: unidentifiable traces only. This species is included by some authors in *R. polymorpha* (Lilj.) Ach.

Ramalina pusilla Duby
(17) *42991*. – Antiparos, at sea level as epiphyte on *Juniperus oxycedrus* subsp. *macrocarpa* in open low scrub on coastal sand dunes. – World distribution: Mediterranean, extending throughout Macaronesia.

TLC: sekikaic acid, indetermined traces.

Ramalina requienii (De Not.) Jatta
(2a) *42613;* (6) *42697* [ATHU, B]; (9) *42788* [ATHU, B]; (11) *42866;* (13) *42925, 42929;* (18) *42995;* (24) in *43089;* (25) *43116;* (29) *43267* [herb. Pirintsos]; (38) *43401*. – Paros and Antiparos, at 5-700 m on exposed outcrops of siliceous (gneissic, volcanic, schistose) rock. – World distribution: Mediterranean, extending throughout Macaronesia.

TLC: divaricatic acid, indetermined traces *(42697)*.

Ramalina subfarinacea (Cromb.) Nyl.
(2a) *42607* [ATHU, B]; (9) *42786*. – Paros, at 450-700 m on exposed outcrops of gneissic rock. – World distribution: along the Atlantic coasts of Europe, extending into the Mediterranean and throughout Macaronesia.

TLC: trace of usnic, norstictic, trace of connorstictic acids *(42607, 42786)*. Separated from *R. farinacea* because of the bluish soralia. Also chemically distinct from the Paros populations of *R. farinacea*, see remark there. The Thira material of this species contains salazinic acid with a minor quantity of norstictic acid (Sipman & Raus 1995: 425), and thus resembles *R. farinacea* from Paros in chemistry.

Rhizocarpon distinctum Th. Fr.
(1) *42496;* (2a) *42625;* (9) in *42801* [ATHU, B]; (11) *42837* [ATHU, B]; (13) *42911* [ATHU]; (21) in *43051;* (23) *43083;* (25) *43122;* (29) in *43220,* in *43254*. – Paros and Antiparos, at 5-700 m on siliceous (granitic, gneissic, schistose, volcanic) rock outcrops. – World distribution: Europe, incl. the Mediterranean, and North America.

The available Paros (and Santorini) specimens differ in having a greyish rather than brownish thallus. In this respect they agree with *R. distinctum* var. *olympicum* J. Steiner (type seen: Dzamlidza 1896/97, leg. *Nemetz* [W 1931-197]).

Rhizocarpon geographicum (L.) DC. subsp. ***geographicum***
(2a) *42635;* (9) *42801* [ATHU, B], *42802;* (34) *43365*. – Paros, at 350-700 m on gneissic rock outcrops. – World distribution: probably cosmopolitan, in the tropics restricted to the mountains.

Several specimens resemble *R. lecanorinum* because they have apothecia with distinct "collar-like" surrounding areoles. They differ from true *R. lecanorinum* by a K+ violet-red epithecium and paucilocular spores.

Rhizocarpon viridiatrum (Wulfen) Körb.
(32a) *43315* [ATHU, B]. – Paros, at 700 m on outcrop of gneissic rock with transition to calcareous rock. – World distribution: like the preceding.

TLC: rhizocarpic, stictic, ?cryptostictic acids, indetermined traces.

Rimelia reticulata (Taylor) Hale & A. Fletcher
(2a) *42611*. – Paros, at 700 m in fissure of exposed gneissic rock outcrop. – World distribution: widespread throughout the tropical mountains, extending into humid temperate areas.

TLC: atranorin, salazinic acid.

Rinodina alba Arnold
(1) *42492* [ATHU], *42493, 42494a;* (6) *42715;* (9) *42809;* (11) *42842, 42855;* (18) *43001* [ATHU]; (29) *43220, 43239* [herb. Pirintsos]. – Paros and Antiparos, at 25-200(-450) m on exposed, siliceous (granitic, gneissic, schistose, volcanic) rock outcrops. – World distribution: Mediterranean, Madeira and Canary Islands.

TLC: (1) atranorin, gyrophoric, lecanoric acids *(42492, 42715);* (2) atranorin, gyrophoric, ?ovoic acids *(42855)*.

Rinodina beccariana Bagl. var. ***beccariana***
(6) *42736* [ATHU]; (11) *42853a;* (11) *42859;* (25) *43123*. – Paros, Antiparos, at 5-80 m on exposed volcanic and schistose rock outcrops near the coast. – World distribution: Mediterranean, throughout Macaronesia, and extending along the Atlantic coast of Europe to the British Isles.

TLC: atranorin, 2 terpenoids *(42736, 42853a, 42859, 43123)*. The material is very similar to *R. santoriensis* morphologically and differs mainly in chemistry: presence of atranorin and two terpenoids, while *R. santoriensis* has atranorin and pannarin. The thallus has sometimes a slightly darker colour. Some material seems lichenicolous like *R. santoriensi*, e.g. *42859*.

Rinodina bischoffii (Hepp) Massal.
(35) *43372*. – Paros, at c. 40 m on calcareous stones on soil in road bank. – World distribution: Europe incl. the Mediterranean, North America and Australasia.

Rinodina cf. *dalmatica* Zahlbr.
(13) *42935*. – Antiparos, at c. 50 m as epiphyte on *Juniperus phoenicea* in open scrub on coastal hill.
TLC: pannarin. A sterile, sorediate, crustose lichen, det. M. Giralt 1999.

Rinodina gennarii Bagl.
(1) in *42512;* (6) *42725, 42739;* (11) *42853;* (13) *42924* [ATHU]; (20) in *43039* [ATHU]; (21) *43050a;* (23) in *43084;* (26a) *43168;* (29) *43242;* (34) *43369*. – Paros and Antiparos, at 5-200(-400) m on siliceous (granitic, volcanic, schistose, gneissic, ultramafic) rock outcrops and stones. – World distribution: widespread in the temperate zones of both hemispheres.

Rinodina immersa (Körb.) Zahlbr.
(8) *42769;* (16) *42978* [ATHU]; (26) *43156* [ATHU]; (27) *43175;* (30) *43279;* (32) *43297*. – Paros and Antiparos, at 100-600 m on calcareous rock outcrops. – World distribution: Mediterranean, extending into Central and W Europe, and eastward to Iran.

Rinodina insularis (Arnold) Haf.
(29) *43243* [ATHU, B]. – Paros, at 150-200 m on schistose rock outcrop, parasitic on *Lecanora rupicola* subsp. *rupicola*. – World distribution: S Europe.

Rinodina luridescens (Anzi) Arnold
(2a) *42629;* (10) *42835;* (38) *43390* [ATHU]. – Paros, at 300-700 m on gneissic rock outcrops. – World distribution: Atlantic Europe and the N Mediterranean.
TLC: zeorin, gyrophoric acid, indetermined spots *(42835, 43390)*.

****Rinodina nimisii*** Giralt & H. Mayrh.
(4) *42685;* (17) in *42986*. – Paros and Antiparos, at sea level on branches of *Juniperus oxycedrus* subsp. *macrocarpa* in open scrub on coastal sand dunes. – World distribution: Mediterranean (Corsica and Sardinia (Giralt & al. 1995); now also recorded for Greece). – *42685* confirmed by M. Giralt 1999.

