

Lichens and lichenicolous fungi from Lanzarote (Canary Islands), with the descriptions of two new species

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Abstract – The flora of lichens and lichenicolous fungi of Lanzarote (Canary Islands) has been studied. The recent catalogue of the Island was composed of 170 species. In the presented annotated list, 71 taxa are additional records for the island, of which 10 are new to the Canary Islands and among them *Catillaria subpraedicta* and *Micarea seneciae* are newly described.

Macaronesia / new taxa / taxonomy / first records / ecology / chemistry / biodiversity

Resumen – Se estudia la flora líquénica y de hongos liquenícolas de la isla de Lanzarote (Islas Canarias). El catálogo de líquenes y hongos liquenícolas de Lanzarote se componía hasta el momento de 170 de la isla, mientras que en este trabajo se señalan 71 taxones nuevos para la isla, de los que 10 eran desconocidos en las Canarias. *Catillaria subpraedicta* y *Micarea seneciae* se describen en este trabajo.

INTRODUCTION

Soon after the publication of the checklist for lichens and lichenicolous fungi of the Canary Islands (Hernández-Padrón, 2001), Hafellner (2005b) published some additional records for the island Lanzarote. In this study, more additional records for Lanzarote are mentioned. It regards material collected in 2003 from 14 localities. Total species diversity is significantly increased. In an annotated list below, 71 taxa are newly recorded to the island including 10 first records to the Canary Islands. *Catillaria subpraedicta* and *Micarea seneciae* are newly described from the Canary Islands. Some additional records of *Catillaria subpraedicta* from continental Europe are also mentioned. Notes on morphology, taxonomy and ecology are given. In a recent revision of the genus *Rinodina*, all the material from that genus, mentioned below is already published in van den Boom *et al.* (in press) elsewhere.

MATERIAL AND METHODS

Lichens and lichenicolous fungi were collected from volcanic rock, terricolous, epiphytic from trees and shrubs, from localities all over the island Lanzarote (Canary Islands). More than 500 collections were made by the author

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and his wife, from 14 spots (Fig. 1). Specimens are deposited in the private herbarium of van den Boom, however type specimens are deposited in LG. For each spot, a species list and ecological notes were made. Most of the data is data-based in access. Additional records of species collected by me, but mentioned already in Hernandez-Adr3n (2001), are indicated as (H-P 2001), or Hafellner (2005b) as (Haf 2005) and are mentioned in the total list. All the species of which collections are made by me are listed and the localities are mentioned exactly. Canary Islands in the text are recorded as: C (Gran Canaria), F (Fuerteventura), G (La Gomera), H (El Hierro), L (Lanzarote), P (La Palma) and T (Tenerife). Air dried specimens were examined anatomically and morphologically with a stereo-microscope and a light microscope. The standard microchemical methods have been used according Orange *et al.* (2001). The collected specimens have been studied mostly according Wirth (1995) and Purvis *et al.* (1992). Nomenclature of lichens or lichenicolous fungi follows Hernandez-Adr3n (2001), Coppins (2002), Diederich & S3rusiaux (2000), Hawksworth (2003) and Santesson *et al.* (2004), with exception of some more recent nomenclatural changes. Lichenicolous fungi are pointed out in the text with a * before the name. In the course of the survey, some specimens have been sent to specialists (see acknowledgements).

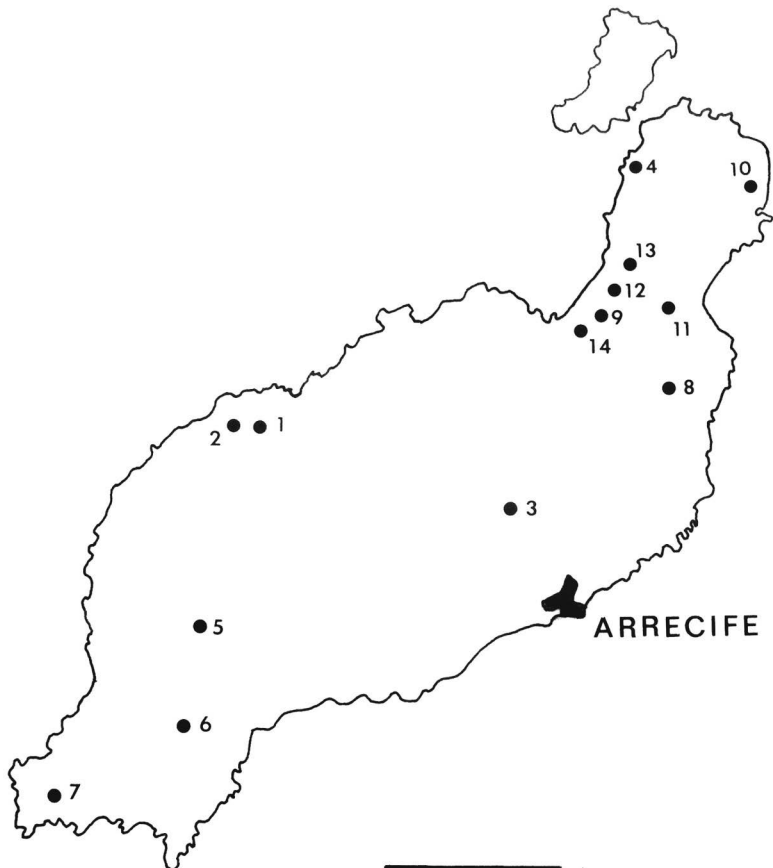


Fig. 1. Collecting sites Lanzarote (1-14). Scale = 10 km.

