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Notes on cyanobacterial lichens (mostly Lichinales, Ascomycota) of the Canary Islands

by

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With 12 figures

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Abstract: Forty-six species and three varieties of terricolous and saxicolous, cyanobacterial lichens are mentioned from the Canary Islands. The new combination *Lichinella undulata* (Henssen) M.Schultz & v.d.Boom is proposed. *Gonohymenia cribellifera* ssp. *macrocarpum* is reduced to synonymy with *Lichinella cribellifera*. Nineteen species and three varieties are new to the Canary Islands and many taxa are recorded as new for at least one of the Islands. New records of rare or poorly known lichens include: *Heppia arenacea*, *H. conchiloba*, *Peccania arabica*, *Peccania teretiuscula*, *Peltula farinosa* and *Psorotichia hassei*. An annotated list with notes on taxonomy, morphology, ecology and distribution of the species is provided. Selected species are illustrated.

Introduction

The lichen flora of the Canary Islands is rather well known. The reports of many contributors are published in the checklists by Hernández-Padrón (2001) and Hafellner (1995, 2002, 2005). However cyanobacterial lichens, though generally well represented on the Islands, are insufficiently studied especially with respect to small, saxicolous and terricolous taxa. Approximately 60 lichens belonging to this group are listed in Hernández-Padrón (2001). During studies on the biodiversity of lichens and lichenicolous fungi in the Canary Islands, the second author collected abundant material of saxicolous and terricolous cyanobacterial lichens. Therefore, the present study provides notes on morphology, taxonomy, ecology and distribution of these often neglected lichens aiming at enhancing our knowledge on the lichenized fungi of the Canary Islands.

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Material and methods

During excursions of the second author material of cyanobacterial lichens was collected on the Canary Islands Gran Canaria, Fuerteventura, Lanzarote and La Palma (herb. P.v.d.Boom). Additional material included in this survey was collected by the first author (La Gomera, Tenerife; herb. M.Schultz), by M.Brand (La Palma, Tenerife; herb. M.Brand), by G.Brown (La Gomera, El Hierro; herb. G.Brown, duplicates in herb. M.Schultz) and by T.Feuerer (Tenerife; HBG). Additional comparative material has been examined from FH, G, MICH, MUB, S and UPS.

Observations of thallus and apothecial anatomy were made using standard microscopic techniques. Photobiont cells, ascospores and conidia measurements were made in water at × 400 or × 1000 magnification. Macrographs were made using a T70 Canon SRL camera and 35 mm lens mounted on bellows.

Results

Nineteen species and three varieties are recorded as new for the Canary Islands in the annotated list below. The genera *Anema* Nyl. ex Forss. and *Arctomia* Th.Fr. were previously not reported from the islands. Many species are recorded for the first time for one of the islands. Common species are *Gloeoheppia turgida*, *Lichinella cribellifera*, *L. stipatula*, *Peltula euploca*, *Pterygiopsis canariensis* and *Spilonema revertens*. These species are often encountered in rather large populations and are known now on at least five islands. An additional non cyanolichen recorded as new to the Canary Islands is *Psorula rufonigra* (Tuck.) Gotth. (see under *Spilonema revertens*).

Thyrea pitardi (Harm.) Zahlbr. listed by Hernández-Padrón (2001) under the Lichinaceae is considered synonymous with *Lichinella algerica* (J.Steiner) P.Moreno & Egea (see Moreno & Egea 1992a: 42, 51; sub *Gonohymenia a.*) and should, therefore, be excluded.

Gloeoheppia erosa (J.Steiner) Marton is listed twice in Hernández-Padrón (2001). The entry under the basionym *Heppia erosa* J.Steiner should be eliminated.

Finally, the epiphytic cyanolichen *Staurolemma omphalarioides* (Anzi) P.M.Jørg. listed in Hernández-Padrón (2001) under the Lichinaceae belongs to the Collemataceae (Jørgensen & Henssen 1993).

The following list provides short notes on distribution and distinguishing characters of rare or species newly recorded for the study area and provides additional records for more common species already reported to occur on the Canary Islands. The following abbreviations are used: C-Gran Canaria, F-Fuerteventura, G-La Gomera, H-El Hierro, L-Lanzarote, P-La Palma, T-Tenerife. Nomenclatural and taxonomic remarks are made wherever necessary.

Anema prodigulum (Nyl.) Henssen

This species is reported from the Canary Islands for the first time. In Moreno & Egea (1992a) this species is reported mainly from south-eastern Spain and a few localities in Morocco. It is also known from SW North America (Schultz 2002). It is the smallest of the species in the genus with a ± crustose habit. However, the

loose reticulate anatomy well separate *Anema prodigulum* from truly crustose cyanolichens such as *Psorotichia* spp., which have a small-celled, paraplectenchymatous anatomy.

SPECIMENS EXAMINED: Fuerteventura, N of Pájara, NW slope of Fénduca, S of mirador 'Degollada de los Granadillos, 28°22.1'N, 14°6.5'W, P. & B.v.d.Boom 26107, 26108.

Arctomia delicatula Th.Fr.

This is a remarkable and unexpected new entry to the lichen flora of the Canary Islands. This species was previously known from north-western Europe where it occurs on old trees and mossy boulders (Purvis 1992). It was also reported from Norway, Sweden and Finland where it is widely distributed (Santesson et al. 2004).

SPECIMENS EXAMINED: La Palma, near road Muchachachos to Santa Cruz, near Picodel Ataud, 28°45.6'N, 17°51.1'W, M.Brand 13254.

Collema coccophorum Tuck.

This species is distributed world wide and has been reported from Portugal, Spain (Llimona & Hladun 2001) and Morocco (Egea 1996). It has not been reported from the Canaries so far. It superficially resembles *Collema tenax* but it is well separated by the constantly 2-celled ascospores.

SPECIMENS EXAMINED: Tenerife, near Buenavista del Norte, way to La Costa and Punta de la Laja, 28°22.5'N, 16°50'W, M.Schultz 17083c.

Collema cristatum (L.) Weber ex F.H.Wigg.

Already known from T.

SPECIMENS EXAMINED: La Palma, 3.5 km NNE of Santa Cruz, Tenagua, 0.3 km NE of crossing with main road, road to P.S. Slucia, 28°42.8'N, 17°44.7'W, P.v.d.Boom 22509. Tenerife, unterhalb Pico del Teide, D. & S.Schultz (herb. M.Schultz 17115).

Collema furfuraceum (Arnold) Du Rietz

Collema furfuraceum is already known from H. & T.Being predominantly an epiphytic species this lichen is occasionally observed on rocky substrates (Degelius 1954).

SPECIMENS EXAMINED: El Hierro, Jinema, Brown 250797-5 (herb. M.Schultz).

Collema polycarpon Hoffm.

Already known from T.

SPECIMENS EXAMINED: Tenerife, Afur, am Fahrweg vom unteren Ortsende zur linken Talseite, UTM 7759, 24.III.2003, T.Feuerer (HBG).

Collema ryssoleum (Tuck.) Schneid.

Already known from H, L, P & T.

SPECIMENS EXAMINED: El Hierro, Jinema, Brown 250797-5 (herb. M.Schultz). Tenerife, Afur, UTM 7759, 24.III.2003, T.Feuerer (HBG).

Collema tenax var. **ceranoides** (Borr.) Degel.

No varieties of *Collema tenax* are distinguished in Hernández-Padrón (2001). Var. *ceranoides* is characterized by the presence of rather broad lobes and abundant, eventually erect, deeply branched lobules. It has been reported from Gran Canaria by Degelius (1954).

Specimens examined: Tenerife, E of Puerto de la Cruz, trail to Playa Bollulo, c. 28°25'N, 16°50.3'W, M.Schultz 17074; near Buenavista del Norte, way to La Costa and Punta de la Laja, 28°22.5'N, 16°50'W, M.Schultz 17080a.

Gloeoheppia erosa (J.Steiner) Marton

This species is known already from L. It is characterized by the squamulose, brittle thallus with undulating, eroding-sorediate margins. *Peltula bolanderi* has similar marginally sorediate undulating margins but differs in the heteromerous thallus anatomy with a distinct lower cortex.

