

New lichen records for the Azores, with the report of some tropical species new to Europe

André APTROOT¹ & Antónia Félix RODRIGUES²

¹*ABL Herbarium, G.v.d. Veenstraat 107, NL-3762 XK Soest, The Netherlands*

²*Department of Agricultural and Environmental Sciences,
University of the Azores, Terceira-Azores,
9701-851 Terra-Chã, Angra do Heroísmo, Portugal*

Résumé – Soixante-neuf espèces de lichens sont recoltées pour la première fois aux Açores, dont trente-neuf d'elles n'ont été observées pas déjà en Macaronésie. La plupart de ces espèces se trouvent en Europe ou dans des climats tempérés mais les cinq espèces suivantes sont découvertes pour la première fois en Europe : *Cryptothecia subtectata*, *Dimerella frederici*, *Fissurina dumastii*, *Heterodermia flabellata*, et *Phyllopsora breviuscula*.

Abstract – Seventy-nine lichen species are reported for the first time from the Azores, 39 of which were never reported from the Macaronesian Region. Most are widespread in temperate regions, also in Europe, but the following five are tropical species which are recorded for the first time from Europe: *Cryptothecia subtectata*, *Dimerella frederici*, *Fissurina dumastii*, *Heterodermia flabellata*, and *Phyllopsora breviuscula*.

INTRODUCTION

During intensive fieldwork in 2004, several hundreds of lichen specimens were collected by the second author and identified by the first author, as a continuation of previous studies (Aptroot 1989, Berger & Aptroot 2002, Aptroot & Rodrigues 2005). They greatly added to the knowledge of the still relatively incompletely known lichen flora of the Azores. Special attention was paid to Graciosa, from which nearly no lichen records were ever published, and furthermore to Terceira, São Miguel and Pico. In this paper, only the species which were never reported from the Azores are mentioned. In total, 79 lichen species are reported for the first time from the Azores, 39 of which were never reported from the Macaronesian Region. Most are widespread in temperate regions, also in Europe, but the following five are strictly (pan-)tropical species which are recorded for the first time from Europe: *Cryptothecia subtectata*, *Dimerella frederici*, *Fissurina dumastii*, *Heterodermia flabellata*, and *Phyllopsora breviuscula*. For the species which were already known from the Macaronesian Region, references are given for their occurrence in Madeira and/or the Canary Islands.

MATERIAL AND METHODS

All specimens were collected by the second author and identified by the first author. All specimens are kept in herbarium DCA with the identified duplicates in ABL. For each species, the collecting localities, substrate and a herbarium code are given.

RESULTS: SPECIES NEW TO THE AZORES

Acarospora fuscata (Nyl.) Arnold (1870) from Terceira Island (Grotta do Vale) on volcanic rock. It is new to the Azores. Herbarium Id: F3:02:2005. Reported from the Canary Islands: Padrón & Sicília (2002).

Acarospora smaragdula (Wahlenb.) A. Massal. (1852) from Graciosa Island (Carapacho) and Terceira Island (Facho) on volcanic iron-rich rocks. It is new to the Macaronesian Region. Herbarium Id: FGRA-112:2004:A.

Acrocordia macrospora A. Massal. (1855) from Terceira Island (Santo Amaro, Serra de Santiago, Terra-Chã, Ribeirinha, Canada dos Cinco Reis and São Carlos) on volcanic rocks. It is new to the Azores. Herbarium Id: F3:03:2005. Reported from Madeira: Hafellner (1995) and the Canary Islands: Padrón & Sicília (2002).

Agonimia opuntiella (Poelt & Buschardt) Vězda (1997) from Terceira Island (Pico da Urze) on unidentified tree. New to the Macaronesian Region. Herbarium Id: TPU-57:2005.

Ainoa mooreana (Carroll) Lumbsch & I. Schmitt (2001) from Terceira (summit of the Serra de Santa Barbara). Growing together with various *Trapelia* and *Stereocaulon* species. New to the Macaronesian Region. Herbarium Id: TSSB-1:2005.