Table 1 : All collected specimens, including additional records from Lanzarote

<i>Acrocordia macrospora</i>	3vr; 4vr; 6vr
<i>Agonimia opuntiella</i>	9vr; 14vr (Barreno & Rico 1985)
<i>Anaptychia ciliaris</i>	4vr; 9vr (H-P 2001)
<i>Arthonia muscigena</i>	2Ly; 4Lv
<i>Arthrosporum populorum</i>	4Lv; 14Sek
<i>Aspicilia calcarea</i>	2c
<i>Aspicilia contorta</i>	5vr (H-P 2001)
<i>Athelia arachnoidea</i>	9vr (Ramal)
<i>Bacidia circumspecta</i>	14Sek
<i>Bacidia subincompta</i>	9Na
<i>Bactrospora carneopallida</i>	2vr; 8vr; 10vr (H-P 2001)
<i>Bactrospora patellarioides</i>	11Ma
<i>Caloplaca aegatica</i>	12Pn; 13Pn (H-P 2001)
<i>Caloplaca crenularia</i>	9vr; 14vr (H-P 2001)
<i>Caloplaca erythrocarpa</i>	8vr; 9vr (H-P 2001)
<i>Caloplaca flavorubescens</i>	14Sek (H-P 2001)
<i>Caloplaca gomerana</i>	10vr (H-P 2001)
<i>Caloplaca holocarpa</i>	9ush (cf.); 14Sek (H-P 2001)
<i>Caloplaca limitosa</i>	14vr
<i>Caloplaca obscurella</i>	11Ma
<i>Caloplaca scoriophila</i>	9vr; 14vr (H-P 2001)
<i>Caloplaca aff. variabilis</i>	4vr; 14vr
<i>Caloplaca vitellinula</i>	1Sek; 2Ly; 4 Lv
<i>Catillaria chalybeia</i>	6vr (cf.)
<i>Catillaria lenticularis</i>	8vr
<i>Catillaria mediterranea</i>	9vr (Ramal) (H-P 2001)
<i>Catillaria subpraedicta</i>	12Pn; 13Pn
<i>Chromatochlamys muscorum</i>	13vr (moss)
<i>Cladonia convoluta</i>	12t (H-P 2001)
<i>Cladonia foliacea</i>	4t; 9vr; 12t; (H-P 2001)
<i>Cladonia pyxidata</i>	12t
<i>Cladonia rangiformis</i>	9vr (H-P 2001)
<i>Clypeococcum epicrassum</i>	8t (Squam) (Haf 2005)
<i>Coccocarpia erythroxyli</i>	13vr; 14vr
<i>Collema polycarpon</i>	9vr; 14vr
<i>Collema tenax</i>	13t
<i>Coscinocladium gaditanum</i>	8vr (Giralt & v.d. Boom 2009)
<i>Degelia plumbea</i>	12vr
<i>Dimelaena radiata</i>	5vr (H-P 2001)
<i>Diploicia canescens</i>	13Pn (H-P 2001)
<i>Diploicia subcanescens</i>	10vr (H-P 2001)
<i>Diploschistes actinostomus</i>	4vr
<i>Diploschistes muscorum</i>	9vr

An = Aeonium - Ep = Euphorbia - Lv = Lavendula - Ly = Lycium intricatum - Na = Nauplius - Pn = Pinus - Sek = Senecio kleinia - c = calcareous rock - Ma = Malus - t = terricolous - ush = unid. shrub - vr = volcanic rock - (f) = fertile

Table 1 : All collected specimens, including additional records from Lanzarote (*continued*)

<i>Diplotomma albostrum</i>	6vr; 11Ma; 14vr
<i>Dirina ceratoniae</i>	4Ly; 11Ma
<i>Dirina insulana</i>	10vr
<i>Dirina massiliensis f. massilien</i>	2vr (H-P 2001)
<i>Dirinaria applanata</i>	4vr; 10vr (H-P 2001)
<i>Endocarpon loscosii</i>	9vr
<i>Flavoparmelia soledians</i>	4vr; 9vr (H-P 2001)
<i>Fulgensia subbracteata</i>	13t (cf.) (H-P 2001)
<i>Gelatinopsis heppiae</i>	14vr (Hdesp)
<i>Gloeoheppia erosa</i>	2vr; 14vr (H-P 2001)
<i>Gloeoheppia turgida</i>	1vr; 2vr; 4t; 7vr; 10vr; 14vr (H-P 2001)
<i>Heppia despreauxii</i>	12vr; 14vr (f) (H-P 2001)
<i>Heppia echinulata</i>	14vr
<i>Heppia lutosa</i>	1vr (Schultz & v.d. Boom 2007)
<i>Heterodermia leucomelos</i>	9vr (H-P 2001)
<i>Heterodermia speciosa</i>	9vr
<i>Labrocarpon canariensis</i>	4vr (Pertu); 8vr (Pertu); 9vr (Pertu); 10vr (Pertu) (Haf 2005)
<i>Lecania cyrtella</i>	9ush; 11ush; 14Sek
<i>Lecania poeltii</i>	4Lv; 4Ly
<i>Lecania spadicea</i>	4vr; 7vr; 8vr; 11Ma; 14vr
<i>Lecania turicensis</i>	1vr; 4vr; 10vr
<i>Lecanographa grumulosa</i>	3vr (Rocce); 3vr (H-P 2001)
<i>Lecanora chlarotera</i>	12Pn (H-P 2001)
<i>Lecanora dispersa</i>	8vr
<i>Lecanora gangaleoides</i>	9vr; 12vr; 14vr (H-P 2001)
<i>Lecanora horiza</i>	11Ma
<i>Lecanora sulphurella</i>	6vr; 12vr (H-P 2001)
<i>Lecidella asema</i>	9vr (cf.); 12vr (H-P 2001)
<i>Lecidella scabra</i>	1vr
<i>Leptogium teretiusculum</i>	11Ma; 13t
<i>Leptogium plicatile</i>	9vr
<i>Lichenocodium usneae</i>	9vr (Ramal)
<i>Lichenodiplis lecanorae</i>	2Ly (Calopl) (H-P 2001)
<i>Lichenostigma episulphurella</i>	6vr (Lsulp)
<i>Lichinella algerica</i>	2vr; 14vr (Schultz & v.d. Boom 2007)
<i>Lichinella nigritlella</i>	14vr (Schultz & v.d. Boom 2007)
<i>Lichinella stipatula</i>	9vr; 14vr (H-P 2001)
<i>Marchandiomyces corallinus</i>	9vr (Anapt); 9vr (Ramal)
<i>Micarea seneciae</i>	14Sek
<i>Muellerella lichenicola</i>	14Sek (Calop)
<i>Neofuscelia pulla s.l.</i>	4vr; 9vr (H-P 2001)
<i>Ochrolechia parella</i>	4vr; 6vr; 14vr; (H-P 2001)
<i>Opegrapha calcarea</i>	10vr (cf.) (H-P 2001)
<i>Opegrapha submaritima</i>	8vr (Tatra)

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Table 1 : All collected specimens, including additional records from Lanzarote (*continued*)