****Rinodina obnascens*** (Nyl.) H. Olivier
(1) *42477* [ATHU, B]; (6) *42716;* (11a) *42885;* (18) *42997* [ATHU], *43008;* (25) *43127* [ATHU]; (29) *43197;* (34) *43357*. – Paros and Antiparos, at 10-400 m on exposed outcrops of siliceous (granitic, volcanic, schistose, gneissic) rock. – World distribution: W Mediterranean, extending into Atlantic Europe and the Canary Islands, now also recorded for Greece.
TLC: no substances found *(42447, 42997, 43008, 43127, 43197, 43199)*. According to Mayrhofer (pers. comm. Jan. 1999) the material belongs to *R. obnascens*, and represents a form without blastidia. It also differs in colour, typical *R. obnascens* having a more brownish thallus colour, resembling *R. milvina* (Wahlenb.) Th. Fr.
The description of *Rinodina cinerascens* J. Steiner, from schistose rock on the Aegean island of Delos (Steiner 1919: 57-58), suggests a similar lichen. However, all three specimens available in W and WU, including the type and material filed under *Caloplaca fuscoatroides*, show no such lichen but material similar to *R. gennarii*, the better material being that filed under *C. fuscoatroides*. This supports the decision of Mayrhofer (1984) to treat *R. cinerascens* as a synonym of *R. gennarii*.

Rinodina oleae Bagl.
(2) *42605;* (2) in *42597;* (6a) *42740a;* (8) *42762;* (32) *43294*. – Paros, at 1-750 m as epiphyte on shrubs, e.g. *Juniperus oxycedrus* subsp. *macrocarpa*, *J. phoenicea*, *Phlomis fruticosa*. – World distribution: Mediterranean.

Rinodina santorinensis J. Steiner var. ***santorinensis***
(2a) in *42632;* (21) *43047;* (25) in *43128;* (29) *43205*. – Paros and Antiparos, at 5-700 m on exposed outcrops of siliceous (gneissic, schistose, volcanic) rock. – World distribution: Mediterranean, Canary Islands.

TLC: atranorin, pannarin *(43047, 43205)*. Very similar to *R. beccariana*, see note under that species.

Roccella phycopsis (Ach.) Ach.
(6) *42696;* (11) *42867;* (13) in *42933;* (15) *42965* [ATHU], *42965a* [B] (c. apoth.); (18) *42993* [ATHU]; (19) *43018;* (25) in *43116;* (29) *43268*. – Paros and Antiparos, at 5-200 m on exposed outcrops of siliceous (volcanic, schistose) and calcareous rock, mainly in N facing fissures, occasionally as epiphyte on shrub branches of *Juniperus phoenicea*. – World distribution: Mediterranean, Atlantic Europe and throughout Macaronesia.

Sarcogyne regularis Körb.
(35) *43372a* [ATHU]; (35) *43375;* (35) *43382;* (39) *43414*. – Paros, at c. 50 m on calcareous and ultramafic stones on soil of road banks. – World distribution: widespread in the temperate zone of the northern hemisphere also in Australasia.

****Schismatomma picconianum*** (Bagl.) J. Steiner
(7) *42747*. – Paros, at 150 m as epiphyte on tree trunk in orchard. – World distribution: W Mediterranean, Azores, now also recorded for Greece.

****Scoliciosporum sarothamni*** (Vainio) Vězda
(2) *42598*. – Paros, at 750 m as epiphyte on low shrubs on exposed top of cliff. – World distribution: Europe, North America.

Solenopsora candicans (Dickson) J. Steiner
(30) *43276* [ATHU, B]. – Paros, at c. 600 m on exposed marble outcrop. – World distribution: Mediterranean, W Europe, North America, Australia.

Solenopsora cesatii (Massal.) Zahlbr. var. ***cesatii***
(26) *43136* [ATHU, B]. – Paros, at c. 200 m on exposed marble outcrop on hill top. – World distribution: Mediterranean, Canary Islands.

Solenopsora cesatii var. ***grisea*** Bagl.
(2) *42558;* (15) *42956;* (15) *42969;* (26) *43141* [ATHU, B]; (26) *43163;* (30) *43270;* (30) *43281*. – Paros and Antiparos, at 150-750 m on soil over calcareous rock and directly on calcareous rock. – World distribution: Mediterranean, Canary Islands.

TLC: atranorin, high terpenoid, ?diploicin, terpenoids, ?fatty acids (*43141*, *43163*, *43270*).

Solenopsora vulturiensis Nyl.
(11) in *42853;* (13) in *42936;* (18) *43016;* (24) *43103;* (25) in *43110;* (29) in *43204* [ATHU, B]. – Paros and Antiparos, at 5-200 m on outcrops of volcanic or schistose rock, on soil covers on such rock and occasionally as epiphyte on dusty branches of *Juniperus phoenicea* on such rock. – World distribution: W and Mediterranean Europe.

Squamarina cartilaginea (With.) P. W. James
(2) *42560;* (2) *42566, 42567;* (8) *42754;* (13) *42897* [ATHU], *42901* [ATHU]; (13) *42898;* (15) *42964;* (25) *43112;* (26) in *43159* [ATHU]; (30) *43272*. – Paros and Antiparos, at 5-750 m on soil over calcareous or volcanic rock. – World distribution: Europe and the Mediterranean, extending into the Canary Islands and Madeira.

TLC: (1) trace of isousnic, usnic, indetermined fatty (roccellic?) acid, indetermined terpenoid, psoromic, 2'-O-demethylpsoromic acid *(42560, 42566, 42754, 42964);* (2) trace of isousnic (sometimes below detection limit), usnic, indetermined fatty (roccellic) acid, indetermined terpenoid *(42567, 42897, 42898, 42901, 43112, 43272)*. (f. *pseudocrassa* (Mattick) Hawksw.). Chemotype 1 was the only one found on Santorini.

Squamarina concrescens (Müll. Arg.) Poelt
(2) *42571;* (15) *42967* [ATHU]; (26) *43159* [ATHU]; (32a) 43324. – Paros and Antiparos, at 150-750 m on soil over marble. – World distribution: Mediterranean, extending into the Canary Islands and Central Asia.

TLC: usnic acid, indetermined terpenoid, psoromic, 2'-O-demethylpsoromic acids, indetermined traces *(42571, 42967, 43159, 43324)*.

Squamarina gypsacea (Sm.) Poelt
(26) *43160*. – Paros, at c. 200 m on soil over marble. – World distribution: Mediterranean, usually at higher elevations, and extending northward to S Scandinavia.

TLC: trace of usnic, psoromic, ?roccellic acids *(43160)*.

Squamarina lentigera (G. H. Weber) Poelt
(2) *42563;* (8) *42748;* (28) in *43185*. – Paros, at 100-750 m on soil over limestone. – World distribution: widespread in the temperate zone of the northern hemisphere.

TLC: (1) trace of isousnic, usnic acids *(42748);* (2) trace of isousnic, usnic, ?roccellic acids (*42563*, uncertain determination)

Squamarina periculosa (Schaerer) Poelt
(2) *42555*. – Paros, at 750 m on soil over marble. – World distribution: Mediterranean.

TLC: usnic, 4-O-demethylbarbatic acid, indetermined traces. The identity of 4-O-demethylbarbatic acid was confirmed by Th. Lumbsch. It seems to be a common substance in *S. periculosa*. It is present in all four investigated specimens of this species in B, originating from France, Italy and Croatia. Psoromic acid, reported by Feige & al. (1997), was not found in the material investigated by us.

Tephromela atra (Hudson) Haf.
(1) *42524* [herb. Pirintsos]; (2a) *42616, 42638;* (3) *42662* [ATHU, B]; (6) *42738;* (9) *42818*; (11) *42850* [ATHU]; (13) *42907;* (15) *42950;* (18) *43006,* (23) in *43075;* (25) *43119;* (29) *43228* [ATHU], *43254;* (32a) *43309;* (38) *43393*. – Paros and Antiparos, at 5-700 m on exposed outcrops of siliceous (granitic, gneissic, volcanic, schistose) rock and as epiphyte on the trunk of a *Ficus carica* tree in a cultivated field. – World distribution: widely distributed on both hemispheres.