Anisomeridium polypori (Ellis & Everh.) M.E. Barr (1996) from Graciosa Island (Serra Branca) and Terceira Island (Canada do Celis) on *Laurus azorica* trees. New to the Macaronesian Region. Herbarium Id: F3:04:2005.

Arthonia spadicea Leight. (1854) from Graciosa (Carapacho and Caldeira), Terceira Island (Dois Caminhos, Posto Santo, São Bartolomeu and Canada do Celis) and S. Miguel Island (Ponta Delgada) on *Salix* sp., *Platanus occidentalis*, *Pittosporum undulatum*, *Eucalyptus* sp., and *Prunus domestica*. It is new to the Macaronesian Region. Herbarium Id: FGRA-119:2004:A

Arthopyrenia punctiformis A. Massal. (1852) from Terceira Island (Dois Caminhos) on *Castanea sativa*. New to the Azores. Herbarium Id: F3:05:2005. Reported from the Canary Islands: Padrón & Sicília (2002).

Aspicilia calcarea (L.) Mudd (1861) from Terceira Island (Grotta do Vale and Conceição-Angra do Heroísmo) on volcanic rocks. It is new to the Azores. Herbarium Id: F3:06:2005. Reported from the Canary Islands: Padrón & Sicília (2002).

Bacidia arceutina (Ach.) Arnold (1869) from Graciosa Island (Caldeira), Terceira Island (Canada de Belém, Canada do Capitão Mor and Pico da Urze) and S. Miguel Island (Jardim da Universidade dos Açores – Ponta Delgada) on *Platanus occidentalis*, *Ficus carica* and unidentified trees. New to the Azores. Herbarium Id: FGRA-125:2004:A Reported from Madeira: Hafellner (1995) and the Canary Islands: Padrón & Sicília (2002).

Bacidia caligans (Nyl.) A.L. Sm. (1911) from Terceira Island (Monte Brasil) on an unidentified tree. New to the Macaronesian Region. Herbarium Id: F3:07:2005.

Bacidia viridifarinoso Coppins & P. James (1992) from Terceira Island (Pico da Urze) on an unidentified tree. New to the Macaronesian Region. Herbarium Id: F3:08:2005.

Biatora ocelliformis (Nyl.) Arnold (1870) from Terceira Island (Serra de Santa Bárbara – Florestal) on *Hydrangea*. New to the Macaronesian Region. Herbarium Id: F3:09:2005.

Buellia tesserata Körber, from Graciosa Island (Carapacho) and Terceira Island (Castelo de São João) on volcanic rocks. New to the Azores. Herbarium Id: FGRA-144:2004:A. Reported from the Canary Islands: Hafellner (1995, as *Buellia fimbriata*).

Caloplaca albolutescens (Nyl.) H. Olivier (1909) from Terceira Island (Castelo de São João) on volcanic rock. New to the Azores. Herbarium Id: F3:11:2005. Reported from the Canary Islands: Padrón & Sicília (2002).

Caloplaca conversa (Kremp.) Jatta (1890) from Graciosa Island (Carapacho) and Terceira Island (Canada dos Pomares – Terra Chã) on volcanic rocks. It is new to the Azores. Herbarium Id: FGRA-84:2004:A. Reported from Madeira: Hafellner (1995) and the Canary Islands: Padrón & Sicília (2002).

Caloplaca coronata (Kremp. ex Körb.) J. Steiner (1919) from Graciosa Island (Carapacho) and Terceira Island (Ponta das Contendas and Relvão) on soil. New to the Macaronesian Region. Herbarium Id: FGRA-8:2004:F

Caloplaca dalmatica (A. Massal.) H. Olivier (1909) from Pico Island (Lajes and Santo António), Graciosa Island (Carapacho, Praia, Santa Cruz, Luz e Serra Branca), S. Miguel Island (Ponta Delgada) and Terceira Island (Praia da Vitória, Angra do Heroísmo, Monte Brasil, Santo Amaro, Serreta, São Mateus, Terra-Chã and São Sebastião) on volcanic rocks. New to the Macaronesian Region. Herbarium Id: FGRA-10:2004:F

Caloplaca flavocitrina (Nyl.) H. Olivier (1930) from Terceira Island (Santo Amaro, Castelo de São João and base of Santa Bárbara Mountain) on volcanic rocks. New to the Macaronesian Region. Herbarium Id: F3:12:2005.