Specimens examined: Fuerteventura, N of Oliva, N of road from Lajares to the east, 28°41.1'N, 13°55.9'W, P. & B.v.d.Boom 25747; N of Betancuria, W of Vega de Rio Palmas, near storage lake, 28°23.1'N, 14°6'W, P. & B.v.d.Boom 25811; N of Betancuria, S of road to mirador, 28°26.2'N, 14°3.2'W, P. & B.v.d.Boom 25763, 25764, 26141. Gran Canaria, W of Mogán, halfway road Las Casas de Veneguéra to the coast village Veneguára, 27°53.2'N, 15°44.6'W, P. & B.v.d.Boom 34522. Lanzarote, 7 km W of Tinajo, 105 m, 'Islote del Madera', 29°03.5'N, 13°44.4'W, P. & B.v.d.Boom 30164. Tenerife, Barranco Los Calderones N El Medano, UTM 4804, 11.III.2005, T.Feuerer (HBG).

Gloeoheppia turgida (Ach.) Gyeln.

Gloeoheppia turgida is known already from C, F, L, P & T. This is a common species on soil crusts in semi-desert habitats especially on Fuerteventura and Lanzarote. It is rather easily recognized by the inflated, convex squamules.

Specimens examined: Fuerteventura, 3 km NNW of Oliva along road to Lajares, W slope of volcano 'Arena', 28°37.9'N, 13°56.8'W, P. & B.v.d.Boom 25700, 25714; N of Betancuria, S of road to mirador, 28°26.2'N, 14°3.2'W, P. & B.v.d.Boom 25768; Parc Natural Jandia, 5 km NW of Morro Jable, E of Casas de Gran Valle, Cuchillo del Ciervo, 28°5.1'N, 14°22.7'W, P. & B.v.d.Boom 25890; S of Puerto del Rosario, W of Casas de Pozo Negro, 28°19.6'N, 13°54.8'W, P. & B.v.d.Boom 26015, 26019. Lanzarote, 5.5 km W of Tinajo, along small road to Playa de la Madera, 29°03.5'N, 13°44.4'W, P. & B.v.d.Boom 30148; 7 km W of Tinajo, 'Islote del Madera', 29°03.5'N, 13°44.4'W, P. & B.v.d.Boom 30157; El Risco de Famara, W of Ye, Camino de Guarifay, 29°11.8'N, 13°29.6'W, P. & B.v.d.Boom 30208; W of Playa Blanca, Montaña Roja, 28°52.2'N, 13°51.2'W, P. & B.v.d.Boom 30282; El Risco de Famara, SSW of Haría, Barranco de la Poceta, 29°6.9'N, 13°31.7'W, P. & B.v.d.Boom 30549. Tenerife, Adeje, NW of la Caleta, 28°2'N, 16°45.2'W, M.Brand 13670; Barranco Los Calderones nördlich El Medano, UTM 4804, 11.III.2005, T.Feuerer (HBG).

Heppia arenacea M.Schultz

This species was recently described from southern Yemen (Schultz 2005a) and the present report is the first from outside Arabia. It forms small, roundish patches and consists of small, greyish or sand-coloured, adnate squamules or areoles. Usually, there are numerous erumpent apothecia in the centre of the squamules. The thallus anatomy with perpendicularly arranged hyphae and a *Scytonema*-like photobiont is often hard to observe due to soil material abundantly incorporated in the thallus.

Unlike the strictly terricolous Arabian material, the Gran Canaria specimen was collected on soft, disintegrating rock.

SPECIMENS EXAMINED: Gran Canaria, W of Mogán, halfway road Las Casas de Veneguéra to the coast village Veneguára, 27°53.2'N, 15°44.6'W, P. & B.v.d.Boom 34540.

Heppia conchiloba Tuck.

This species was hitherto only known from western North America (Büdel et al. 2002). It is rather distinctive due to the presence of coarsely granulose marginal soralia (Fig. 1) and usually somewhat greyish pruinose, concave squamules.

SPECIMENS EXAMINED: Gran Canaria, NNW of Maspalomas, along road GC-503, near mirador, 27°50.1'N, 15°36.8'W, P. & B.v.d.Boom 34205; NNW of Maspalomas, along road GC-505, S of Cercados de Espinos, 27°52.6'N, 15°40.5'W, P. & B.v.d.Boom 34416.

Tenerife, Afur, UTM 7759, 24.III.2003, T.Feuerer (HBG).

Heppia despreauxii (Mont.) Tuck.

The species is known already from F, L, P & T. It is a characteristic species identified by the greenish or yellowish olive colour and the presence of pale dots on the upper surface. These dots may become slightly elongated forming small cracks. They are obscured when abundant pruina is present. There is a distinct paraplectenchymatous upper cortex whereas a lower cortex is absent or very thin and restricted to marginal parts of the squamules. Richly fertile material was found on Lanzarote.

SPECIMENS EXAMINED: Fuerteventura, N of Betancuria, W of Vega de Rio Palmas, 28°23.1'N, 14°6'W, P. & B.v.d.Boom 25811, S of road to mirador, 28°26.1'N, 14°3.2'W, P. & B.v.d.Boom 25761; 3 km N of Pájara, N slope of Fénduca, 28°22.1'N, 14°6.5'W, P. & B.v.d.Boom 26070. Lanzarote, El Risco de Famara, SSW of Haría, Barranco de la Poceta, 29°6.9'N, 13°31.7'W, P. & B.v.d.Boom 30503. Tenerife, near Buenavista del Norte, way to La Costa and Punta de la Laja28°22.5'N, 16°50'W, M.Schultz 17083b.

Heppia echinulata Marton & Galun

Heppia echinulata is new to the Canary Islands. It is distinctive due to the presence of numerous, short, hyaline spinules. These spinules are formed predominately along the margins of small, olive brown squamules. However, they may easily break off or be disguised by abundant soil particles and hence hard to recognize. The species was described from Israel but is also known from SE Spain, Algeria and Morocco (Egea 1989, Marton & Galun 1974, 1981).

SPECIMENS EXAMINED: Gran Canaria, NW of Maspalomas, N of Los Palmitos Park, 27°50.4'N, 15°36.9'W, P. & B.v.d.Boom 34191.

Heppia lutosa (Ach.) Nyl.

This species was known from L & T. *Heppia lutosa* forms small, often irregularly shaped squamules (Fig. 2) of dark olive colour. The anatomy is homoiomerous and the thallus is ecorticate or there is a rudimentary lower cortex at the margin of young squamules (Henssen 1994).

SPECIMENS EXAMINED: Fuerteventura, N of La Oliva, N of road from Lajares to the east, near Rosa de Combrillo, 28°41.1'N, 13°55.9'W, P. & B.v.d.Boom 25748. Lanzarote, 5.5 km W of Tinajo, along

small road to Playa de la Madera, 29°3.5'N, 13°44.4'W, P. & B.v.d.Boom 30138. Tenerife, NW, near Buenavista del Norte, way to La Costa and Punta de la Laja, 28°22.5'N, 16°50'W, M.Schultz 17083a.

Heppia solorinoides (Nyl.) Nyl.

Previously this species was known from L & T. *Heppia solorinoides* is easily recognized due to the whitish thallus colour and the deeply cracked surface of the squamules giving it a tessellate appearance (Fig. 3). Hence, *H. solorinoides* is unlikely to be mistaken with any other species of the genus.

SPECIMENS EXAMINED: Tenerife, Barranco Los Calderones nördlich El Medano, UTM 4804, 11.III.2005, T.Feuerer (HBG).

Leptogium biatorinum (Nyl.) Leight.

This is the first record from the Canaries. The species is widespread in Europe (Czeika et al. 2004) and is present also in SW North America (Jørgensen & Nash 2004). Using the key to the species of *Leptogium* in the Iberian Peninsula recently provided by Aragón et al. (2005), our material could be referred to *L. cretaceum*. Since no further information on this taxon was provided by Aragón et al. (2005) we are following the concept of Czeika et al. (2004) who synonymized *Leptogium cretaceum* under *L. biatorinum*.

SPECIMENS EXAMINED: La Gomera, Brown 160798-9, M.Schultz 17107. Tenerife, near Buenavista del Norte, way to La Costa and Punta de la Laja, 28°22.5'N, 16°50'W, M.Schultz 17083a.

Leptogium palmatum (Huds.) Mont.

This species has been reported from P, G, T & C under the name *Leptogium corniculatum* (Hoffm.) Minks. However, Jørgensen & Nash (2004) discussed the nomenclatural problems with this name and proposed to use *Leptogium palmatum* for this taxon.

