Lichens of Cupressus sempervirens on the Aegean islands of Kriti and Kos, Greece

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Abstract


72 epiphytic taxa are reported from *Cupressus sempervirens* stands of the islands of Kriti and Kos. Including previously published taxa, the known flora of epiphytic lichens of Greek *Cupressus* stands comprises 93 taxa. Two taxa, *Bacidia parathalassica* and *B. thurrenica* are new to Greece, 21 taxa are new to Kos and 4 taxa are new to Kriti.

Key words: Mediterranean cypress, epiphytic lichens, lichen diversity, Cos, Crete, Mediterranean region.

Introduction

A relatively high number of papers deal with the Greek lichen flora (see Christensen 1989). In recent years papers mainly authored or co-authored by S. N. Christensen, S. Pirintsos or H. J. M. Sipman have contributed further to the knowledge of the Greek lichen flora. Lately, the checklist of Kriti (Grube & al. 2001) seems to have stimulated publication of floristic work on the island (Spribille & al. 2006, Christensen & Svane 2007).

The high percentage of new records in recent papers underlines the incompleteness of the present knowledge. However, knowledge of the composition of the lichen flora and vegetation of particular substrates and habitats is even scantier (Spribille & al. 2006). The present paper is a small contribution to improve this situation.

*Cupressus sempervirens* is a chiefly E Mediterranean tree, which forms woodlands, mainly on limestone. Elsewhere in the Mediterranean it occurs naturally in coastal S Anatolia, Cyprus, Lebanon and the Cyrenaica. It also occurs in the Elburz area and in mountains of S Iran (Christensen 1997). Outside its natural area it is widely planted as an ornamental tree in churchyards and waysides. The investigated stands on Kriti and Kos thus represent together with those in the Cyrenaica the westernmost natural occurrences of *C. sempervirens*. A list of epiphytic lichens of this tree has not previously been published, neither from Greece, nor from elsewhere.
Material and methods

The specimens were collected on living Cupressus sempervirens trees. All specimens were collected by the present author; his collecting numbers are given in italics. For some specimens no separate vouchers were made: they co-occur with the specimens cited. The specimens are deposited at the Botanical Museum of Copenhagen (C) with minor sets in Berlin-Dahlem (B) and in the author’s private herbarium.

Epiphytic taxa of Cupressus sempervirens published by Sipman & Raus (2002) or Spribille & al. (2006) and not found in this study are included in order to give as comprehensive a list as possible. Epiphytes on other phorophytes in Cupressus woodlands are not included.

The distribution of the taxa on the islands were checked using Grube & al. (2001), Spribille & al. (2006) and Christensen & Svane (2007) for Kriti and Sipman & Raus (2002) for Kos.

The lichens collected come from the following localities:

Kriti, Nomos Chanion, Lefka Ori Mts
1. About 6 km WNW of the village of Omalos, about 1½ km N of the village of Agia Irini, Cupressus sempervirens-Quercus coccifera woodland with scattered Pinus brutia on NNW slope; bedrock: limestone; 975-1050 m, 10.4.1986. This is the same as locality 4 of Christensen & Svane (2007).
2. About 24 km SSW of the town of Chania, about 3 km S of the village of Omalos, just N of Xyloskalo; degraded Cupressus sempervirens-Quercus coccifera woodland on SW slope; bedrock: limestone; 1200-1360 m, 3.4.1986. This is the same as locality 6 of Christensen & Svane (2007).

Kos
4. N slope of Mt Dikeos, just E of the village Ziá, Cupressus sempervirens woodland on N facing limestone slope, 300 m, 26.4.1988.
5. N slope of Mt Dikeos, above the village Ziá, open Cupressus sempervirens-Pinus brutia woodland with undervegetation of Quercus coccifera and Cistus salvifolius on N facing limestone slope, 340 m, date 26.4.1988.
6. N slope of Mt Dikeos, above the village Ziá, along the path to the summit, dense stand of tall Cupressus sempervirens trees along unpaved dirt road on W slope; bedrock: limestone; 460 m, 27.4.1988.
7. N slope of Mt Dikeos, above the village Ziá, along the path to the summit; open Cupressus sempervirens woodland on N slope; bedrock: sandstone; 580 m, 27.4.1988.

List of lichens from Kriti and Kos epiphytic on Cupressus sempervirens

The following list includes two taxa, preceded by two asterisks (**), that are new to Greece, four taxa, preceded by a plus sign (+), new to Kriti and 21 taxa, preceded by an asterisk (*), new to Kos.