Caloplaca flavovirescens (Wulfen) Dalla Torre & Sarnth. (1902) from Terceira Island (Canada dos Cinco Reis) on volcanic rock. New to the Azores. Herbarium Id: F3:13:2005. Reported from the Canary Islands: Padrón & Sicília (2002).

Caloplaca lactea (A. Massal.) Zahlbr. (1901) from Terceira Island (Castelo de São João) on volcanic rock. New to the Azores. Herbarium Id: F3:14:2005. Reported from the Canary Islands: Padrón & Sicília (2002).

Candelaria concolor (Dicks.) Stein (1879) from S. Miguel Island (Ponta Delgada) and Terceira Island (Posto Santo) on *Prunus domestica* and unidentified tree. New to the Azores. Herbarium Id: F3:15:2005. Reported from the Canary Islands: Padrón & Sicília (2002).

Canoparmelia crozalsiana (de Lesd.) Elix & Hale (1986) from Terceira Island (Serra de Santiago and Ribeirinha) on volcanic rocks. New to the Azores. Herbarium Id: F3:16:2005. Reported from Madeira: Hafellner (1995) and the Canary Islands: Padrón & Sicília (2002).

Chrysothrix chlorina (Ach.) J.R. Laundon (1981) from Graciosa Island (Caldeira) S. Miguel Island (Ponta Delgada) and Terceira Island (Dois Caminhos, Canada do Martelo and Canada dos Cinco Reis), on volcanic rocks. New to the Azores. Herbarium Id: FGRA-15:2004:F. Reported from Madeira: Hafellner (1995) and the Canary Islands: Padrón & Sicília (2002).

Cladonia cariosa (Ach.) Spreng. (1827) from Graciosa Island (Carapacho) on volcanic rocks. New to the Azores. Herbarium Id: FGRA-107:2004:A. Reported from Madeira: Hafellner (1995) and the Canary Islands: Padrón & Sicília (2002).

Cladonia fimbriata (L.) Fr. (1831) from Terceira Island (Achada) on *Cryptomeria japonica*. New to the Azores. Herbarium Id: F3:17:2005. Reported from Madeira: Hafellner (1995) and the Canary Islands: Padrón & Sicília (2002).

Cladonia ramulosa (With.) J.R. Laundon (1984) from Terceira Island (Poça dos Frades and Farol da Serreta) on volcanic rocks. New to the Azores. Herbarium Id: F3:22:2005. Reported from the Canary Islands: Padrón & Sicília (2002).

Clauzadea immersa (Hoffm.) Hafellner & Bellem. (1984) from Terceira Island (Castelo de São João) on volcanic rock. New to the Macaronesian Region. Herbarium Id: F3:23:2005.

Collema bachmannianum (Fink) Degel. (1954) from São Miguel (Ponta Delgada, airport) on soil. Growing together with *C. crispum* and *C. tenax*. New to the Macaronesian Region. Herbarium Id: SMAR-20:2005.

Coscinocladium gaditanum (Clemente) A. Crespo, Llimona & D. Hawksw. (2004) from Terceira Island (Castelo de São João) on volcanic rock. It is new to the Azores. Herbarium Id: F3:38:2005. Reported from Madeira: Hafellner (1995, as *Lecanora lisbonensis*).

Cryptothecia subtectata Stirton (1879) from Terceira (Canada do Capitão Mor) on *Ficus* tree. The material has a smooth, C-negative greenish thallus with paler ascigerous zones, globose asci with 8 hyaline, regularly muriform, $7-9 \times 1-2$ -septate ascospores which measure $27-37 \times 12-15 \mu\text{m}$. It has been described from India, but it is more widespread in the tropics. The genus is at present poorly known, but even if it turns out to be a different taxon, it is still the first species of this tropical genus found in Europe. It is new to Europe. Herbarium Id: TCCM-50:2005.