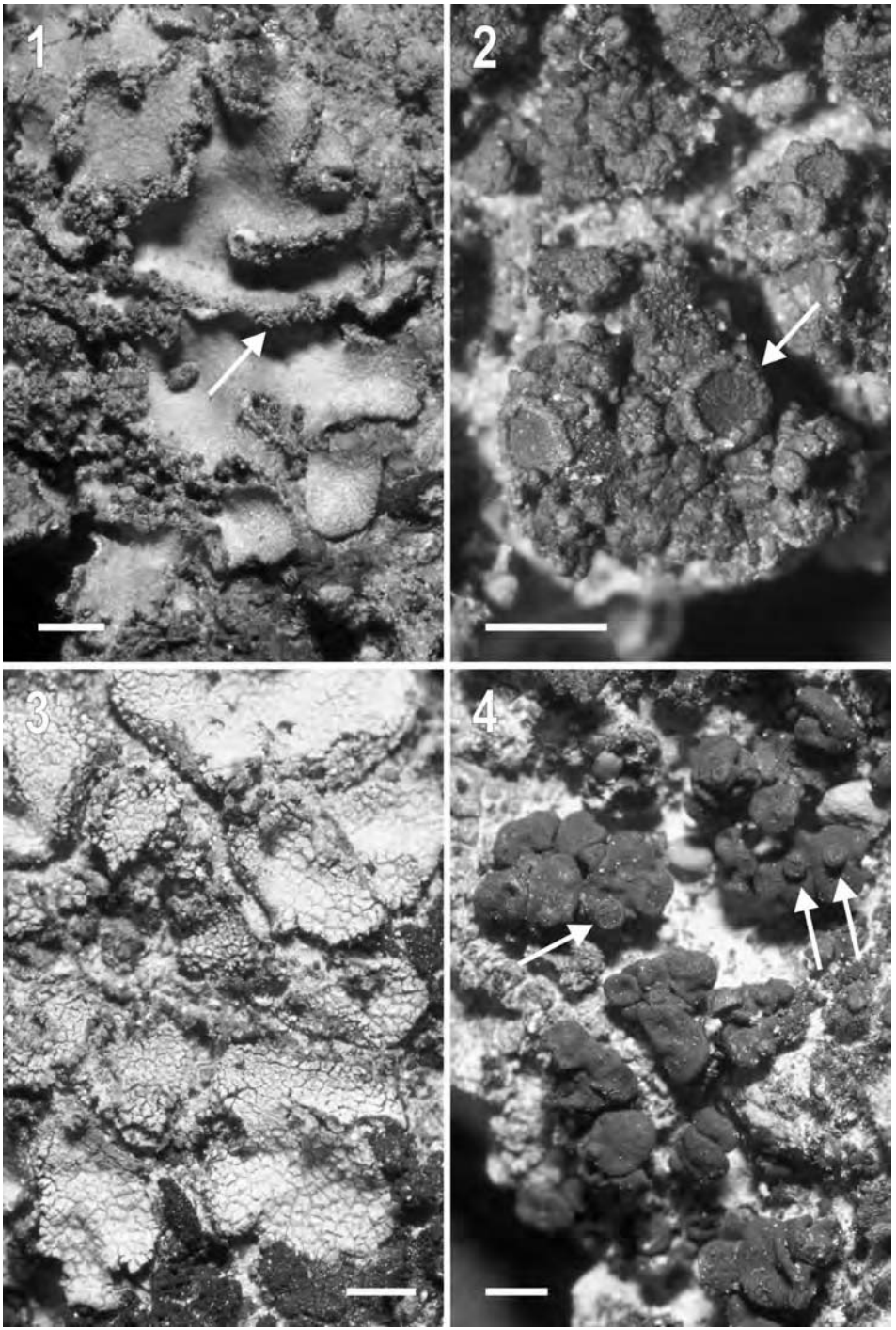
SPECIMEN EXAMINED: Tenerife, Puerto del Archos, 26.III.2003, T.Feuerer (HBG).

Lichinella algerica (J.Steiner) P.Moreno & Egea

Known already from C.

SPECIMENS EXAMINED: Fuerteventura, 6 km NW of Pájara, E of Ajuy, Barranco de la Madre del Aqua, 28°24.7'N, 14°8.6'W, P. & B.v.d.Boom 26094. Lanzarote, El Risco de Famara, SSW of Haría, Barranco de la Poceta, 29°6.9'N, 13°31.7'W, P. & B.v.d.Boom 30538. Tenerife, E of Los Gigantes, 28°10.3'N, 16°50.0'W, M.Brand 13810; near Buenavista del Norte, way to La Costa and Punta de la Laja, 28°22.5'N, 16°50'W, M.Schultz 17082.

Figures 1-4: Fig. 1. *Heppia conchiloba*: squamules greyish olive with coarse, dark soralia along the margins (arrow), *Feuerer* (HBG). Fig. 2. *Heppia lutosa*: thallus dark olive, irregularly squamulose with big apothecia (arrow), v.d.Boom 34530. Fig. 3. *Heppia solorinoides*: squamules whitish with deeply cracked surface causing tessellate appearence, Feuerer (HBG). Fig. 4. *Peccania teretiuscula*: rather juvenile thalli with some small apothecia (arrows), v.d.Boom 34240. Bars = 1 mm.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Lichinella cribellifera (Nyl.) P.Moreno & Egea

Lichinella cribellifera is known already from C, L, P & T. This is a widespread species found on inclined rocks, especially in seepage tracks.

Henssen (1990) described *Gonohymenia cribellifera* ssp. *macrocarpa* based on the large size and laminal to submarginal insertion of the fruiting bodies. Studies of the first author revealed no significant differences between available type material of ssp. *macrocarpa* (FH, G- paratypes: Henssen 32046c) and various, richly fertile material of *Lichinella cribellifera* from the Canary Islands, the Mediterranean as well as from SW North America (see Schultz 2005b). Instead, intermediate stages were observed in thallus shape and size, lobe formation as well as in the size, shape and texture of the fruiting bodies. Therefore, we suggest to reduce *Gonohymenia cribellifera* ssp. *macrocarpa* Henssen into synonymy with *Lichinella cribellifera*.

SPECIMENS EXAMINED: Fuerteventura, N of Pájara, N slope of Fénduca, nearby mirador 'Degollada de los Granadillos', 28°22.4'N, 14°5.7'W, P. & B.v.d.Boom 26055. Gran Canaria, NNW of Maspalomas, W of Soria, along road GC-505, 27°54.3'N, 15°41.2'W, P. & B.v.d.Boom 34350a; W of Mogán, halfway road Las Casas de Veneguéra to the coast village Veneguára, 27°53.2'N, 15°44.6'W, P. & B.v.d.Boom 34523. La Gomera, SW, Valle Gran Rey, El Guro, just above the village, M. Schultz 17085b; upper Valle Gran Rey, old mule trail from La Viscaina to El Cercado, 17°17.5'W, 28°7'N, M.Schultz 17086; La Gomera, Brown 280797-8 (herb. M.Schultz); 3-4 km W of Fortaleza de Chipude, Brown 200797-1 (herb. M.Schultz). Tenerife, Adeje, Bco. Infernale, 28°3.4'N, 16°42.7'W, M.Brand 13630; near Buenavista del Norte, Riscon Trail into the Teno Mts., 28°21'N, 16°52.5'W, M.Schultz 17075; near Buenavista del Norte, way to La Costa and Punta de la Laja, 28°22.5'N, 16°50'W, M.Schultz 17081a; Masca, 28°18'N, 16°50.3'W, M.Schultz 17084a. - ADDITIONAL MATERIAL STUDIED FOR COMPARISON: Fuerteventura, Degolla de las Granadillas, Kamm bei 550 m, A.Henssen 32046c [Henssen, Lich. Cyan. Fungi Sax. Exs. no. 37] (FH, G-paratypes). Israel. Hagalil, oberes Jordantal, Almagor bei Korazim, A.Henssen 21514b [Henssen: Lich. Cyan. Fungi Sax. Exs. no. 36] (FH, G).

Lichinella iodopulchra (Croz.) P.Moreno & Egea

A widespread species in the Canaries but less common than the previous one. Known already from F.

SPECIMENS EXAMINED: Fuerteventura, 2 km N of Pájara, W slope of Fénduca, 28°22.2'N, 14°5.9'W, P. & B.v.d.Boom 25852. Gran Canaria, NNW of Maspalomas, N of Los Palmitos Park, 27°50.4'N, 15°36.9'W, P. & B.v.d.Boom 34199; NNW of Maspalomas, along road GC-505, S of Cercados de Espinos, W side of mountain 'Mesa de las Pardeas', 27°52.6'N, 15°40.5'W, P. & B.v.d.Boom 34402. Tenerife, Schlucht unterhalb Masca, 14.III.2005, T.Feuerer (HBG).

Lichinella nigritella (Lettau) P.Moreno & Egea

The species is listed in Hernández-Padrón (2001) but with no indication of the island. Exsiccate material of *Lichinella nigritella* has been distributed from T by Henssen (1990). For separation from *Lichinella iodopulchra* and *L. cribellifera* see Moreno & Egea (1992b) and Schultz (2005b).

