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Catalogue of lichens (and some related fungi) of Navarino Island, Cape Horn Biosphere Reserve, Chile

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ABSTRACT

The Cape Horn Biosphere Reserve, Chile, has been identified as a hotspot of bryophyte diversity and it has been suggested to be the same for lichens. However, in contrast to the extensive bryophyte studies, only preliminary lichen inventories had been conducted in this reserve. We conducted the first intensive study on the diversity of lichens on Navarino Island during the southern summers of 2005 and 2008. We explored the main habitat types of the island, including coastal areas, evergreen and deciduous forests, Magellanic tundra, and high Andean ("alpine") habitats on the mountain summits. The following substrates on which lichens grow were considered: bark, wood (incl. logs, stumps), soil, mosses, and rocks. We recorded a total of 416 taxa, although some of them not identified to species level. A main result is the finding of two species that are proposed as new: The lichen *Candelariella magellanica*, and the saprobic fungus *Sclerococcum nothofagi* that grows on the bark of trees of the genus *Nothofagus*. In addition, one species of lichenicolous fungus is recorded for the first time on Navarino Island: *Tremella haematommatis*. These results provide additional evidence about the great diversity of lichens that are conserved in the Cape Horn Biosphere Reserve.

Key words: biodiversity, flora, lichenicolous fungi, sub-Antarctic, Tierra del Fuego

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Catálogo de líquenes (y algunos hongos relacionados) de la isla Navarino, Reserva de la Biosfera Cabo de Hornos, Chile

RESUMEN

La Reserva de la Biosfera Cabo de Hornos, Chile, ha sido identificada como un área de alta diversidad de briófitas y se ha sugerido que también lo sea para los líquenes. Sin embargo, en contraste con los extensos estudios de briófitas, sólo se habían realizado inventarios preliminares de líquenes en esta reserva. Realizamos el primer estudio florístico intensivo sobre la diversidad de líquenes en la isla Navarino durante los veranos australes de 2005 y 2008. Exploramos los principales tipos de hábitat de la isla, incluyendo áreas costeras, bosques siempreverdes y caducifolios, complejo de tundra de Magallanes y hábitats altoandinos ("alpinos") en las cumbres de las montañas. Se consideraron los diferentes sustratos sobre los que crecen los líquenes: corteza, madera (incluidos troncos, tocones), tierra, musgos y rocas. Registramos un total de 416 taxones, aunque algunos de ellos no se identificaron a nivel de especie. Un resultado principal es el hallazgo de dos especies que se proponen como nuevas: el liquen *Candelariella magellanica* y el hongo sapróbico *Sclerococcum nothofagi* que crece sobre la corteza de árboles del género *Nothofagus*. Además, una especie de hongo liquenícola, *Tremella haematommatis*, se registró por primera vez en la isla Navarino. Estos resultados proporcionan evidencia adicional sobre la gran diversidad de líquenes que se conservan en la Reserva de la Biosfera Cabo de Hornos.

Palabras clave: biodiversidad, flora, hongos liquenícolas, subantártico, Tierra del Fuego.

INTRODUCTION

The southern tip of South America offers some unique features of great interest for biodiversity and ecology. First, we find here the southernmost forests of the world, almost ten degrees further south than the New Zealand forests (Rozzi *et al.* 2012a). Second, being the southern end of the Andes, the region is mostly covered by complex mountain ranges with hundreds of glaciers and an extensive tundra, which is the most obvious biogeographical link with the vegetation of Antarctica, only 900 km away (Pisano, 1977; Rozzi, 2018). Third, the Subantarctic Magellanic forests are protected by the Cape Horn Biosphere Reserve, and most of them are essentially undisturbed (Rozzi *et al.* 2006a). These forests are dominated by three broad-leaf species of the genus *Nothofagus*: the deciduous *Nothofagus pumilio* (Mirb.) Oerst. and *N. antarctica* (G. Forst.) Oerst., and the evergreen *N. betuloides* (Poepp. & Endl.) Krasser. The distribution of these species and of the types of *Nothofagus* forests is associated with ecological factors like climate, soil, and topography (Aguirre *et al.* 2021, Cuevas, 2000; Donoso, 1995; Frangi & Richter, 1994; Frangi *et al.* 2005; Gerding & Thiers, 2002; Gutiérrez *et al.* 1991; Pisano, 1980 and Veblen *et al.* 1996;).

On Navarino Island, accurate surveys have been carried out along altitudinal gradients through the forests revealing three vegetation types: a) mixed forest of *N. betuloides* and *N. pumilio* distributed at lower altitudes (0–300 m); b) pure forests of *N. pumilio* distributed at higher altitudes (350–550 m); c) krummholz forest of *N. pumilio* near the tree line (500–550 m) (Molina *et al.* 2016). On the island, the tree line at approximately 500 m is sharp and clear being one of the most typical features of a landscape (Fig. 1) where *Nothofagus* forests started to colonize since at least 10,000 years BP (Heusser, 1989).

Located on the south bank of the Beagle Channel, Navarino Island summarizes well the ecological richness of the Subantarctic Magellanic ecoregion (Rozzi 2018). It is one of the biggest islands south of Tierra del Fuego in the Cape Horn Biosphere Reserve. Virtually free of ice the Dientes de Navarino mountain range, with several summits above 1000 m, allows the development of alpine environments with many permanent snow peaks, an extensive tundra and all kind of rocky habitats intensively colonized by rich lichen communities (Sancho, 2012). Saxicolous lichens are also abundant on pebbles and cliffs of the coast, with varying colours as a response to the tides and sea spray gradients. In between, a thick forest belt extends till the limit of the alpine tundra. Navarino forests contain an impressive community of epiphytic lichens rich in diversity and with a high biomass. However, forest extension is also limited by the presence of peat bogs and wetlands that dominate big areas of the island (Molina *et al.* 2016; Pisano, 1977).

The Subantarctic Magellanic ecoregion has an oceanic climate (Contador *et al.* 2015, Rozzi *et al.* 2012a) but with one of the world's most extreme west-east precipitation gradients due to the intersection of the westerly belt by the Darwin cordillera (Aguirre *et al.* 2021). Although Navarino Island is located at subpolar latitudes (54°52'S–55°18'S; 67°03'W and 68°22'W), the climate is mild due to strong oceanic conditions characterized by low thermal variations between seasons, and even precipitation throughout the year (Rozzi *et al.* 2014, 2020b). The annual rainfall ranges from over 1000 mm in the western and southern areas to 500 mm in the central and northern areas of the island (Aguirre *et al.* 2021; Tuhkanen et al., 1990). The oceanic conditions combined with gradients of rainfall and a multiplicity of habitats contributes to the high diversity

Fig. 1. Above: On Navarino Island and Hoste Island south of the Beagle Channel, the tree line is sharp at approximately 500 m. At this altitude, the high deciduous tree *Nothofagus pumilio* form krummholz forests. Above the tree line, the high Andean or "Alpine" vegetation includes a high diversity of lichens lichens. Photo by Ricardo Rozzi taken from the Beagle Channel southward in February 2019.

Below: Close-up of the tree line on Navarino Island showing krummholz forests of *N. pumilio* at the tree line.

Photograph by Adam Wilson taken on Cerro Bandera showing the Dientes de Navarino in the background in January 2010.

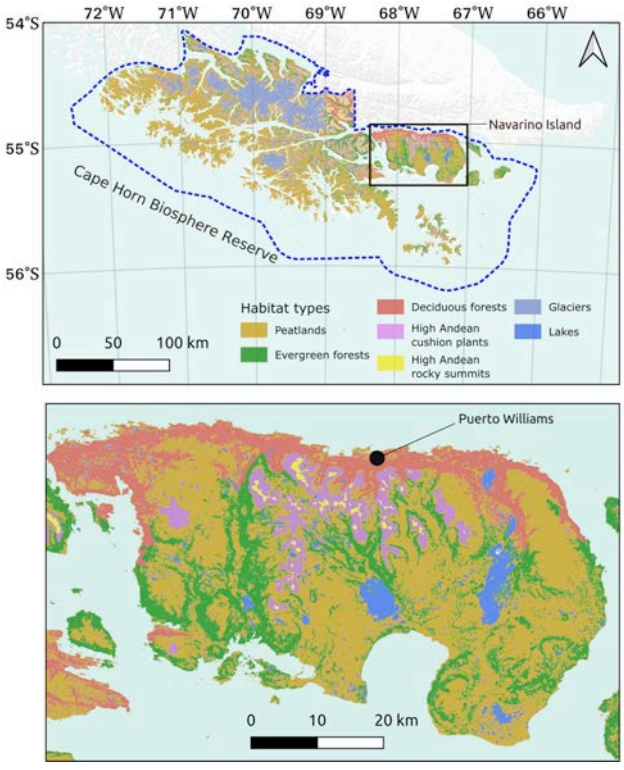

Fig. 2. Above: Land cover classification of the main habitat types in the Cape Horn Biosphere Reserve. The light blue dotted line demarcates the boundary of the biosphere reserve.

Below: Close-up of the land cover of Navarino Island. Our land cover supervised classification is based on satellite images and ground points. Images modified from Aguirre *et al.* (2021).

of cryptogams on Navarino Island; indeed, te Cape Horn Biosphere Reserve has been identified as a world hotspot of bryophyte diversity (Buck & Goffinet, 2010; Rozzi 2008). An indication of the lichen richness of Navarino Island is the exceptionally high number of lichenicolous fungi found in this area (Etayo & Sancho, 2008).

Significant efforts have been made to highlight the cryptogamic diversity found in the Cape Horn Biosphere Reserve (Méndez *et al.* 2013; Rozzi *et al.* 2012b). In this context, the Omora Ethnobotanical Park research team has created an especially remarkable activity called "Ecotourism with a Hand-Lens" (Rozzi *et al.* 2020a; Sancho, 2012). Omora Park is located 3 km west of Puerto Williams, on the north-central shore of Navarino Island. Dr. Ricardo Rozzi and Dra. Francisca Massardo, both associated with the Universidad de Magallanes in Puerto Williams, as well as residents on Navarino Island, were instrumental in encouraging biodiversity research and integrating cryptogam diversity in the development of ecotourism (Goffinet *et al.* 2012; Rozzi *et al.* 2012b). Navarino Island and other islands south of Tierra del Fuego host a high cryptogamic diversity (Rozzi *et al.* 2007). Omora Park researchers used this fact as a decisive argument to support their proposal to create the Cape Horn Biosphere Reserve by UNESCO (Rozzi *et al.* 2007, 2020a).

HABITAT TYPES

Navarino Island has an area of 2,514 square kilometers. It hosts a mosaic of habitat types that includes moorlands, forests, high-Andean or alpine vegetation (Fig. 2). Lichens grow in all these habitat types, which we concisely describe below.

Fig. 3. "Magellanic tundra complex" or "Magellanic Moorland" in the Cape Horn Biosphere Reserve. Photograph by Adam Wilson taken at Ainsworth Bay in January 2010.

1. Moorlands. The magellanic tundra complex. Vast areas of the Cape Horn Biosphere Reserve, including Navarino Island, are dominated by mires (Rozzi *et al.* 2007) (Fig. 3). This is the most extensive habitat type in the biosphere reserve, and it represents 54% of the land cover on Navarino Island (Fig. 2). Edmundo Pisano (1977) calls the set of different types of mires "Magellanic tundra complex", also known as "Magellanic Moorland" (Godley, 1960). Pisano distinguishes the following five main types.

1.1. Peatlands or *Sphagnum* tundra that includes two dominant species of mosses, *Sphagnum magellanicum* Brid. and *S. fimbriatum* Wilson (Fig. 4). This habitat represents the largest reserve of CO_2 in the biomass of dead organic matter that accumulates under the cushions of *Sphagnum* (León *et al.* 2021). This habitat also includes dwarf trees and shrubs, such as the smallest *Myrtaceae* (*Myrteola nummularia* (Lam.) O. Berg) as well as low trees of *Nothofagus antarctica* and *N. betuloides* that grow in this moss dominated matrix (Mackenzie *et al.* 2016). Lichens grow directly on the *Sphagnum* matrix as well as on the bark of small shrubs and trees.

1.2. Cushion plant bogs, dominated by a matrix of cushion plants of the genera *Astelia, Azorella, Laretia* and *Bolax* (Figs. 5 and 6). Small *Juncaceae* such as *Rostkovia magellanica* Desv. and *Juncus stipulates* Nees & Meyen, which typically grow around ponds embedded in the layer of cushion plants (Rozzi, 2018).

1.3. Graminoid bogs, zones dominated by grass-like plants, "graminoid", such as *Schoenus antarcticus* (Hook. f.) Dusén, *Tetroncium magellanicum* Willd. and *Uncinia kingii* R. Br. ex Boott. (Pisano, 1980). Commonly associated with cushion bog areas, and more recently with abandoned beaver ponds (Anderson *et al.* 2006) (Fig. 7).

Fig. 4. Peatlands of *Sphagnum magellanicum* (brown-red) and *S. fimbriatum* (green). Peatlands are a main component of the Magellanic tundra complex. Photograph by Javier Etayo taken at the trail from Wulaia to Caleta Mejillones on Navarino Island on 23 January 2005.

Fig. 5. High Andean cushion plant bogs dominated by plants ball-forming and very compact dominated by *Bolax gummifera*. Photograph by Javier Etayo taken at Cerro Bandera on 9 January 2005.

Fig. 6. A community of terricolous and humicolous lichens growing on and between the cushion plants. Photograph by Javier Etayo taken at Cerro Bandera on 9 January 2005.

Fig. 7. Graminoid bogs growing on an abandoned beaver pond that inundated a forest of *Nothofagus antarctica*. Photograph by Javier Etayo taken at Ukika River trail to Puerto Williams on 27 January 2005.

Fig. 8. Wetland habitats dominated by the rush *Marsippospermum grandiflorum,* where the South American Snipe or Magellan Snipe (*Gallinago paraguaiae*) nests. Photograph by Jordi Plana at Omora Park, January 2005.

1.4. Rush wetlands, hyperhumid habitats dominated by the rush *Marsippospermum grandiflorum* (L.f.) Hook., which provides a critical nesting habitat for numerous bird species such as the South American Snipe or Magellan Snipe (*Gallinago paraguaiae* Vieillot, 1816) (Fig. 8). This habitat is culturally relevant, since it is the place where the Yaghan community gathers fibers for their traditional basket weaving (Rozzi *et al.* 2010).

1.5. Tussock habitats, a type of tundra dominated by tall grasses of *Poa flabellata* (Lam.) Hook. f., a species native to southern South America, including beyond the Cape Horn Biosphere Reserve, the Falkland Islands, South Georgia and other islands in the South Atlantic (Mackenzie *et al.* 2020). *P. flabellata* grows in dense clumps, usually about 2 meters high (although they can be much taller), mainly on wet exposed coastal areas (Rozzi *et al.* 2020b). Tussock habitats are found only in small areas of Navarino Island, and in our study lichen collecting did not take place in this type of habitat in this study.