Dimerella frederici Kalb (1980) from São Miguel (Jardim da Universitario) on tree. The material has been compared with an isotype (from Hawaii). It is readily recognized by the bluish grey thallus with pale yellowish apothecia of a size intermediate between *D. lutea* and *D. pineti*. It has furthermore only been reported from Jamaica, but it is more widespread in the tropics (e.g. in Taiwan, pers. observ.). It is new to Europe. Herbarium Id: SMJA-28:2005.

Endocarpon pallidum Ach. (1810) from Terceira Island (Serra de Santiago) on soil and volcanic rocks. New to the Macaronesian Region. Herbarium Id: F3:24:2005.

Fellhaneropsis vezdae (Coppins & P. James) Sérus. & Coppins (1996) from Terceira Island (Serra de Santa Bárbara-Florestal) on *Vaccinium*. New to the Azores. Herbarium Id: F3:25:2005. Reported from the Canary Islands: Padrón & Sicília (2002).

Fissurina dumastii Fée (1824) from Terceira Island (Canada do Martelo) on *Pittosporum undulatum*. New to Europe. In the tropics a common species. It is only the third species of this mostly tropical genus in Europe. All are very rare. A further specimen of *F. triticea*, previously reported from the Azores by Aptroot (1989) was recently found on Terceira (TALC-52). Herbarium Id: F3:26:2005.

Heterodermia flabellata (Fée) D.D. Awasthi (1973) from Terceira Island (São Sebastião) on volcanic rocks. It is new to Europe. In the tropics it is a common species. The material is fully congruent with some tropical specimens, with a red, KOH+purple pigment on the lower surface and a relatively thick thallus. The species was not detected during the work for a specific paper on the Azores specimens of this genus (Moberg & Purvis 1997). Herbarium Id: F3:27:2005.

Hypocenomyce anthracophila (Nyl.) P. James & Gotth. Schneid. (1980) from S. Miguel Island (Ponta Delgada) and Terceira Island (Pico da Urze) on unidentified trees. It is new to the Macaronesian Region. Herbarium Id: F3:28:2005.

Ionaspis lacustris (With.) Lutzoni (1995) from Terceira Island (Several sites of the Serra de Santa Bárbara) on volcanic rocks. New to the Azores. Herbarium Id: F3:29:2005. Reported from Madeira: Hafellner (1995 as *Hymenelia lacustris*).

Lecania atrynoides M. Knowles (1913) from Graciosa Island (Carapacho), Pico Island (Castelete) and Terceira Island (Praia da Vitória, Serra de Santiago and Canada do Martelo) on pyroclastic rocks and ignimbrite rocks. It is new to the Macaronesian Region. Herbarium Id: FGRA-116:2004:A.

Lecania cuprea (A. Massal.) Van den Boom & Coppins (1992) from Terceira Island (Canada dos Cinco Reis) on volcanic rocks. It is new to the Macaronesian Region. Herbarium Id: F3:30:2005.

Lecania naegeli (Hepp) Diederich & Van den Boom (1994) from Terceira Island (Terra-Chã) on *Populus* tree. It is new to the Azores. Herbarium Id: F3:31:2005. Reported from the Canary Islands: Padrón & Sicília (2002).

Lecanographa subgrumulosa (Egea, Torrente & Manrique) Egea & Torrente (1994) from Terceira Island (Ribeirinha) on volcanic rock. It is new to the Macaronesian Region. Herbarium Id: F3:32:2005.

Lecanora argentata (Ach.) Malm (1897) from Graciosa Island (Caldeira, Serra Branca and Fontes) and Terceira Island (Monte Brasil, Canada do Celis, Canada de São Bartolomeu, Ponta das Contendas and Pico da Urze) on *Salix* sp., *Platanus occidentalis* and *Pittosporum undulatum*. It is new to the Azores. Herbarium Id: FGRA-121:2004:A. Reported from the Canary Islands: Padrón & Sicília (2002).

Lecanora campestris (Schraerer) Hue (1888) from S. Miguel Island (Madre de Deus-Ponta Delgada) and Terceira Island (Relvão and Canada dos Cinco Reis) on concrete and volcanic rocks. It is new to the Azores. Herbarium Id: F3:33:2005. Reported from Madeira: Hafellner (1995) and the Canary Islands: Padrón & Sicília (2002).