The numbers in brackets refer to the collecting localities given in the section “Material and methods”.

Anaptychia ciliaris (L.) Körb. – (1) on trunk, 3276; (2) on trunk, 2950, 2972, 2973, on bark of twigs, with Pseudevernia furfuracea 2977, on decorticated wood of twigs, with Pertusaria albescens 2968.

**Bacidia paratalassica** Llop & Gómez-Bolea – (6) on trunks, 4897a, with Physcia adscendens 4900, 4903; (7) on trunks, 4920, on thin branches, 4926, with B. thyrrenica 4922. – All det. E. Llop.

**Bacidia thyrrenica** Llop ad int. – (6) on a trunk, with Physcia adscendens 4900; (7) on a thin branch, 4916a, 4917a, 4922, on cones, with Lecanora horiza 4913. – All det. E. Llop.

Buellia chloroleuca Körb. – Kriti (Spribille & al. 2006).
Buellia griseovirens (Turner & Borrer) Almb. – (2) on decorticated wood, 2945a.
Caloplaca cerina (Hedw.) Th. Fr. – (2) on trunks, 2947, 2952; (3) on trunks, 4770a, 4772, 4774a; (5) on trunks, 4840; (6) on a trunk, with Catillaria chalybeia 4897.
*Caloplaca flavorubescens var. quercina (Flagey) Giralt & al. – (1) on bark of twigs, 3273; (2) on bark of twigs and cones, with Caloplaca haematites 2974, with Lecidella euphoria 2931, 2975, with Physcia leptalea 2976; (4) on a twig, 4826; (6) on trunks, with Lecanora argenteata 4905, on cones, with Rinodina pyrina 4902; (7) on a thin branch, with Lecanora argenteata 4917, with Bacidia rosella 4917a, 4926, on a twig, with Lecanora meridionalis 4916, with Physcia leptalea 4930, on cones, with Lecanora horiza 4913, with Catillaria chalybeia 4915. – See Christensen & Svane (2007).
*Caloplaca furfuracea H. Magn. – (1) on a trunk and on decorticated wood, 3265a, 3269, 3270, 3271a, with Pertusaria albescens var. corallina 3264, with Ochrolechia turneri 3266, with Ochrolechia pallescens 3267, with Pertusaria coccodes var. coccodes 3272. – No. 3271a conf. U. Sochting. This species differs from C. herbidella in the non-corticate, K- “isidia”.
*Caloplaca haematites (St.-Amans) Zwackh – (1) on deco rticated wood of a trunk (with Catillaria nigroclavata 4917, on cones, with Lecanora chlorotera 4833; (6) on a trunk, with Diplotomma alboatrum 4909; (7) on cones, with Lecanora horiza 4913, with Catillaria chalybeia 4915.
Caloplaca herbidella (Hue) H. Magn. – Kriti (Spribille & al. 2006).
Caloplaca obscurella (Körb.) Th. Fr. – Kos (Sipman & Raus 2002).
Caloplaca pyracea (Ach.) Th. Fr. – (4) on a twig, with Caloplaca flavorubescens 4826; (5) on trunks, with Rinodina pyrina 4839, with Caloplaca cerina 4840, with Catillaria chalybeia 4850, on bark on dead twig, with Lecanora chlorotera 4833; (6) on trunks, 4899a, 4899 conf. U. Sochting, on cones, with Rinodina pyrina 4902, on shaded twigs, with Diplotomma alboatrum 4909; (7) on cones, with Lecanora horiza 4913.
Candelariella faginea (Nyl.) H. Kilias – Kos (Sipman & Raus 2002).
Candelariella reflexa (Nyl.) Lettau – Kriti (Spribille & al. 2006).
Candelariella vitellina (Hoffm.) Müll. Arg. – (1) on a trunk, with Pyrrhospora querne a 3252; (2) on a trunk, 2935.
Candelariella xanthostigma (Ach.) Lettau – (1) on a trunk, 3262, on bark of twigs, 3261; (6) on a trunk, with Catillaria chalybeia 4897.
Candelariella sp. 1 – Kriti (Spribille & al. 2006).
Catillaria chalybeia (Borrer) A. Massal. – (5) on trunks, 4844, 4834a, 4850; (6) on trunk, 4897. (7) on cones, 4915.
Catillaria chalybeia var. chloropola (Nyl.) H. Kilias – Kos (Sipman & Raus 2002).
*Catillaria nigroclavata (Nyl.) Schuler – (6) on trunks, with Physcia adscendens 4900, with Bacidia rosella 4903.
Catinaria atropurpurea (Schaeer) Vézda & Poelt – Kriti (Spribille & al. 2006).
*Cladonia chlorophaeas (Sommerf.) Spreng. – (2) on trunk, with Lethariella intricata 2953; (5) on the base of a trunk, 4845 (squames only).
+Cladonia cf. grayi Sandst. – (2) on the base of a trunk, 2954. – Cups relatively narrow, granulose sorediate, primary squames esorediate. C-, K-. Two tlc-runs gave inconclusive results. Using the key of Ahti (1977), the specimen is best referred to C. grayi.
Collema furfuraceum (Arnold) Du Rietz – Kriti (Spribille & al. 2006).
Collema multipunctatum Degel. – Kriti (Spribille & al. 2006).
Diplotomma alboatrum (Hoffm.) Flotow – (1) on twigs, 3257; (6) on a trunk, with Ramalina canarinesis 4898, on shaded twigs, 4909.
Fuscopannaria olivacea (P. M. Jørg.) P. M. Jørg. – (1) on bark and decorticated wood, 3251, 3274, both conf. P. M. Jørgenssen.