2. Evergreen Subantarctic Magellanic rainforests. This is the second most extensive habitat type in Cape Horn Biosphere Reserve, and it represents 20% of the land cover on Navarino Island (Rozzi *et al.* 2007) (Fig. 9). It prevails in perhumid zones, and is dominated by the Evergreen Beech (*Nothofagus betuloides*). This evergreen broadleaf forest constrasts with boreal forests in subpolar latitudes in the Northern Hemisphere that are dominated by coniferous species (Veblen *et al.* 1996). This forest type reaches the southernmost island in the Cape Horn archipelago that has a warmer climate than other subantarctic islands at similar latitudes due to its position alongside the west side of South America, where the Convergence Zone is deflected southward (Buma *et al.* 2021). Other evergreen broadleaf tree species in these forests of Cape Horn include Winter's Bark (*Drimys winteri* Jordan Forst. & G. Forst), and the Pickwood (*Maytenus magellanica* (Lam.) Hook. f.) (Pisano, 1977). A well-developed understory formed by shrubs of Holly-leafed

Fig. 9. Evergreen Subantarctic Magellanic rainforests dominated by *Nothofagus betuloides* at the margins of Róbalo Lake, Omora Park. Photograph by Javier Etayo taken at Róbalo Lake, Omora Park, on 12 January 2005.

Barberry (*Berberis ilicifolia* G. Forst.), Box-leafed Barberry (*B. microphylla* G. Forst.), and Wild Currant (*Ribes magellanicum* Poir.) characterizes these evergreen forests. The physiognomy of forests dominated by *N. betuloides* is complex and multi-layered; trunks and large branches are profusely covered by lichens as well as by mosses and liverworts (Pisano, 1980). In these evergreen forest lichens grow on the soil as well as on the bark of trunks and branches of trees and shrubs (Goffinet *et al.* 2012).

3. Deciduous forest. This is the third most extensive habitat type in Cape Horn Biosphere Reserve, and it represents 14% of the land cover on Navarino Island (Rozzi *et al.* 2007) (Fig. 10). It prevails in drier areas that receive less than 1000 mm annual rainfall and on soils that have good drainage. Hence, on Navarino Island deciduous forests dominated by deciduous beech (*Nothofagus pumilio*) forests prevail on the majority of the mountainous slopes above 150 m altitude. At lower altitudes, *N. pumilio* and *N. betuloides* often form mixed forests of evergreen and deciduous trees (Rozzi *et al.* 2006b). The understory of deciduous forests is poorly developed and consists mainly of a layer of low shrubs, such as *Maytenus disticha* (Hook. f.) Urb. and *Gaultheria mucronata* (L.f.) Hook. & Arn., and herbaceous plants, such as *Rubus geoides* Sm. (Molina *et al.* 2016; Pisano, 1977). In these deciduous forests, lichens grow on the soil as well as on the bark of trunks and branches of trees and shrubs (Goffinet *et al.* 2012).

4. High Andean cushion plants. Above the tree line, a diverse flora of mosses and lichen species grow on the rocks or associated with cushion plants (Méndez *et al.* 2013) (Fig. 11). This is the fourth most extensive habitat type in Cape Horn Biosphere Reserve, and it represents 6% of the land cover on Navarino Island (Rozzi *et al.* 2007). These high Andean or alpine habitats have

Fig. 10. Deciduous forests of High-Deciduous Beech (*Nothofagus pumilio*) represents the 14% of the land cover on Navarino Island. Primary forests with many fallen and rotten logs are common. They can be found mixed with evergreen trees of *N. betuloides*. Photograph by Silvina Ippi taken at Omora Park on January 2003.

Fig. 11. Above the tree line on Navarino Island, lichens are the most diverse and abundant group of photosyntetic organisms. Photograph by Javier Etayo taken at Dientes de Navarino on 19 January 2005.

Fig. 12. High Andean habitats on Navarino Island where many species of lichens and mosses grow on rock. Photograph by Javier Etayo taken at Róbalo Mountain, Dientes de Navarino, on 18 January 2005.

Fig. 13. Rocks at the summit of Bandera Mountain, almost completely covered by lichens, mostly belonging to the genera *Lecidea*, *Ochrolechia, Placopsis, Usnea*. Photograph by Leopoldo G. Sancho taken at Dientes de Navarino, on 19 January 2005.

Fig. 14. Numerous lakes and lagoons formed by glaciersretreats represent 6% of the land cover on Navarino Island. Photograph by Javier Etayo taken at Dientes de Navarino on 19 January 2005.

three distinct altitudinal levels: i) a lower zone dominated by low shrubs (e.g. *Empetrum rubrum* Vahl ex Willd.); ii) an intermediate zone dominated by cushion plants (*e.g. Bolax gummifera* (Lam.) Spreng., *Azorella selago*); iii) a high zone dominated by lichens on rocky substrates (Méndez *et al.* 2013; Rozzi *et al.* 2006a).

5. Rocky mountain summits. This habitat type represents 1% of the land cover on Navarino Island (Rozzi *et al.* 2007) (Figs. 12 and 13). Rocky outcrops and also rocks exposed by recent glacial retreats host a diversity of species of lichens and mosses (Goffinet *et al.* 2012).

6. Lakes. This habitat type represents 5% of the land cover on Navarino Island (Fig. 14). Since the last glacial maximum, 20,000 to 15,000 years BP (Heusser, 1989), glaciers retreat has generated numerous lakes and lagoons as well as streams that descend from the mountains (Aguirre et al. 2021). In the riparian habitats along these streams and lakes, there grows a diversity of lichens and bryophytes (Goffinet *et al.* 2012).

7. Coastal habitats. Beyond terrestrial habitats, the coasts of Navarino Island include rocky intertidal zones that host a unique set of lichen species (Sancho, 2012) (Fig. 15). In the lower extreme of the intertidal zones, crustose lichens of the genus *Verrucaria* s.lat. form a conspicuous black or purple zone on the rocks. Above the high tide line, another set of crustose lichen species of the family *Teloschistaceae* form a conspicuous orange-colored band that extends to 1 or 2 m above sea level. Further up, the rocks are covered by lichens of particularly the genera: *Pertusaria, Haematomma,* and *Ramalina*.

Fig. 15. Seashore habitats in Navarino Island host a typical set of lichens distributed in three zones: a black one lower zone dominated by dark *Verrucaria* species; an orange zone of *Caloplaca* s.lat. and a whitish upper zone with species of *Haematomma, Pertusaria*, etc. Photograph by Javier Etayo taken at the trail between Caleta Honda and Caleta Mejillones, Navarino Island, on 13 January 2005.

HISTORY OF LICHEN STUDIES ON NAVARINO ISLAND

Despite the high diversity of lichens in the archipelagoes of the Cape Horn Biosphere Reserve in general, and on Navarino Island in particular, only occasional lichenological studies have been carried out in this area. Rolf Santesson visited the northern coastal areas of Hoste and Navarino islands in 1940. His samples were never published by him, and today are deposited in UPS and are visible in Fryday (2020). He included 31 species: *Chaenotheca furfuracea* (Navarino), *Chrysothrix candelaris* (Navarino), *Cladonia lepidophora* (Navarino), *Hypogymnia austerodes* (Navarino), *Hypotrachyna swinscowii* (Navarino), *Leptogium menziesii* (Navarino), *Menegazzia magellanica* (Hoste), *M. sanguinescens* (Hoste), *M. tenuis* (Hoste), *Nephroma cellulosum* (Hoste, Navarino), *Parmelia saxatilis* (Navarino), *Parmeliella* sp. (Navarino), *Peltigera canina* (Navarino), *P. didactyla* (Navarino), *P. polydactylon* (Hoste), *Platismatia glauca* (Hoste, Navarino), *Pseudocyphellaria coriifolia* (Hoste, Navarino), *P. crocata* (Hoste, Navarino), *P. dubia* (Hoste, Navarino), *P. faveolata* (Hoste), *P. freycinetii* (Hoste), *P. glabra* (Hoste, Navarino), *P. granulata* (Hoste, Navarino), *P. hirsuta* (Navarino), *P. lechleri* (Hoste, Navarino), *P. mallota* (Navarino), *P. obvoluta* (Hoste), *P. scabrosa* (Hoste), *P. vaccina* (Hoste, Navarino), *Punctelia stictica* (Navarino) and *Xanthoria (Polycauliona) candelaria* (Navarino). Lately, the herbarium of Naturhistoriska riksmuseet displayed all the samples collected by Santesson in that expedition and increased the number of lichens to 91 (https://herbarium.nrm.se/search/specimens/?query=Navarino&name=&family=&basionym=&continent=all&year=&collector=Santesson&collectornumber=&group=svampar&createddate=), although several of them are repeated or without specific number. The species not recorded in Fryday (2020) but here are recorded in the present text as Naturhistoriska riksmuseet (2021).

Walker (1985) cites specimens of *Usnea acromelana, U. antarctica, U. aurantiacoatra, U. patagonica*, and *U. trachycarpa* collected by Santesson at Navarino on 28 February 1940 and by other authors. There are two problems with this: Walker's purely morphological species concepts are not always reliable and the records of *U. antarctica* are certainly wrong. Lagostina *et al.* (2021) have studied many samples from Patagonia (incl. Navarino) with microsatellites and none of them belonged to *U. antarctica*. They were all damaged *U. aurantiacoatra* and *U. trachycarpa*.

One of the most avid collectors of lichens in the surrounding regions was Henry Imshaug, but he never visited these austral islands. Redón and Quilhot (1977) listed 56 species from the Navarino Island, and Galloway and Quilhot (1998) prepared a lichen flora for Chile with records from the island. Since 2005, a team led by Leo G. Sancho, Madrid, performed intensive field work on Navarino Island and other islands and areas around the Beagle Channel. Etayo and Sancho (2008) publishing on lichenicolous fungi of the island recorded 113 lichen species as hosts, which, at that moment, was the most accurate catalogue of lichens from Navarino Island. More recently, floristic and taxonomical papers focusing on particular lichen groups have been published (Burgaz & Raggio, 2007; Lagostina *et al.* 2021; Ruprecht *et al.* 2016; Søchting & Sancho, 2012; Søchting *et al.* 2014, 2016, 2021;), as well as ecophysiological studies focussing on *Usnea* species (Laguna-Defior *et al.* 2016). The relative lack of critical floristic surveys in Tierra del Fuego and the Cape Horn region prevents any comparison with the much better known Antarctic lichen diversity (Olech, 2004; Øvstedal & Lewis Smith, 2001; Søchting *et al.* 2004), therefore the degree of biogeographical affinity between the two sides of the Drake Passage as well as with other austral cold temperate regions like Tasmania and New Zealand is still largely unknown (Muñoz *et al.* 2004; Winkworth *et al.* 2002). In order to bridge this gap we present in this work the results of an extensive survey of lichen diversity on Navarino Island.

MATERIAL AND METHODS

In January – February 2005, and January 2008 extensive expeditions were made in the different habitat types of Navarino Island. The sampling effort included 46 sites on North and Northwest part of Navarino Island and adjacent islets (Fig. 16). Unfortunately, we did not have the chance to visit the South and Southeast part of the island due to logistical constraints. A detailed characterization of each site, including sampling date, exact location, altitude, habitat types, and collectors is provided in Table 1. Further collections were made by Ulrik Søchting in 2015 in Puerto Williams around the airport and at Caleta Honda.

In the description of each identified species of lichen, we indicate the accepted name and synonims that have been used in the area, we record each sampling site (with the number of the site), the collector's name, and the herbarium number. Some species that are easily identified in the field and therefore not collected appear in the text as f.o. (field observation). When the samples fit well with the concept of the species and this is commonly collected in South America or Europe, we do not offer any morphological or anatomical description. We only do it when Navarino samples differ in some way to descriptions and in this case these differences are discussed. Traditional morphological and anatomical methods have been used and will not be further described. Molecular methods have not been used in this study, but have been used in many of the cited papers. Vouchers are deposited in the herbaria indicated in the paper after the cited specimens, primarily in MAF-Lich, UMAG, C and personal herbaria of the authors. We

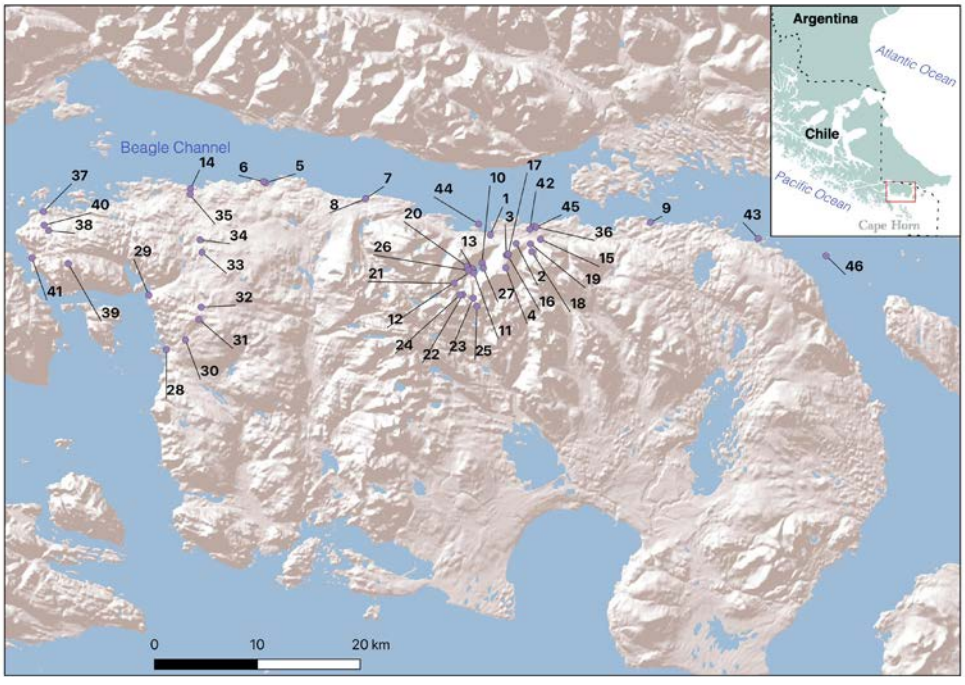

Fig. 16. Map of Navarino Island showing the sampling sites. The description of each site is provided in Table 1.

have aimed at citing in the catalogue all known occurrences in Navarino Island, except those repeated by several authors in papers about other regions like Rubio *et al.* (2013) or recorded in non-floristic papers.For the identification of some lichen species, specimens were sent to other specialists that appear under acknowledgements. This catalogue of the lichen flora of Navarino Island does not pretend to be complete; surely many rare taxa have not been collected. Furthermore, the critical revision of, *e.g.*, the *Teloschistaceae* disclosed that the taxonomy of many genera in the area may be in need of a thorough taxonomic revision. This has, however, not been the aim of this first attempt to catalogue the very rich lichen mycobiota from Navarino Island.