TLC: atranorin, α-collatolic acid, indetermined traces *(42524, 42818, 42950, 43006, 43228).*

42950 grew on marble and has a thick thallus. It can be considered to belong to var. *cypria* (Körb.) Nimis.

Thelenella modesta (Nyl.) Nyl.
(3) *42658;* (4) 42667. – Paros, at 1-550 m as epiphyte on trees and shrubs, on *Ficus carica* tree in cultivated field and on *Pistacia lentiscus* in low scrub on coastal sand dunes. – World distribution: Europe, N Africa, North America and Australia.

Thelomma siliceum (Fée) L. Tibell
(2a) in *42627;* (13) *42904* [ATHU]; (21) *43046;* (29) *43192*. – Paros and Antiparos, at 50-700 m on exposed outcrops of siliceous (gneissic, volcanic, schistose) rock. – World distribution: northern Mediterranean, from Spain to Greece.

Thelopsis isiaca Stizenb.
(4) *42674* [ATHU, B]. – Paros, at sea level on *Juniperus oxycedrus* subsp. *macrocarpa* shrub in low scrub on coastal sand dunes. – World distribution: Mediterranean, Atlantic Europe northward to S Scandinavia, throughout Macaronesia, W North America; a variety in Australia.

Toninia aromatica (Sm.) Massal.
(6) in *42726* [ATHU]; (15) in *42960;* (16) in *42982;* (26) *43164;* (27) in *43178;* (28) *43189a* [ATHU]; (32) in *43298;* (32a) *43324a;* (39) *43413*. – Paros and Antiparos, at 50-700 m on cal-

careous or volcanic rock outcrops or on soil over such rocks. – World distribution: widespread in the temperate zone of the northern hemisphere; Australasia.

Toninia episema (Nyl.) Timdal
(8) *42780* [ATHU, B]; (23) *43078;* (26) in *43148*. – Paros and Antiparos, at 100-300 m on marble outcrops, parasitic on *Aspicilia calcarea*. – World distribution: Mediterranean and W Europe.

Toninia opuntioides (Vill.) Timdal
(27) *43180*. – Paros, at c. 200 m on exposed marble rock outcrop. – World distribution: widespread in the temperate zone of the northern hemisphere.

The determination is not completely certain. Perhaps the material represents *T. massata* (Tuck.) Herre but grows on rock.

Toninia sedifolia (Scop.) Timdal
(2) *42572;* (8) *42750* [ATHU]; (15) *42970;* (16) *42982;* (28) *43189* [ATHU]; (35) *43383*. – Paros and Antiparos, at 40-750 m on soil over calcareous or ultramafic rock. – World distribution: cosmopolitan.

Trapeliopsis wallrothii (Spreng.) Hertel & G. Schneider
(24) *43096*. – Antiparos, at 150 m on a cinder heap. – World distribution: Mediterranean, Atlantic Europe, North and South America, also on Madeira and the Canary Islands.

Umbilicaria crustulosa (Ach.) Frey
(34) *43359* [ATHU, B]. – Paros, at 350-400 m on an exposed gneissic rock outcrop. – World distribution: widespread in the temperate zone of the northern hemisphere.

The specimens belong to the same morphotype as found in, e.g., Sardinia, with raised apothecia and a rather dark, strongly warty lower side. This differs strongly from the usual, boreal-alpine type with often impressed apothecia and a smooth, whitish lower face. However, intermediate plants with pale, more or less warty lower face occur in, e.g., the Vosges, France, see also Nimis & Poelt (1987: 235), Hestmark (1992: 342).

Verrucaria cf. *caerulea* DC.
(8) in *42774;* (32) *43303*. – Paros, at 100-700 m on calcareous rock outcrops.

The identification is provisional, since the material lacks properly developed perithecia and differs clearly from Central European specimens. It concerns a rather thick, smooth, areolate, pale blue-grey crust.

Verrucaria calciseda auct.?
(2) *42547;* (30) *43280* [ATHU, B]; (32) *43305*. – Paros, at 600-750 m on marble outcrops.

The identification is provisional, in view of the poor knowledge of *Verrucaria* taxonomy in the Mediterranean. The material may be heterogeneous. It has largely immersed perithecia, c. 0.3-0.4 µm diam., with completely carbonised involucrum and without distinctly shield-like involucrellum.

Verrucaria compacta (Massal.) Jatta
(6) *42727;* (39) *43409*. – Paros, at 50-80 m on volcanic rock outcrops and ultramafic stones in road bank. – World distribution: Mediterranean, from S France to N Africa and Israel; Mongolia and Australia. *42727* has been identified by O. Breuss. The identification of *43409* is provisional, the material does not correspond completely with herbarium material in B.

Verrucaria fuscella (Turner) Winch
(8) *42766*. – Paros, at c. 100 m on low limestone outcrop. – World distribution: probably widespread in the temperate zone of the northern hemisphere.

The name is used in a wide sense as in Nimis (1993).

Verrucaria cf. *muralis* Ach.
(24) in *43100;* (32a) in *43320* [ATHU, B]. – Paros and Antiparos, at 150-700 m on calcareous and schistose rock outcrops.

Verrucaria nigrescens Pers.
(2a) *42652* [ATHU, B] (no spores); (8) *42768;* (26) *43151, 43157*. – Paros, at 100-700 m on marble outcrops. – World distribution: Europe, N Africa, North America and Australasia.

The name is used in a wide sense, for specimens with a brown, areolate thallus with black hypothallus.

Verrucaria aff. *nigrescens*
(8) *42770;* (13) *42928a;* (22) *43060*. – Paros and Antiparos, at 50-170 m on calcareous rock outcrops and cinder heaps.

This concerns three specimens resembling *V. nigrescens* but with particularly black thallus.

Verrucaria viridula (Schrad.) Ach.
(8) in *42774;* (13) *42896;* (22) in *43060*. – Paros and Antiparos, at 50-170 m on calcareous and volcanic rock and cinder. – World distribution: probably widespread in Europe and North America. – This concerns specimens with a brown, areolate thallus without black hypothallus.

Verrucaria sp. A
(2a) in *42635;* (9) *42813*. – Paros, at 450-700 m on gneissic rock outcrops.

An apparently parasitic species forming small, scattered, dark brownish colonies on *Rhizocarpon geographicum*. The Paros material lacks fruit bodies, but is similar to fruiting material seen from Corsica. – TLC: no substances found.

Verrucaria? sp. B
(2a) *42654*. – Paros, at 700 m on marble rock outcrop.

A smooth, crustose lichen measuring several cm in diam., with c. 0.1 mm wide, immersed perithecia (or pycnidia?) without ripe asci.

Xanthoparmelia tinctina (Maheu & Gillet) Hale
(1) *42504;* (9) *42798* [ATHU]; (10) *42836;* (13) *42902*. – Paros and Antiparos, at 25-450 m on granitic, gneissic and volcanic rock outcrops. – World distribution: Mediterranean extending northward to S Scandinavia, and eastward to Pakistan (Hale 1990).

TLC: usnic, trace of norstictic, salazinic acids *(42504, 42798, 42836, 42902)*.

Xanthoria calcicola Oksner
(1) *42511* [ATHU]; (6) *42724;* (11) *42844;* (13) in *42902;* (18) in *42994;* (25) in *43116;* (29) *43209*. – Paros and Antiparos, at 5-200 m on granitic, volcanic and schistose rock outcrops, exclusively saxicolous. – World distribution: Mediterranean, extending northward to S Scandinavia and eastward to the SW Asia.