SPECIMENS EXAMINED: Fuerteventura, N of Pájara, W slope of Fénduca, along road to Betancuria, 28°22.2'N, 14°5.9'W, P. & B.v.d.Boom 25854; N of Pájara, N slope of Fénduca, nearby mirador 'Degollada de los Granadillos, 28°22.3'N, 14°5.6'W, P. & B.v.d.Boom 26161. Lanzarote, El Risco de Famara, SSW of Haría, Barranco de la Poceta, 29°6.9'N, 13°31.7'W, P. & B.v.d.Boom 30539. La Gomera, 3-4 km W of Fortaleza de Chipude, Brown 200797-2 (herb. M.Schultz). - ADDITIONAL MATERIAL STUDIED: Tenerife, zwischen Santiago del Teide und Masca, A.Henssen (20031a) & M.Küthe [Henssen: Lich. Cyan. Fungi Sax. Exs. no. 38] (FH, G).

Lichinella robusta Henssen

This species is described by Henssen (1963) from Algeria but is also known from T. It differs from *Lichinella stipatula* in the more robust thallus.

SPECIMENS EXAMINED: Fuerteventura, N of Pájara, N slope of Fénduca, nearby mirador 'Degollada de los Granadillos, 28°22.3'N, 14°5.6'W, P. & B.v.d.Boom 26163, 26170. Gran Canaria, NNW of Maspalomas, N of Los Palmitos Park, trail from hotel to the north, 27°50.4'N, 15°36.9'W, P. & B.v.d.Boom 34181; W of Mogán, halfway road Las Casas de Veneguéra to the coast village Veneguára, 27°53.2'N, 15°44.6'W, P. & B.v.d.Boom 34534.

Lichinella stipatula Nyl.

This species is common in the Canary Islands; we have seen it several times together with other cyanolichens. Previously it was already known from L & T.

SPECIMENS EXAMINED: Fuerteventura, N of Pájara, W slope of Fénduca, along road to Betancuria, 28°22.2'N, 14°5.9'W, P. & B.v.d.Boom 25851, 25882. Gran Canaria, NNW of Maspalomas, W of San Bartolomé de Tirajana, SW of Ayacata, W of Los Pinos, along road GC-605, 27°55.6'N, 15°39.1'W, P. & B.v.d.Boom 34315a. Lanzarote, SSW of Haría, Peñas del Chache, S side of top, 29°7'N, 13°31.2'W, P. & B.v.d.Boom 30567; El Risco de Famara, SSW of Haría, Barranco de la Poceta, 29°6.9'N, 13°31.7'W, P. & B.v.d.Boom 30559. La Gomera, Valle Gran Rey, El Guro, just above the village, M.Schultz 17085d; Brown 280797-8 (herb. M.Schultz). La Palma, WSW of Tijarafe, small road to Cayado Nuevo, 28°42.2'N, 17°57.9'W, P. & B.v.d.Boom 22158. Tenerife, near Buenavista del Norte, way to La Costa and Punta de la Laja, 28°22.5'N, 16°50'W, M.Schultz 17081b; Masca, 28°18'N, 16°50.3'W, M.Schultz 17084b; Schlucht unterhalb Masca, 14.III.2005, T.Feuerer (HBG); Barranco del Infierno, 13.III.2005, T.Feuerer (HBG); Barranco Los Calderones N El Medano, UTM 4804, 11.III.2005, T.Feuerer (HBG).

Lichinella undulata (Henssen) M.Schultz & v.d.Boom comb. nov.

BASIONYM: *Gonohymenia undulata* Henssen**,** Lich. Cyan. Fungi Sax. Exs., fasc. II, no. 35: 5 (1990).

TYPE: (Spain) Fuerteventura, Sukkulentenhalbwüste auf basisch-kristallinem Gestein, Paßstraße zwischen Betancuria und Pájara nahe Vega del Rio de las Palmas, auf sonnenexponierten Sickerwasserflächen bei 550-580 m, 1986, A.Henssen 30736b (FH, G-isotypes!).

This species was described by Henssen (1990) as *Gonohymenia undulata* from F. It is well circumscribed by the conspicuously undulating, smooth to somewhat folded, erect to ascending thallus lobes and the presence of thallinocarpous fruiting bodies visible as irregularly shaped marginal swellings. The name change is proposed here since *Lichinella* is accepted here in the sense of Moreno and Egea (1992b), i.e. including *Gonohymenia.*

Peccania arabica (Müll.Arg.) Henssen

This is a very poorly known lichen. It was originally described from the Sinai Peninsula by Müller-Aargau (1891) and placed in *Peccania* by Henssen & Jørgensen (1990). No further literature records are known to the authors. However, *Peccania arabica* seems to be rather common in the Middle East (unpublished records of the first author) in fact all records of *Peccania coralloides* (A.Massal.) A.Massal. published in Schultz (1998), Schultz et al. (2000) and Brown et al. (2002) from the Arabian Peninsula were misidentified and represent *P. arabica*. We previously considered the differences in size and shape between characteristic forms of *Peccania coralloides*

and *Peccania*-specimens from Kuwait, Yemen and Oman as environmentally controlled. However, the first author has seen abundant material of typical *Peccania coralloides* from Iran, which is morphologically different from material that represents the forgotten species *P. arabica*. Nonetheless, it appears that *P. coralloides* is absent from the Arabian Peninsula but widely distributed in the Mediterranean region and dry areas of Iran (extending into Inner Asia as far as Mongolia). In contrast, *Peccania arabica* is distributed from Iran, the Arabian and Sinai Peninsula to SE Spain (unpublished records of the first author) and the Canary Islands.

Peccania arabica is intermediate in size between the rather large-lobed forms of *P. coralloides* and the dwarf-fruticose *P. fontqueriana*. Typically, *Peccania arabica* forms small, sometimes greyish pruinose rosettes or cushions 0.5-2 cm wide on calcareous, more rarely acidic soil crusts. The lobes are usually less than 5 mm long and 0.5-2 mm wide, slightly to distinctly broadened and sometimes greyish pruinose. Marginal lobes are often concave to ear-shaped whereas the central lobes are ± cylindrical sometimes becoming furcate. Apparently, these cylindrical lobes develop from globose to short cylindrical outgrowth on the surface and basis of the marginal lobes. Specimens with predominantly cylindrical lobes include v.d.Boom 25749, 26088, 26091, 26092, 30141 and 30280. Specimens showing broadened, often ear-shaped lobes include v.d. Boom 26109, 30325 and 30537. Apothecia are only occasionally formed and situated laminally or conterminally on the lobes. The upper hymenium is typically reddish brown maculate. When apothecia are lacking there are usually abundant globose or isidia-like outgrowths.

Specimens examined: Fuerteventura, N of Oliva, N of road from Lajares to the east, 28°41.1'N, 13°55.9'W, P. & B.v.d.Boom 25749; NW of Pájara, E of Ajuy, Barranco de la Madre del Aqua, 28°24.7'N, 14°8.6'W, P. & B.v.d.Boom 26088, 26091, 26092; N of Pájara, NW slope of Fénduca, S of mirador 'Degollada de los Granadillos, 28°22.1'N, 14°6.5'W, P. & B.v.d.Boom 26109; SSW of Pájara, NW of Montaña Hendida, S slope of 'Melindraga', 28°16.1'N, 14°9.8'W, P. & B.v.d.Boom 26150; Parc Natural de Jandia, 5 km NW of Morro Jable, E of Casas de Gran Valle, Cuchillo del Ciervo, 28°5.1'N, 22°7.0'W, P. & B.v.d.Boom 25887. Lanzarote, 5.5 km W of Tinajo, along small road to Playa de la Madera, 29°03.5'N, 13°44.4'W, P. & B.v.d.Boom 30141; W of Playa Blanca, Montaña Roja, 28°52.2'N, 13°51.2'W, P. & B.v.d.Boom 30280; SSW of Haría, Peñas del Chachhe, S side of top, 29°7.0'N, 13°31.2'W, P. & B.v.d.Boom 30325; El Risco de Famara, SSW of Haría, Barranco de la Poceta, 29°6.9'N, 13°31.7'W, P. & B.v.d.Boom 30536, 30537. Tenerife, steep W-slope E of Los Gigantes, 28°10.3'N, 16°50.0'W, M.Brand 13810; Tenerife, Barranco Los Calderones N El Medano, UTM 4804, 11.III.2005, T.Feuerer (HBG).