Table 1. List and description of each of the sites where lichens were collected on Navarino Island. Each number identifies a site and corresponds to the numbers on the map of Navarino Island on Fig. 16.

Site Number	Site Name	Latitude (S)	Longitude (W)	Altitude (m)	Habitat type	Site and habitat characterization	Date	Collected by
1	Omora Park	54°56'35.0''	67°39'26.4''	28	Evergreen/ mix forests	On the ground and also as epiphytes on the three species of Nothofagus	8-Jan-05	J. Etayo, L.G. Sancho & A. Gómez-Bolea.
2	Bandera Mt	54°57'14.6''	67°37'42.2''	260	Deciduous forests	Cerro Bandera Trail from the base to the "Mirador", old N. pumilio forest with many fallen trunks	9-Jan-05	J. Etayo, L.G. Sancho & A. Gómez-Bolea.
3	Bandera Mt	54°57'37.3''	67°37'56.6''	584	Deciduous forests	Upper part of Cerro Bandera trail on north-facing slope, N. pumilio forest, near the Krummholz	9-Jan-05	J. Etayo, L.G. Sancho & A. Gómez-Bolea.
4	Bandera Mt	54°58'17.3''	67°37'59.0''	736	H. Andean cushion pl.	On the way from Cerro Bandera to Laguna El Salto, siliceous rocks	9-Jan-05	J. Etayo, L.G. Sancho & A. Gómez-Bolea.
5	Mejillones Bay	54°54'03.0''	67°59'58.0''	6	Evergreen/ mix	Road from Puerto Williams to the west (ca. km 37), coastal rocks and woods of N. betuloides	9-Jan-05	J. Etayo, L.G. Sancho & A. Gómez-Bolea.
6	Mejillones Bay	54°53'59.4''	68°00'10.1''	19	Evergreen/ mix	Small peninsula with rocks and forest of N. pumilio and N. betuloides	10-Jan-05	J. Etayo & A. Gómez-Bolea.
7	Guerrico	54°54'48.4''	67°50'51.7''	28	Evergreen/ mix forests	Road from Pto. Williams to the west, secondary forest with large N. pumilio trees	10-Jan-05	J. Etayo & A. Gómez-Bolea.
8	Eugenia Port	54°54'49.1''	67°50'51.8''	30	Evergreen/ mix forests	Puerto Eugenia, road from Pto. Williams to the east, forest of N. pumilio and N. betuloides at the entrance of the military ground	11-Jan-05	J. Etayo, L.G. Sancho & A. Gómez-Bolea.
9	Pantalón Couve	54°55'45.5''	67°24'53.6''	24	Evergreen/ mix	Road from Pto. Williams to the east, N. pumilio forests in caleta Pantalón	11-Jan-05	J. Etayo, L.G. Sancho & A. Gómez-Bolea.
10	Róbalo Lake	54o58'04.0''	67o40'09.0''	223	Evergreen/ mix	Trail to Róbalo Lake, humid forest of N. betuloides on west-facing slope	12-Jan-05	J. Etayo, L.G. Sancho, A. Gómez-Bolea & U. Søchting.
11	Navarino Port	54°58'36.5''	67°40'52.6''	296	Evergreen/ mix forests	Lake Róbalo camp site, old-growth forest of N. pumilio around the lake	12-Jan-05	J. Etayo, L.G. Sancho, A. Gómez-Bolea & U. Søchting.

Table 1.

12	Honda Couve	54°58'26.5''	67°40'58.6''	267	Evergreen/ mix forests	Puerto Navarino (west end of the road Y-905), near Navy houses, coastal rocks and N. betuloides trees exposed to the wind	13-Jan-05	J. Etayo, A. Gómez-Bolea, U. Søchting & R. Vilches.
13	Lum	54°58'23.0''	67°40'59.8''	285	Evergreen/ mix forests	Caleta Honda, between Puerto Navarino and Lum, rocky wall covered with large lichen thalli at the side of the road	13-Jan-05	J. Etayo, A. Gómez-Bolea, U. Søchting & R. Vilches.
14	Lum	54°54'25.5''	68°06'47.8''	11	Evergreen/ mix forests	Road from Puerto Williams to the west, between Caleta Honda and Mejillones, closest to Lum, siliceous wall above intertidal coastal zone	13-Jan-05	J. Etayo, A. Gómez-Bolea, U. Søchting & R. Vilches.
15	Puerto Williams	54°56'46.0''	67°34'52.2''	86	Evergreen/ mix forests	Trail that crosses Virgen de Lourdes towards Barranca Guarriaco through military zone, soil, slopes and forest with large trees of N. pumilio near the road	14-Jan-05	J. Etayo, L.G. Sancho, A. Gómez-Bolea & U. Søchting.
16	Bandera Mt	54°57'38.5''	67°37'49.4''	561	H. Andean cushion pl.	East facing slope, ledges with Bolax cushion plants	15-Jan-05	J. Etayo, A. Gómez-Bolea & U. Søchting.
17	Bandera Mt	54°57'34.0''	67°37'46.4''	551	Deciduous forests	"Krummholz" forests of N. pumilio, Cerro La Bandera	15-Jan-05	J. Etayo, A. Gómez-Bolea & U. Søchting.
18	Ukika Mt	54°57'25.3''	67°35'38.4''	505	Deciduous forests	Forests	16-Jan-05	J. Etayo, L.G. Sancho, A. Gómez-Bolea, U. Søchting & R. Vilches.
19	Ukika Mt	54°57'00.9''	67°35'46.0''	141	Deciduous forests	East-facing slope of Cerro Ukika in the Guanaco River Valley, old-growth forests of N. pumilio in deep valley	16-Jan-05	J. Etayo, L.G. Sancho, A. Gómez-Bolea, U. Søchting & R. Vilches.
20	Róbalo Mt	54°58'15.3''	67°41'30.9''	518	Deciduous forests	Cerro Róbalo, transect through forest reaching the tree line and beyond	18-Jan-05	J. Etayo, A. Gómez-Bolea, U. Søchting & R. Vilches.
21	Dientes Navarino	54°59'09.6''	67°42'38.6''	548	Deciduous forests	High part of the Róbalo Valley on the way to Dientes de Navarino, rocks, krummholz forests to the alpine belt	18-Jan-05	J. Etayo, A. Gómez-Bolea, U. Søchting & R. Vilches.
22	Dientes Navarino	54°59'44.6''	67°41'50.5''	628	H. Andean cushion pl.	High part of the Róbalo Valley on the way to Dientes de Navarino, gentle slope	19-Jan-05	J. Etayo, A. Gómez-Bolea, U. Søchting & R. Vilches.
23	Dientes Navarino	54°59'54.5''	67°40'53.0''	714	H. Andean rocky summits	High part of the Róbalo Valley on the way to Dientes de Navarino, cliff and stones along the stream	19-Jan-05	J. Etayo, A. Gómez-Bolea, U. Søchting & R. Vilches.

Table 1.

24	Dientes Navarino	54°59'45.7''	67°42'06.0''	565	H. Andean cushion pl.	High part of the Róbalo Valley on the way to Dientes de Navarino, meadow with scattered stones	19-Jan-05	J. Etayo, A. Gómez-Bolea, U. Søchting & R. Vilches.
25	Dientes Navarino	55°00'20.0''	67°40'32.6''	879	H. Andean rocky summits	Dientes de Navarino, climbing to the crest	19-Jan-05	J. Etayo, A. Gómez-Bolea, U. Søchting & R. Vilches.
26	Róbalo Lake	54°58'28.3''	67°41'22.3''	411	Evergreen/ mix forests	Old-growth forest at Róbalo Lake	19-Jan-05	J. Etayo, A. Gómez-Bolea, U. Søchting & R. Vilches.
27	Róbalo Lake	54°58'20.3''	67°40'00.9''	266	Evergreen/ mix forests	Trail from Róbalo Lake to Puerto Williams, rocks in the forest	20-Jan-05	J. Etayo, A. Gómez-Bolea, U. Søchting & R. Vilches.
28	Wulaia Bay	55°02'51.0''	68°08'48.5''	8	Evergreen/ mix forests	West coast of Wulaia Bay, outdoors of the main house	23-Jan-05	J. Etayo, A. Gómez-Bolea, U. Søchting & R. Vilches.
29	Wulaia Bay	55°00'01.5''	68°10'28.8''	12	Evergreen/ mix forests	Trail from Wulaia to Caleta José, along the coast	24-Jan-05	J. Etayo, A. Gómez-Bolea, U. Søchting & R. Vilches.
30	Mladineo	55°02'20.3''	68°07'04.8''	429	Deciduous forests	Trail from Wulaia to Paso Mladineo	25-Jan-05	J. Etayo, A. Gómez-Bolea, U. Søchting & R. Vilches.
31	Mladineo	55°01'14.8''	68°05'53.8''	640	Peatlands/	Summit Paso Mladineo	25-Jan-05	J. Etayo, A. Gómez-Bolea, U. Søchting & R. Vilches.
32	Mladineo	55°00'36.7''	68°05'40.6''	578	Peatlands/ shrubs	Trail from Paso Mladineo to Lum, isolated boulder in peatland	25-Jan-05	J. Etayo, A. Gómez-Bolea, U. Søchting & R. Vilches.
33	Mladineo	54°57'44.4''	68°05'40.3''	368	Peatlands/ shrubs	Trail from Paso Mladineo to Lum, peatlands and flat rocks	26-Jan-05	J. Etayo, A. Gómez-Bolea, U. Søchting & R. Vilches.
34	Mladineo	54o57'05.3''	68o05'52.5''	326	Deciduous forests	Trail from Paso Mladineo to Lum, old-growth forest of N. pumilio with large trunks	26-Jan-05	J. Etayo, A. Gómez-Bolea, U. Søchting & R. Vilches.
35	Lum	54o54'41.7''	68o06'45.3''	45	Evergreen/ mix forests	N. pumilio forest close to the coast	26-Jan-05	J. Etayo, A. Gómez-Bolea, U. Søchting & R. Vilches.
36	Ukika	54°56'06.3''	67°35'31.3''	12	Evergreen/ mix forests	Trail along the Ukika river, east of Puerto Williams	27-Jan-05	J. Etayo.

37	Navarino Port	54°55'42.5''	68°20'08.9''	10	Evergreen/ mix forests	Coastal trail from Puerto Navarino to the west, Puerto Hambre	6-Feb-05	J. Etayo, J. Raggio & L.G. Sancho.
38	Navarino Port	54°56'41.6''	68°19'39.9''	206	Deciduous forests	Trail from Puerto Navarino to the west, Laguna de la Represa, N. pumilio forest	6-Feb-05	J. Etayo, J. Raggio & L.G. Sancho.
39	Navarino Port	54°58'24.5''	68°17'51.4''	571	Deciduous forests	Trail from Puerto Navarino to the west, Cerro de la Laguna del Medio, from the edge of the forest of N. antarctica to the ridge	7-Feb-05	J. Etayo, J. Raggio & L.G. Sancho.
40	Isorna Port	54°56'24.4''	68°20'05.0''	175	Deciduous forests	Trail from Laguna de la Represa to Puerto Isorna, old-growth forest of N. pumilio	7-Feb-05	J. Etayo, J. Raggio & L.G. Sancho.
41	Isorna Port	54°58'08.0''	68°21'09.5''	9	Peatlands/ shrubs	Coastal rocks	7-Feb-05	J. Etayo, A. Gómez-Bolea, J. Raggio, L.G. Sancho & R. Vilches.
42	Ukika	54°56'15.1''	67°35'51.9''	34	Evergreen/ mix forests	Trail to the Rodeo south of Puerto Williams, N. pumilio forest, ground and slopes	9-Jan-08	J. Etayo & A. Gómez-Bolea.
43	Holger Islets	54°56'27.9''	67°15'03.4''	4	Evergreen/ mix forests	South-facing bay with N. betuloides, Berberis ilicifolia and many lichens on the ground	22-Jan-08	J. Etayo, A. Gómez-Bolea, L. G. Sancho, S. Pérez-Ortega & A. Pintado.
44	Marchant Islet	54°56'01.7''	67°40'31.4''	5	Peatlands/ shrubs	Coastline with rocks covered by lichens, no trees	23-Jan-08	J. Etayo, A. Gómez-Bolea, L. G. Sancho, S. Pérez-Ortega & A. Pintado.
45	Ukika	54°56'07.8''	67°35'17.3''	65	Evergreen/ mix forests	Road from Bulnes to the south, disturbed forest of N. pumilio, slopes and soil	23-Jan-08	J. Etayo & A. Gómez-Bolea.
46	Snipe Islet	54°57'16.5''	67°08'49.9''	5	Evergreen/ mix forests	N. betuloides forest in front of Snipe Island, old trunks, many fallen	23-Jan-08	J. Etayo, A. Gómez-Bolea, L. G. Sancho, S. Pérez-Ortega & A. Pintado.

Table 1.

CONCLUSIONS ABOUT THIS CATALOGUE

The lichen flora of South America is poorly known in general, both in tropical and extratropical areas. The region most comparable with Navarino in the austral zones could be the Falkland or Malvinas Islands. In size they are much larger but the climate is more extreme and there are no native trees, so epiphytic lichens appear only on shrubs, foreign trees or imported wood. Furthermore, they are approximately 600 km east of the mainland of South America. The whole of islands add up to a total land area of just over 12 000 km^2, although the islands are spread out over an area about twice that size. Fryday *et al.* (2019) completed a catalogue of those islands comprising 393 taxa, of which 6 were infra-specific taxa (var. ssp. or forma) in 161 genera and 15 lichenicolous fungi in 12 genera. In total, 408 taxa of lichens and lichenicolous fungi. Of those, 150 were reported for the first time in the islands what confirms the previous comment.

The flora of lichens and lichenicolous from Navarino is composed at the moment of 608 taxa. Etayo and Sancho (2008) published the results of the lichenicolous fungi found there: 189 species of which 60 were described as new for science. In this paper dedicated to the lichen flora we add 3 new lichenicolous fungi, so 192 species of lichenicolous fungi are currently known from Navarino. Finally, we have found or recorded 416 species of lichenized fungi in this first report although we are convinced there are dozens of species that are waiting to be recorded.

In Fryday (2020, last updated 2008) there are many interesting data about lichens from southern South America and other Antarctic regions but most of the data are very old dating from the first botanists arriving there. For example, the checklist from L'Hermite contains less than one hundred taxa collected by Hooker and Taylor in 1844 and Hooker in 1847, the checklist from Cape Horn comprises 34 taxa studied by Müller in 1888. A larger number of taxa is, however, known from the Isla de los Estados: 230. Regarding the important recapitulatory study by Fryday (2020), the lichen flora from Isla Grande de Tierra del Fuego has 218 species. Since the last update of this list several papers have been published on Tierra del Fuego lichens and this number is most likely larger.