<i>Parmotrema reticulatum</i>	9vr; 12vr; 13vr; 14vr (H-P 2001)
<i>Parmotrema subinctorum</i>	14vr (H-P 2001)
<i>Parmotrema tinctorum</i>	4vr (f); 9vr; 10vr; 11Ma; 14vr (H-P 2001)
<i>Peccania arabica</i>	1vr; 7vr; 12vr; 14vr (Schultz & v.d. Boom 2007)
<i>Peccania fontqueriana</i>	7vr; 14vr (Schultz & v.d. Boom 2007)
<i>Peccania teretiuscula</i>	14vr (Schultz & v.d. Boom 2007)
<i>Peltula bolanderi</i>	14vr (Schultz & v.d. Boom 2007)
<i>Peltula euploca</i>	9vr (H-P 2001)
<i>Peltula obscurans var. hassei</i>	9vr
<i>Pertusaria amara</i>	6vr
<i>Pertusaria leucosora</i>	8vr
<i>Pertusaria pluripuncta</i>	2vr; 4vr; 6vr (H-P 2001)
<i>Phaeophyscia hirsuta</i>	9vr (f); 14vr
<i>Phloeopeccania pulvinulina</i>	1vr; 2vr; 10vr (Schultz & v.d. Boom 2007)
<i>Physcia adscendens</i>	11Ma; 13vr (f)
<i>Physcia tribacia</i>	9vr; 14vr
<i>Piccolia ochrophora</i>	11Ma
<i>Placidium pilosellum</i>	4vr
<i>Placopyrenium bucekii</i>	14vr
<i>Placynthium nigrum</i>	2vr (cf.); 8vr; 14vr
<i>Protoparmelia montagnei</i>	6vr
<i>Pterygiopsis canariensis</i>	9vr (Schultz & v.d. Boom 2007)
<i>Pyxine cocoes</i>	14vr (H-P 2001)
<i>Ramalina bourgaeana</i>	2vr; 4vr; 5vr; 6vr; 7vr; 9vr; 14vr; (H-P 2001)
<i>Ramalina chondrina</i>	12Pn; 13Pn; 14Ep
<i>Ramalina crispatula</i>	6vr; 9vr
<i>Ramalina decipiens</i>	4vr; 9vr; 13vr (H-P 2001)
<i>Ramalina farinacea</i>	12Pn
<i>Ramalina huei</i>	12An; 12Pn; 13Pn (H-P 2001)
<i>Ramalina lacera</i>	1vr; 4Ly; 9Sek; 13Pn; 14Ep (H-P 2001)
<i>Ramalina maderensis</i>	9vr (H-P 2001)
<i>Ramalina mollis</i>	13Pn (H-P 2001)
<i>Ramalina pluviariae</i>	4vr; 9vr (f) (H-P 2001)
<i>Ramalina requienii</i>	6vr (H-P 2001)
<i>Rinodina etayoi</i>	3vr (Giralt & v.d. Boom 2009)
<i>Rinodina abolescens</i>	11Ma; 14Sek (v.d. Boom <i>et al.</i> 2009)
<i>Rinodina beccariana v. beccariana</i>	14vr (v.d. Boom <i>et al.</i> 2009)
<i>Rinodina beccariana v. lavicola</i>	6vr; 10vr; 14vr (v.d. Boom <i>et al.</i> 2009)
<i>Rinodina canariensis</i>	2vr; 9vr; 12vr (v.d. Boom <i>et al.</i> 2009)
<i>Rinodina gr. colobina</i>	11Ma (v.d. Boom <i>et al.</i> 2009)
<i>Rinodina nimisii</i>	2Ly (v.d. Boom <i>et al.</i> 2009)
<i>Rinodina pruinaella</i>	12Pn; 14Sek (v.d. Boom <i>et al.</i> 2009)
<i>Roccella canariensis</i>	4vr (H-P 2001)
<i>Roccella fuciformis</i>	4vr; 10vr; 13vr (H-P 2001)

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Table 1 : All collected specimens, including additional records from Lanzarote (*continued*)

<i>Roccella phycopsis</i>	2vr; 3vr (H-P 2001)
<i>Roccella tinctoria</i>	2vr; 4vr; 9vr
<i>Schismatomma dirinellum</i>	11Ma
<i>Seiophora scorigenus</i>	1vr; 3vr; 5vr; 7vr (H-P 2001)
<i>Seiophora villosus</i>	6vr; 9 Sek; 12An (dead) (H-P 2001)
<i>Solenopsora cesatii</i>	12vr
<i>Solenopsora holophaea</i>	9vr; 12vr (Haf 2005)
<i>Sphinctrina leucopoda</i>	6vr (crust); 12vr (Pertu); 13Pn (cf.) (Lecano); (Haf 2005)
<i>Spilonema revertens</i>	14vr (Schultz & v.d. Boom 2007)
<i>Squamarina cartilaginea</i>	4t (cf.); 12vr (H-P 2001)
<i>Squamarina congregens</i>	4t; 8t; 9vr (Haf 2005)
<i>Stereocaulon vesuvianum</i>	5vr (H-P 2001)
<i>Stigmidium epixanthum</i>	1vr (Acaro)
<i>Stigmidium tabacinae</i>	14vr (Haf 2005)
<i>Taeniolella beschiana</i>	12vr (Cfolia)
<i>Tephromela atra</i>	8vr (H-P 2001)
<i>Thelenella melanospora</i>	4Ly; 14Sek
<i>Thelomma mammosum</i>	4vr (H-P 2001)
<i>Thelopsis isiaca</i>	6vr; 11Ma; 14Na (Haf 2005)
<i>Toninia albilabra</i>	14vr (H-P 2001)
<i>Toninia aromatica</i>	4vr; 9vr; 12vr; 14vr (H-P 2001)
<i>Toninia cinereovirens</i>	14vr
<i>Toninia episema</i>	9vr (Aspic)
<i>Toninia aff. subfuscae</i>	7vr (Lecania)
<i>Toninia toepfferi</i>	4vr; 12vr; 14vr (H-P 2001)
<i>Toninia tristis ssp. pseudotabac.</i>	4vr; 14vr (H-P 2001)
<i>Tornabea scutullifera</i>	3vr; 6vr; 9 Sek; 12An (dead); 13Pn (f) (H-P 2001)
<i>Tremella ramalinae</i>	9 (Sek)
<i>Trichonectria rubefaciens</i>	9vr (Ramal)
<i>Verrucaria geophila</i>	14t
<i>Xanthoparmelia tinctina</i>	9vr (H-P 2001)
<i>Xanthoria resendei</i>	1vr; 14vr (H-P 2001)

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Collecting sites

1 = 5.5 km W of Tinajo, along small road to Playa de la Madera, open hilly area with volcanic rocks cinder. 13° 44.40' W - 29° 03.50' N, 110 m, 3 March 2003.

2 = 7 km W of Tinajo, along small road to Playa de la Madera, open hilly area, "Islote del Madera" volcanic outcrops. 13° 44.40' W - 29° 03.50' N, 105 m, 3 March 2003.

3 = W of Tahiche, road to San Bartolomé, W of volcano Montaña de Maneje, small hill with volcanic outcrops. 13° 34.20' W - 29° 00.70' N, 205 m, 4 March 2003.

4 = El Risco de Famara, W of Ye, Camino de Guarifay, NW exposed slope with steep and strong sloping volcanic outcrops. 13° 29.60' W - 29° 11.80' N, 140 m, 4 March 2003.