Peccania cerebriformis Henssen & Büdel

Previously reported from L (type locality), SE Spain, Morocco and Kuwait (Moreno & Egea 1992a, Schultz et al. 2000).

Specimens examined: Fuerteventura, S of Puerto del Rosario, W of Casas de Pozo Negro, 28°19.6'N, 13°54.8'W, P. & B.v.d.Boom 26014; NW of Pájara, E of Ajuy, Barranco de la Madre del Aqua, 28°24.7'N, 14°8.6'W, P. & B.v.d.Boom 26087.

Peccania fontqueriana P.Moreno & Egea

New to the Canary Islands. The material from the Canaries was compared with the holotype (MUB), which is a rather small specimen. Several of our recent collections are well developed and richly fertile. The thalli form small cushions of repeatedly

furcate, cylindrical branches. *Peccania fontqueriana* was previously known from south-eastern Spain and a single locality in Morocco, Algeria as well as from Kuwait and Yemen (Schultz 1998, Schultz et al. 2000).

SPECIMENS EXAMINED: Fuerteventura, N of Betancuria, S of road to mirador, 28°26.2'N, 14°3.2'W, P. & B.v.d.Boom 25762, 25777; S of Betancuria, W of Vega de Rio Palmas, 28°23.1'N, 14°6.0'W, P. & B.v.d.Boom 25781. Gran Canaria, NNW of Maspalomas, N of Los Palmitos Park, 27°50.4'N, 15°36.9'W, P. & B.v.d.Boom 34200. Lanzarote, W of Playa Blanca, Montaña Roja, top of volcano, 28°52.2'N, 13°51.2'W, P. & B.v.d.Boom 30279; El Risco de Famara, SSW of Haría, Barranco de la Poceta, 29°6.9'N, 13°31.7'W, P. & B.v.d.Boom 30506. Tenerife, near Buenavista del Norte, way to La Costa and Punta de la Laja, 28°22.5'N, 16°50'W, M.Schultz 17083d.

Peccania teretiuscula (Flagey) Henssen

This is the first record of this species since Flagey's original collection in Algeria (Flagey, Lich. Alg. 297, S!, UPS!). The epithet "*teretiuscula*" appears to be somewhat misleading if Flagey intended to describe the shape of the thallus. *P. teretiuscula* forms small cushions composed of rather few, closely aggregated to rarely free, short lobules. At first the lobules are smooth, flattened with rounded tips (Figs. 4 & 5). Subsequently they become subcylindrical or irregularly shaped with a granulose surface (Fig. 6). The lobules are sparsely and irregularly branched and become ± suberect with age. The apothecia are quite conspicuous, sessile to finally stipitate. They are situated marginally or subterminally on the lobules (Figs. 4-6). The type collection was made from volcanic rock in Algeria. Two of the new collections were made on similar volcanic substrate. The best material, however, was found on thin soil crusts over rock. Further collections from Crete were recently recorded by Spribille et al. (2006). In contrast to Henssen & Jørgensen (1990) who reported the hymenium to be immaculate we found a reddish brown maculate colouration of the upper hymenium that is characteristically observed in species of *Peccania*.

SPECIMENS EXAMINED: Gran Canaria, NNW of Maspalomas, along road GC-503, near mirador (SE), 27°50.1'N, 15°36.8'W, P. & B.v.d.Boom 34240; NNW of Maspalomas, along road GC-505, S of Cercados de Espinos, W side of mountain 'Mesa de las Pardeas', 27°52.6'N, 15°40.5'W, P. & B.v.d.Boom 34402. Lanzarote, El Risco de Famara, SSW of Haría, Barranco de la Poceta, 29°06.9'N, 13°31.7'W, P. & B.v.d.Boom 30514.

Peltula bolanderi (Tuck.) Wetmore

New to the Canary Islands. This species may be confused with *Peltula euploca* due to the presence of marginal soralia. However, in *P. bolanderi* the squamules do not exceed 2 mm in size whereas *P. euploca* usually forms distinctly larger squamules to 12 mm wide. Furthermore, the margin is often distinctly undulating in *P. bolanderi* whereas the margin of the squamules is usually down-rolled in *P. euploca*. *P. bolanderi* is distributed world wide.

SPECIMENS EXAMINED: Fuerteventura, N of Pájara, N slope of Fénduca, nearby mirador 'Degollada de los Granadillos', 28°22.3'N, 14°5.6'W, P. & B.v.d.Boom 26207. Lanzarote, El Risco de Famara, SSW of Haría, Barranco de la Poceta, 29°6.9'N, 13°31.7'W, P. & B.v.d.Boom 30566. La Gomera, Valle Gran Rey, El Guro, just above the village, trail to salchito, M.Schultz 17085g. Tenerife, Adeje, Bco. Infernale, 28°3.4'N, 16°42.7'W, M.Brand 13630; near Buenavista del Norte, way to La Costa and Punta de la Laja, 28°22.5'N, 16°50'W, M.Schultz 17080b.

Peltula euploca (Ach.) Poelt

New to F, known already from all other Islands.

SPECIMENS EXAMINED: Fuerteventura, N of Pájara, N slope of Fénduca, nearby mirador 'Degollada de los Granadillos, 28°22.3'N, 14°5.6'W, P. & B.v.d.Boom 26158. Lanzarote, SSW of Haría, Peñas del Chache, 29°7'N, 13°31.2'W, P. & B.v.d.Boom 30345. La Gomera, Valle Gran Rey, El Guro, just above the village, trail to salchito, M. Schultz 17085c. La Palma, N of Los Sauces, La lomadita, 28°49.6'N, 17°46.8'W, P. & B.v.d.Boom 22592. Tenerife, Masca, 28°18'N, 16°50.3'W, M.Schultz 17084c.

Peltula farinosa Büdel

New to Canary Islands. This is a distinctive species due to the large, greyish pruinose, lobate squamules and the dark soralia running around the margin of the squamules (Fig. 7). The species was hitherto known from South Africa, Pakistan and SW North America (Büdel & Nash 2002). The new record from Gran Canaria is filling a gap in the distribution area of the species. A similar distribution pattern is commonly found in members of *Peltula*, *Heppia* as well as in the Lichinaceae. It is charcterized by usually rather few isolated, disjunct occurrences in tropical and subtropical regions world wide.

SPECIMENS EXAMINED: Gran Canaria, NW of Agüimes, Barranco de Guayadeque, 2 km W of crossing of road to Ingenio, 27°56.0'N, 15°28.4'W, P. & B.v.d.Boom 34553.