CATALOGUE

Acarospora badiofusca **(Nyl.) Th. Fr.**

Our specimen could be a form very reduced, almost without thallus, of this species.

12, on shore rocks, hb. Etayo 22531.

Agonimia tristicula **(Nyl.) Zahlbr.**

All samples are sterile, but thalli are very similar to European ones. It is a cosmopolitan species (Breuss, 2020).

5, on humus on boulder with *Leptogium mandonii*, hb. Etayo 22633. 29, on humus on mossy rock, hb. Etayo 22870.

Alectoria ochroleuca **(Hoffm.) A. Massal.**

With cylindrical (< 1 mm diam.), yellow coloured laciniae. On alpine soil forming small cushions. Recorded by Redón and Quilhot (1977) and Quilhot *et al.* (2012) from Navarino.

21, alpine soil, hb. Etayo 22731. 31, alpine soil, hb. Etayo 22905 (UMAG).

Alectoria sarmentosa **(Ach.) Ach.**

With postrate and yellow coloured thallus growing on soil, laciniae slightly applanate to 2 mm wide. On soil on horizontal rocks close to shore.

12, schistose rock near the shore, hb. Etayo 22539.

Alyxoria culmigena **(Lib.) Ertz**

Opegrapha herbarum Mont.

Our collections fit well with the concept of this species (Ertz, 2009; Smith *et al.* 2009 as *O. herbarum*) except for its dark brown exciple that do not react with K a character probably not determinant.

2, *Nothofagus pumilio*, hb. Etayo 22190. 7, on bark of *N. pumilio*, hb. Etayo 22695, 22696; *ibidem*, J. Etayo 22697 (MAF). 8, on *Nothofagus* and other lichen thalli hb. Etayo 22712 (MAF). 17, on *N. pumilio*, hb. Etayo 22266. 26, on old bark of *N. pumilio*, hb. Etayo 22971. 2, on bark of *N. pumilio*, hb. Etayo 24637. 42, on bark of *N. pumilio*, hb. Etayo 24687.

Amandinea punctata **(Hoffm.) Coppins & Scheid.**

Some of the samples could be related to other similar species, viz.: *A. mediospora* Marbach and *A. subduplicata* (Vainio) Marbach, living in tropical mountains (Marbach, pers. comm.).

Recorded from the Falkland Islands (Fryday *et al.* 2019) on wood. Here also collected on twigs and trunks of *Nothofagus*.

5, on young *N. pumilio*, hb. Etayo 22607 (UMAG); *ibidem*, on twigs, hb. Etayo 22623, 22624. 6, on old *Nothofagus*, hb. Etayo 22649 (MAF). 15, *N. pumilio*, hb. Etayo 22490. 42, on old *N. pumilio* in the track with dust, J. Etayo 24675 (UMAG), hb. Etayo 24676, Etayo 15629, 15730 (MAF).

Anisomeridium macrocarpum **(Körb.) V.Wirth**

With asci 76–80 x 27–32 µm and hyaline, later brown, ascospores, 1–3-septate, 33–35 x 9–11 µm. A similar sample with smaller spores, 22–29 x 6–7 µm, is included here.

2, on *N. pumilio*, hb. Etayo 24655. 17, on *N. pumilio*, hb. Etayo 22266. 43, on twigs of *Berberis*, hb. Etayo 24537.

Anisomeridium polypori **(Ellis & Everh.) M.E. Barr**

28, on *Nothofagus* sp., hb. Etayo 22779.

Arthonia atra **(Pers.) A. Schneid.**

43, on twigs of *Berberis* with *Usnea* sp., hb. Etayo 24537.

Arthonia aff. arthonioides **(Ach.) A.L. Sm.**

Whitish thallus with *Trentepohlia*. Apothecia black-brown, flat to convex, sessile. Epithecium and hypothecium dark brown, K-; hymenium yellowish, 25–30 µm thick. Asci subglobose to widely pyriform, 8-spored, 19–25 x 13–14 µm. Ascospores (1–)2(–3)- septate, hyaline, straight but sometimes curved, 9–12.5 x 4–5 µm, upper cell larger than the others. Similar to *A. arthonioides* (Ach.) A.L. Sm., which differs by having smaller ascomata (140–350 µm), K+ greenish epithecium, thick hypothecium (100–300 µm) and (1–)3(–4)-septate ascospores, 11–17 x 4–5(–7) according to Purvis *et al.* (1992).

Growing in rain protected, whitish parts of the bark of *N. pumilio* with *Chaenotheca trichialis, Chrysotrix candelaris* and *Alyxoria culmigena*.

2, on *N. pumilio*, hb. Etayo 24651. *Ibidem*, wood of *Nothofagus*, hb. Etayo 24669. 6, on old *N. pumilio*, hb. Etayo 22641, 22643, 22648. 8, *N. pumilio*, hb. Etayo 22227, 22228. 26, old bark of *N. pumilio*, hb. Etayo 22971. 42, *N. pumilio*, hb. Etayo 24683 (hb. Galloway). 28, on *Berberis microphylla*, hb. Etayo 22815.

Arthonia radiata **(Pers.) Ach**.

On thin twigs of *Berberis* near the shore, with *e.g. Lecanora confusa* and *Ramalina terebrata*. 28, on *Berberis microphylla*, hb. Etayo 22815.

Arthrorhaphis citrinella **(Ach.) Poelt**

Although not common on Navarino Island we found it always sterile as small yellow, sorediate thalli, directly on peaty soil. Bipolar, reaching tropical, mountain areas.

16, on alpine soil, hb. Etayo 22516, UMAG. 33, on alpine soil, with *Stereocaulon*, hb. Etayo 22917. *Ibidem,* J. Etayo, 15879 (MAF, UMAG).

Athallia holocarpa **(Hoffm.) Arup, Frödén & Søchting**

We can only confirm one saxicolous specimen from Caleta Honda, the other specimens need molecular confirmation.

5, thin, exposed twigs of *Berberis*, hb. Etayo 22623. 28, on twigs of *Berberis microphylla*, hb. Etayo 22815. Caleta Honda 54.9153º S, 68.2259º W, vertical, N-exposed, shaded rock, 200 m from the sea. 1 February 2015, U. Søchting 12342 (C).

Austromelanelixia subglabra **(Räsänen) Divakar, A. Crespo & Lumbsch**

Melanelixia subglabra (Räsänen) A. Crespo, Divakar & Elix; *Melanelia subglabra* (Räsänen) Essl.

This species has round and convex, whitish to greenish soralia. Common in Southern South America (Elvebakk *et al.* 2014; Esslinger, 1977).

2, *N. antarctica*, hb. Etayo 22183. 29, undetermined trunk, hb. Etayo 22877.

Austroplaca ambitiosa **(Darb.) Søchting, Frödén & Arup**

Recorded as *Caloplaca hookeri* (C.W. Dodge) Søchting, Øvstedal and Sancho in Etayo and Sancho (2008), but *C. hookeri* has so far not been found on Navarino Island.

12, on coastal rocks, hb. Etayo 22532, U. Søchting 10169 (C). 28, on maritime rocks, U. Søchting 10351a (C). Puerto Williams, around the airport, 54.9304ºS, 67.6302ºW, 40 m, top of boulder on beach, 19-01-2015, U. Søchting 12232, 12234, 12228 (C). Caleta Honda, 54.9187ºS, 68.2140ºW, 40 m, 01-02-2015, U. Søchting 12343 (C). Island N of Isla Navarino, 54º 56′ 03′′S, 67º 40′ 27′′W, 2 m, stone, M.Z. Søgaard 80, 82 (C). W of Puerto Williams, 54º 55′ 48′′S, 67º 43′ 26′′W, 12 m, stone, M.Z. Søgaard 98, 101, 102, 104 (C). E of Puerto Navarino, 54º 55′ 53′′S, 68º 21′ 28′′W, 10 m, E-facing cliff, M.Z. Søgaard 108, 110, 112 (C).

Austroplaca cirrochrooides **(Nyl.) Søchting, Frödén & Arup s.lat.**

Caloplaca cirrochrooides Nyl.

This species aggregate includes several more or less cryptic species characterized by yellow, lobate and sorediate thalli. Habitually steril, considered by Øvstedal and Lewis Smith (2001) to be an Antarctic endemic. Ours records fit well with the ecology of the species recorded on shore rocks with species of *Buellia, Teloschistaceae* and *Verrucaria*. Recorded earlier by Etayo and Sancho (2008).

5, shore rocks, hb. Etayo 22626. Puerto Williams around the airport, 54.9304°S, 67.6302°W, boulders on beach. 19 January 2015, U. Søchting 12238b, 12233 (C).

Austroplaca darbishirei **(C.W. Dodge & G.E. Baker) Søchting, Frödén & Arup**

Caleta Honda, 54.9187° S, 68.2140° W, 40 m, E-exposed, eutrophicated concrete in pasture. 1 January 2015, U. Søchting 12344 (C).

Austroplaca millegrana **(Müll. Arg.) Søchting, Frödén & Arup s.lat.**

Caloplaca millegrana (Müll. Arg.) Zahlbr.

This species includes several more or less cryptic species and was recorded by Etayo and Sancho (2008) from Navarino.

W of Puerto Williams, 54°55'48'' S, 67°43'26'' W, 12 m, stone on coast. 27 January 2008, M.Z. Søgaard 96, 103; E of Puerto Navarino, 54°55'54'' S, 68°21'17'' W, 10 m, stone on coast, 28 January 2008, M.Z. Søgaard 106, 107 (C), Puerto Williams around the airport, 54.9304° S, 67.6302° W, 5 m, boulders on beach, 19 January 2015, U. Søchting 12229, 12235, 12240, 12245 (C). 28, maritime rocks, U. Søchting 10350 (C), 29, on rhizoids of *Macrocystis* on beach, U. Søchting 10380a (C).

Austroplaca sibirica **(H. Magn.) Søchting & Arup**

This is a bipolar lichen that has been collected in Navarino on detritus, mosses and even as lichenicolous on *Peltigera collina* (Søchting & Arup, 2021).

4. On bryophytes, hb. Etayo 22422. 14. On *Berberis* twigs, U. Søchting 10189 (C); on *Peltigera collina*, U. Søchting 10180 (C). 21, U. Søchting 10293(C). See Søchting and Arup (2021).

Austroplaca soropelta **(E.S. Hansen, Poelt & Søchting) Søchting, Frödén & Arup**

A saxicolous, sorediate species that was recorded from Navarino by Søchting and Castello (2012).

Bacidia cf. absistens **(Nyl.) Arnold**

We found this species on damaged *Peltigera*. With an intensely blue green epithecium, colorless hypothecium and reddish and hyaline exciple in section. Ascospores are acicular, 7–10(–14) septate, 30–40(–47) x 2.5–3.5 µm. According to Smith *et al.* (2009) ascospores of *B. absistens* are 45-80 µm long.

Bacidia absistens typically grows on acidic bark in old woodlands and has a wide distribution (Smith *et al.* 2009).

7, on *Peltigera collina* growing on *Nothofagus*, hb. Etayo 22706 (det. Llop).

Bacidia bagliettoana **(A. Massal. & De Not.) Jatta**

Our samples were growing on *Bolax* and are identical to samples from the Spanish Pyrenees: crustose, poorly developed thallus, black apothecia with margin, brown reddish exciple, lighter in the centre, and blue green epithecium, N+ purple with blue crystals between the paraphyses and apex of the asci. Ascospores 24–37 x 2.5–3.5 µm, with 3–6 septa. Sample hb. Etayo 23232 growing on bryophytes with *Austroplaca sibirica*, differs in having algae inside the exciple, 3–7 septate, curved spores, 25–32 x 2.5–3 µm and pigments similar to those of *B. absistens*.

Øvstedal and Lewis Smith (2001) recorded a muscicolous sample of *B. bagliettoana* from Antarctica. According to their description apothecia are light brown with a pruinose bluish white margin, brownish epithecium, colorless hypothecium and exciple, and acicular ascospores with 14–16 septa. These characters are different from our species and closer to the Antarctic *B.*

tuberculata Darb., that must be a similar species to *B. bagliettoana*. *Bacidia* sp. A (Fryday, 2019a) growing on *Empetrum nigrum* stems in the Falkland Islands has larger spores, 50–65 long.

3, on *Bolax*, together with *Megalaria grossa*, hb. Etayo 22287. 33, on dead *Bolax* with *Psoroma cinnamomeum*, J. Etayo 22921 (MAF); U. Søchting 10396 (C). 39, on dead *Bolax* with *Lecanora epibryon*, J. Etayo 23027 (UMAG). 32, on saxicolous bryophytes, hb. Etayo 23232.

Bacidia circumspecta **(Nyl. ex Vain.) Malme**

Forming small thalli between *Parmeliella concinna*. Ekman (1996) indicated it has a Panamerican and European distribution but avoids the colder regions of North and South America.

2, on *N. pumilio*, hb. Etayo 24649.

Bacidia aff. coprodes **(Körb.) Lettau**

Thallus granulose to areolate, areoles with slightly raised margins, greenish, K+ yellow. Apothecia light brown to black, 250–450 µm, margin lighter than disk, hardly prominent, disc flat to slightly convex. Exciple green-brown, textura oblita with thick-walled hyphae. Hypothecium dark brown. Epithecium greenish. Hymenium 50–70 µm tall. Paraphyses conglutinate, sometimes bifurcate, c. 1 µm thick, capitate to 1.5–2.5 µm wide. Asci 8-spored, 50–65 x 8–10 µm, between *Bacidia* and *Biatora*-type. Ascospores spirally arranged in asci, colorless, straight and bacilliform to curved or vermiform, 5–7-septate, (20–)22–30.5 x 2.5–3.6 µm.

Morphologically like *B. coprodes,* a saxicolous species known from Europe, North America and Antarctica, but ascospores are longer and more septate than in this species. A study of this species appears in Llop and Ekman (2007). The corticolous *B. subincompta* is also similar except for the not bifurcate paraphyses and not vermiform ascospores.

Growing on pebbles in a stream together with *Verrucaria margacea*. None of the species described and keyed out from the Falkland Islands (Fryday, 2019a) fits well with this one.

25, on stream pebbles, hb. Etayo 22850 (UMAG, det. Llop).

Bacidia aff. delicata **(Larbal. ex Leight.) Coppins**

Thallus with delicate, branched to coralloid isidia. Apothecia white to beige, to 1 mm diam. All parts in section are colorless. Exciple and hypothecium thick, prosoplechtenchymatic with cells with thick wall except for the external ones. Hymenium c. 80 µm. Ascospores acicular, 58–70 x 2–3 µm, wider in one end.