- 5 = N of Yaiza, near entrance of park nacional de Timanfaya, S of Islote Lenguas, open hilly area with volcanic cinder. 13° 29.60' W - 29° 11.80' N, 135 m, 5 March 2003.
- 6 = S of Yaiza, S of Femés, Pico de la Aceitona, N slope with volcanic outcrops. 13° 46.80' W - 28° 54.50' N, 440 m, 5 March 2003.
- 7 = W of Playa Blanca, Montaña Roja, top of volcano, W exposed volcanic outcrops. 13° 51.20' W - 28° 52.20' N, 190 m, 5 March 2003.
- 8 = SW of Guatiza, road to El Mojón, N of volcano Montaña de Guenia, N exposed volcanic outcrops in open field. 13° 30.00' W - 29° 04.30' N, 230 m, 6 March 2003.
- 9 = SSW of Haría, Peñas del Chache, S side of top, E exposed slope with volcanic outcrops and shrubs. 13° 31.20' W - 29° 07.00' N, 640 m, 6 March 2003.
- 10 = 3 km N of Sitio de interés científico de los Jameos, open area with volcanic cinder outcrops and boulders. 13° 25.80' W - 29° 10.00' N, 35 m, 7 March 2003.
- 11 = SE of Haría, W of Tabayesco along road to Haría, some fruit-trees along road. 13° 30.10' W - 29° 07.60' N, 250 m, 7 March 2003.
- 12 = SSW of Haría, road with hairpin bends and N exposed slope along road with shrubs, *Pinus* trees and volcanic outcrops. 13° 30.90' W - 29° 07.70' N, 535 m, 7 March 2003.
- 13 = SW of Haría, Valle del Malpaso, NW slope in valley with volcanic outcrops and *Pinus* trees. 13° 31.20' W - 29° 07.80' N, 515 m, 7 March 2003.
- 14 = El Risco de Famara, SSW of Haría, Barranco de la Poceta, valley with WNW slope with volcanic outcrops. 13° 31.70' W - 29° 06.90' N, 475 m, 8 March 2003.

Annotated list of most interesting species (at least new to Lanzarote)

Acrocordia macrospora A. Massal. - This species is rather inconspicuous and found in crevices, mostly on shaded vertical rock faces. Previously known from P and T (H-P 2001) and F (van den Boom & Etayo 2006). - Loc. 3, 4, 6 on volcanic rock.

Arthonia apatetica (A. Massal.) Th. Fr. - *A. apatetica* is easily overlooked for *A. muscigena*, but the ascospores in this specimen contain a roundish apex and are clearly wider (4.5-5.5 µm) than in *Arthonia muscigena* (2.5-4.0 µm). The brownish epithecium react greenish in KOH. *A. apatetica* is only once recorded from the Canary Islands from F (van den Boom & Etayo 2006). - Loc. 14 on *Senecio kleinia*.

Arthonia muscigena Th. Fr. - This species is easily overlooked and mainly collected from shrubs. The three localities indicate that it is not a very rare species on L. Previously reported from P and recorded as a lichenicolous species in Etayo (2000). - Loc. 2 on *Lycium intricatum*; 4 on *Lavendula*; 14 on *Senecio kleinia*.

Arthrosporum populorum A. Massal. - This species was growing in small amounts among *Caloplaca* sp. and *Lecania cyrtella*, mainly together with *Arthonia muscigena*, for which it is sometimes easily overlooked. Previously it was known from C. - Loc. 4 on *Lavendula*; 14 on *Senecio kleinia*.

Aspicilia calcarea (L.) Mudd - This species is most probably a very common species in the Canary Islands. Recently it is recorded from F with a note that it regards mainly the ochre colored form (van den Boom & Etayo 2006), however this record regards the typical grey-white form. Furthermore it is known from C, P, T (H-P 2001). - Loc. 2 on volcanic outcrops.

Bacidia circumspecta (Norrl. & Nyl.) Malme - Confusion with *B. subincompta* is possible, but *B. circumspecta* has a somewhat warted, non granular thallus, a hyaline hypothecium and smaller ascospores. New to Canary Islands. - Loc. 14 on *Senecio kleinia*.

Bacidia subincompta (Nyl.) Arnold - After the record for the Canary Islands in van den Boom & Etayo (2006), collected in F, this is the second record for the Canary Islands. - Loc. 9 on *Nauplius*.

Bactrospora patellarioides (Nyl.) Almq. - This corticolous species seems to be not rare in the Canary Islands and was previously known from C, G, H and T. - Loc. 11 on *Malus*.

Caloplaca limitosa (Nyl.) Oliv. - The typical black prothallus is present (many black lines) and the apothecia have a black margin. This species is related to *C. crenularia* which seems to be a common species in the Canary Islands. This is the first record for the Canary Islands. - Loc. 14 on volcanic rock.

Caloplaca obscurella (Körb.) Th. Fr. - In van den Boom (2007) it was reported for the first time for Macaronesia (La Palma), so this is the second record for the Canary Islands. - Loc. 11 on *Malus*.

Caloplaca* aff. *variabilis (Pers.) Müll. Arg. - This material refer to *C. variabilis*. However it could be also a form of *C. alociza*, because apothecia don't have a clearly thalline margin and the discs are heavily pruinose, but the apothecia are clearly sessile. The whitish thallus consists of small areoles or lobes. In fact this material is intermediate between *C. variabilis* and *C. alociza* and is in need of further study. *C. variabilis* is only known from C (H-P 2001). - Loc. 4, 14 on volcanic rock.

Caloplaca* aff. *vitellinula auct. non (Nyl.) H. Olivier

The ascospores are 10-13.5 × 4-6 µm, which fit well with the description of *C. vitellinula* according the concept of Clauzade & Roux (1985), but this species is known from mountain levels in non Mediterranean regions. A rather similar species is *Caloplaca alnetorum* Giralt, Nimis & Poelt, but the ascospores are 9-15 × 6-9 µm. Most probably the specimens below refer to the same taxon, mentioned in the checklist (H-P 2001) under the name *C. vitellinula* (Nyl.) H. Olivier. This group needs further study.

Loc. 1 on *Senecio kleinia*; 2 on *Lycium intricatum*; 4 on *Lavendula*.

Catillaria chalybeia (Borrer) A. Massal. - Both specimens are comparable with the material published from F (van den Boom & Etayo 2006), in lacking the greenish pigment in the apothecia. It was also known from P and T (H-P 2001). - Loc. 6, 8 on volcanic rock.

Catillaria lenticularis (Ach) Th. Fr. - The only islands from where it was recorded before is P (H-P 2001). - Loc. 8 on volcanic rock.

Catillaria subpraedicta M. Brand & van den Boom sp. nov.

Fig. 2, 3.

Diagnose latine - *Similis Catillariae praedicta sed thallus farinoso spongiosus-granulosus; asci 16-spori; ascosporae 6.8-7.9 × 2.7-2.8 µm; conidia bacilliforma 2.6-2.8 × 1.1 µm.*

Type: SPAIN, Canary Islands, Lanzarote, SW of Haría, Valle del Malpaso, NW slope in valley with volcanic outcrops and *Pinus* trees, 515 m, 29° 07.8' N-13° 31.2' W, 7 March 2003, P. & B. van den Boom 30471 (LG-holotypus; hb v.d. Boom-isotypus).