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Hypocenomyce caradocensis (Nyl.) P. James & Gotth. Schneid. – (2) on decorticated wood, 2941 det. V. Alstrup.
Lecania cyrtellina (Nyl.) Sandst. – Kriti (Spribille & al. 2006).
Lecania naegelii (Hepp) Diederich & Van den Boom – (6) on a trunk, 4897b det. E. Llop, 4908a; (7) on cones, with Lecanora horiza 4913 det. E. Llop.
*Lecanora argentaiata (Ach.) Malme – (5) on trunks, 4841, 4848; (6) on a trunk, 4905; (7) on a thin branch, 4917, on cones, with Lecanora horiza 4913, with Catillaria chalybeia 4913.
Lecanora chlorotera Nyl. – (1) on bark and wood of twigs and cones, with Pertusaria albescens 3268; (2) on a trunk, 2934, on decorticated wood of twigs, with Pertusaria albescens 2968.
*Lecanora chlorotera subsp. chlorotera f. crassula (H. Magn.) Poelt – (5) on bark on a dead twig, 4833.
Lecanora dispersa (Pers.) Sommerf. – (3) on a trunk, 4773.
*Lecanora hagenii (Ach.) Ach. – (2) on twigs, with Lecidella euphoria 2931; (4) on a twig, with Caloplaca flavorubescens 4826.
Lecanora horiza (Ach.) Linds. – (4) on a twig, with Caloplaca flavorubescens 4826; (5) on a trunk, with Rinoquina pyrina 4839, on bark on dead twig, with Lecanora chlorotera 4833; (6) on trunks, with Caloplaca pyracea 4899, with Physcia biziana 4908; (7) on a trunk, 4927, on twigs, 4912a, on cones, 4913.
Lecanora leuckertiana Zedda – Kos (Sipman & Raus 2002).
*Lecanora meridionalis H. Magn. – (5) on a trunk, 4831; (7) on a trunk, 4921, on a twig, 4916.
*Lecanora rugosella Zahlbr. – (2) on decorticated wood of a trunk, 2937; (5) on a trunk, 4830; (6) on trunks, with Caloplaca pyracea 4899, with Physcia adscendens 4899a; (7) on twigs, with Lecanora horiza 4912a.
Lecanora sulicina (Schrad.) Zahlbr. – Kriti (Spribille & al. 2006).
*Lecanora umbrina (Ach.) A. Massal. – (6) on a trunk, with Caloplaca pyracea 4899.
Lecanora varia (Hoffm.) Ach. – (2) on decorticated wood, 2919, 2941a.
Lecidea cf. erythrophaea Sommerf. – Kos (Sipman & Raus 2002).
*Lecidella aehristotera (Nyl.) H. Hertel & Leuckert – (2) on bark of twigs, with Caloplaca cerina 2952, with Physcia leptalea 2976.
Lecidella elaeochroma (Ach.) M. Choisy – (1) on decorticated wood, 3271; (2) on decorticated wood of a dead branch, with Ochrolechia alboflavescens 2943, on bark of twigs, with Pseudovernia furfuracea 2977; (5) on a trunk, 4849; (7) on a thin branch, with Bacidia rossella 4922, on cones, with Catillaria chalybeia 4915.
*Lecidella euphoria (Flörke) Hertel – (1) on bark and wood of twigs and cones, with Diplocoma alboflatum 3257, with Pertusaria albescens 3268, with Caloplaca flavorubescens 3273; (2) on trunks, 2927, 2934a, on decorticated wood of a trunk, 2937a, 2939, on bark of twigs and cones, 2931, 2975; (4) on a twig, Caloplaca flavorubescens 4826; (5) on trunks, with Lecanora rugosella 4830, with Lecanora meridionalis 4831, on bark on dead twig, with Lecanora chlorotera 4833; (7) on a twig, with Physcia leptalea 4930, on cones, with Lecanora horiza 4913.
Leptogium gelatinosum (With.) J. R. Laundon – (2) on mosses on trunks, 2917, 2918, 2959, 2962.
Leptogium teretiusculum (Wallr.) Arnold – Kriti (Spribille & al. 2006).
Leptariella intricata (Moris) Krog – (2) on trunks, 2933, 2967.
Megaspora verrucosa var. mutabilis (Ach.) Nimis & C. Roux – (2) on trunks, 2923, 2924.
*Mycocalicium cf. minutellum (Ach.) Nádv. – (5) on decorticated wood of a broken limb, 4853.
Ochrolechia alboflavescens (Wulfen) Zahlbr. – (2) on decorticated wood of a dead branch, 2943.
Ochrolechia balcanica Vershgy – Kriti (Spribille & al. 2006).
*Ochrolechia microstictoides Rääsänen – (2) on decorticated wood, 2945.
Ochrolechia pallescens (L.) A. Massal. – (1) on trunks, 3255, 3267; (2) on trunks, 2971.
Ochrolechia turneri (Sm. & Sowerby) Hasselrot – (1) on a trunk, 3266. – New to Nomos Chania, Kriti.
Parmelia saxatilis (L.) Ach. – (1) on a trunk, 3275; (2) on decorticated wood on trunks, 2942, 2960. – Kos (Sipman & Raus 2002).