Apparently, our specimen is similar to *B. delicata*, whose apothecia, hymenium and ascospores are, however, bigger. Furthermore, it grows on clay soil together with *Psoroma* spp. and *Cladonia* spp. instead of being corticolous or rarely saxicolous on calcareous rock and stonework (Coppins & Aptroot in Smith *et al.* 2009)

42, on clay soil, hb. Etayo 24696.

Baeomyces rufus **(Huds.) Rebent.**

We found two small, sterile thalli of this species, parasitized and degraded by *Epilichen scabrosus*. Similar thalli were recorded by Søchting *et al.* (2004) in Antarctica (South Bay).

16, peaty soil, hb. Etayo 22523. 42, clay soil, J. Etayo 24694 (UMAG).

Bellemerea sanguinea **(Krempelh.) Hafellner & Roux**

Our sample has an almost black thallus, cracked, very thin and immersed, brown apothecia, without algae below hypothecium and reddish brown epithecium.

25, on torrent pebbles, hb. Etayo 22851.

Bibbya bullata **(Meyen & Flot.) Kistenich, Timdal, Bendiksby & S. Ekman**

Tonina bullata (Meyen & Flot.) Zahlbr.

Widely distributed in the Southern Hemisphere. Timdal (1991) recorded it from Antarctica and Tierra del Fuego without specific locations.

14, on humus and bryophytes on subvertical, shaded walls, hb. Etayo 22201. 37, outcrop near the sea, J. Etayo 22990 (MAF); U. Søchting 10204 (C).

Bilimbia sp.

On *Peltigera collina* together with *Bacidia absistens*; thallus grey, granulose; apothecia reddish to dark brown with a prominent margin that is darker than the convex disk; exciple colorless except for a greenish brown rim, prosoplechtenchymatous, textura oblita, with thick walled hyphae, 8–12 x 1–1.5 µm with subglobose end cells, 3–4 µm wide; hypothecium colorless, paraplechtenchymatic; hymenium colorless, 60–70 µm tall; epithecium green; paraphyses bifurcate to branched, not anastomosing, 1–1.5 µm thick, with subglobose apical cells, 4–6 µm diam. Asci 8-spored, clavate, 50–55 x 8–10 µm, *Byssoloma*-type; ascospores colorless, elipsoid, wider in one end, 3-septate, with a thin gelatinous sheath when young, then verruculose , 13.3–22.5(–25) x 2.8–4.4 µm.

Seems to be related to *B. lobulata*, but with a less well-developed thallus.

7, on *Peltigera collina* on *N. pumilio*, hb. Etayo 22706 (det. Llop).

Blastenia circumpolaris **Søchting, Frödén & Arup**

Described by Arup *et al.* (2013). Forming small thalli between other crustaceous lichens, even over foliaceous lichens like *N. antarcticum*, with very small, orange, round soralia on a thin and whitish thallus. Circumantarctic.

Navarino Island 54°57'41''S, 67°11'36''W, 2 m, on dead *Nothofagus*, 23 January 2008, M.Z. Søgaard 74 (C); 30 km W of Pto. Williams, Caleta José, 55°00'5''S, 68°10'4''W, 2 m, dry bark of *Nothofagus betuloides*, 24 January 2005, U. Søchting 10372 (C); 7 km SW of Pto. Williams, Valle Róbalo, 54°58'4''S, 67°40'9''W, 240 m, trunk of *N. betuloides*, 12 January 2005, U. Søchting 10152 (C). 5, schrub twiggs, hb. Etayo 23488. 2, *N. antarctica*, hb. Etayo 22183, 22190. 17, on *N. pumilio*, hb. Etayo 22266. 15, on old *N. pumilio*, hb. Etayo 22482, 22490. 29, on old *Nothofagus*, hb. Etayo 22861 (MAF, UMAG). 38, on old bark of *Nothofagus*, hb. Etayo 23012. 42, old and dusty *N. pumilio* , J. Etayo 24675 (UMAG).

Bogoriella hemisphaerica **(Müll. Arg.) Aptroot & Lücking**

Mycomicrothelia hemisphaerica (Müll. Arg.) D. Hawksw.

Our sample fits well with this taxon, but the centrum is KI+ light blue and the excipular wall is K-. Paraphyses trabeculate, c. 1 µm thick, 8-spored asci and brown, 1-septate ascospores of unequal cells, 22–27(–30) x 8–11 µm.

10, bark of *N. betuloides*, hb. Etayo 22239. 39, bark of *Nothofagus* sp., hb. Etayo 23064.

Brigantiaea fuscolutea **(Dicks.) R. Sant.**

Common on alpine soils of Navarino Island and inside the woodlands on the base of mossy trunks. Here apothecia usually are deformed, subglobose and without margin. In transversal section these structures are made by a hyphal net mixed with crystals, but reproductive structures are not observed. They could ressemble badly developed thalli of *B. austroamericana* (Räsänen) Hafellner, a corticolous and muscicolous species common in woodlands of *Nothofagus* from South America.

Recorded by Calvelo (1992) from southern Argentina, by Fryday *et al.* (2019) from the Falkland Islands, and from Navarino by Etayo and Sancho (2008).

3, alpine soil with cushions of Bolax, J. Etayo 22284 (UMAG). 4, on acidic soil, hb. Etayo 22404. 16, on peaty soil, J. Etayo s.n. (UMAG). 18, on peaty soil, hb. Etayo 22584. 21, on Empetrum and soil, J. Etayo 22739 (MAF). 34, on mossy basal trunks of ***N. pumilio***, hb. Etayo 23049. *Ibidem***,** MAF- 15647, 15648, 15699, 15680 (UMAG).

Bryobilimbia australis (Kantvilas & Messuti) Fryday, Printzen & S. Ekman

Recorded from the Falkland Islands by Fryday *et al.* (2019).

3 and 11, A. Gómez-Bolea s.n. (BCN-lich.).

Bryobilimbia hypnorum **(Lib.) Fryday, Printzen & S. Ekman**

Mycobilimbia hypnorum (Lib.) Kalb & Hafellner

Our samples were growing on dry grass in the alpine belt and are very similar to European ones. Very characteristic by their abundant, black ascomata with a neat margin, hymenium with many blue-purple crystals, K+ intensely green. Growing with *Lecanora epibryon*. Fryday (2019b) recorded *B. australis* from the Falkland Islands, but that species has a different apothecial formation with apothecia forming large, blackberry-like clusters (Fryday *et al.* 2014). *B. hypnorum* was known especially from the Northern Hemisphere, but has also been recorded from Antarctica (Øvstedal & Lewis-Smith, 2001).

4, on grassy and mossy soil, hb. Etayo 22419. 33, on decomposing plants, hb. Etayo 22923. (det. Z. Palice).

Bryoria cf. austromontana **P.M. Jørg. & D.J. Galloway**

We found a terricolous species, with laciniae to 1 mm wide, with or without foveolae, K-, similar to *B. austromontana* recorded in the Falkland Islands (Fryday *et al.* 2019b; Orange, 2016). However, this species has a K+ red thallus. *Bryoria forsteri* Olech & Bystr., is also K- and occurs on soil in King George Island (Olech & Bystrek, 2004). Further studies are required to know well this taxon. Quilhot *et al.* (2012) recorded *Bryoria chalybeiformis* (L.) Brodo & D. Hawksw. from Navarino, species that could be the same treated here.

15, on soil, J. Etayo 22495 (MAF). 21, on thin soil on rocks, hb. Etayo 22749.

Buellia discreta Darb.

With *Lecanora rupicola* on rocks near to the coast. Recorded from the Falkland Islands (Fryday, 2019a; Fryday *et al.* 2019) as endemic.

12, on rocks near the coast, hb. Etayo 22533, 22542.

Buellia nitrophila Zahlbr.

With sunken apothecia in a crustose, grey colored, areolate thallus with I- medulla, subhymenium inspersed, ascospores polarilocular when young. Recorded from the Falkland Islands (Fryday, 2019a).

5, outcrop 10 m a.s.l, hb. Etayo 22675.

Buellia aff. pulverea **Coppins & P. James**

With granular thallus, thick, dull green grey to dark brown, with irregular soralia, 20–50 µm, lighter green to brown, C+ reddish, UV+ yellow, P- to yellowish, with apothecia amongst soralia. Apothecia abundant, black, flat, with a thin border, 100–180 µm diam.

It is abundant on dusty trees, especially at the base, with *Candelariella magellanica, Pseudocyphellaria coriifolia* and *Polycauliona candelaria*. *Buellia pulverea* has so far only been reported from Europe (Smith *et al.* 2009).

42, old *N. pumilio* near the track, hb. Etayo 24676 (hb. Galloway).

Buellia sp.

Thallus yellowish, thin, rimose. Ascomata black, not pruinose, firstly flat then convex, 0.3–0.8 mm diam. with a concolorous border, 50–60 µm thick. Basal exciple 40–50 µm thick, prosoplechtenchymatous, dark brown, K- surrounded internally by a chondroid, hyaline row of hyphae, 10–15 µm wide. Lateral exciple formed by subglobose cells similar to those of the epithecium. Hymenium hyaline, completely inspersed, 110–120 µm high. Paraphyses simple, rarely branched, 1.5–2 µm wide, hyaline but capitate, brown, 3–5 µm wide. Hypothecium very thick, 200–250 µm. Asci subclavate, 8-spored. Ascospores brown, polarilocular, with a thick and dark septum (*Orcularia*-like), straight, with obtuse ends or one acute end, with smooth surface, very fragile, sometimes broken, (15–)16–19(–21) x (7–)8–9(–10) µm (23).

Growing on young cortex of *Nothofagus*. We found two similar specimens with large ascospores (description) and smaller 14–16,5 x 6,5–7 µm. This is one of the species of *Buellia* with polarilocular spores similar to *Caloplaca*. Some species probably related with ours appear in Fryday (2019a), *e.g. B. nitrophila* or *B. falklandica* Darb., but those species are saxicolous.

6, on young *Nothofagus*, hb. Etayo 22672 (hb. Marbach). 11, on *N. pumilio*, hb. Etayo 22258. 15, on bark of *N. pumilio*, hb. Etayo 22490 (hb. Marbach).

Byssoloma marginatum **(Arnold) Sérusiaux**

Our specimens are like this species but the hypothecium is dark brown to blackish, K-, and ascospores 3–4(–7) septate, 15–22(–33) x 4–4.5 µm. For the moment we think this is the best name for our species.

36, on young *Nothofagus*, hb. Etayo 22926.

Calicium abietinum **Pers.**

Very characteristic by its large ascomata without pruina and ascospores large with granulose ornamentation.

5, fallen wood, hb. Etayo 22620. 9, wood, J. Etayo 22724 (UMAG).

Calicium adspersum **Pers.**

With yellow pruina on mazaedia, and ascospores with spirally arranged ridges it belongs to this species. Tibell (1984, 1987) described the ssp. *australe* known from New Zealand and Australia (also Southern South America in Smith *et al.* 2009) with larger ascomata (1.1–2 mm high), thallus K+ red and ascospores 9.5–11 x 4–5 µm. Our samples, however, have thallus K-, ascomata are smaller, 0.6–0.8 mm high, 0.5–0.8 mm wide and stalk 0.2–0.25 mm thick, more similar to ssp. *adspersum* known in Northern Hemisphere, but ascospores 8–11.5 x 3.5–4.5 µm are closer to ssp. *australe* than ssp. *adspersum,* with larger ascospores (12–14.5 x 5.5–6.5 µm).

8, wood of *Nothofagus*, hb. Etayo 22230. 34, on old bark of *N. pumilio*, hb. Etayo 23057.

Calicium glaucellum **Ach.**

We found this species at several occasions together with *C. adspersum* and a white *Micarea* aff. *alabastrites* on *Nothofagus*.

2, wood of *Nothofagus*, hb. Etayo 24640. 34, on old bark of *N. pumilio*, hb. Etayo 23057; *ibidem*, J. Etayo 23059 (MAF).

Calicium salicinum **Pers.**

According to Tibell (1987) it is known in the Southern Hemisphere from Australia, New Guinea, New Zealand, Tasmania, Africa and South America.

We found it on old bark of *N. pumilio* especially under overhangs with *Arthonia* aff. *arthonioides* and *Chrysothrix candelaris*.

6, on old bark of *Nothofagus*, hb. Etayo 22643 (UMAG), J. Etayo 22644 (MAF). 8, on bark overhangs of *Nothofagus*, hb. Etayo 22710. 38, on old bark of *N. pumilio*, J. Etayo, 22998 (UMAG).

Calicium viride **Pers.**

Found together with *C. salicinum*, but less abundant, in one shore locality on old and overhanging bark of *Nothofagus*. Recorded previously in Navarino by Redón and Quilhot (1977) and in Cape Horn Biosphere Reserve (Goffinet *et al*. 2012).

6, on *Nothofagus* sp., hb. Etayo 22662. 7, overhanging trunk of *N. pumilio*, hb. Etayo 22694; *ibidem* MAF 15882. 34, on old bark of *N. pumilio*, J. Etayo 23058 (UMAG). 38, on old bark of *N. pumilio*, hb. Etayo 22999 (UMAG).

Caloplaca phaeocarpella **(Nyl.) Zahlbr**.

Growing on thalli of *Psoroma* spp. and *Cladonia* squamules in slopes with *Bolax*. This species was known from North Asia and Greenland (Hansen *et al.* 1987). Its habitat is similar to *Caloplaca psoromatis* Olech & Søchting.

3, on thallus of *Psoroma hypnorum* on alpine soil with *Bolax*, hb. Etayo 22280. 3, on cushions of *Bolax*, J. Etayo 22293 (UMAG). 16, on *Psoroma hypnorum, P. cinnamomeum* and *Pannaria hispidula*, also on *Cladonia* on peaty soil, hb. Etayo, 22511 (MAF). 16, on dead *Bolax*, hb. Etayo 22509. 39, on dead *Bolax* with *Lecanora epibryon*, J. Etayo 23027 (UMAG).

Caloplaca tornöensis **H. Magn.**

Living on bryophytes, and characterized by its apothecia with orange disk and black margin, bluish black exciple without algae, and ascospores 15–21 x 6–6.5 µm with a thin septum.

31, bryophytes on soil, hb. Etayo 22907.

Candelariella magellanica **Etayo, sp. nov.**

Mycobank: MB842282

Diagnosis: It differs from *C. xanthostigmoides* by its larger apothecia to 0.4 mm diam., asci 4–8-spored and ascospores larger (0–)1(–2) septate, (12–)14–19(–21) x (4.5)5–8(–10.5).