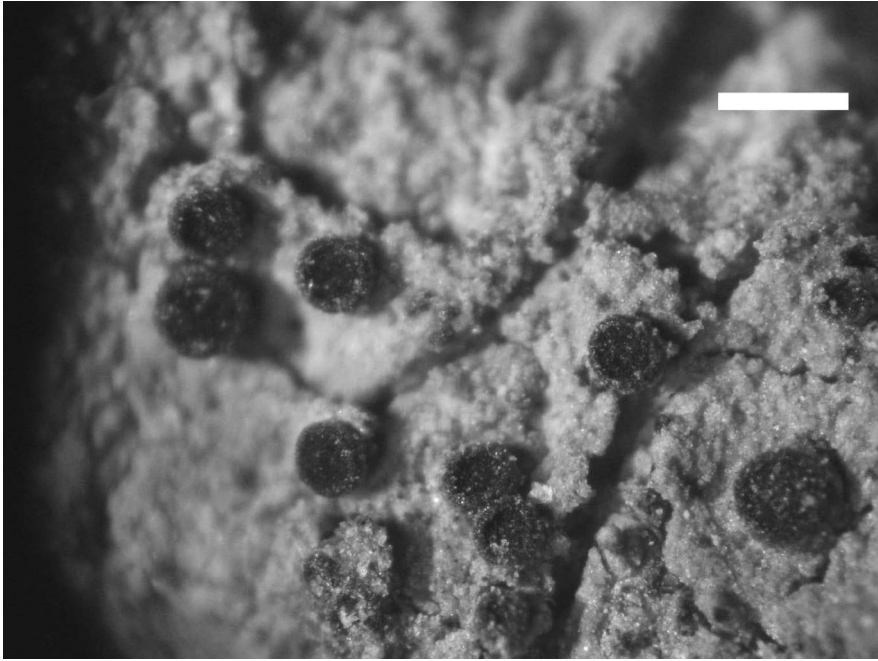


Fig. 2. *Catillaria subpraedicta* (holotype); crustose thallus and apothecia. Scale = 0.5 mm.

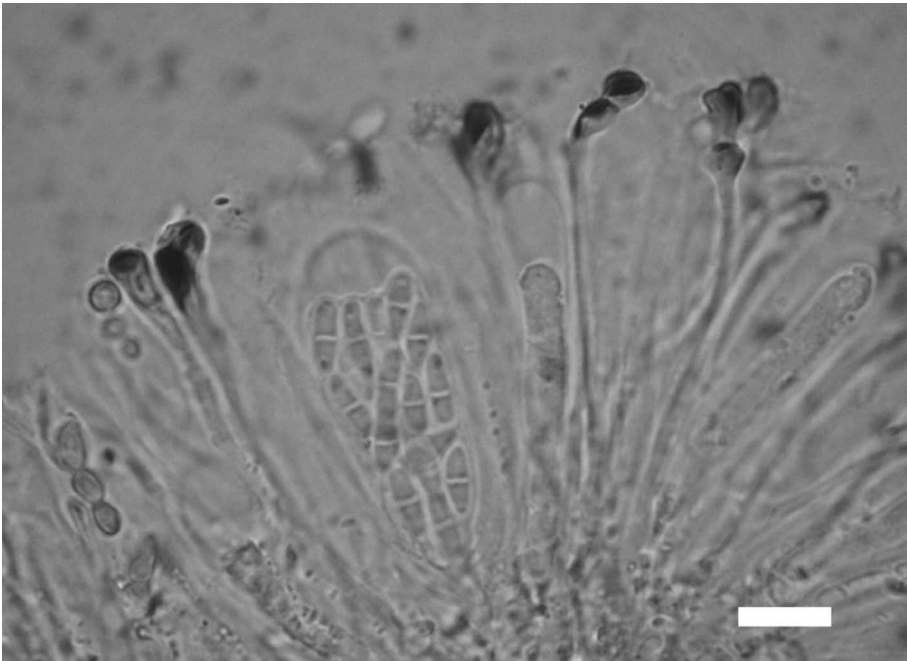


Fig. 3. *Catillaria subpraedicta* (holotype); ascus with 16 ascospores. Scale = 10 μ m.

Thallus small, c. 1 cm wide, semi-endophloeish, up to 0.4 mm thick, scurfy to farinose spongy granular, consisting of clustered gonocysts of 50×50 to $200 \times 130 \mu\text{m}$, upper surface pale to dark brown, matt. Photobiont chlorococcoid, cells to $10 \mu\text{m}$ diam., interwoven with partly grayish brown hyphae. Apothecia to 0.4(-0.5) mm diam., disc plane to slightly convex, dark gray to blackish; margin thin (to 0.05 mm wide), somewhat paler than the disc; excipulum c. $30\text{-}65 \mu\text{m}$ wide, outer rim dark brown with a hyaline epinecral layer, c. $12\text{-}20 \mu\text{m}$ wide, inner part hyaline and often weakly interspersed with fine oil droplets; subhymenium pigmented, pale gray brown to straw; hymenium c. $45\text{-}50 \mu\text{m}$ high, interspersed with fine oil droplets, at least the lowest part; paraphyses loose, apices dark brown to black, widened up to $5 \mu\text{m}$. Asci 16-spored, c. $30 \times 12 \mu\text{m}$; ascospores $6.8\text{-}7.9 \times 2.7\text{-}2.8 \mu\text{m}$, 1-septate. Pycnidia rare, c. $75 \mu\text{m}$ diam., ostiole greenish brown pigmented; conidia short bacilliform, $2.6\text{-}2.8 \times 1.1 \mu\text{m}$. Bluish pigment in apothecia and thallus lacking.

No chemical compounds detected.

On trunks of old trees of, *Acer campestre*, *Ceratonia*, *Prunus* and *Olea* in Mediterranean areas (Canary Islands, Spain, Italy en Kroatia).

The new species is rather similar to *C. nigroclavata* and *C. praedicta* but differs in thallus morphology, 16-spored asci, smaller ascospores and conidia. Tretiach & Hafellner (1998) made the distinction of *C. praedicta* from *C. mediterranea* because of the 32-spore asci of the former, with ascospores of $6.4\text{-}6.5 \times 2.6 \mu\text{m}$, the apothecia are c. 0.35 mm diam. and it is corticolous, the latter has 12-24-spored asci, with ascospores of $6.8\text{-}7.0 \times 3.1 \mu\text{m}$, apothecia of 0.12-0.2 mm and the thallus is poorly developed, beside that, it is only known lichenicolous, mainly on *Anaptychia*, *Physcia* and *Ramalina*.