Xanthoria parietina (L.) Th. Fr.
(2) *42588* [ATHU]; (3) in *42662* [ATHU, B]; (4) *42670;* (6a) in *42740* [ATHU, B]; (9A) *42821;* (17) *42988* [ATHU]; (17a) in *42992* [ATHU, B]; (32) *43295;* (33) in *43327;* (33) in *43333;* (33) in *43338*. – Paros and Antiparos, at 1-750 m as epiphyte in various trees and shrubs, on branches and trunks, and in various vegetation types; e.g. on *Ficus carica*, *Juniperus oxycedrus* subsp. *macrocarpa*, *Cupressus sempervirens*, *Olea europaea*, *Phlomis fruticosa*, *Morus alba*, *Quercus ithaburensis* subsp. *macrolepis*. – World distribution: probably widespread in the temperate zones of both hemispheres.

indet. crustose lichen A
(18) *43017*. – Antiparos, at c. 150 m on schistose rock outcrop.

A grey, warty, sterile, crustose lichen. – TLC: pannarin and traces of atranorin and a terpenoid, probably zeorin.

indet. crustose lichen B
(24) *43099*. – Antiparos, at c. 150 m on schistose rock outcrop.

A brownish, warty, crustose lichen reminding of the genus *Toninia*, but much damaged and exposing the white medulla. Its medulla reacts C+ red and TLC suggests the presence of gyrophoric acid. Evidently it does not belong to any of the above species.

indet. crustose lichen. C
(25) *43121*. – Antiparos, at sea level on lava rock outcrop.

A sterile, greyish, areolate, crustose lichen growing over *Pertusaria parotica*. – TLC: salazinic and a trace of norstictic acids.

Checklist of the lichens of the Santorini archipelago

This checklist is based on Sipman & Raus (1995). Species reported there are presented here without comment. For the others, literature references, habitat and locality information, and unpublished collections are given. For an explanation of the locality numbers in brackets, see Sipman & Raus (1995). The list contains 170 identified species, including 15 taxa first reported for the archipelago (marked *) and 1 species, *Lecanora sardoa*, probably new for the flora of Greece (marked **).

Acarospora microcarpa (Nyl.) Wedd.
Acarospora umbilicata Bagl.
Acarospora veronensis Massal.
Anaptychia ciliaris (L.) Massal.
Arthonia clemens (Tul.) Th. Fr.
Arthonia varians (Davies) Nyl.
Aspicilia calcarea (L.) Mudd (Szatala 1943: 35; Steiner 1919: 77, Szatala 1943: 39 as *Lecanora albescens* var. *deminuta* auct. non (Stenh.) Th. Fr.; Steiner 1919: 87 as *Lecanora calcarea* (L.) Sommerf.). – Common on limestone at 20-560 m altitude. Profitis Ilias, Monolithos, Gavrillos. – Two specimens in WU identified as *L. albescens* var. *deminuta* have been examined. They appeared to be sterile and morphologically indistinguishable from *Aspicilia calcarea*.
Aspicilia intermutans (Nyl.) Arnold (cited by Sipman & Raus 1995: 415 as *Aspicilia reticulata* var. *contortoides* (J. Steiner) Szat.)
****Bagliettoa parmigera*** (J. Steiner) Vězda & Poelt. – On limestone at 550 m altitude. Profitis Ilias: (1) *28594*.
****Bagliettoa parmigerella*** (Zahlbr.) Vězda & Poelt. – On limestone at 550 m altitude. Profitis Ilias: (1) *28595*.
Buellia alboatra (Hoffm.) Th. Fr. (cited by Sipman & Raus 1995: 420 as *Diplotomma ambiguum* (Ach.) Flagey)
Buellia fimbriata (Tuck.) Sheard
Buellia punctata (Hoffm.) Massal.
Buellia sequax (Nyl.) Zahlbr.
Buellia stellulata (Taylor) Mudd
Buellia subdisciformis (Leighton) Vainio
Buellia venusta (Körb.) Lettau (cited by Sipman & Raus 1995: 420 as *Diplotomma epipolium* (Ach.) Arnold)
Caloplaca agardhiana (Massal.) Clauz. & Roux
Caloplaca alociza (Massal.) Migula
Caloplaca aractina (Fr.) Häyrén (cited by Sipman & Raus 1995: 416 as *Caloplaca conglomerata* (Bagl.) Jatta)
Caloplaca aurantia (Pers.) J. Steiner (Steiner 1919: 68 as *Caloplaca callopisma* f. *orientalis* J. Steiner; Szatala 1943: 52 as *Gasparrinia callopisma* f. *orientalis* (J. Steiner) Szat.). – On

limestone at 100-560 m altitude. Profitis Ilias: (1) *28611*. Gavrillos: (34) *29332*. Phira. Mesavouno saddle.

Caloplaca cerina (Hedw.) Th. Fr.

****Caloplaca cerinelloides*** (Erichsen) Poelt. – Epiphytic at 10-560 m altitude. Profitis Ilias: (2) in *28641*. Nea Kaimeni: (13) *28809*. Palea Kaimeni: (16) *28871*. Aspronisi: (18) *28952*.

Caloplaca citrina (Hoffm.) Th. Fr. (Steiner 1919: 71, Szatala 1943: 51). – Widespread on bark, wood, lava, limestone and soil at 50-560 m altitude. Profitis Ilias: (1) *28621*. Nea Kaimeni: (4) *28687a, 28689;* (7) *28717*. Aspronisi: (18) *28949*. Megalo Vouno: (26) *29162*. Cape Akrotiri: (31) *29267*. Palea Kaimeni. Thirasia. Kokkino Vouno. Cape Mavrorachidi. Lavicolous specimens often have considerable parts of the thallus without soredia.

Caloplaca coronata (Körb.) J. Steiner

****Caloplaca crenularia*** (With.) J. R. Laundon (cited by Sipman & Raus 1995: 418 as *Caloplaca scotoplaca* (Nyl.) Magnusson)

Caloplaca dolomiticola (Hue) Zahlbr.

Caloplaca erythrocarpa (Pers.) Zwackh

Caloplaca flavescens (Hudson) J. R. Laundon

Caloplaca flavorubescens (Hudson) J. R. Laundon

Caloplaca fuscoatroides J. Steiner

Caloplaca granulosa (Müll. Arg.) Jatta (Steiner 1919: 68; Szatala 1943: 52 as *Gasparrinia granulosa* (Müll. Arg.) Sydow).

Caloplaca haematites (Chaub. ex Saint-Amans) Zwackh (Steiner 1919: 69 as *Caloplaca cerina* var. *haematites* (Chaub.) Flagey; Szatala 1943: 50). – Epiphytic on *Pinus brutia* twigs, on *Quercus coccifera* and on wood, at 50-500 m altitude. Profitis Ilias 500 m (2) *28641a*; Nea Kaimeni 50 m (4) *28690*.

Caloplaca holocarpa (Ach.) A. E. Wade

Caloplaca inconnexa (Nyl.) Zahlbr.

****Caloplaca limitosa*** (Nyl.) H. Olivier (cited by Sipman & Raus 1995: 418 as *Caloplaca percrocata* (Arnold) J. Steiner)

Caloplaca pyracea (Ach.) Th. Fr. (Steiner 1919: 71, Szatala 1943: 50). – Epiphytic on *Pinus brutia* twigs and on *Quercus coccifera* at 50 m altitude. Profitis Ilias: (2) *28641*.

Caloplaca saxicola (Hoffm.) Nordin

Caloplaca teicholyta (Ach.) J. Steiner

Caloplaca variabilis (Pers.) Müll. Arg.

****Caloplaca veneris*** Roux & Nav.-Ros. – Arkhangelos: (32) *29282a*.

Caloplaca vitellinula (Nyl.) H. Olivier (Steiner 1919: 71, Szatala 1943: 51).

Candelariella aurella (Hoffm.) Zahlbr.

Candelariella reflexa (Nyl.) Lettau

Candelariella vitellina (Hoffm.) Müll. Arg.