Type: CHILE: Navarino, Ukika, track from Bulnes to the south, fertile thalli on *Nothofagus pumilio* bark, c. 50 m, J. Etayo 24541 and A. Gómez-Bolea, 21 January 2008, (holotypus-MAF-Lich., isotypus-hb. Etayo).

Thallus sorediate, yolk coloured, K-, formed by minute areoles (0.1–0.4 mm diam.), disolved into soredia, 20–50 µm diam. Biatorine exciple. Algae round, 10–15 µm diam. Ascomata sessile amongst soralia, 0.3–0.55 mm diam., yolk coloured, initially flat, soon convex, with initially prominent, then disappearing margin, becoming granular-sorediate, concolorous with thallus. Hymenium 80–90 µm tall. Paraphyses simple, septate, 1.5–2 µm wide, hardly capitate upwards.

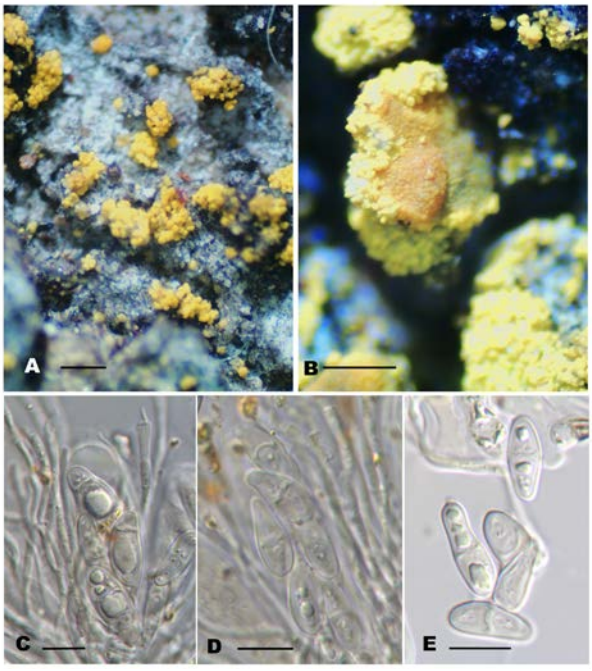

Fig. 17. *Candelariella magellanica*. A, B, habitus; C, ascus with ascospores, one of them 2-septate; D, ascus with mostly 1-septate ascospores; E, 1-septate ascospores. Scales: A = 250 µm; B = 300 µm; C, D, and E = 10 µm. Photograph by Javier Etayo.

Epithecium with yellow crystals, K-. Asci 4–8-spored, clavate to widely subglobose with a long foot, 40–60 x 14–20 µm. Ascospores of variable shape, elongate to broadly ellipsoidal, with obtuse ends, straight, rarely slightly curved, (0–)1(–2)-septate; septa centered or near the ends (when two), normally with one large oil drop in each cell, (12–)14–19(–21) x (4.5)5–8(–10.5) µm (52).

C. xanthostigmoides (Müll. Arg.) R.W. Rogers is most similar to our species but has smaller apothecia to 0.25 mm, 8-spored and smaller asci, 30–35 x 12.5–15 µm, and always simple spores, 12–15 x 5–6 µm (Filson, 1992; Rogers, 1982). Lately, Lendemer and Westberg (2010) studied some North American specimens attributed to this species and reported spores a bit larger, [11]–(11.2)–13.3–(15.4)–[17.7] x [3.8]– (4.2)–5.0–(5.9)–[7.2] µm. Westberg (2005) wrote that one thin septum is common in several species; however, septate spores have never been reported in *C. xanthostigmoides*. Furthermore, the septum (or rarely septa) in *C. magellanica* is as thick as the spore wall even inside the ascus and fairly frequent. 77% of spores are 1-septate, 4% spores are 2-septate and only 19% spores are simple. Some of them could be hypermature, but we have hardly observed germinating spores. Another strange feature of this species is the very variable morphology of spores from long and thin to wide and short.

Candelariella reflexa (Nyl.) Lettau, is a European species similar to *C. xanthostigmoides* but without a sorediate apothecial margin and simple and smaller spores, 10–16 x 4.5–5.5 µm. This species and other related as *C. sorediosa* Poelt & Reddi (Poelt & Reddi, 1969) need to be studied more detailed but in all cases ascospores seem to be more similar to *C. xanthostigmoides* than to *C. magellanica*.

Candelariella magellanica grows directly on the cortex of *Nothofagus* or over other crustaceous lichens, more rarely on foliaceous ones like (Fig. 17) *Pseudocyphellaria coriifolia*, and seems to be relatively common (although generally sterile) in Navarino.

15, bark of *N. pumilio*, hb. Etayo 22490 (sterile). 42, on old, dusty bark of *N. pumilio* near the track, hb. Etayo 24676 (sterile). 2, on *N. antarctica*, hb. Etayo 22178 (fertile). 14, on *N. pumilio* between *Peltigera collina* and *Leptogium* sp., hb. Etayo 22214 (sterile).

Candelariella vitellina **(Ehrh.) Müll. Arg.**

Recorded by Etayo and Sancho (2008).

5, rock 10 m. a.s.l., hb. Etayo 22657 (UMAG).

Carbonea vorticosa **(Flörke) Hertel**

Bipolar species known from the Southern Hemisphere in maritime and continental Antarctica (Øvstedal & Lewis Smith, 2001).

2, on ground pebbles, hb. Etayo 24672 (MAF, UMAG).

Catapyrenium cinereum **(Pers.) Körb.**

Bipolar species known from Tierra del Fuego and Antarctica (Søchting *et al.* 2004).

31, on soil, hb. Etayo 22912.

Catenarina vivasiana **Søgaard & Søchting**

This species that grows on maritime rocks was recorded from Navarino by Søchting *et al.* (2014).

Cetraria aculeata **(Schreb.) Fr.**

Coelocaulon aculeatum (Schreb.) Link

Bipolar species even living in Antarctica (Søchting *et al.* 2004). Recorded by Redón and Quilhot (1977), Quilhot *et al.* (2012), Etayo and Sancho (2008), Laguna-Defior (2017) and Lagostina *et al.* (2021) from Navarino.

3, on alpine soil, hb. Etayo 22274, 22283. 4, on alpine soil, hb. Etayo 22416, 22428. 18, on peaty soil, J. Etayo 22598 (UMAG). 5, on peaty soil, J. Etayo 22630 (MAF), *ibidem*, J. Etayo 15884 (UMAG).

Cetraria ericetorum **Opiz**

Recorded by Laguna-Defior (2017) from Navarino.

Cetraria islandica **(L.) Ach.**

Recorded by Redón and Quilhot (1977), Etayo and Sancho (2008) and Laguna-Defior (2017) from Navarino.

Loc 18, on soil, J. Etayo 15886 (MAF, UMAG).

Cetraria islandica **ssp. antarctica Kärnef.**

Common on alpine soils mixed with other terricolous lichens. Recorded by Etayo and Sancho (2008) in Navarino and in Cape Horn Biosphere Reserve (Goffinet *et al.* 2012). (Fig. 18).

Chaenotheca brachypoda **(Ach.) Tibell**

Chaenotheca furfuracea (L.) Tibell is morphologically similar and appears between Santesson records from Navarino (Fryday, 2020), however, Tibell (1987) discussed the differences between these two species and pointed out that the Southern Hemisphere samples belong to *C. brachypoda*. However, one of our samples was sterile, yellow, with *Stichococcus* in the thallus, growing on shaded rocks, and could belong to *C. furfuracea*.

Fig. 18. *Cetraria islandica* ssp. *antarctica*, with large lacinae growing on soil, hb. Etayo 22297. 4, on acidic soil, J. Etayo 22407 (MAF), *ibidem*, hb. Etayo 22428. 11, on peaty soil, J. Etayo 22250 (MAF). 16, on peaty soil, hb. Etayo 22526. 18, on peaty soil, hb. Etayo 22585. 33, on alpine soil, hb. Etayo 22918 (UMAG). Photograph by Javier Etayo at Omora Park on 26 January 2005.

Recorded by Tibell (1987) from the Southern Hemisphere in Australia, New Zealand and Tasmania.

2, on stones in the forest, hb. Etayo 24665. 7, on overhangs bark of *N. pumilio*, J. Etayo 22687 (UMAG). 26, on wood, hb. Etayo 22955; *ibidem*, J. Etayo 22969 (MAF).

Chaenotheca chrysocephala (Turn. Ex Ach.) Th. Fr.

It is easily distinguished by its intensely yellow colored thallus (vulpinic acid) and mazaedium pruina and by its coarsely ornamented, globose to ellipsoidal ascospores. This is a bipolar species, common throughout the Northern Hemisphere and also known in Australia, Africa and New Zealand (Tibell, 1987). We found one sample with *Stichococcus*, a vicariant phycobiont in the Southern Hemisphere as recorded in Tibell (1987).

26, on wood of *N. pumilio*, hb. Etayo 22954.

Chaenotheca hispidula (Ach.) Zahlbr.

Mixed with the much more common *Mycocalicium subtile* on overhanging bark of *Nothofagus*. It is distinguished from other similar species by its thin ascomata with yellow pruina and large ascospores, 6–8 µm in diam., with reticulate fissures. Recorded by Etayo and Sancho (2008) as lichenicolous on large foliose thalli.

8, on overhanging bark of *Nothofagus* sp., hb. Etayo 22709 (MAF, UMAG); *ibidem* hb. Etayo 22710.

Chaenotheca stemonea (Ach.) Müll. Arg.

Distinguished by its greenish, leprose thallus, with *Stichococcus*, pruinose whitish stalk

and mazaedium and ascospores with irregular cracks, 3.5–4 µm diam. We found it growing on a sterile lichen with *Trentepohlia*.

Cosmopolitic; known from tropical America from mountains of Venezuela (Tibell, 1996).

2, on *N. pumilio*, hb. Etayo 22182.

Chaenotheca trichialis **(Ach.) Th. Fr.**

A variable species in Navarino woods; some samples have a thallus made up by convex, whitish squamules with granulose surface as already recorded by Tibell (1987). It seems common in underhangs of leaning trunks and wood of *Nothofagus*.

2, on *N. pumilio*, hb. Etayo 24652. 7, in underhangs of *N. pumilio*, hb. Etayo 22694. 8, in underhangs of *N. pumilio*, hb. Etayo 22227, 22228. 11, on underhangs of *N. pumilio*, hb. Etayo 22258. 15, on wood of *Nothofagus*, J. Etayo 22488 (MAF).

Chaenothecopsis pusilla **(Ach.) A. Schmidt**

We found it associated with *Lecanactis fraudans* and *Chrysothrix candelaris*.

11, in underhangs of *N. pumilio*, hb. Etayo 22258. 36, on old bark of *Nothofagus* sp., between *Lecanactis* and *C. candelaris,* hb. Etayo 22933.

Chroodiscus australis **Kantvilas & Vězda**

Recorded by Etayo and Sancho (2008) growing on *Ochrolechia*. The sample recorded here was growing on wood.

2, on wood in the soil, hb. Etayo 24638 (MSC0086669).

Chrysothrix candelaris **(L.) Laundon**

It is very common in underhangs of leaning *Nothofagus*, especially old trunks of *N. pumilio*, protected from the water. Recorded already by Santesson in Fryday (2020), Etayo and Sancho (2008), Rozzi *et al.* (2012b) and Trest *et al.* (2015) from Navarino.

1, on old *N. pumilio*, J. Etayo 22135 (UMAG). 6, on bark of old *Nothofagus*, hb. Etayo 22643 (UMAG), *ibidem*, J. Etayo 22644 (MAF). 7, on old bark of *N. pumilio*, J. Etayo 22701 (MAF). 8, on underhangs of *N. pumilio*, hb. Etayo 22227, 22228; *ibidem*, MAF16088, 15654, 15728, 15747 (UMAG), 22709; *ibidem* hb. Etayo 22710, 22717. 11, on underhangs of leaned *N. pumilio*, hb. Etayo 22258. 34, on old bark of *N. pumilio*, J. Etayo 23058 (UMAG). 36, on old bark of *Nothofagus* sp., hb. Etayo 22933. 42, on old and dusty *N. pumilio* near the track, J. Etayo 24677 (UMAG).

Chrysothrix chlorina **(Ach.) J. R. Laundon**

Bipolar species, also recorded from Antarctica (Øvstedal & Lewis Smith, 2001).

28, on outcrops near seashore, J. Etayo 22798 (MAF, UMAG).

Cladia aggregata **(Sw.) Nyl.**

Previously recorded in Navarino by Burgaz and Raggio (2007).

22, on soil on an outcrop, J. Etayo 22771 (UMAG). 43, on soil, hb. Etayo 24531 (UMAG).

Cladonia acuminata **(Ach.) Norrl.**

Previously recorded in Navarino by Burgaz and Raggio (2007).

Cladonia arbuscula **ssp. arbuscula (Wallr.) Flot. s.lat.**

Previously recorded in Navarino by Stenroos (1995) and Burgaz and Raggio (2007).

Cladonia asahinae **J.W. Thompson**

Previously recorded in Navarino by Stenroos (1995) and Burgaz and Raggio (2007). Recorded also in Cape Horn Biosphere Reserve (Goffinet *et al.* 2012).

Cladonia aueri **Räsänen**

Recorded from Navarino by Stenroos (1995).

Cladonia bacilliformis **(Nyl.) Glück**

Previously recorded in Navarino by Stenroos (1995) and Burgaz and Raggio (2007).

Cladonia bellidiflora **(Ach.) Schaerer**

Previously recorded in Navarino by Burgaz and Raggio (2007).
4, on acidic soil, hb. Etayo 22442.

Cladonia borealis **Stenroos**

Previously recorded in Navarino by Burgaz and Raggio (2007).
4, on acidic soil, hb. Etayo 22443. 38, on humus on rock, J. Etayo 23011 (UMAG). 39, on soil, hb. Etayo 23065.

Cladonia carneola **(Fr.) Fr.**

Previously recorded in Navarino by Stenroos (1995) and Burgaz and Raggio (2007).

Cladonia cenotea **(Ach.) Schaer.**

Previously recorded in Navarino by Burgaz and Raggio (2007).

Cladonia cervicornis **ssp. mawsonii (C.W. Dodge) S. Stenroos & Ahti**

Previously recorded in Navarino by Burgaz and Raggio (2007).

Cladonia chlorophaea **(Flörke ex Sommerf.) Spreng.**

Previously recorded in Navarino by Stenroos (1995, Redón and Quilhot (1977) and Burgaz and Raggio (2007).

Cladonia cornuta **(L.) Hoffm.**

Previously recorded in Navarino by Stenroos (1995) and Burgaz and Raggio (2007) and in Cape Horn Biosphere Reserve (Goffinet *et al.* 2012).

Cladonia cryptochlorophaea **Asahina**

Previously recorded in Navarino by Burgaz and Raggio (2007), as the first Chilean record.