Parmelia pastilifera (Harm.) Hale – (1) on decorticated wood on a trunk, 3254.

Parmelia tiliacea (Hoffm.) Hale – (2) on a trunk, 2920.

Pertusaria albecens (Huds.) Choisy & Werner – (1) on trunks, 3252a, 3256, 3265, on bark and wood of twigs and cones, 3260, 3268; (2) on trunks, 2930, 2946, on decorticated wood of twigs, 2968; (7) on a trunk, 4925.

Pertusaria albecens var. coralina (Zahlbr.) J. R. Laundon – (1) on trunks, 3264, 3285, on bark on thin branches and twigs, 3258, 3263; (2) on trunks, 2944, 2948, 2963, 2964, 2969. – This taxon dominated the epiphytic vegetation on trunks of C. sempervirens at loc. 2.

Pertusaria coccodes (Ach.) A. Massal. – (1) on a trunk, 3272; (2) on a trunk, with Pertusaria pertusa var. meridionalis 2921.

Pertusaria pertusa auct. – Kriti (Spribille & al. 2006).

Pertusaria rhodensis auct. – Erichs. – (5) on a trunk, 4834 (K+ faintly yellow); (7) on a trunk, 4919 (K+ reddish). – The taxonomy of P. rhodensis and related species needs urgent revision. Sipman & Raus (2002) and Spribille & al. (2006) discuss the species. – Kriti (Spribille & al. 2006).

Phaeophyscia orbicularis (Neck.) Moberg – Kos (Sipman & Raus 2002).

Phlyctis argena (Spreng.) Flotow – (7) on a trunk, 4929. – Kriti (Spribille & al. 2006).

Physcia adscendens (Fr.) H. Olivier – (5) on a trunk, 4829; (6) on trunks, 4999a, 4900, on cones, with Rinodina pyrina 4902. – Kriti (Spribille & al. 2006).

Physcia biziana (A. Massal.) Zahlbr. – (6) on a trunk, 4908.

Physcia biziana var. leptophylla Vézda – Kriti (Spribille & al. 2006).

Physcia leptalea (Ach.) DC. – (2) on a trunk, 2936, on bark of twigs, 2976; (5) on a trunk, 4828; (6) on trunks, 4901, 4906; (7) on a trunk, 4918, on a twig, 4930, on cones, with Lecanora horizc 4913.

Physcia tenella (Scop.) DC. – (2) on a trunk, 2951; (6) on a trunk, with Catillaria chalybeia 4897.