Additional specimens examined: **Canary Islands**, *La Palma*, 3 km NNE of Puntagorda, road (E) from El Castillo, to los Codesas, roadside *Prunus* tree, on *Prunus*, 920 m, 2 May 1999, P. van den Boom 22122 (hb v.d. Boom); 2.2 km E of Puntagorda, main road between Las Tricias and Los Codesas, along road, W slope with volcanic outcrops, on *Prunus*, 900 m, 2 May 1999, P. van den Boom 22122 (hb v.d. Boom). **Lanzarote**, SSW of Haría, road with hairpin bends and N exposed slope along road with shrubs, *Pinus* trees and volcanic outcrops, 535 m, $29^{\circ} 07.7' \text{N}\text{-}13^{\circ} 30.9' \text{W}$, 07 March 2003, P. & B. van den Boom 30180 (hb v.d. Boom). **Spain**, prov. Castellon, Sierra de Irta, 10 km SW of Peñíscola, $0^{\circ} 19.08' \text{E}\text{-}40^{\circ} 16.73' \text{N}$, flat area near coast, on *Ceratonia*, 16 May 2005, M. Brand 52004 (hb Brand). **Italia**, prov. Calabria, 15 km N of Cosenza, W of Bivio Acri, $16^{\circ} 12.5' \text{E}\text{-}39^{\circ} 26.3' \text{N}$, 300 m, old *Olea* trees scattered in meadow, on *Olea*, 21 May 2001, M. Brand 43436 (hb Brand). **Kroatia**, Velebit, 10 km S of Senj, Lopki, $14^{\circ} 55.5' \text{E}\text{-}44^{\circ} 54.2' \text{N}$, 500 m, scattered trees near farm, on *Acer campestre*, 20 July 1987, M. Brand 16633 (hb Brand).

Chromatochlamys muscorum (Fr.) H. Mayrhofer & Poelt - The genus *Chromatochlamys* is represented by only one species in the Canary Islands (*C. muscorum*), previously occurring on P and T (H-P 2001). - Loc. 13 on volcanic rock, over moss.

Cladonia pyxidata (L.) Hoffm. - The genus *Cladonia* is not so abundantly present in the eastern Islands F and L. Both *C. foliacea* and *C. rangiformis* are rather common. *C. pyxidata* wasn't reported from these islands before. - Loc. 12 terricolous.

Coccocarpia erythroxyli (Spreng.) Swinsc. & Krog - This species previously only known from all the 'western islands C, G, H, P & T. This is the first record for the semi-desert (eastern) islands. - Loc. 13, 14 on volcanic rock.

Collema polycarpon Hoffm. - Previously only mentioned from T (H-P 2001) and F (van den Boom & Etayo 2006). - Loc. 9, 14 on volcanic rock.

Collema tenax (Sw.) Ach. Em Degel. - This species is the most common of the genus in the Canary Islands and known from C, F, H, P and T (H-P 2001). The variety *Collema tenax* var. *ceranoides* (Borr.) Degel. is published by Degelius (1954) from C and by Schultz & van den Boom (2007) from T. - Loc. 13 terricolous.

Degelia plumbea (Lightf.) P.M. Jørg. & P. James - Previously this species was known from all islands except F and L. - Loc. 12 on volcanic rock.

Diploschistes actinostomus (Pers. ex Ach.) Zahlbr. - This species is widespread throughout the Canary Islands from the west to the east. - Previously only unknown from L. - Loc. 4 on volcanic rock.

Diploschistes muscorum (Scop.) R. Sant. - This species, overgrowing *Cladonia* squamules of an unknown species, however it could be *C. pyxidata* but the cups are lacking. It was previously known from C and T (H-P 2001). - Loc. 9 on volcanic rock.

Diplotomma alboatrum (Hoffm.) Flot. - This species is very common in many places of continental Europe and probably not rare in the Canary Islands, corticolous as well as saxicolous. It was already published from H and T (H-P 2001) and F (van den Boom & Etayo 2006). - Loc.11 on *Malus*; Loc.14 on volcanic rock.

Dirina ceratoniae Fr. - This epiphytic species seems to be not rare in the Canary Islands and is reported already from F, P and T (H-P 2001). - Loc. 11 on *Malus*; Loc. 4 on *Lycium intricatum*.

Dirina insulana (Tav.) Tehler - This is a rather inconspicuous saxicolous species, previously reported from F (van den Boom & Etayo 2006) and T (H-P 2001). - Loc. 10 on volcanic rock.

Endocarpon loscosii Müll. Arg. - This is the second record for the Canary Islands, after the report in van den Boom & Etayo (2006) from F. - Loc. 9 on E sloping outcrops.

****Gelatinopsis heppiae*** Nav. Ros. Hladun & Llimona - First recorded here outside the Iberian Peninsula. It was growing on *Heppia despreauxii*. Previously only known from Aragon (Spain), Navarro-Rosinés *et al.* (2008). - Loc. 14 terricolous.

Heppia echinulata Marton & Galun - Schulz & van den Boom (2007) reported this species for the first time for the Canary islands, from Gran Canaria, so this is the second record for the archipelago. - Loc. 14 on volcanic rock.

Heterodermia speciosa (Wulfen) Trev. - Apparently it is a rather rare species in the Canary Islands and previously only reported from P (H-P 2001). - Loc. 9 on volcanic rock.

Lecania cyrtella (Ach.) Th. Fr. - *L. cyrtella* is abundantly present on shrubs in the mentioned localities. The ascospores deviate somewhat from the typical material. In some asci, ascospores measure $8-10 \times 4.5-5 \mu\text{m}$ and in the same apothecia are found also longer spores ($10-12 \times 3.5-4.5 \mu\text{m}$). In some specimens it seems to be growing parasitical. More material from different localities is needed to see if a separated taxon is involved. In (H-P 2001) it is mentioned from T, in van den Boom (2007) from P and in van den Boom & Etayo (2006) from F. - Loc. 9, 11 on unidentified shrubs; 14 on *Senecio kleinia*.

Lecania poeltii van den Boom, Alonso & Egea - This species described from most south western Portugal and north western Morocco, seems to be rare in L, it grew on shrubs. Previously known from comparable habitats in F (van den Boom & Etayo 2006). - Loc. 4 on *Lavendula*; Loc. 4 on *Lycium intricatum*.

Lecania spadicea (Flot.) Zahlbr. - This species was abundantly present in some places in L. - Loc. 4, 7, 8, 14, on volcanic rock.

Lecania turicensis (Hepp) Müll. Arg. - The dark brownish to black apothecia are clearly pruinose, so in the field it is easily overlooked for *Diplotomma alboatrum*. Both species occur in the same habitats, growing sometimes close together. - Loc. 1, 4, 10 on volcanic rock.