Catillaria chalybeia (Borrer) Massal. (Steiner 1919: 94, Szatala 1943: 29 as *Catillaria chalybaea* var. *gelatinosa* J. Steiner). – On lava at 10-560 m altitude. Nea Kaimeni: (4) *28673;* (5) *28699;* (8) *28720* [ATHU]; (10) *28740;* (12) *28778*. Palea Kaimeni: (15) *28823;* (16) *28867*. Profitis Ilias. Arkhangelos.

Cladonia cervicornis (Ach.) Flotow

Cladonia foliacea (Hudson) Willd.

Cladonia humilis (With.) J. R. Laundon

Cladonia pyxidata (L.) Hoffm.

Cladonia rangiformis Hoffm.

Clauzadea monticola (Ach.) Haf. & Bellem.

Collema auriforme (With.) Coppins & J. R. Laundon

Collema cristatum (L.) Wigg.

Collema tenax (Sw.) Ach. (Steiner 1919: 89, Szatala 1943: 24 as *Collema pulposum* (Bernh.) Ach.). – On soil on limestone and calcareous lava at 25-250 m altitude. Monolithos: (17) *28927, 28943*. Thirasia: (19) *28979*. Mesavouno saddle: (35) *29343*. Megalo Vouno.

Diploicia canescens (Dickson) Massal.

Diploschistes actinostomus (Pers. ex Ach.) Zahlbr.

Diploschistes diacapsis (Ach.) Lumbsch

****Diploschistes euganeus*** (Massal.) J. Steiner. – On lava at c. 150 m altitude. Arkhangelos: (32) in *29290*.

Diploschistes muscorum (Scop.) R. Sant.

Diploschistes scruposus (Schreb.) Norman

Dirina cretacea (Zahlbr.) Tehler

Dirina massiliensis Durieu & Mont. f. ***massiliensis***

Dirina massiliensis f. ***sorediata*** (Müll. Arg.) Tehler

Enterographa crassa (DC.) Fée

Epiphloea terrena (Nyl.) Trevisan

Evernia prunastri (L.) Ach. (Steiner 1919: 76, Szatala 1943: 6 as *Evernia prunastri* f. *gracilis* Ach.).

Fulgensia subbracteata (Nyl.) Poelt (Steiner 1919: 74 as *Caloplaca fulgens* var. *campestris* auct. non (Th. Fr.) J. Steiner; Szatala 1943: 52 as *Fulgensia fulgens* var. *campestris* auct. non (Th. Fr.) Szat.). – On soil on limestone at 150-500 m altitude. Gavrillos: (34) *29316*, *29335a* [ATHU]. Mesavouno saddle: (35) *29341*, *29345*. Profitis Ilias, *Bildheim 20*. Profitis Ilias SW side: *Raus 17684*. – The identity of the material cited as *Caloplaca fulgens* var. *campestris* was found by investigating a specimen in WU from "Hagios Elias", studied by Steiner.

Haematomma ochroleucum var. ***porphyrium*** (Pers.) J. R. Laundon

Hafellia leptoclinoides (Nyl.) Scheid. & H. Mayrh. (Steiner 1919: 64, Szatala 1943: 54 as *Buellia leptoclinoides* (Nyl.) J. Steiner). – Widespread on lava at 50-200 m altitude. Palea Kaimeni: (16) *28859*, *28874*. Thirasia: (20) *29014*. Megalo Vouno: (25) *29088*. Mikro Profitis Ilias: (29) *29227* [ATHU]. Cape Akrotiri: (31) *29256*, *29274*.

Lecania cyrtella (Ach.) Th. Fr.

Lecania inundata (Hepp ex Körb.) M. Mayrh.

Lecania rabenhorstii (Hepp) Arnold (Steiner 1919: 77; Szatala 1943: 4 as *Lecania erysibe* var. *Rabenhorstii* (Hepp) Mudd; Szatala 1943: 43 as *Lecania erysibe* var. *proteiformis* auct. an (Massal.) Boistel). – One of the specimens of "var. *rabenhorstii*" in WU is on mortar. The specimen in WU of *L. erysibe* var. *proteiformis* does not show significant differences with those of "var. *rabenhorstii*".

Lecania spadicea (Flotow) Zahlbr.

Lecania turicensis (Hepp) Müll. Arg. (Mayrhofer 1988: 114). – On limestone and mortar at 25-150 m altitude. Phira: (6) *28708*. Monolithos: (17) *28919*, *28931*, *28939*. Gavrillos: (34) *29319*. – Thallus development and apothecium colour of the available specimens are very variable.

Lecanographa grumulosa (Dufour) Egea & Torrente (cited by Sipman & Raus 1995: 421 as *Lecanactis grumulosa* var. *grumulosa* and var. *monstrosa*)

Lecanographa werneri (Faurel & al.) Egea & Torrente (Egea & Torrente 1994: 164; cited by Sipman & Raus 1995: 421 as *Lecanactis*)

Lecanora albescens (Hoffm.) Branth & Rostr. – Part of the material cited by Sipman & Raus (1995: 421) is excluded and a new note presented here: On limestone at 25 m altitude. Monolithos: (17) *28944*. Gavrillos: (34) *29321*.

Lecanora campestris (Schaerer) Hue

Lecanora carpinea (L.) Vainio (Steiner 1919: 83, Szatala 1943: 38 as *Lecanora pallida* auct. non (Schreb.) Schaerer). – Steiner (1919) evidently used the name *L. pallida* in the old,

wider sense. The specimen in WU turned out to have the C+ yellow reaction on the apothecium disc characteristic of *L. carpinea*.

Lecanora conferta (Duby ex Fr.) Grognot

Lecanora dispersa (Pers.) Sommerf. (Steiner 1919: 83, Szatala 1943: 39). – Common on lava, limestone, wood, and epiphytic on *Pinus brutia*, at 10-500 m altitude. Profitis Ilias: (2) *28642a*. Nea Kaimeni: (8) *28730;* (12) *28779, 28788, 28790;* (13) *28808*. Palea Kaimeni: (15) *28822;* (16) *28873*. Profitis Ilias. Thirasia. Kokkino Vouno. Mikro Profitis Ilias. Cape Skaros. Arkhangelos. Cape Mavrorachidi. – The name is used here in a wide sense for saxicolous and corticolous plants. The specimens vary mainly in the development of the apothecial margin, which may be thick and white, or thinner and more greyish.

Lecanora expallens Ach.

Lecanora gangaleoides Nyl.

Lecanora hagenii (Ach.) Ach. (Steiner 1919: 83, Szatala 1943: 39).

Lecanora horiza (Ach.) Lindsay

****Lecanora hybocarpa*** (Tuck.) Brodo (cited by Sipman & Raus 1995: 421 as *L. chlarotera* Nyl.)

Lecanora meridionalis H. Magn. (cited by Sipman & Raus 1995: 421 as *L. chlarotera* subsp. *meridionalis* (H. Magn.) Clauz. & Roux)

****Lecanora poeltiana*** Clauz. & Roux. – On limestone. Mt Gavrillos: (34) *29301*.

Lecanora pruinosa Chaub.

Lecanora rupicola (L.) Zahlbr. subsp. ***rupicola*** (Szatala 1943: 39; Steiner 1919: 82 as *Lecanora sordida* (Pers.) Th. Fr.). – On lava at 100-560 m altitude. Profitis Ilias: (1) *28605*. Palea Kaimeni: (16) *28892*. Thirasia: (20) *29016, 29019;* (21) *29039, 29042* [ATHU]; (22) *29051*. Megalo Vouno: (26) 2*9135*. Kokkino Vouno. Mikro Profitis Ilias. Arkhangelos. – Specimens tested by C-reaction of thallus medulla and cortex (both negative).