Peltula obscurans (Nyl.) Gyeln. var. **deserticola** (Zahlbr.) Wetmore

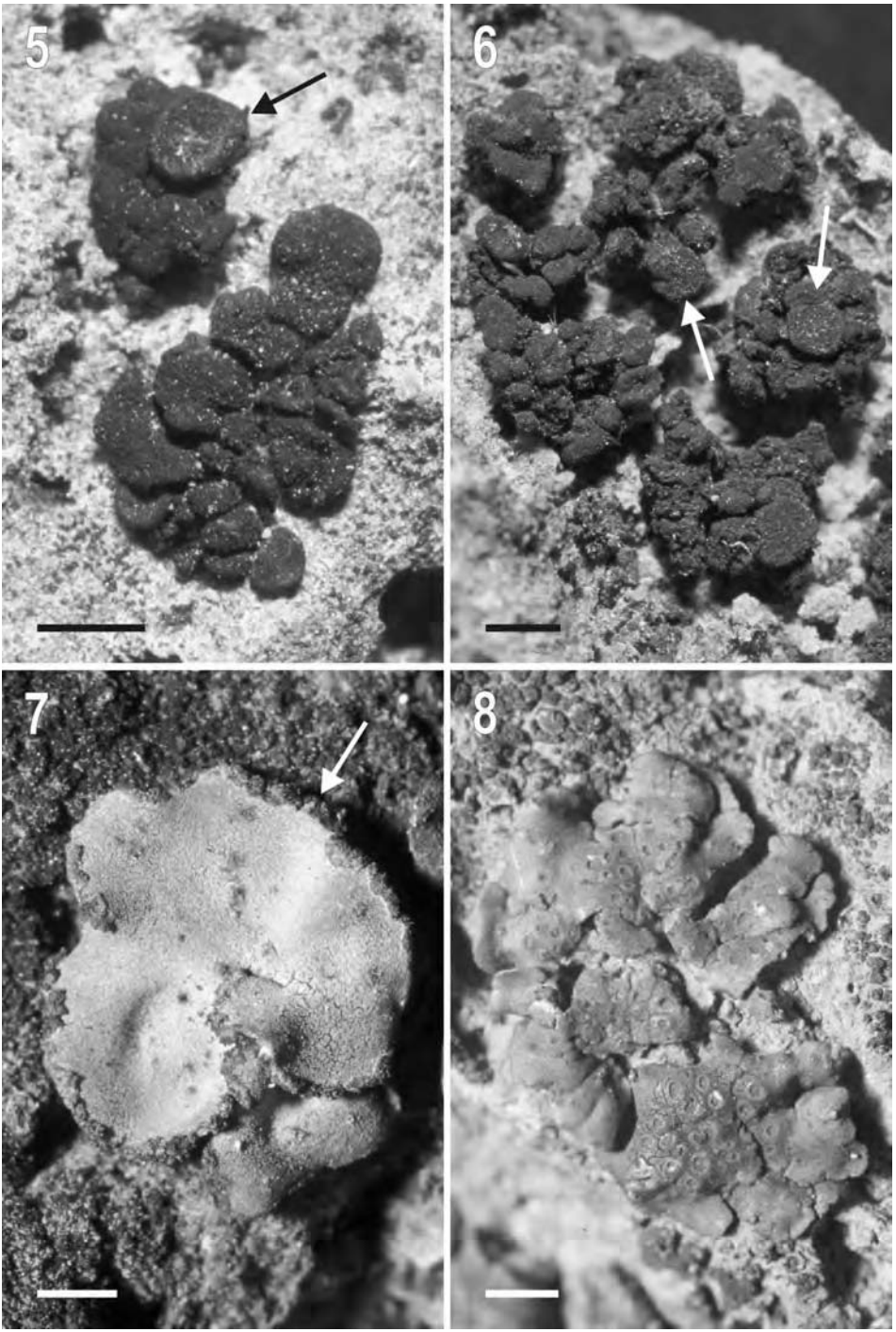
This variety is new to the Canary Islands; however, varieties were not distinguished in Hernández-Padrón (2001). It is distinguished from var. *hassei* by small, convex squamules lacking the lobulate margin and possessing immersed apothecia finally filling the entire squamule. It differs from var. *obscurans* mainly in the shape of the ascospores and negative reaction of the hymenium KOH. For detailed descriptions see Büdel & Nash (2002).

SPECIMENS EXAMINED: Gran Canaria, NNW of Maspalomas, W of Soria, along road GC-505, 27°54.3'N, 15°41.2'W, P. & B.v.d.Boom 34395. La Palma, ESE of Los Sauces, San Andrés, 28°47.6'N, 17°45.5'W, P. & B.v.d.Boom 22480. Tenerife, Escalera, 23.III.2003, T.Feuerer (HBG).

Peltula obscurans (Nyl.) Gyeln. var. **hassei** (Zahlbr.) Wetmore

This variety is new to the Canary Islands; however, varieties were not distinguished in Hernández-Padrón (2001). It is identified by the small thallus squamules that usually have a distinctly lobulate margin and a sessile apothecium in the centre. The epihymenium reacts K- as in var. *deserticola*. For a detailed description see Büdel & Nash (2002).

Figures 5-8: Fig. 5. *Peccania teretiuscula*: juvenile thalli with smooth lobes and one big apothecium (arrow), Flagey, Lich. Alg. 297 (S-isolectotype). Fig. 6. *Peccania teretiuscula*: aged thalli with irregular, granulose lobules and some apothecia (arrows), Flagey, Lich. Alg. 297 (UPS-isolectotype). Fig. 7. *Peltula farinosa*: thallus grey with confluent, dark grey marginal soralia (arrow), v.d. Boom 34553. Fig. 8. *Peltula rodriguesii*: squamulose thalli with lobulate margin and numerous punctiform apothecia, Schultz 17108. Bars = 1 mm.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SPECIMENS EXAMINED: Gran Canaria, N of Maspalomas, along road GC-60, N of San Bartolomé de Tirajana, 27°56.8'N, 15°36.7'W, P. & B.v.d. Boom 34263; NW of Agüimes, Barranco de Guayadeque, end of the main road (GC-103), 27°56.3'N, 15°30.8'W, P. & B.v.d.Boom 34598; NW of Agüimes, Barranco de Guayadeque, 2 km W of road to Ingenio, 27°56'N, 15°28.4'W, P. & B.v.d.Boom 34615. La Gomera, Brown 280797-1 (herb. M.Schultz). Tenerife, Escalera, 23.III.2003, T.Feuerer (HBG).

Peltula obscuratula (Nyl.) Poelt ex Egea

New to the Canary Islands. This species is very close to *P. obscurans* especially var. *obscurans* (see Egea 1989). The epihymenium reacts distinctly purple with KOH; the squamules are rather small and only slightly lobulate attached to the substrate by rhizohyphae (e.g. v.d.Boom 34536, 34541) or a small umbilicus. The ascospores are globose to subglobose, but ellipsoid spores are also found approaching the shape but not reaching the size of the ascospores of *P. obscurans*.

SPECIMENS EXAMINED: Gran Canaria, W of Mogán, halfway road Las Casas de Veneguéra to the coast village Veneguára, 27°53.2'N, 15°44.6'W, P. & B.v.d.Boom 34536, 34541.

Peltula omphaliza (Nyl.) Wetmore

Already known from T and L.

SPECIMENS EXAMINED: Gran Canaria, W of Mogán, halfway road Las Casas de Veneguéra to the coast village Veneguára, 27°53.2'N, 15°44.6'W, P. & B.v.d.Boom 34535; W of Mogán, halfway road Las Casas de Veneguéra to the coast village Veneguára, 27°53.2'N, 15°44.6'W, P. & B.v.d.Boom 34541a. La Gomera, Valle Gran Rey, El Guro, just above the village, trail to salchito, M.Schultz 17085f.

Peltula patellata (Bagl.) Swinscow & Krog

Already known from C, F, P & T.

SPECIMENS EXAMINED: Gran Canaria, NNW of Maspalomas, W of Soria, along road GC-505, at W side of Montaña Vista de Soria, S rim of Fuente del Durazno, 27°54.3'N, 15°41.2'W, P. & B.v.d.Boom 34347. Tenerife, near col in road Santiago-Masca, 28°13.5'N, 16°49.4'W, M.Brand 13701.

Peltula placodizans (Zahlbr.) Wetmore

This species is already known from F and T. *P. placodizans* is widely distributed and known from all continents, including Asia (Hong Kong) (Aptroot & Seaward 1999; Egea 1989).

SPECIMENS EXAMINED: Fuerteventura, N of Pájara, N slope of Fénduca, nearby mirador 'Degollada de los Granadillos, 28°22.3'N, 14°5.6'W, P. & B.v.d.Boom 26155, 26159, 26167. La Gomera, Valle Gran Rey, El Guro, just above the village, trail to salchito, M.Schultz 17085e.

Peltula radicata Nyl.

New to the Canary Islands. The species forms small, roundish, ± olive squamules with pale dots on the upper surface. It is fastened by strands of rhizohyphae deeply penetrating into the sandy substrate. This species may be mistaken for *P. patellata*, which, however, differs in the presence of a dark, often elevated rim surrounding the squamules and the pale olivaceous to greyish thallus colour.

SPECIMENS EXAMINED: Gran Canaria, NNW of Maspalomas, along road GC-503, near mirador, 27°50.1'N, 15°36.8'W, P. & B.v.d.Boom 34215.

Peltula rodriguesii (Cromb.) Büdel

Originally, the species was described from Rodriguez Island (Mauritius). Büdel (1989) reported several new localities from Australia, South Africa, Zimbabwe, Italy and the Cape Verde Island. Here we report the occurrence of the species on La Gomera, Gran Canaria and Tenerife. It forms small (to 2.5 mm), ± convex, peltate squamules with lobate margins (Fig. 8). The thallus colour is olivaceous, the surface is smooth and often somewhat glossy. Usually, there are several, immersed apothecia with small, punctiform or slightly widened discs.

Specimens examined: Gran Canaria, NNW of Maspalomas, W of San Bartolomé de Tirajana, SW of Ayacata, W of Los Pinos, along road GC-605, 27°55.6'N, 15°39.1'W, P. & B.v.d.Boom 34303; NNW of Maspalomas, W of Soria, along road GC-505, at W side of Montaña Vista de Soria, 27°54.3'N, 15°41.2'W, P. & B.v.d.Boom 34350; NW of Agüimes, Barranco de Guayadeque, 2 km W of road to Ingenio, 27°56'N, 15°28.4'W, P. & B.v.d.Boom 34554b. La Gomera, Brown 280797-1, 280797-8 (herb. M.Schultz). Tenerife, Schlucht unterhalb Masca, 14.III.2005, T.Feuerer (HBG).