Lecanora dispersa (Pers.) Sommerf. - The *L. dispersa* group from the Canary Islands needs further study, however this material fits well with *L. dispersa* material from continental Europe. Previously it was reported from P and T in (H-P 2001) and from F in van den Boom & Etayo (2006). - Loc. 8 on volcanic rock.

Lecanora horiza (Ach.) Lindenb. - This species is easily confused with some other species from the *Lecanora subfusca* group, containing small crystals in the apothecium. According the recent treatment of this species (Ryan *et al.* 2004), the *Lecanora horiza* group required further investigation. - Loc. 11 on *Malus*.

Lecidella scabra (Taylor) Hertel & Leuckert - Although previously it was rarely recorded from the Canary Islands, only from P (H-P 2001), Hafellner (2005b) recorded several specimens from F, where it seems to be not a rare species. - Loc. 1 on volcanic rock.

Leptogium teretiusculum (Wallr.) Arnold - In (H-P 2001) this species is mentioned from G, P & T. - Loc. 11 on *Malus*; Loc. 13 terricolous.

Leptogium plicatile (Ach.) Leight. - Recorded from P and T in H-P 2001. - Loc. 9 on E sloping on volcanic rock.

****Lichenocodium usneae*** (Anzi) D. Hawksw. - This genus is rarely mentioned from the Canary Islands. Only *Lichenocodium lichenicola* (P. Karst.) Petr. et Syd. and *L. xanthoriae* M.S. Christ. are recorded from G (H-P 2001). This is the first record for the Canary Islands. - Loc. 9 on *Ramalina pluviariae* on volcanic rock.

****Lichenostigma episulphurella*** Etayo & van den Boom - In van den Boom & Etayo (2006) this species is described as new and recorded from C, F, G and P. This species seems to be very common in the Canary Islands. - Loc. 6 on volcanic rock on *Lecanora sulphurella*.

****Marchandiomyces corallinus*** (Roberge) Diederich et D. Hawksw. - Loc. 9 on *Anaptychia* and *Ramalina* on volcanic rock.

Micarea seneciae van den Boom sp. nov.

Fig. 4

Diagnose latine - *Thallus albidus vel pallidocremeus, ad 0.2 mm crassus; apothecia immarginata, obscure fusca vel nigra; asci typus Lecanorae; ascosporae ellipsoidae, 1-septatae, 8-10 × 2.5-3(-3.5) µm; paraphyses 2-2.5 µm crassis, capitatae, apicibus ad 5 µm in diametro, ramosae, interdum anastomosantes; sine pycnidia.*

Type: SPAIN, Canary Islands, Lanzarote, El Risco de Famara, SSW of Haría, Barranco de la Poceta, valley with WNW slope, with volcanic outcrops, 29° 06.90' N-13° 31.70' W, 475 m, on dead standing *Senecio kleinia*, 8 March 2003, P. & B. van

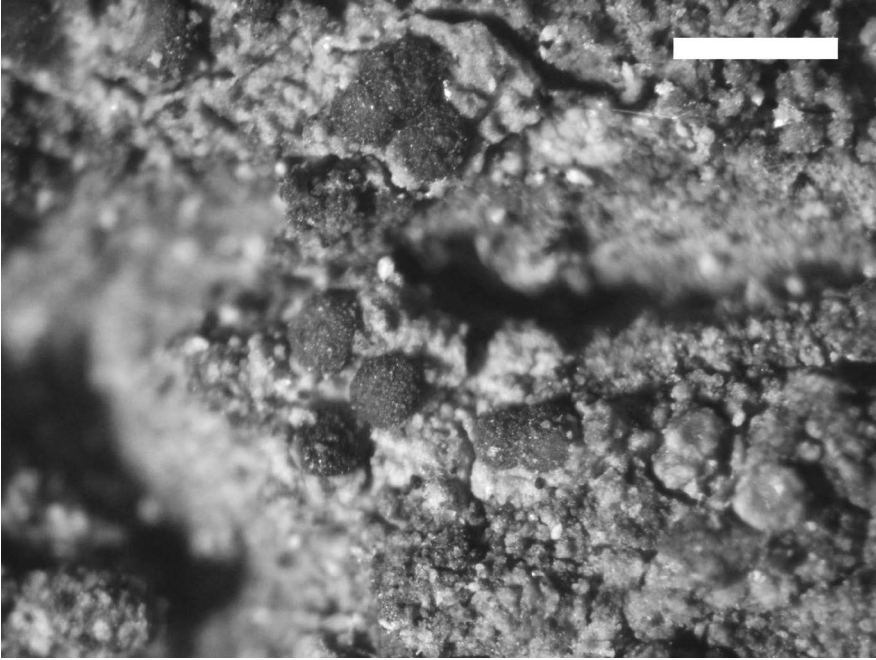


Fig. 4. *Micarea seneciae* (holotype); crustose thallus and apothecia. Scale = 1 mm.

den Boom 30515 (LG-holotypus; hb v.d. Boom-isotypus; paratypus P. & B. van den Boom 30569, 30489, hb v.d. Boom).

Thallus whitish to pale crème, up to 0.2 mm thick, in small delimited peaches among other crustose lichens, up to 3 mm wide. Photobiont chlorococcoid, cells 6-15 μm diam. Apothecia reddish- to dark brown, to blackish, to 0.4 mm diam., immarginate, \pm flat to convex; epithecium brown, K-, N-; hymenium with brownish (K-, N-) vertical steaks; hypothecium hyaline to straw; hamathecium of paraphyses (1.5-)2-2.5(-3) μm wide, septate, branched anastomosed, tips sometimes widened, up to 5 μm and than mostly dark brown pigmented; asci *Lecanora*-type, 25-35 \times 8-10 μm , 8-spored; ascospores 1-septate, hyaline, 8-10 \times 2.5-3(-3.5) μm . No pycnidia found. No chemical compounds detected.

Distribution and ecology: Only known from the type locality, abundantly on shrubs of *Senecio kleinia*. It was found in a rich community of Kleinio-Euphorbietum, with *Arthonia muscigena*, *Arthrosporum populorum*, *Caloplaca* sp., *Lecania cyrtella* and *Xanthoria parietina*.

Notes: This new species belongs in the genus *Micarea* because of the very poorly developed true exciple, hamathecium of branched anastomosed paraphyses, the *Lecanora*-type asci and 1-septate rather small ascospores. Even, in general it has the habitus of a *Micarea*.

The rather wide paraphyses are rarely known in the genus *Micarea*. Species such as *M. erratica* and *M. botryoides*, have comparable paraphyses as they are found in *M. seneciae*.

****Muellerella lichenicola*** (Sommerf.) D. Hawksw. - Only *Muellerella hospitans* Stizenb. and *M. pygmaea* are rarely reported from the Canary Islands (H-P 2001), *M. lichenicola* is new to this archipelago. - Loc. 14 on *Senecio kleinia*, on *Caloplaca* sp.