Lecanora rupicola subsp. ***sulphurata*** (Ach.) Leuckert & Poelt

*****Lecanora sardoa*** Bagl. – On lava at c. 250 m altitude. Thirasia: (22) *29062*. Det. T. Lumbsch (Essen). – TLC: atranorin, norstictic, connorstictic acids. Previously (Sipman & Raus 1995: 422) included in *L. schistina,* from which it differs by its more raised apothecia with thicker margins.

Lecanora schistina (Nyl.) Arnold (excl. *29062*)

Lecanora sulphurea (Hoffm.) Ach.

Lecidea fuscoatra (L.) Ach.

Lecidella aegaea Knoph & Sipman (Knoph & Sipman 1999).

Lecidella asema (Nyl.) Knoph & Hertel

Lecidella chodati (Samp.) Knoph & Leuckert

Lecidella elaeochroma (Ach.) Haszl. (incl. *Lecidella achristotera* (Nyl.) Hertel & Leuckert) (Steiner 1919: 95, Szatala 1943: 27 as *Lecidea parasema* (Ach.) Arnold). – On *Pinus brutia* twigs, *Vitis vinifera* and *Quercus coccifera* at 150-500 m altitude. Profitis Ilias: (2) *28642b*. Thirasia: (20) *29000*. – See remark in Paros list.

Lecidella euphorea (Flörke) Hertel (Steiner 1919: 95, Szatala 1943: 27 as *Lecidea euphorea* Flörke).

Lecidella scabra (Taylor) Hertel & Leuckert (Steiner 1919: 95, Szatala 1943: 28 as *Lecidea protrusa* Th. Fr.). – On lava at 100-200 m altitude. Thirasia: (19) *28966*. Kokkino Vouno: (27) *29190*. Nea Kaimeni. Mikro Profitis Ilias.

Lepraria nivalis J. R. Laundon

Leprocaulon microscopicum (Vill.) D. Hawksw. (Steiner 1919: 92 as *Stereocaulon nanum* Ach; Szatala 1943: 33 as *Stereocaulon quisquiliare* (Leers) Hoffm.). – On soil on lava at 10-250 m altitude. Nea Kaimeni: (4) *28675*. Palea Kaimeni. Thirasia. Megalo Vouno. Mikro Profitis Ilias.

Leptogium gelatinosum (With.) J. R. Laundon (Szatala 1943: 24 as *Leptogium pulvinatum* (Hoffm.) Crombie). – The old record is confirmed by a new, muscicolous specimen from the top of Mt Profitis Ilias, 500 m. Profitis Ilias: (2) *28645*.

Neofuscelia attica (Leuckert & al.) Essl. – Note: The discussion in Sipman & Raus (1995: 423) was based on a misinterpretation of the chemistry. Alectoronic acid is not present and the samples have the usual chemical spectrum of *N. attica*. Therefore *N. attica* is no longer considered conspecific with *N. glabrans* (Nyl.) Essl. and *N. pulloides* (Essl.) Essl.

Ochrolechia parella (L.) Massal. (Steiner 1919: 77, Szatala 1943: 43). – On lava and wood at 100-200 m altitude. Nea Kaimeni: (12) *28755*. Palea Kaimeni: (16) *28841*. Thirasia: (20) *29001, 29010.* Megalo Vouno: (26) *29133*. Mikro Profitis Ilias: (29) *29205*. Cape Skaros. Arkhangelos. *29205* and *29001*, collected on wood, do not show any difference with the saxicolous plants, and have therefore been included in the same species and not in *L. pallescens* (L.) Massal.

Opegrapha calcarea Sm.

Opegrapha rupestris Pers.

Opegrapha subelevata (Nyl.) Nyl.

Parmelia saxatilis (L.) Ach.

****Peccania coralloides*** (Massal.) Massal. – On limestone at 150 m altitude. Gavrillos: (34) *29310*. – Confirmed by M. Schultz (Kaiserslautern).

Pertusaria amara (Ach.) Nyl.

Pertusaria flavicans Lamy

****Pertusaria parotica*** Sipman. – On lava at 200 m altitude. Mikro Profitis Ilias: (29) *29241*.

****Pertusaria pentelici*** J. Steiner. – On lava at 250 m altitude. Thirasia: (22) in *29056* (*Pertusaria flavicans*).

Pertusaria pertusa var. ***rupestris*** (DC.) Dalla Torre & Sarnth.

Phaeophyscia orbicularis (Necker) Moberg (Steiner 1919: 55, Szatala 1943: 58 as *Physcia orbicularis* (Necker) Th. Fr.).

Physcia adscendens (Fr.) H. Olivier

Physcia biziana (Massal.) Zahlbr.

Physcia semipinnata (J. F. Gmel.) Moberg (Steiner 1919: 55 as *Physcia stellaris* var. *leptalea* (Ach.) Th. Fr.; Szatala 1943: 57 as *Physcia leptalea* (Ach.) DC.).

Placidium squamulosum (Ach.) O. Breuss – Most material of this species was erroneously reported by Sipman & Raus (1995) and revised by O. Breuss. The only remaining specimen was from a lava outcrop at 300 m on Mt Megalo Vouno (loc. 26).

Placidium tenellum (O. Breuss) O. Breuss – The material was erroneously cited as *Catapyrenium squamulosum* by Sipman & Raus (1995) and revised by O. Breuss.

****Placopyrenium trachyticum*** (Haszlin) O. Breuss – On weakly calcareous lava at 200 m altitude. Kokkino Vouno: (27) *29188*.

Placynthium nigrum (Hudson) Gray

Placynthium subradiatum (Nyl.) Arnold

Pleurosticta acetabulum (Necker) Elix & Lumbsch (Steiner 1919, Szatala 1943: 45 as *Parmelia acetabulum* (Necker) Duby).

Porina linearis (Leighton) Zahlbr. (Steiner 1919: 97, Szatala 1943: 19 as *Porina plumbea* (Bagl.) Zahlbr.). – On limestone at 25 m altitude. Monolithos: (17) *28923*. – The specimen deviates by its small perithecia, only about 0.2 mm in diam.

Porpidia macrocarpa (DC.) Hertel & A. J. Schwab

Protoparmelia psarophana (Nyl.) Sancho & Crespo var. ***psarophana*** – Part of the material cited by Sipman & Raus (1995: 424) is now included in var. *reagens* and only the following records apply to var. *psarophana*. On lava at 100-300 m altitude. Thirasia: (19) *28964;* (21) *29031, 29037*. Megalo Vouno: (26) *29129, 29183.* Arkhangelos: (32) *29285*. – TLC: lobaric acid with two associated traces, sometimes with traces of norstictic acid.

*****Protoparmelia psarophana*** var. ***reagens*** (J. Steiner) Sipman – See species list for Paros above. On lava at 100-300 m altitude. Thirasia: (21) *29045*. Megalo Vouno: (26) *29163*. Mikro Profitis Ilias: (29) *29247*. – TLC: gyrophoric acid, sometimes with a trace of norstictic acid. No difference in colour or thallus structure with var. *psarophana* could be observed, except

that in the few available specimens with gyrophoric acid the thallus margin is more often slightly effigurate. The differentiation between both chemical varieties thus is less clear than on Paros.

Psora decipiens (Hedw.) Hoffm.

Psora gresinonis B. de Lesd.

Ramalina breviuscula Nyl.

Ramalina canariensis J. Steiner (Steiner 1919: 74, Szatala 1943: 47 as *Ramalina latzelii* Zahlbr.). – Epiphytic, e.g., on *Ficus, Pinus brutia,* occasionally on lava, at 180-550 m altitude. Profitis Ilias: (1) *28599, 28618;* (2) *28661b*. Thirasia: (20) *29020a;* (24) *29077*. Megalo Vouno, *Bildheim 30*. – TLC: divaricatic acid *(28599, 28661b, 29020a).*

Ramalina farinacea (L.) Ach. (Steiner 1919: 74, Szatala 1943: 47 as *Ramalina farinacea* var. *multifida* Ach.). – Epiphytic at 560 m altitude. Profitis Ilias: (1) *28617*. – TLC: usnic and protocetraric acids. A record from "Kaimeni, auf Lava" (Szatala 1943: 47) is unlikely and probably refers to small specimens of *R. requienii*, which are common on this locality.