Cladonia farinacea **(Vain.) A. Evans**

Previously recorded in Navarino by Stenroos (1995) and Burgaz and Raggio (2007).

Cladonia fimbriata **(L.) Fr.**

Previously recorded in Navarino by Stenroos (1995) and Burgaz and Raggio (2007).

Cladonia furcata **(Huds.) Schrad.**

Recorded by Etayo and Sancho (2008).
4, on acidic soil, hb. Etayo 22443. 16, on peaty soil, hb. Etayo 22512. 21, on peaty soil, hb. Etayo 22741.

Fig. 19. *Cladonia gracilis*, easily distinguishable by its long and thin podetia. Photograph by Javier Etayo taken at Róbalo Lake, Omora Park, on 15 January 2005.

Cladonia gracilis **ssp. gracilis (L.) Willd.**

Previously recorded in Navarino by Stenroos (1995), Burgaz and Raggio (2007) and Etayo and Sancho (2008). It forms large and convex cushions with many podetia (Fig. 19).

11, on peaty soil in wood of *Nothofagus*, hb. Etayo, 22245 (UMAG). 16, on tundra soil, hb. Etayo 22506 (UMAG). 18, on soil, J. Etayo 22577 (MAF), hb. Etayo 22578. 19, on soil, J. Etayo 22736 (MAF). 25, on soil between boulders, J. Etayo 22844 (MAF). 31, on alpine soil, J. Etayo 22906 (UMAG).

Cladonia gracilis **ssp. elongata (Wulfen) Vainio**

More robust than ssp. *gracilis* and without podetial squamules. Previously recorded in Navarino by Stenroos (1995) and Burgaz and Raggio (2007).

26, on soil, hb. Etayo 22977 (UMAG).

Cladonia humilis **(With.) J.R. Laundon**

Previously recorded in Navarino by Burgaz and Raggio (2007).

Cladonia laevigata **(Vain.) Gyeln.**

Previously recorded in Navarino by Stenroos (1995).

Cladonia lepidophora **Ahti & Kashiw.**

Previously recorded in Navarino by Santesson in Fryday (2020) and by Burgaz and Raggio (2007) in its three chemical types (I, II and III).

Cladonia luteoalba **Wheldon & A. Wilson**

Previously recorded in Navarino by Burgaz and Raggio (2007).

23, on sandy soil, hb. Etayo 22763.

Cladonia macilenta **Hoffm.**

Previously recorded in Navarino by Burgaz and Raggio (2007) in its chemical types I and II.

29, on fallen trunk of *Nothofagus*, hb. Etayo 22869.

Cladonia macrophyllodes **Nyl.**

Previously recorded in Navarino by Burgaz and Raggio (2007).

Cladonia mitis **Sandst.**

Cladonia arbuscula (Wallr.) Flotow var. *mitis* Sandst.

Previously recorded in Navarino by Ruoss and Ahti (1989) as *C. arbuscula* var. *mitis* and also recorded by Redón and Quilhot (1977), Stenroos (1995), Burgaz and Raggio (2007) and Quilhot *et al.* (2012).

The subspecies *squarrosa* (Wallr.) Ruoss, characterized by the absence of rangiformic acid has been recorded from Argentinian Tierra del Fuego, so it may occur in Navarino too.

11, on acidic soil with *C. rangiferina*, J. Etayo 22251 (UMAG). 18, on peaty soil, hb. Etayo 22586. 31, on soil, J. Etayo 22908 (MAF); *ibidem*, hb. Etayo 22909.

Cladonia novochlorophaea **(Sipman) Brodo & Ahti**

Previously recorded in Navarino by Burgaz and Raggio (2007).

Cladonia ochrochlora **Flörke**

Previously recorded in Navarino by Stenroos (1995) and Burgaz and Raggio (2007).

Cladonia phyllophora **Hoffm.**

Previously recorded in Navarino by Burgaz and Raggio (2007).

Cladonia pleurota **(Flörke) Schaerer**

Previously recorded in Navarino by Burgaz and Raggio (2007).

11, bog, hb. Etayo 22246 (MAF).

Cladonia pocillum **(Ach.) Grognot**

Previously recorded in Navarino by Burgaz and Raggio (2007).

Cladonia pyxidata **(L.) Hoffm.**

Previously recorded in Navarino by Burgaz and Raggio (2007) and as *C.* aff. *pyxidata* by Etayo and Sancho (2008).

29, on humus on outcrop, J. Etayo 22884 (MAF). 42, on base of *N. pumilio*, hb. Etayo 24689.

Cladonia rangiferina **(L.) Weber ex Wigg.**

Previously recorded in Navarino by Stenroos (1995), Burgaz and Raggio (2007) and Rozzi *et al.* (2012b). Recorded also from Cape Horn Biosphere Reserve (Goffinet *et al.* 2012).

11, on acidic soil with *C. mitis*, J. Etayo 22251 (UMAG). 16, on tundra soil, hb. Etayo 22520. 18, on tundra soil, J. Etayo 22600 (MAF). 31, on soil, hb. Etayo 22910 (MAF).

Cladonia rigida **(J.D. Hooker & Taylor) Hampe**

Previously recorded in Navarino by Stenroos (1995).

Cladonia sarmentosa **(Hook f. & Taylor) C.W. Dodge**

Previously recorded in Navarino by Stenroos (1995) and Burgaz and Raggio (2007).

Cladonia scabriuscula **(Delise) Nyl.**

Previously recorded in Navarino by Burgaz and Raggio (2007).

Cladonia squamosa **(Scop.) Hoffm.**

Previously recorded in Navarino by Stenroos (1995) and Burgaz and Raggio (2007).

Cladonia subchordalis **A. Evans**

Previously recorded in Navarino by Burgaz and Raggio (2007).

Cladonia subsquamosa **Kremp**.

Previously recorded in Navarino by Burgaz and Raggio (2007). We found the chemotype with thamnolic acid.

11, on acidic soil below *N. betuloides*, hb. Etayo 22248 (MAF) (det. Burgaz). 31, on soil, hb. Etayo 22911.

Cladonia subsubulata **Nyl.**

Previously recorded in Navarino by Burgaz and Raggio (2007).

Cladonia subulata **(L.) F.H. Wigg.**

Previously recorded in Navarino by Burgaz and Raggio (2007).

Cladonia sulphurina **(Michaux) Fr.**

Previously recorded in Navarino by Burgaz and Raggio (2007).

11, on peaty soil *Nothofagus*, hb. Etayo 22244 (UMAG, MAF). 4, on pet soil, hb. Etayo 22438. 30, on pet soil, hb. Etayo 22901.

Cladonia symphycarpa **(Flörke) Fr.**

Previously recorded in Navarino by Burgaz and Raggio (2007).

Cladonia ustulata **(Hook. F. & Taylor) Leight.**

Previously recorded in Navarino by Burgaz and Raggio (2007). Recorded also from Cape Horn Biosphere Reserve (Goffinet *et al.* 2012).

Coccotrema corallinum **Messuti**

Previously only known from Argentinian Tierra del Fuego (Messuti & Vobis, 2002).

21, on plant remains on upper side of rock, hb. Etayo 22743.

Coccotrema cucurbitula **(Mont.) Müll. Arg.**

It is a common species growing on *Nothofagus* in Navarino, usually together with *Pertusaria microcarpa*. More rarely it was saxicolous as also observed by Messuti and Vobis (2002). It has been recorded by Etayo and Sancho (2008) and Quilhot *et al.* (2012) from Navarino.

11, on *N. pumilio*, hb. Etayo 22256, 22460. 17, on *N. pumilio*, hb. Etayo 22265 (UMAG). 18, on outcrop, J. Etayo 22560 (MAF). 21, on *Empetrum*, together with *M. verrucosa*, hb. Etayo 22737. 22, on rock, hb. Etayo 22770. 25, on rock, hb. Etayo 22852. 26, on old *N. pumilio*, hb. Etayo 22936; *ibidem*, hb. Etayo 22961. 27, on *Nothofagus*, U. Søchting (C) 10334. 38, on *N. pumilio*, J. Etayo 23015 (UMAG). 32, common on outcrop, hb. Etayo 23230 (UMAG).

Coelopogon epiphorellus (Nyl.) Brusse & Kärnefelt

Austral species that reaches Antarctica growing on saxicolous mosses (Søchting *et al.* 2004). In Navarino it is commonly growing on *Nothofagus* trunks, sometimes covering large surfaces of the trunk, less common on rocks near the shore. Rarely, we have collected samples with large, grey soralia that could belong to *C. abraxas* Brusse a species recorded in the Falkland Islands (Fryday *et al.* 2019).

Previously recorded in Navarino as *Coelopogon* spp. by Redón and Quilhot (1977), and also by Santesson in Naturhistoriska riksmuseet (2021), Trest *et al.* (2015), Etayo and Sancho (2008) and Quilhot *et al.* (2012).

1, on *N. pumilio*, hb. Etayo 22125. 2, on *N. pumilio*, J. Etayo 24657 (UMAG). 6, on *Nothofagus* sp., J. Etayo 22637 (UMAG). 7, on *N. pumilio*, J. Etayo 22689 (MAF). 8, on *Nothofagus*, hb. Etayo 22715. *Ibidem*, on trunk of *N. pumilio*, hb. Etayo 22232; *ibidem*, hb. Etayo 22715 (UMAG). 13, on base of *Nothofagus*, hb. Etayo 22195. 28, on rocks covered by many lichens, J. Etayo 22799 (UMAG).

Coenogonium pineti (Ach.) Lücking & Lumbsch

Dimerella pineti (Ach.) Vezda

Found only once, growing in bark fissures of *Nothofagus*.

38, on *Nothofagus*, hb. Etayo 23012.

Collemopsidium halodytes (Nyl.) Grube & B.D. Ryan

Probably cosmopolitan (Smith *et al.* 2009), it has not been recorded before in southern Chile but in the Falkland Islands (Fryday *et al.* 2019).

44, on *Balanus* on seashore rocks, hb. Etayo 24489.

Cyanisticta obvoluta (Sw.) C.W. Dodge

Pseudocyphellaria obvoluta (Sw.) Malme

Unmistakeble due to its hairy surface and abundant apothecia. A Valdivian magellanic species, typically epiphytic, known from the south of Chile and Argentina (Galloway, 1986). In Navarino it appears dispersed and is never abundant. Collected by Santesson in Fryday (2020) in Hoste. Recorded from Navarino by Redón and Quilhot (1977), Galloway (1992), Galloway *et al.* (1995), Etayo and Sancho (2008) and Quilhot *et al.* (2012) (Fig. 20).

1, on *N. pumilio*, hb. Etayo 22132. 2, on *N. pumilio*, hb. Etayo 22152 (MAF, UMAG). 4, on trunk of *N. antarctica*, J. Etayo 22424 (MAF). 7, on trunk of *N. pumilio*, hb. Etayo 22685. 11, on *N. betuloides*, U. Søchting 10162 (C). 19, on *N. pumilio*, hb. Etayo 22575 (UMAG, MAF). *Ibidem*, hb. Etayo 22580. 26, on *Nothofagus pumilio*, hb. Etayo 22946.

Cystocoleus ebeneus (Dillwyn) Twaites

On steep walls forming small, black cushions on thalli of *Pannaria hispidulum, Pseudocyphellaria glabra, Parmelia saxatilis* and *Stereocaulon* sp., or directly on rock. Bipolar, reaches Antarctica (Olech, 2004).

Fig. 20. *Cyanisticta obvoluta*, easily identificable by its hairy thallus and abundant apothecia. Photograph by Javier Etayo taken at Omora Park on 8 January 2005.

6, on schists in subvertical walls, hb. Etayo 22655. 13, on subvertical rock growing on *Pseudocyphellaria glabra* and *Stereocaulon* sp., hb. Etayo 22191, 22196. 28, on *P. saxatilis* on rocks, J. Etayo 22793 (MAF). 38, on *Lepraria* sp. and *Pannaria hispidulum* on humus on rock, J. Etayo 23011 (UMAG).

Degelia subcincinnata **(Nyl.) P.M. Jørg.**

On peaty soil or moist pebbles, usually without apothecia, only with abundant conidiomata and bacilliform conidia, 5–7 x 1–1.5 µm.

21, on damp soil, hb. Etayo 22740 (det. Jørg.). 23, on moist pebbles, hb. Etayo 22765.

Dermatocarpon miniatum **(L.) W. Mann**

With an upper pruinose side, a lower smooth, and orange–brownish side and medulla I–; ascomata with hyaline exciple and ascospores 10–13 x 6–7 µm, it is very similar to European morphs of *D. miniatum*.

29, on subvertical seashore rocks together with *Phaeophyscia sciastra*, hb. Etayo 22871.

Dufourea australis **(Zahlbr.) Frödén, Arup & Søchting**

Samples recorded as *Xanthoria parietina* from Navarino by Etayo and Sancho (2008) on coastal rocks belong to this species.

28, on maritime rocks, U. Søchting 10347 (C). 29, coastal rocks, hb. Etayo 22874 (Fig. 21).

Endocena informis **var. informis Cromb.**

Described by Crombie (1876), it is a very characteristic lichen similar to a sterile *Ochrolechia*, with a white, bright, sublobulate and verrucose thallus that bursts in the apex of convex areoles

Fig. 21. Wet *Dufourea australis* growing on seashore rocks parasited by the lichenicolous fungus *Arthonia sytnikii*. Morphologicaly this species is similar to the holarctic common *Xanthoria parietina*. Photograph by Javier Etayo taken at the coast of Wulaia Couve on 24 January 2005.

exposing a sorediate zone inside, P+ intensely orange, K+ yellow. It is usually parasitized by a *Lichenostigma*-type fungus that causes a grey discoloration in the thallus. Together with *Siphula* it is common in the tundra of this zone. According to Fryday *et al.* (2017) there are two varieties, var. *informis* and var. *falklandica* Fryday, I. Schmitt & Pérez-Ort., common in the Falkland Islands but rare in Tierra del Fuego. This last one is distinguised by its crustose, sorediate thallus.

4, on mossy soil, hb. Etayo 22432, 22437, 22439, 22440. 11, on mineral soil on the surface of rock outcrop, hb. Etayo 22252. 18, on mineral soil on boulder, hb. Etayo 22555. *Ibidem*, on acidic soil, hb. Etayo 22561 (UMAG). 21, on mineral soil on rock, hb. Etayo 22750. 22, on mineral soil on a slope, hb. Etayo 22769. 25, on humus on a boulder, J. Etayo 22858 (MAF). 26, on humus on a boulder, hb. Etayo 22980.

Epilichen scabrosus (Ach.) Clem.

With a yellowish thallus, UV+ yellowish, and black, convex apothecia, it grows on *Baeomyces*. Epithecium greenish and hypothecium dark brown. Ascospores brown, 1-septate, 10–12.5 x 6.5–7 µm. Differs from terricolous *Buellia* species in its branched-anastomosed paraphyses and parasitic life form.