Physconia distorta (With.) J. R. Laundon – Kriti (Spribille & al. 2006).

Physconia grisea (Lam.) Poelt – (3) on a trunk, 4770.

Physconia subpurulenta (Sztalata) Poelt – (1) on a trunk, 3277.

Physconia venusta (Ach.) Poelt – (1) on a trunk, 3284; (2) on bark, 2932, on decorticated wood on a trunk, 2938, 2961, 2965.

Platismatia glauca (L.) W. L. Culb. & C. F. Culb. – (2) on a trunk, 2955.

Pleurosticta acetabulum (L.) W. L. Culb. & C. F. Culb. – (2) on a trunk, 2955.

Pleurosticta reagens (With.) de Lesd. – (7) on twigs, 4898, (K- or faintly yellow); on a twig, 4919.

Pseudevernia furfuracea (L.) Zopf var. furfuracea – (2) on a trunk, 2933, on bark of twigs, 2977.

Pyrrhospora quernea (Dicks.) Körb. – (1) on a trunk, 3252. – Distinguished from Lecanora expallens by its UV+ orange fluorescence.

Ramalina canariensis J. Steiner – (6) on a trunk, 4898, on shaded twigs, with Diplotomma alboatrum 4909; (7) on a twig, 4924.

Ramalina farinacea var. reagens de Lesd. – (7) on twigs, 4928.

Ramalina fraxinea (L.) Ach. – Kos (Sipman & Raus 2002).

Ramalina pollinaria (Westr.) Ach. – (2) on a trunk, 2966. – Reported from Kriti by Rondon (1969).

Ramalina subgeniculata Nyl. – (7) on twigs and cones, 4912, 4914.

Rinodina oleae Bagl. – (4) on a twig, with Caloplaca flavorubescens 4826 det. H. Mayrhofer.

Rinodina plana H. Magn. – Kriti (Spribille & al. 2006).

Rinodina pyrina (Ach.) Arnold – (5) on a trunk, 4839 det. H. Mayrhofer; (6) on a trunk, with Physcia leptalea 4901 det. H. Mayrhofer, on cones, 4902.

Rinodina septentrionalis Malme – (5) on a trunk, 4831a conf. H. Mayrhofer.

Rinodina sophodes (Ach.) A. Massal. – (3) on a trunk, 4774.
Rinodina spp. – (1) on a trunk, 3270a; (2) on a trunk, with Pertusaria albescens var. corallina 2944, with Caloplaca cerina 2952; (5) on bark on dead twig, with Lecanora chlorotera 4833. – All det. H. Mayrhofer.

Tephromela atra (Huds.) Hafellner – (2) on decorticated wood of a trunk, 2938; (7) on a twig, with Physcia leptalea 4930, on cones, Lecanora horiza 4913.

Xanthoria parietina (L.) Th. Fr. – (1) on a trunk, 3283; (3) on a trunk, 4771 a very shaded and dust affected specimen with rugose central part of the thallus, reminiscent of X. calcicola Oxner; (5) on a trunk, 4832; (6) on trunks, 4904, 4907, on shaded twigs, with Diplotomma alboatrum 4909; (7) on trunks, with Lecanora meridionalis 4921, with Lecanora horiza 4927, on twigs, with Lecanora meridionalis 4916, with Ramalina canariensis 4924, with Physcia leptalea 4930, on a thin branch, with Lecanora argentata 4917, with Bacidia rosella 4926, on cones, with Lecanora horiza 4913, with Catillaria chalybeia 4915.

Discussion

The higher mountains of Kriti and the larger E Aegean islands are the natural habitat of *Cupressus sempervirens* in Greece. According to Walter & Lieth (1960) the whole of the island of Kos belongs to the climate group Vb, while the mountainous areas of Kriti belong to climate group IVa. No climate data exist from Kos, but it is safe to expect the precipitation to be lower in the climate group IVa. It is relatively higher percentage of nutrient-demanding species found on the localities of this island.

Discussion of James & al. (1977) and Wirth (1980), keeping in mind that communities described from northern or western Europe may not be directly applicable to Kriti and Kos. Species may occur in more than one units and some species referred to either Physcietum ascendents, a community of nutrient rich substrates, or to Lecanoretum subfuscae, a community of relatively nutrient rich substrates, may as well have been referred to the other unit, e.g., Lecidella elaeochroma. The two newly described Bacidia species are referred to Physcietum ascendents on account of the accompanying species (see species list).