Phloeopeccania pulvinulina J.Steiner

Henssen and Jørgensen (1990) reported the occurrence of *Phloeopeccania pulvinulina* on the Canary Islands; however, they provided no exact locality data. Thus, the species is not included in the checklists by Hafellner (1995, 2002, 2005) and Hernández-Padrón (2001). The species seems to be rather common on dry, inclined boulders occasionally moistened by seeping water. *P. pulvinulina* might be confused with *Pterygiopsis canariensis* since both of them possess polysporous asci. They differ, however, in the thallus shape and anatomy. *Phloeopeccania pulvinulina* has minute convex squamules composed of short cylindrical proliferations (Fig. 9) and large photobiont cells surrounded by a thick gelatinous sheath and reticulately arranged, short-celled hyphae. In *Pterygiopsis canariensis*, the thallus is crustose to subsquamulose and lacks any vertical proliferations. The anatomy is more compact, the photobiont cells are smaller, the gelatinous sheath is thinner and the symbionts are ± vertically arranged. Furthermore, there are internal cavities in the larger, older thallus areoles of *Pterygiopsis canariensis*. Finally, the species differs in the type of ascoma ontogeny. *Phloeopeccania pulvinulina* forms groups of coiled ascogonia whereas *Pterygiopsis canariensis* produces ascogonia beneath pycnidia (= pycno-ascocarps).

Specimens examined: Fuerteventura, N of Oliva, N of road from Lajares to the east, 28°41.1'N, 13°55.9'W, P. & B.v.d.Boom 25745; 2 km N of Pájara, W slope of Fénduca, 28°22.2'N, 14°5.9'W, P. & B.v.d.Boom 25853; NW of Pájara, E of Ajuy, Barranco de la Madre del Aqua, 28°24.7'N, 14°8.6'W, P. & B.v.d.Boom 26085, 26086; SSW of Pájara, NW of Montaña Hendida, S slope of 'Melindraga', 28°16.1'N, 14°8.9'W, P. & B.v.d.Boom 26137,26149. Gran Canaria, NNW of Maspalomas, N of Los Palmitos Park, 27°50.4'N, 15°36.9'W, P. & B.v.d.Boom 34179; NNW of Maspalomas, along road GC-505, S of Cercados de Espinos, W slope of 'Mesa de las Pardeas', 27°52.6'N, 15°40.5'W, P. & B.v.d.Boom 34404, 34170. Lanzarote, 5.5 km W of Tinajo, along small road to Playa de la Madera, 29°03.5'N, 13°44.4'W, P. & B.v.d.Boom 30150, 30160; ENE of Arrieta, 3 km N of Sitio de interés científico de los Jameos, 29°10'N, 13°25.8'W, P. & B.v.d.Boom 30396. Tenerife, Schlucht unterhalb Masca, 14.III.2005, T.Feuerer (HBG).

Polychidium muscicola (Sw.) Gray

Already known from C, H, P & T. *P. muscicola* is a rather well known species, widely distributed in Europe, not rare in Iberian Peninsula (Llimona & Hladun 2001), also known and rather common in northern Africa (Egea 1996).

SPECIMEN EXAMINED: El Hierro, Jinema, Brown 250797-3 (herb. M.Schultz).

Psorotichia hassei Fink

Psorotichia hassei is new to the Canary Islands. This species was described from SW North America where it is quite common. It is characterized by the presence of areoles, composed of cylindrical to coralloid granules and sessile apothecia with rather expanded discs (Fig. 10). With some hesitation, it was recently reported from Socotra (Schultz & Mies 2003). The first author has further collections from southern Yemen as well as from Namibia (both unpublished). All these non-American collections agree well with the type material of *Psorotichia hassei* at MICH (U.S.A. California, Riverside Co., San Jacinto Mt., on sandstone, Hasse). However, it remains to be seen whether all the "coralloid-granulose" *Psorotichia* material belongs to a single species.

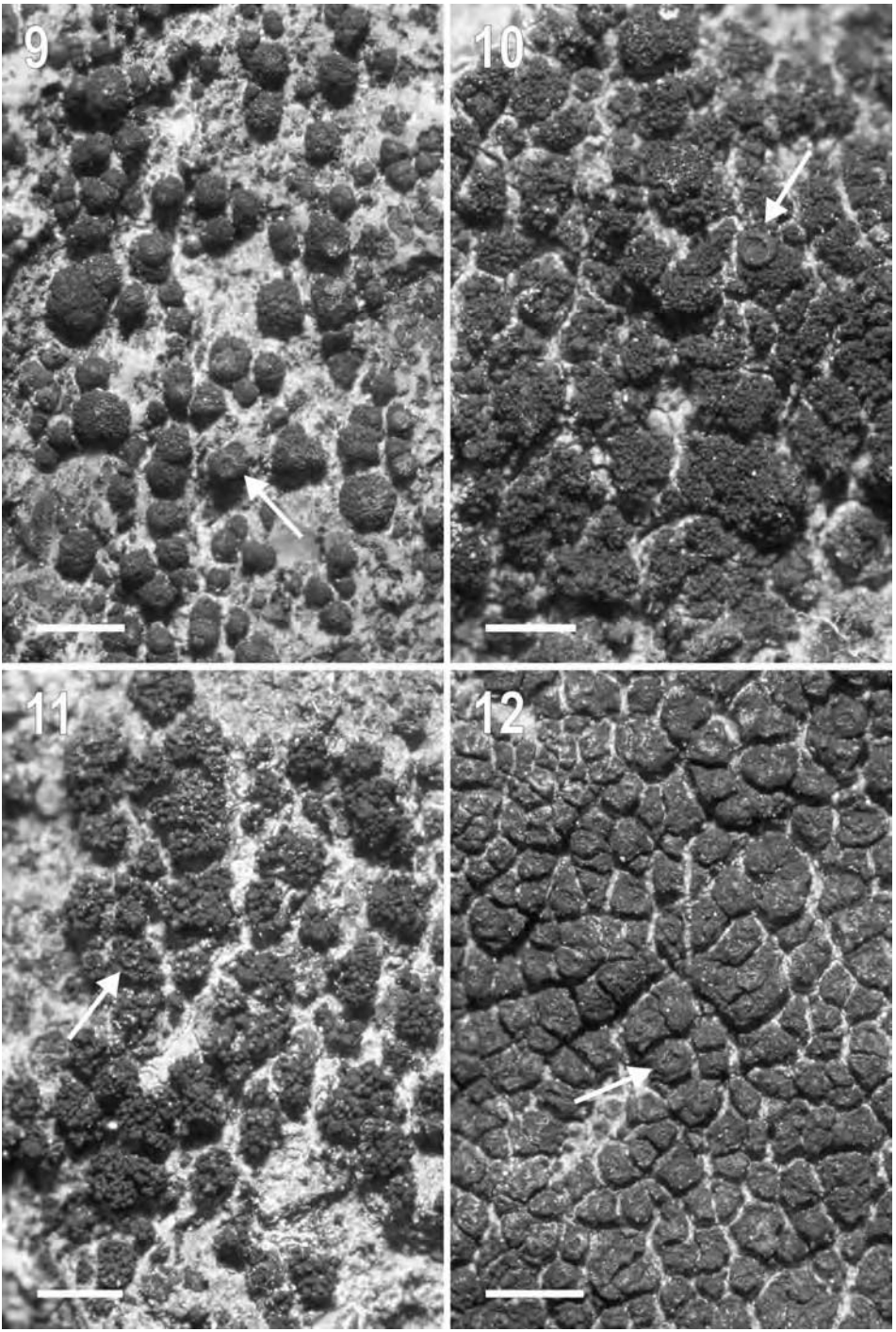
SPECIMENS EXAMINED: Gran Canaria, W of Mogán, halfway road Las Casas de Veneguéra to the coast village Veneguára, 27°53.2'N, 15°44.6'W, P. & B.v.d.Boom 34545.

Pterygiopsis canariensis Henssen

This species was described by Henssen (1990) from F. It was recently reported from SW North America (Schultz 2006). *P. canariensis* seems to be rather common on inclined rock faces across the Canaries. The type of ascoma ontogeny (pycnoascocarp), the polysporous asci and the effigurate-squamulose growth form separate it from *P. atra* (8-spored, no pycnoascocarp). *P. affinis* is also polyspored but there are contrary opinions about the type of ascoma development. However, *P. affinis* is a crustose species with an effigurate margin and seems to be restricted to limestone.