Lecanora carpinea (L.) Vain. (1888) from Graciosa Island (Carapacho) on an unidentified tree. It is new to the Azores. Herbarium Id: FGRA-148:2004:A. Reported from the Canary Islands: Padrón & Sicília (2002).

Lecanora confusa Almb. (1955) from Terceira (Canada do Celis) on *Eucalyptus globulus*, growing together with *Amandinea punctata*. It is new to the Macaronesian Region. Herbarium Id: TCCE-39:2005.

Lecanora hybocarpa (Tuck.) Brodo (1984) from Graciosa Island (Caldeira) and Terceira Island (Dois Caminhos and Canada do Martelo) on *Platanus occidentalis* and on an unidentified tree. It is new to the Macaronesian Region. Herbarium Id: FGRA-37:2004:F.

Lecanora intumescens (Rebent.) Rabenh. (1845) from Pico Island (Mata de S. João) on *Pinus pinaster*. It is new to the Azores. Herbarium Id: F3:34:2005. Reported from Madeira: Hafellner (1995).

Lecanora muralis (Schreb.) Rabenh (1845) from Terceira Island (Mata da Esperança and São Sebastião) on volcanic rocks. It is new to the Azores. Herbarium Id: F3:39:2005. Reported from Madeira: Hafellner (1995) and the Canary Islands: Padrón & Sicília (2002).

Lecanora sulphurella Hepp (1857) from Graciosa Island (Carapacho) and Terceira Island (Canada de São Bartolomeu and Serra de Santiago) on volcanic rocks. It is new to the Azores. Herbarium Id: FGRA-145:2004:A. Reported from Madeira: Hafellner (1995) and the Canary Islands: Padrón & Sicília (2002).

Lepraria isidiata (Llimona) Llimona & A. Crespo (2004) from Terceira Island (Castelo de São João, São Sebastião, Serra de Santiago and Canada dos Cinco Reis) on volcanic soil. It is new to the Macaronesian Region. Herbarium Id: F3:40:2005.

Macentina stigonemoides A. Orange (1989) from Terceira Island (Canada do Capitão Mor) on *Ficus* tree. New to the Macaronesian Region. Herbarium Id: TCCM-44:2005.

Micarea adnata Coppins (1983) from Terceira Island (Ribeirinha) on volcanic rock. It is new to the Azores. Herbarium Id: F3:41:2005. Reported from Madeira: Hafellner (1995).

Micarea xanthonica Coppins & Tønsberg (2001) from Terceira Island (Serra de Santa Bárbara-Florestal) on bryophytes. It is new to the Macaronesian Region. Herbarium Id: F3:42:2005.

Opegrapha rufescens Pers. (1794) from Graciosa Island (Serra Branca) on volcanic rock. It is new to the Azores. Herbarium Id: FGRA-70:2004:A. Reported from the Madeira: Hafellner (1995).

Pertusaria flavicans Lamy (1878) from Graciosa Island (Serra Branca) on volcanic rock. It is new to the Azores. Herbarium Id: FGRA-124:2004:A. Reported from the Canary Islands: Padrón & Sicília (2002).

Pertusaria leioplaca DC. (1815) from S. Miguel Island (Ponta Delgada) and Terceira Island (Terra-Chã, Canada de São Bartolomeu, Relvão and Canada do Celis) on poplar trees, *Pittosporum undulatum* and *Laurus azorica*. It is new to the Azores. Herbarium Id: F3:45:2005. Reported from Madeira: Hafellner (1995) and the Canary Islands: Hafellner (1995).

Phaeophyscia endophoenicea (Harm.) Moberg (1977) from Graciosa Island (Carapacho) on volcanic rock. It is new to the Macaronesian Region. Herbarium Id: FGRA-117:2004:A.

Phyllopsora breviscula (Nyl.) Müll. Arg. (1894) from Terceira (Canada do Celis) on *Laurus azorica*. So far known from the tropics only. The material is sterile, but the lobe configuration is characteristic. Even if it turns out to be a different taxon, it is still the second species of this mainly tropical genus found in Europe. It is new to Europe. Herbarium Id: TCCE-38:2005.