Ramalina fastigiata (Pers.) Ach.

Ramalina lacera (With.) J. R. Laundon

Ramalina pusilla Duby

Ramalina requienii (De Not.) Jatta (Steiner 1919: 74, Szatala 1943: 47 as *Ramalina polymorpha* auct. non Ach.). – Widespread on lava, especially on hill tops, occasionally epiphytic *(Calicotome villosa),* at 50-300 m altitude. Nea Kaimeni: (4) *28677;* (12) *28753*. Palea Kaimeni: (16) *28837*. Thirasia: (20) *29021;* (22) *29065*. Megalo Vouno: (25) *29105;* (26) *29120, 29124; Bildheim 25*. Mikro Profitis Ilias: *Bildheim 21b*. Kokkino Vouno. Cape Skaros. Cape Akrotiri. Mesavouno saddle. – TLC: divaricatic acid with or without traces of usnic acid. By far the commonest species of its genus on the archipelago. The identity of Steiner's *Ramalina polymorpha* was established by examination of duplicates in W (TLC: divaricatic acid) and four specimens in WU.

Ramalina subfarinacea (Cromb.) Nyl.

Rhizocarpon distinctum Th. Fr.

Rimelia reticulata (Taylor) Hale & Fletcher

Rinodina beccariana Bagl. var. ***beccariana*** (Mayrhofer & al. 1993: 288). – On lava at 200 m altitude. Megalo Vouno: (25) *29094*. Mikro Profitis Ilias: (29) *29207*.

Rinodina gennarii Bagl.

Rinodina oleae Bagl. (cited by Sipman & Raus 1995: 425 as *Rinodina exigua* (Ach.) Gray)

Rinodina pyrina (Ach.) Arnold

Rinodina santorinensis J. Steiner (Steiner 1919: 57 as *Rhinodina santorinensis* J. Steiner; Szatala 1943: 57, Mayrhofer & al. 1993: 298). – Widespread on lava at 50-250 m altitude. Nea Kaimeni: (5) *28692*. Palea Kaimeni: (16) *28856, 28901*. Thirasia: (21) *29035*. Megalo Vouno: (25) *29086;* (26) *29146*. Mikro Profitis Ilias: (29) *29203*. Cape Akrotiri: (31) *29255, 29271*. Kokkino Vouno. Cape Skaros. Arkhangelos. Cape Mavrorachidi. – All specimens, except *28692*, were identified by J. Sattler (Graz).

Roccella phycopsis Ach. (Steiner 1919: 97, Szatala 1943: 21 as *Roccella fucoides* (Dickson) Vainio). – On lava or limestone and epiphytic *(Lycium schweinfurthii)* at 25-200 m altitude. Palea Kaimeni: (16) *28838, 28880*. Monolithos: (17) *28929*. Thirasia: (20) *29022, 29023* (c. apoth.!); (23) *29074*. Megalo Vouno: (26) *29122, Bildheim 27*. Cape Akrotiri: (31) *29272*. Gavrillos: *Raus 17681*.

Sclerophyton circumscriptum (Taylor) Zahlbr.

Solenopsora cesatii (Massal.) Zahlbr. var. ***cesatii***

Solenopsora cesatii var. ***grisea*** Bagl.

Solenopsora holophaea (Mont.) Samp.

Solenopsora vulturiensis Bagl.

Sphinctrina leucopoda Nyl.

Squamarina cartilaginea (With.) P. James (Steiner 1919: 82 as *Lecanora crassa* (Hudson) Ach.; Szatala 1943: 41 as *Squamaria crassa* (Hudson) DC.). – On soil on lava or limestone at 150-250 m altitude. Megalo Vouno: (26) *29128*. Kokkino Vouno: (28) *29196*. Gavrillos: (34) *29327*. Mesavouno saddle. Mesavouno S side: *Raus 17685*. – TLC: usnic acid only (f. *pseudocrassa* (Mattick) D. Hawksw.; material studied by Steiner and coll. *Raus* not tested).

Squamarina concrescens (Müll. Arg.) Poelt

Stereocaulon vesuvianum Pers. (Steiner 1919: 90, Szatala 1943: 32 as *Stereocaulon denudatum* Flörke.; Steiner 1919: 92 as *Stereocaulon denudatum* subsp. *santorinense* J. Steiner; Szatala 1943: 33 as *Stereocaulon santorinense* J. Steiner; Szatala 1943: 32 as *Stereocaulon denudatum* var. *vesuvianum* (Pers.) Laurer). – Common, locally abundant, on Nea Kaimeni and the younger part of Palea Kaimeni, on lava at 10-100 m altitude. Nea Kaimeni: (8) *28731*; (12) *28754*, *28785*. Small or vegetatively reproducing (sorediate) specimens of *S. vesuvianum* are not given a high taxonomic rank by recent authors (Lamb 1977), contrary to Steiner (1919). All available specimens were of reduced size. Soredia are produced by *28731* and *28754*, which therefore might be arranged under f. *santorinense* (J. Steiner) Lamb.

Tephromela atra (Hudson) Haf. (Steiner 1919: 82, Szatala 1943: 40 as *Lecanora atra* (Hudson) Körb.). – On lava at 20-250 m altitude. Nea Kaimeni: (11) *28751;* (12) *28780*. Palea Kaimeni: (16) *28895*. Thirasia: (20) *29004*. Megalo Vouno: (25) *29090;* (26) *29154*. Cape Akrotiri: (31) *29265*. Kokkino Vouno. Mikro Profitis Ilias. Cape Skaros. Arkhangelos. Mesavouno saddle. – TLC: atranorin, alectoronic and α-collatolic acids (*28780, 28895, 29004, 29090, 29154, 29265* tested).

Toninia aromatica (Sm.) Massal. (Steiner 1919: 93, Szatala 1943: 30). – On soil on lava or limestone, or directly on rock, at 25-500 m altitude. Profitis Ilias: (2) *28653;* Nea Kaimeni: (5) *28701;* (12) *28759*. Palea Kaimeni: (16) *28898*. Monolithos: (17) *28915, 28916*. Megalo Vouno: (26) *29141, 29181, 29184*. Mikro Profitis Ilias: (29) *29240* [ATHU]. *28916*, *29141*, *29184* and *29240* were growing on soil, the other specimens directly on rock.

Toninia episema (Nyl.) Timdal

****Toninia opuntioides*** (Vill.) Timdal. – On soil on lava at 250 m altitude. Megalo Vouno: *Bildheim 16*.

Toninia sedifolia (Scop.) Timdal (Steiner 1919: 93 as *Toninia coeruleonigricans* (Lightf.) Th. Fr.; Szatala 1943: 30 as *Thalloedaema coeruleonigricans* (Lightf.) Poetsch). – On calcareous soil at 20-250 m altitude. Thirasia: (19) *28971*. Gavrillos: (34) *29323*. Monolithos: *Bildheim 2*. Mesavouno S side: *Raus 17686*. Mesavouno saddle.

Toninia toepferi (B. Stein) Navás

Tornabea scutellifera (With.) J. R. Laundon

Trapeliopsis wallrothii (Spreng.) Hertel & G. Schneider

Verrucaria calciseda f. ***calcivora*** Massal. (Steiner 1919: 101, Szatala 1943: 16).

Verrucaria fusconigrescens Nyl.

Verrucaria fuscula Nyl.

Verrucaria nigrescens Pers.

Verrucaria obductilis (Zahlbr.) Zschacke (Steiner 1919: 100 as *Verrucaria integra* var. *obductilis* Nyl.; Szatala 1943: 17).