With the exception of loc. 3 on Kos, which was an avenue, all investigated *Cupressus* stands on the two islands are natural woodlands. However, none of the stands is unaffected by human influence. Selective cutting occurred in earlier times. Presently, to different degrees, they all are affected by raised nutrient levels from flocks of sheep and goats and other human activities. The nutrient status is reflected in the presence of the following species, which occur on half or more of the localities: Caloplaca cerina, C. flavorubescens, C. haematites, C. pyracea, Lecanora horiza, L. rugosella, Lecidella elaeochroma, L. euphorea, Physcia leptalea and Xanthoria parietina.

The two Cretan localities were rather open mixed woodlands of *Cupressus sempervirens* and *Quercus coccifera*. They harbour mainly a mixture of Pseudevernietum furfuraceum and Physcietum ascendentis with a minor quantum of species belonging to the Lecanoretum subfuscae. Finally few xylicolous lichens of the Lecanorion variae were present. The vegetation of the trunks of *Cupressus* trees at loc. 2 was dominated by *Pertusaria albescens* var. *corallina*. This taxon was also abundant at loc. 1. *Pertusaria albescens* var. *corallina* is a species of nutrient enriched bark (*Xanthorion*) (Wirth 1980). It was, however, not found on *C. sempervirens* on Kos despite the relatively high percentage of nutrient-demanding species found on the localities of this island.

Pseudevernietum furfuraceum is a common community (alliance) of many coniferous trees. In the present study it was only found in *Cupressus* woodlands of Kriti, and only in an impoverished form, including the following species: Lethariella intricata, Ochrolechia alboflavescens,
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<td><em>Pa</em> <em>Physconia leuconota</em></td>
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<td>Pa <em>Physconia pseudoplanata</em></td>
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<td>Pa <em>Physconia subtruncata</em></td>
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<td>Pa <em>Pseudocyphellina crassifolia</em></td>
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<td>Pa <em>Pseudocyphellina rubra</em></td>
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<td>Pa <em>Pseudocyphellina subfusca</em></td>
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<td>Pf <em>Lecanora squarrosa</em></td>
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**O. microstictoides, Parmelia saxatilis, Platismatia glauca and Pseudevernia furfuracea.** This is perhaps a result of competition from species favoured by nutrients and calcareous dust.

The natural woodland localities of Kos (loc. 4-7) were located at different altitudes on the north slope of a single mountain. The lower altitude of the localities at Kos compared to those of Kriti (300-580 m vs. 975-1360 m) results in a higher level of human activity, including animal husbandry. This again results in a higher nutrient level, which is reflected in the species composition: lack of Pseudeverniaetum and other elements of nutrient poor conditions (Table 1). At loc. 7, the woodland was more open than at the lower localities (4-6). The presence here of higher abundance and more species of the genus Ramalina may be the result of the more open environment in combination with the higher altitude (fog, precipitation?).

The *Cupressus* avenue (loc. 3) harboured only a few species. They are all characteristic of nutrient enriched substrates: *Caloplaca cerina, Lecanora dispersa, Physconia grisea, Rinodina sophodes* and *Xanthoria parietina*.

In all 72 epiphytic taxa were collected on *Cupressus sempervirens* on the two islands. Excluding *Rinodina* spp., this paper reports 45 epiphytic taxa from Kriti and 40 from Kos. 30 epiphytic taxa occurring on Kriti were not found on Kos, while 25 epiphytic taxa found on Kos were not found on Kriti (Table 1). Disregarding genera with only one species encountered, it is notable that the genera *Ochrolechia* and *Parmelina* were only found on the island of Kriti, while *Bacidia* and *Catillaria* were only found on Kos. The genera *Ramalina* and *Rinodina* are represented with more species on the island of Kos than on Kriti, while the opposite was the case for *Pertusaria*. Sipman & al. (2005) ascribe similar differences in the epiphytic lichen flora on the two Aegean islands of Naxos and Ikaria to restrictions in dispersal and chance colonisation. However, the differences in species composition on *C. sempervirens* on the isles of Kriti and Kos may well reflect the preliminary status of the floristic work on the islands.

The high percentage of taxa reported new to Kriti and Kos in particular underlines the present insufficient state of knowledge of the lichen flora of these islands. Further studies are obviously needed. Based on a purely floristic work, attempts to explain the difference in composition of the floras of the localities can only be speculative. Ecological investigations are, therefore, in great need to provide a better understanding of the impact of environment on the vegetation of the Mediterranean biotopes.

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**References**


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