Physcia dimidiata (Arnold) Nyl. (1881) from Terceira Island (Monte Brasil) on *Pittosporum undulatum*. It is new to the Azores. This species was also collected on an unidentified tree at Miraflores (mainland) and constitute a new record for Portugal. Herbarium Id: F3:46:2005 and F3:47:2005. Reported from Madeira: Hafellner (1995) and the Canary Islands: Padrón & Sicília (2002).

Physcia tribacia (Ach.) Nyl. (1874) from Graciosa Island (Serra Branca) on volcanic rocks. Is a new record for the Azores. Herbarium Id: FGRA-93:2004:A. Reported from Madeira: Hafellner (1995) and the Canary Islands: Padrón & Sicília (2002).

Placynthiella dasaea (Stirton) Tønsb. (1992) from Terceira Island (Santa Bárbara – Florestal) on *Cryptomeria japonica*. Is a new record for the Macaronesian Region. Herbarium Id: F3:48:2005.

Porina ahlesiana (Körb.) Zahlbr. (1931) from Graciosa Island (Carapacho) on volcanic rocks. Is a new record for the Macaronesian Region. Herbarium Id: FGRA-132:2004:A.

Porina guentheri (Flot.) Zahlbr. (1922) from Graciosa Island (Carapacho and Serra Branca) on volcanic rocks. Is a new record for the Azores. Herbarium Id: FGRA-95:2004:A. Reported from the Canary Islands: Padrón & Sicília (2002).

Porpidia contraponenda (Arnold) Knoph & Hertel (1984) from Pico Island (Lajes), Graciosa Island (Porto Martins, São Sebastião and Castelo de São

João) on volcanic rocks. It is a new record for the Macaronesian Region. Herbarium Id: FGRA-58:2004:F.

Porpidia tuberculosa (Sm.) Hertel & Knoph (1984) from Terceira Island (Grotta do Vale, Monte Brasil, Ribeirinha and Santa Bárbara Mountain) on volcanic rocks. It is new to the Azores. Herbarium Id: F3:50:2005. Reported from Madeira: Hafellner (1995).

Rhizocarpon badioatrum (Flörke ex Spreng.) Th. Fr. (1874) from Terceira Island (Peak of Santa Bárbara) on volcanic rocks. New to the Azores. Herbarium Id: F3:51:2005. Reported from the Canary Islands: Padrón & Sicília (2002).

Rhizocarpon umbilicatum (Ramond) Flagey (1894) from Terceira Island (Peak of Santa Bárbara) on volcanic rocks. New to the Macaronesian Region. Herbarium Id: F3:53:2005.

Rinodina colobinoides (Nyl.) Zahlbr (1931) from Terceira Island (Pico da Urze and Terra-Chã) on *Platanus occidentalis*. New to the Macaronesian Region. Herbarium Id: F3:54:2005.

Rinodina confragosa (Ach.) Körber (1855) from Graciosa Island (Serra Branca) and Terceira Island (Serra de Santiago) on volcanic rocks. New to the Azores. Herbarium Id: FGRA-146:2004:A. Reported from the Canary Islands: Padrón & Sicília (2002).

Rinodina ericina (Nyl.) Giralt (2000) from Graciosa Island (Caldeira) on *Cryptomeria japonica*. It is new to the Azores. Herbarium Id: FGRA-52:2004:A. Reported from the Canary Islands: Hafellner (1995, as *Buellia ericina*).

Rinodina exigua (Ach.) Gray (1821) from Graciosa Island (Carapacho) and Terceira Island (Ponta das Contendas) on *Salix* sp. and *Erica azorica*. New to the Azores. Herbarium Id: FGRA-81:2004:F. Reported from Madeira: Hafellner (1995) and the Canary Islands: Padrón & Sicília (2002).

Rinodina mniaraea (Ach.) Körber (1865) from Terceira Island (Canada do Martelo and Ribeirinha) on bryophytes. It is new to the Macaronesian Region. Herbarium Id: F3:55:2005.