SPECIMENS EXAMINED: Fuerteventura, N of Pájara, nearby mirador Degollada de los Granadillos, N slope of Fénduca along road, 28°22.3'N, 14°05.6'W, P. & B.v.d.Boom 26156. Gran Canaria NW of Agüimes, Barranco de Guayadeque, 2 km W of of road to Ingenio, 27°56'N, 15°28.4'W, P. & B.v.d.Boom 34554a; NNW of Maspalomas, Soria, N side of village, along road at E side of Montaña Vista de Soria, 27°54.7'N, 15°40.1'W, P. & B.v.d.Boom 34342; NNW of Maspalomas, W of San Bartolomé de Tirajana, SW of Ayacata, W of Los Pinos, 27°55.6'N, 15°39.1'W, P. & B.v.d.Boom 34315b; NNW of Maspalomas, W of Soria, along road GC-505, at W side of Montaña Vista de Soria, 27°54.3'N, 15°41.2'W, P. & B.v.d.Boom 34348; W of Mogán, halfway road Las Casas de Veneguéra to the coast village Veneguára, 27°53.2'N, 15°44.6'W, P. & B.v.d.Boom 34523, 34550. Lanzarote, SSW of Haría, Peñas del Chache, S side of top, 29°07.0'N, 13°31.2'W, P. & B.v.d.Boom 30364, 30350. La Gomera, Brown 280797-1, 280797-4, 280797-7 (herb. M.Schultz). La Palma, Bco. Angustias near Casas la Vina, UTM 16.2/76.8, FN 35, 4.IV.1986, M.Brand 13415. Tenerife, Schlucht unterhalb Masca, 14.III.2005, T. Feuerer (HBG). - ADDITIONAL MATERIAL STUDIED: Fuerteventura, bei Degollada de las Granadillos, A.Henssen 32050 [Henssen: Lich. Cyan. Fungi Sax. Exs. no. 42] (FH, G-paratypes).

Figures 9-12: Fig. 9. *Phloeopeccania pulvinulina*: characteristic growth form with minute, convex squamules and a few apothecia (arrow), v.d.Boom 34404. Fig. 10. *Psorotichia hassei*: thallus crustose-areolate, areoles composed of cylindrical to coralloid granules and one sessile apothecium with expanded disc (arrow), v.d.Boom 34545. Fig. 11. *Pyrenopsis conferta*: thallus minutely shrubby composed of cylindrical to coralloid granules and one small, stipitate apothecium with punctiform disc (arrow), v.d.Boom 34523. Fig. 12. *Pyrenopsis subareolata*: well developed, areolate thallus, areoles plane, angulose and with immersed to semi-immersed apothecia with punctiform discs (arrows), Feuerer (HBG). Bars = 1 mm.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Pyrenopsis conferta (Born.) Nyl.

P. conferta is new to the Canary Islands. It is known from south-western Europe and has recently been reported from the Madrid region (Burgaz 2004). It forms minute cushions resembling irregular areoles, however being composed of tiny cylindrical to coralloid granules (Fig. 11). The apothecia are situated at the tips of these granules. They are small, ± globose and have punctiform discs. Due to the coralloid "areoles" the species superficially resembles *Psorotichia hassei* (see above and Fig. 10). It differs however, in the reddish colour of the gelatinous sheath of the photobiont cells, in the shape of the asci (broadly clavate and rather thick walled) and in the type of ascoma ontogeny (pycnoascocarps). In *Psorotichia hassei* the sheaths of the photobiont cells are yellowish brown, the asci are subcylindrical to narrowly clavate and thin walled and the ascoma arise from a spheroid tangle of generative hyphae.

Specimens examined: Fuerteventura, N of Pájara, N slope of Fénduca, nearby mirador 'Degollada de los Granadillos', 28°22.4'N, 14°5.7'W, P. & B.v.d.Boom 26043; N of Pájara, N slope of Fénduca, nearby mirador 'Degollada de los Granadillos', 28°22.3'N, 14°5.6'W, P. & B.v.d.Boom 26160. Gran Canaria, NNW of Maspalomas, W of San Bartolomé de Tirajana, SW of Ayacata, W of Los Pinos, along road GC-605, 27°55.6'N, 15°39.1'W, P. & B.v.d.Boom 34315; NNW of Maspalomas, Soria, N side of village, along road at E side of Montaña Vista de Soria, 27°54.7'N, 15°40.1'W, P. & B.v.d.Boom 34344; W of Mogán, halfway road Las Casas de Veneguéra to the coast village Veneguára, 27°53.2'N, 15°44.6'W, P. & B.v.d.Boom 34523; NW of Agüimes, Barranco de Guayadeque, 2 km W of crossing of road to Ingenio, 27°56.0'N, 15°28.4'W, P. & B.v.d.Boom 34556.

Pyrenopsis subareolata Nyl.

P. subareolata is new to the Canary Islands. The record of *P. rhodosticta* from T most certainly belongs here. Henssen & Jørgensen (1990) found that the type of *P. rhodosticta* (Tayl.) Müll.Arg. is a species of *Cryptothele* and, therefore, this species has to be called *C. rhodosticta* (Tayl.) Henssen. However, *C. rhodosticta* is an oceanic lichen occurring on moist rock and being so far only known from upland areas in the North of the British Isles. *P. subareolata* forms spreading areolate crusts. The areoles are ± angulose and plane. Apothecia are frequently formed but inconspicuous because they are small and immersed in the thallus areoles. The apothecial discs are small, blackish and ± punctiform (Fig. 12).

Specimens examined: Tenerife, Afur, UTM 7759, 24.III.2003, T.Feuerer (HBG); wenig oberhalb Taganana, UTM 8059, 10.III.2005, T.Feuerer (HBG).

Pyrenopsis triptococca Nyl.

This species is treated by Moreno & Egea (1994) and mentioned also from northern Africa, France, Portugal and Spain, including T. The thallus is crustose, very thin, and granulose to small areolate. At the margin the areoles are often effigurate. In central thallus portions, the areoles may become disguised by granules forming isidia-like outgrowths. Apothecia are very small, sessile and have a punctiform disc.

Specimens examined: Gran Canaria, NNW of Maspalomas, along road GC-503, near mirador (SE), 27°50.1'N, 15°36.8'W, P. & B.v.d.Boom 34208; NNW of Maspalomas, along road GC-505, S of Cercados de Espinos, W slope of 'Mesa de las Pardeas', 27°52.6'N, 15°40.5'W, P. & B.v.d.Boom 34414; NW of Agüimes, Barranco de Guayadeque, 2 km W of road to Ingenio, 27°56'N, 15°28.4'W, P. & B.v.d.Boom 34554c; La Gomera, Valle Gran Rey, El Guro, just above the village, trail to salchito, M.Schultz 17085a.

Spilonema revertens Nyl.

Already known from T, new to C, F, H, L & P. This species is easily confusable with *Lichinella stipatula* especially if the dark bluish green hypothallus is not well developed. However, careful examinations of the hyphal arrangement and photobiont type allow for separation. *Psorula rufonigra*, a lichen species belonging in the Psoraceae, which is often found parasitic on cushions of *Spilonema revertens,* is recorded here as new to the Canary Islands.

SPECIMENS EXAMINED: El Hierro, Jinema, Brown 250797-6, 250797-3, 250797-9 (herb. M.Schultz). Fuerteventura, N of Pájara, NW slope of Fénduca, nearby mirador 'Degollada de los Granadillos', 28°22.1'N, 14°6.5'W, P. & B.v.d.Boom 26096, 26209, 26098. Gran Canaria, N of Maspalomas, along road GC-60, N of San Bartolomé de Tirajana, halfway to Ayacata, 27°56.8'N, 15°36.7'W, 8.II.2005, P. & B.v.d.Boom 34261. Lanzarote, El Risco de Famara, SSW of Haría, Barranco de la Poceta, 29°6.9'N, 13°31.7'W, P. & B.v.d.Boom 30568. La Palma, 3.5 km NNE of Santa Cruz, Tenagua, 0.3 km NE of crossing with main road, road to P.S. Slucia, 28°42.8'N, 17°44.7'W, P.v.d.Boom 22518.

Thyrea plicatissima (Nyl.) Zahlbr.

New to the Canary Islands. Moreno & Egea (1992a) reported *T. plicatissima* from south-eastern Spain, Morocco, and Algeria, where the species is not rare. It is characterized by thin, broadly rounded lobules densely covered with globose granules giving the lobes a rough texture.

SPECIMENS EXAMINED: Fuerteventura, NW of Pájara, E of Ajuy, Barranco de la Madre del Aqua, 28°24.7'N, 14°8.6'W, P. & B.v.d.Boom 26093.

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