****Opegrapha submaritima*** Hafellner - In Hafellner (2007) this species is newly described from T and also reported from F and G. - Loc. 8 on volcanic rock, on *Tephromela atra*.

Peltula obscurans (Nyl.) Gyeln. var. ***hassei*** (Zahlbr.) Wetmore - Although Schulz and van den Boom (2007) recorded this variety as new to the Canary Islands, no specimens of Lanzarote were included, only from C, G and T. - Loc. 9 on volcanic rock.

Pertusaria amara (Ach.) Nyl. - When growing on rock, this species is easily overlooked for *P. leucosora*, but they are easily distinguishable by the chemistry. Known from G, H, P and T (H-P 2001). - Loc. 6 on N sloping volcanic rock.

Pertusaria leucosora Nyl. - In van den Boom & Etayo (2006) it is recorded from F, probably this species is confused with taxa such as *P. dealbata* and *P. aspergilla*. - Loc. 8 on volcanic rock.

Phaeophyscia hirsuta (Mereschk.) Essl. - This species is recorded previously from T (H-P 2001) and F (van den Boom & Etayo 2006). One specimen (Loc. 9) is fertile. - Loc. 9, 14 on volcanic rock.

Physcia adscendens (Fr.) H. Olivier - This species was reported from all islands except L (H-P 2001) - Loc. 11 on *Malus*; 13 on volcanic rock and fertile.

Physcia tribacia (Ach.) Nyl. - Loc. 9, 14 on volcanic rock.

Piccolia ochrophora (Nyl.) Hafellner - In H-P 2001, this species is mentioned as *Biatorella ochrophora* from P and T. - Loc. 11 on *Malus*.

Placidium pilosellum (Breuss) Breuss - Known already from F (van den Boom & Etayo 2006), P and T (H-P 2001). - Loc. 4 on volcanic rock.

Placopyrenium bucekii (Nádv. & Servit) Breuss - Previously known from T (Breuss 1988) and F (van den Boom & Etayo 2006). - Loc. 14 on volcanic rock.

Placynthium nigrum (Huds.) Gray - Although the hypothallus of this species is weakly developed or sometimes lacking, the habitus of the thallus and apothecia is very similar to specimens from continental Europe where it is a very common species. The ascospores are often not well developed, but they have been found several times and 3-septate, so there is no doubt about the identity. However in none of the checklists ((H-P 2001), Hafellner (2002), Hafellner (2005a) or Hafellner (2008), this species is mentioned, so it is recorded for the first time for the Canary Islands here. - Loc. 2, 8, 14 on volcanic rock.

Protoparmelia montagnei (Fr.) Poelt & Nimis - Previously known from F (van den Boom & Etayo 2006) and P, T (H-P 2001). - Loc. 6 on S sloping volcanic rock.

Ramalina chondrina Steiner - This corticolous and sometimes terricolous species has been found in altitudes between 475 and 535 m, on shrubs and trees. It was previously known from all islands except C and L - Loc. 12, 13 on *Pinus*; Loc. 14 on *Euphorbia*.

Ramalina crispatula Despr. ex Nyl. - This species is probably more common on the Canary Islands than the checklist suggest, C, T (H-P 2001). - Loc. 6, 9 on volcanic rock.

Ramalina farinacea (L.) Ach. - Previously this species was known from all other islands (H-P 2001). - Loc. 12 on *Pinus*.

Roccella tinctoria DC. - This species was known from C, H, P, T (H-P 2001) and F (van den Boom & Etayo 2006). - Loc. 2, 4, 9 on volcanic rock.

Schismatomma dirinellum (Ny.) Zahlbr. - According to H-P 2001, it was only known from T. - Loc. 11 on *Malus*.

Solenopsis cesatii (A. Massal.) Zahlbr. s.l. - In H-P 2001, *S. cesatii* is mentioned only from T. The specimen below is clearly grayish white, sorediate and contains a lot of apothecia, so it most probably refers to *S. cesatii* var. *grisea*, but this complex is in need of revision. - Loc. 12 on volcanic rock.

****Stigmidium hageniae*** (Rehm) Hafellner - During this fieldtrip, several *Stigmidium* specimens from different localities and different hosts are collected on Lanzarote, these are most probably undescribed species. *S. hageniae* is the second record of the Canary Islands, after the record of T (H-P 2001). - Loc. 9 on E exposed vertical volcanic rock.

****Taeniolella beschiana*** Diederich - *T. beschiana* was found on the squamules, especially on the margins, of *Cladonia foliacea*. - New to Canary Islands. - Loc. 12 terricolous.

Thelenella melanospora Etayo & H. Mayrhofer - In Etayo & Mayrhofer (2003) it is described from the Mediterranean area and recorded as new to Macaronesia and in van den Boom & Etayo (2006) from F. - Loc. 4 on *Lycium intricatum*; Loc. 14 on *Senecio kleinia*.

Toninia cinereovirens (Schaer.) A. Massal. - In H-P 2001, it is mentioned from P and T. - Loc. 14 on volcanic rock.

****Toninia episema*** (Nyl.) Timdal. - This is the second report of this species for the Canary Islands after the record of F (van den Boom & Etayo 2006). - Loc. 9 on volcanic rock, on *Aspicilia calcarea*.

****Toninia* aff. *subfuscae*** (Arnold) Timdal - This rather small collection has the characters of *Toninia subfuscae*, olivaceous epithecium, reddish brown hypothecium and 3-septate ascospores (14-15 × 4-4.5 µm). However *T. subfuscae* is only known from saxicole *Lecanora*, *Lecidella* and *Lobothallia* species (van den Boom & Etayo 2006). More material from similar host species (*Lecania spadicea*) is needed to be sure about the identification. Previously *T. subfuscae* was only known from G (H-P 2001) and F (van den Boom & Etayo 2006). - Loc. 7 on volcanic rock, on *Lecania spadicea*.

****Tremella ramalinae*** Diederich - After the record in van den Boom & Etayo (2006) from F, this is the second record from the Canary Islands. - Loc. 9 on *Senecio kleinia*.

****Trichonectria rubefaciens*** ((Ellis & Everh.) Diederich & Schroers - This species is mostly collected from *Parmelia sulcata*, but recently *T. rubefaciens* is also recorded from *Ramalina* in Portugal (van den Boom 2006). It was known as *Nectria rubefaciens* from G (H-P 2001). - Loc. 9 on volcanic rock, on *Ramalina*.

Verrucaria geophila Zahlbr. - The specimen was found on N sloping volcanic rock, on overlaying sand in an open area with shrubs. It was already known from T (H-P 2001). - Loc. 14 on sand on volcanic rock.

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