Verrucaria rupestris Schrad. (Steiner 1919: 100; Szatala 1943: 17).

Verrucaria viridula (Schrad.) Ach. (Steiner 1919: 98; Szatala 1943: 17).

Xanthoria calcicola Oxner (Steiner 1919: 67, Szatala 1943: 53 as *Xanthoria parietina* var. *aureola* Ach.). – On lava at 20-200 m altitude. Nea Kaimeni: (4) *28667*. Palea Kaimeni. Thirasia. Megalo Vouno. Kokkino Vouno. Mikro Profitis Ilias. Cape Skaros. Cape Akrotiri.

Xanthoria parietina (L.) Th. Fr. (Steiner 1919: 67; Steiner 1919: 68, Szatala 1943: 53 as *Xanthoria parietina* var. *ectanea* (Ach.) Kickx). – On lava, limestone, or epiphytic (e.g. *Thymelaea hirsuta, Atriplex halimus, Opuntia, Quercus coccifera*), at 20-550 m altitude. Profitis Ilias: (1) *28604, 28612, 28624*. Nea Kaimeni: (4) *28669*. Palea Kaimeni: (16) *28887*.

Aspronisi: (18) *28951*. Thirasia: (20) *29009*. Megalo Vouno: *Bildheim 26*. Mikro Profitis Ilias: *Bildheim 21*. Profitis Ilias: *Raus 17683*. Kokkino Vouno.

Uncertain or doubtful literature records for the Santorini island group

Aspicilia calcarea var. *reagens* (Zahlbr.) Szat. (Steiner 1919: 87, as *Lecanora calcarea* var.; Szatala 1943: 36). – The identity of this taxon is uncertain; it probably is an insignificant modification of *A. calcarea*. Material in WU does not differ significantly from the main form of the species.

Buellia subochracea (Zahlbr.) J. Steiner (Steiner 1919: 62; Szatala 1943: 55, as *Diplotomma*). – Said by Steiner (1919: 62) to differ from *B. ambigua* by "medulla J ope maculatim saltem coerulescente et KOH varie extense et intense rubente". In Zahlbruckner's original description (1906: 522) different characters are stressed: "differt ... areolis thalli scabridis, subpulverulentis (non laevibus) ochraceo-cinerascentibus, apotheciis nudis, hypothecio fuscescente, hymenio J violaceo". A duplicate in B of material studied by Steiner seems to be conspecific with the collections included here in *B. alboatra*.

Caloplaca agardhiana var. *granuligera* J. Steiner (Steiner 1919: 72; Szatala 1943: 49, as *Blastenia agardhiana* var.). – This variety was not treated by Wunder (1974). It is probably an insignificant modification of the species.

Cladonia rangiferina (L.) Rabenh. (Szatala 1943: 31). – A very unlikely record of this boreal species, most probably due to confusion with *Cladonia rangiformis*.

Lecania arenaria (Anzi) Flagey (Steiner 1919: 77, Szatala 1943: 43). – This taxon is not mentioned in the recent revision of the genus (Mayrhofer 1988). The material in WU shows some resemblance to *L. inundata*.

Lecanora rupicola f. *decussata* (Crombie) Zahlbr. (Steiner 1919: 82, as *Lecanora sordida* f. *decussata* (Cromb.) J. Steiner, Szatala 1943: 39). – Probably an insignificant form of *L. rupicola*. Material was not available for study in WU.

Ramalina panizzii De Not. (Steiner 1919: 76, Szatala 1943: 47). – A poorly known species; perhaps the material concerns *R. fastigiata*. Material was not available for study in WU.

Ramalina pollinaria (Westr.) Ach. (Steiner 1919: 74, Szatala 1943: 47). – An unlikely find; the habitat makes probable that *R. requienii* was at hand. Material was not available for study in WU.

Roccella arnoldii Vainio (Steiner 1919: 97, as *R. tinctoria* var.; Szatala 1943: 21). – As presently understood, the species is restricted to the W Mediterranean area and the Azores (Follmann 1969). Because during the 1990 fieldwork no other *Roccella* species was found, it is assumed that the material belongs to *R. phycopsis*. Material was not available for study in WU.

Roccella tinctoria DC. (Szatala 1943: 21). – A doubtful record, because the species, as presently understood, is restricted to the W Mediterranean area (Follmann 1969). Because during the 1990 fieldwork no other *Roccella* species was found, it is assumed here that the record concerns *R. phycopsis*.

Incomplete and provisional determinations of Santorini material used for the comparison with the flora of Paros

Acarospora sp. – On lava at 100-300 m altitude. Nea Kaimeni (7) *28718;* Megalo Vouno (26) *29136*. – Probably two different species.

Anema nodulosum (Nyl.) Forss. – On limestone at 150 m altitude. Gavrillos: (34) *29310b*. – Determination provisional.

Anema sp. – On limestone at 150 m altitude. Gavrillos: (34) *29310a*. – Tentatively identified as *A. decipiens*, but not that species according to M. Schultz (Nov. 1998).

Bagliettoa cf. *baldensis* (Massal.) Vězda. – On limestone at 25-560 m altitude. Profitis Ilias: (1) *28630, 28639;* (2) *28660*. Monolithos: (17) *28912, 28920.* Gavrillos: (34) *29298*. The identification of the endolithic species of the genus *Verrucaria* s.l. causes considerable problems. The taxonomy of the group seems incompletely known, and most available specimens are damaged and without spores. Therefore the identifications are with doubt, and the possibility cannot be ruled out that additional species occur. Likewise it is unclear whether the species recorded by Steiner (1919) are really different from the ones observed among the recent collections. See also note in Paros list.

Buellia sp. 1. – On limestone at 25 m altitude. Monolithos: (17) *28909*. Seemingly a parasitic species on *Buellia venusta*.

Buellia sp. 2. – On lava at c. 100 m altitude. Palea Kaimeni: (16) *28866*.

Caloplaca cf. *lactea* (Massal.) Zahlbr. – On limestone at 150 m altitude. Gavrillos: (34) *29306*. – Same taxon as on Paros list.

Caloplaca cf. *marmorata* (Bagl.) Jatta. – On limestone at 150-550 m altitude. Profitis Ilias: (1) *28632*. Gavrillos: (34) *29297*. – Same taxon as in Paros list, see above.

Lecanora cf. *albescens* (Hoffm.) Branth & Rostr. – On limestone at 25 m altitude. Monolithos (17) *18917*. – The specimen deviates by a warty thallus and apothecia with constricted base and agrees with material under this name from Paros.

Lecanora cf. *urbana* Nyl. – On limestone at 500 m altitude. Profitis Ilias: (2) *28658*. – The thallus reacts K-, C-, KC-. – TLC: trace of 2,7-dichlorolichexanthone? The material differs clearly from *L. albescens*, of which *L. urbana* is considered to be a synonym, by its much thicker thallus with constricted apothecia. It may be conspecific with *Lecanora effigurascens* Nyl. as presented by Renobales (1996: 119). The original description of Nylander (1872) shows some conspicuous differences, however. In particular the substrate, schist instead of limestone, and the apothecium disc colour, pale brown instead of dark brown.

Leptogium cf. *teretiusculum* (Wallr.) Arnold. – On soil on lava, at 20-100 m altitude. Palea Kaimeni: (14) *28818;* (16) *28883b*. – The material does not match completely with available herbarium specimens in B, the thallus being less isidiate and more compacted.

Pertusaria cf. *digrediens* Nyl. – On lava at 200 m altitude. Megalo Vouno: (26) *29165*. – TLC: protocetraric acid *(29165)*. The specimen deviates by the absence of soredia. It resembles closely *P. parotica* and *P. monogona*, and might represent a chemical strain of these.

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