Squamarina cartilaginea (With.) P. James (1980) from Pico Island (Castelete), Graciosa Island (Carapacho) and Terceira Island (Serra de Santiago, Poça dos Frades, Negrito and Monte Brasil) on soil and volcanic rocks. It is new to the Azores. Herbarium Id: FGRA-74:2004:F. Reported from Madeira: Hafellner (1995) and the Canary Islands: Padrón & Sicília (2002).

Trapelia placodioides Coppins & P. James (1984) from Terceira Island (Serra de Santiago) on soil. It is new to the Macaronesian Region. Herbarium Id: F3:56:2005.

Verrucaria macrostoma Dufour ex DC. (1805) from Terceira Island (Serra de Santiago) on volcanic rock. It is new to the Azores. Herbarium Id: F3:57:2005. Reported from the Canary Islands: Padrón & Sicília (2002).

Verrucaria muralis Ach. (1803) from Terceira Island (Castelo de São João) on volcanic rock. It is new to the Macaronesian Region. This species was also recorded for the first time for Portugal (mainland) on a wall at Peso da Régua (Trás-os-Montes Region). Herbarium Id: F3:58:2005 and F3:59:2005.

Verrucaria pinguicula A.Massal. (1856) from Graciosa Island (Carapacho) on volcanic rock. It is new to the Macaronesian Region. Herbarium Id: FGRA-115:2004:A.

Verrucaria viridula (Schrad.) Ach. (1803) from Graciosa Island (Carapacho), S. Miguel Island (Ponta Delgada) and Terceira Island (Angra do Heroísmo, Terra-Chã, Ribeirinha and Lajes). It is new to the Azores. Herbarium Id: FGRA-120:2004:A. Reported from the Canary Islands: Padrón & Sicília (2002).

DISCUSSION

The knowledge of the lichen flora of the Azores is still relatively incomplete (Hafellner, 1995). For instance, from Graciosa nearly no lichen records were ever published, and few are known from Terceira, especially when compared to São Miguel and Pico. In this paper, 79 species were reported for the first time ever from the Azores, all collected in 2004. Of these, 39 were never reported from the Macaronesian Region. This proves that the lichen flora, with now around 500 species reported, is still imperfectly known, and we expect at least a hundred more in the coming decade, if the present collecting effort is to be continued. Most of the newly reported species are widespread in temperate regions or Europe, but some have a more restricted distribution, e.g. *Coscinocladium gaditanum* and *Lecanographa subgrumulosa*, which are restricted to the Western Mediterranean and Macaronesian Region. The Azores are unique in Europe that some, generally widespread, tropical lichens have here their only occurrence (Aptroot, 1989). Five further tropical species are recorded here for the first time from Europe.

REFERENCES

- APTROOT A., 1989 — Additions to the Azores Lichen Flora. *Lichenologist* 21: 59-65.
- APTROOT A. & RODRIGUES A.F., 2005 — Additions to the Azorean flora. *Arquipélago. Life and Marine Sciences* 22(A) (in press).
- BERGER F. & APTROOT A., 2002 — Further contributions to the flora of lichens and lichenicolous fungi of the Azores. *Arquipélago. Life and Marine Sciences* 19(A): 1-12.
- HAFELLNER J., 1995 — A new checklist of lichens and lichenicolous fungi of insular Laurimacaronesia including a lichenological bibliography for the area. *Fritschiana* 5: 1-132.
- MOBERG R. & PURVIS O.W., 1997 — Studies on the lichens of the Azores. Part 4. The genus *Heterodermia*. *Symbolae Botanicae Upsalienses* 32(1): 187-194.
- PADRÓN S. & SICÍLIA H., 2002 — *Listas e Índices de taxones de las Especies Silvestres de Canarias: Lichenes y Lichenicolous Fungi* Viceconsejería de Medio Ambiente. Gobierno de Canarias. <http://www.gobcan.es/medioambiente/biodiversidad/ceplam/bancodatos/biota/ListadeLiqueneseIndice.pdf>. Accessed on 10 February 2005.