We found it on *Baeomyces* on peaty soil together with *Micarea magellanica* and *Ochrolechia* sp. 16, peaty soil, hb. Etayo 22523.

Frutidella caesioatra (Schaer.) Kalb

Lecidea cf. *caesioatra* Schaer.

Thallus granulose, grey brown. Apothecia grey black, slightly white pruinose, convex, without margin. Hymenium greenish to greenish blue, K+ intensifying. Exciple of conglutinate

hyphae. Paraphyses gelatinized of branched hyphae, slightly widened apically. Asci 8-spored and ascospores simple, colorless, then brownish, 10.5–17 x 5.5–7.5 µm.

Bipolar, known from the North of Europe and America and also from Antarctica (Øvstedal & Lewis Smith, 2001). Fryday *et al.* (2019) recorded it from the Falkland Islands too.

4, on *Andraea*, hb. Etayo 22421. (conf. Palice). 16, on mineral soil in horizontal rock, U. Søchting 10237 (C), 10244. 21, on alpine soil, hb. Etayo 22729 (conf. Coppins).

Fuscopannaria mediterranea **(Tav.) P.M. Jørg.**

A corticolous species with bluish soralia. Already recorded from Tierra del Fuego (Jørgensen in Nash III *et al.* 2002).

7, on the bark of *N. pumilio*, hb. Etayo 22699 (conf. Jørgensen).

Fuscopannaria minor **(Darb.) P.M. Jørg.**

With small hemisphaeric apothecia without or with a thin crenulate margin. Ascospores are ellipsoidal, some shortly mucronate, 14–17 x 7–7.5 µm. According to Jørgensen (1999) it is a corticolous species that was known from New Zealand and South America; we found it usually growing on *Nothofagus* and bryophytes on peat.

10, on *N. betuloides*, U. Søchting 10156 (C). 15, on *N. pumilio*, J. Etayo 22502 (MAF), *ibidem*, hb. Etayo 22503 (det. Jørgensen). 38, on mossy soil, hb. Etayo 23017 (hb. Jørgensen).

Gondwania sublobulata **(Nyl.) S.Y. Kondr., Kärnefelt, Elix, A. Thell, J. Kim, M.-H. Jeong, N.-N. Yu, A.S. Kondr. & Hur**

Caloplaca sublobulata (Nyl.) Zahlbr.

This is the most common species of *Teloschistaceae* growing on seashore rocks. It has been recorded by Santesson in Naturhistoriska riksmuseet (2021), Redón and Quilhot (1977), Etayo and Sancho (2008), Quilhot *et al.* (2012) from Navarino and in Cape Horn Biosphere Reserve (Goffinet *et al.* 2012).

5, seashore rocks, hb. Etayo 22627; *ibidem* J. Etayo 22635 (MAF). 14, seashore rocks, hb. Etayo 22205, 22208 (MAF, UMAG), *ibidem*, hb. Etayo 22211. 28, seashore pebbles, hb. Etayo 22817. 29, seashore rocks, J. Etayo 22872 (UMAG). 45, seashore outcrops, J. Etayo 24522 (UMAG).

Gowardia nigricans **(Ach.) Halonen**

Alectoria nigricans (Ach.) Nyl.

Recorded by Redón and Quilhot (1977), Quilhot *et al.* (2012) and Laguna-Defior (2017) from Navarino. We found it on alpine soil with *Cetraria, Hypogymnia* sp., *Thamnolia vermicularis* and *Protousnea* sp.

3, on alpine soil, hb. Etayo 22274. 4, on acidic soil, hb. Etayo 22414. 16, on *Empetrum rubrum*, hb. Etayo 22525. 21, on alpine soil, J. Etayo 22730 (UMAG, MAF).

Graphis scripta **(L.) Ach.**

We found some small thalli on twigs of *Berberis*.

43 on twigs of *Berberis*, hb. Etayo 24538.

Gyalectaria jamesii **(Kantvilas) I. Schmitt, Kalb & Lumbsch**

Pertusaria jamesii Kantvilas

A description of this corticolous, tiny species with small, yellowish apothecia, 8-spored asci and large ascospores 24-38(–40) x 14–21 µm, appears in Kantvilas (1990) and Messuti and

Fig. 22. *Haematomma nothofagi*, growing on *Nothofagus* trunks. Photograph by Javier Etayo taken at an old forest in Róbalo Lake, Omora Park, on 19 January 2005.

Vobis (2002). It is a corticolous species. Ascospores in our material are larger 38-47 x 19-22 µm and we found on several substrates even growing on lichens.

In our oppinion there must be more than one species under this name. *G. jamesii* fit well with our corticolous and lignicolous samples. A similar taxon with 4-spored asci, *Pertusaria gyalectoides* Vězda, known from New Guinea (Weber, 1971) has significantly larger ascospores, 45–64 x 25–32 µm and larger apothecia with the type growing on *Trypethelium grossum*. We found several samples growing on lichens and with 4-spored asci that could belong to that species. Recorded from Navarino in Etayo and Sancho (2008).

2, on wood of *Nothofagus*, hb. Etayo 24639. 17, on bark of *N. pumilio*, hb. Etayo 22266. 26, on wood of *Nothofagus pumilio*, hb. Etayo 22941. 27, on bark of *Nothofagus*, U. Søchting 10334 (C). 42, old *N. pumilio* near the track, J. Etayo 24679 (UMAG).

Other samples with 4-spored asci: 1, on *Parmelia sulcata* on *N. pumilio*, J. Etayo 22136 (UMAG). 6, on old bark of *Nothofagus*, J. Etayo 22648 (MAF). 11, on *Pseudocyphellaria coriifolia* on *N. pumilio*, hb. Etayo 22463. 26, on old bark of *Nothofagus* sp., hb. Etayo 22961. 28, on *Xanthoparmelia submougeotii* on a boulder, hb. Etayo 22797. 38, on *Pseudocyphellaria granulata* on mossy trunk of *N. pumilio*, hb. Etayo 23005. 48, on squamules of *Cladonia macilenta* on *N. pumilio*, hb. Etayo 23106.

Haematomma erythromma (Nyl.) Zahlbr.

An endemic Antarctic-Subantarctic taxon (Søchting *et al.* 2004) relatively common on seashore rocks in Navarino.

14, on seashore rocks, with *Pertusaria spegazzinii*, hb. Etayo 22207. 12, on seashore schists, J. Etayo 22541 (UMAG). *Ibidem*, hb. Etayo 22542. *Ibidem*, MAF 15919. 28, steril on seashore rocks, hb. Etayo 22818. 41, on seashore rocks, hb. Etayo 23223 (UMAG).

Haematomma nothofagi **Kalb & Staiger**

Vobis *et al.* (1995) recorded *Haematomma hilare* Zahlbr. from Argentina, Chile and New Zealand. Staiger and Kalb (1995), however, distinguised this species as endemic from New Zealand and differentiated from *H. nothofagi*, an austral species growing in Australia, New Zealand and the southern regions of Argentina and Chile. In Chile it was recorded from La Araucanía, Los Lagos, Magallanes and Tierra del Fuego. Redón and Quilhot (1977) recorded it as *H. puniceum* from Navarino where it does not seem to be very common on trunks and branches of *Nothofagus* in well preserved woods (Fig. 22).

2, on bark of *N. pumilio*, hb. Etayo 24637 (hb. Galloway). 7, on bark of *N. pumilio*, hb. Etayo 22695. 17, on *N. pumilio*, hb. Etayo 22264. 20, on *Nothofagus* sp., hb. Etayo 22974. 26, on bark of *N. pumilio*, hb. Etayo 22940, 22968. 36, on bark of young *Nothofagus* near the track, hb. Etayo 22931. 57, on *N. pumilio*, hb. Etayo 24541.

Hafellia disciformis **(Fr.) Marbach & H. Mayrhofer**

Ascomata black, sessile, convex to subsphaerical, 0.4–0.7 mm diam. Hymenium inspersed with large crystals inside, paraphyses capitate, 3–6 µm. Asci 8-spored. Ascospores reniform, grey to brown, paler in the ends, wall thickened also in the ends, 20–25 x 8–11 µm. Navarino samples fit well with European samples, even with the Italian type (Marbach, pers. comm.).

7, bark of *N. pumilio*, hb. Etayo 22696 (hb. Marbach). 42, on dusty bark of old *N. pumilio* in the track, J. Etayo 24675 (UMAG).

Halecania fuscopannariae **Etayo & van den Boom**

Only known from one collection on the hypothallus of an unidentified *Fuscopannaria* growing on *Nothofagus pumilio*. Described in van den Boom (2009). Although considered a lichenicolous fungus, it was not recorded in Etayo and Sancho (2008) and belongs to a generally lichenized genus.

15, on hypothalus of *Fuscopannaria* on *N. pumilio*, hb. Etayo 22503.

Helocarpon crassipes **Th. Fr.**

We found granulate to sorediate, greenish colored thalli with sessile to shortly stipitate, black apothecia, without margin when mature; exciple made up of very thin, branched hyphae, only grey brown in the border (5–10 µm), hypothecium purple brown, K- or blue black; hymenium colorless, with very branched-anastomosed paraphyses, especially apically with a gelatinous, black to brown epihymenium, granulose, K-, 8-spored asci and simple, long ellipsoidal to fusiform ascospores, 16–22 x 4.5–6.5 µm.

Found together with *Cladonia* sp., *Endocena informis* and *Rimularia* sp. on soil or on bryophytes.

4, on mossy soil, hb. Etayo 22431 (conf. Palice). 42, on soil, hb. Etayo 24693. (hb. Galloway).

Heterodermia japonica **(Sato) Swinscow & Krog**

Cosmopolitan species that we found growing between other lichens like *e.g. Pseudocyphellaria coriifolia* or *Normandina pulchella*.

1, on *N. pumilio*, hb. Etayo 22134.

Heterodermia speciosa **(Wulfen) Trevis.**

We found only small thalli growing on a boulder together with *Physcia caesia, Pseudocyphellaria mallota* or *Ps. intricata*.

29, on a boulder inside the wood, hb. Etayo 22875.

Himantormia deusta **(Hook.f.) A. Thell & Søchting**

Nimisia fuegiae Kärnefelt & A. Tehl; *Nimisia deusta* (Hook. f.) Fryday

Records from Southern South America are cited in Elvebakk *et al.* (2014). Recorded by Etayo and Sancho (2008) and Laguna-Defior (2017) from Navarino.

16, on rocks, MAF 15902. 21, on rocks J. Etayo 22745 (UMAG). 22, on rocks, hb. Etayo 22772. 25, on rocks, hb. Etayo 22849 (UMAG). 31, on rocks, hb. Etayo 22914 (UMAG).

Hydropunctaria maura **(Wahlenb.) C. Keller, Gueidan & Thüs**

Verrucaria maura Wahlenb.

Recorded from Navarino by Redón and Quilhot (1977) and Quilhot *et al.* (2012).

5, on rocks splashed by seawater. hb. Etayo 22626 (UMAG).

Hypocenomyce scalaris **(Ach.) Choisy**

Thalli of this species from Navarino had abundant apothecia and were hardly sorediate squamules as recorded elsewhere (Purvis *et al.* 1992).

37, burnt wood of *Nothofagus*, hb. Etayo 22987, 22988 (UMAG).

Hypogymnia antarctica **(Bitt.) Dodge**

At least three species of lichenicolous fungi are able to grow on *H. antarctica*; some of them like *Lichenoconium erodens*, are very destructive. The species is rare in Navarino possibly due to these parasites because the most common *H. lugubris* is not attacked by parasites in the island. It has been recorded by Santesson in Naturhistoriska riksmuseet (2021), Redón and Quilhot (1977), Etayo and Sancho (2008) and Quilhot *et al.* (2012) from Navarino.

6, on *Nothofagus* sp., hb. Etayo 22667, 22668. 29, on mossy boulder, J. Etayo 22868 (MAF). 26, on *N. pumilio*, hb. Etayo 22949.

Hypogymnia austerodes **(Nyl.) Räsänen**

This species was recorded by Santesson in Fryday (2020) as collected in Navarino. We have not found it again.

Hypogymnia lugubris **var. lugubris (Pers.) Krog**

Really common in meadows and alpine soil, it grows also directly on small bushes of *Empetrum*. We found it with apothecia in areas near to sea. Recorded by Santesson in Naturhistoriska riksmuseet (2021), Redón and Quilhot (1977), Quilhot *et al.* (2012) and Laguna-Defior (2017) from Navarino.

3, on alpine soil with *Bolax*, J. Etayo 22277 (UMAG). 4, on acidic soil, hb. Etayo 22414. 16, on peaty soil, hb. Etayo 22504 (UMAG). 12, on soil and small twigs of bushes, J. Etayo 22540 (MAF). 18, on soil, hb. Etayo 22563. 22, on mineral soil on boulder, J. Etayo 22774 (MAF). 25, on mineral soil on rock, J. Etayo 22857 (MAF).

Hypogymnia lugubris **var. sublugubris (Müll. Arg.) Elix**

This variety is habitually corticolous and forms round, lobate, large thalli with abundant and large apothecia.

2, on *N. antarctica*, hb. Etayo 22154, hb. Etayo 24634. 5, on *N. pumilio*, J. Etayo 22634 (UMAG). 6, on *Nothofagus* sp., hb. Etayo 22671. 26, on old *N. pumilio*, J. Etayo 22970 (UMAG). 28, lignum of *Nothofagus*, J. Etayo 22785 (MAF). 29, on mossy rock, J. Etayo 22866 (MAF). 34, on *N. pumilio*, hb. Etayo 23039. 40, on mossy rock, J. Etayo 23238 (UMAG).

Hypogymnia pulverata **(Nyl. ex Crombie) Elix**

Similar to *H. lugubris* var. *sublugubris*, but with blue greyish, laminal soralia.

We found it intermixed with *H. lugubris* var. *sublugubris* and *Menegazzia vesiculosa* on young trunks of *Nothofagus*.

6, on *Nothofagus* sp., hb. Etayo 22671. 38, on *N. pumilio*, hb. Etayo 22997.

Hypotrachyna brevirhiza **(Kurok.) Hale**

This corticolous species with grey thallus with soralia and medullae K+ red is a pantropical species that occurs in southern Argentina and Chile (Elvebakk *et al.* 2014; Hale, 1975). Recorded by Santesson in Naturhistoriska riksmuseet (2021) from Navarino.

28, branches of *Nothofagus*, hb. Etayo 22802.

Hypotrachyna sinuosa **(Sm.) Hale**

It appears to be a common species in southern South America (Elvebakk *et al.* 2014). Some specimens fit well with *H. flavovirens* (Kurok.) Hale but Elvebakk *et al.* (2014) reduced it to a synonym of *H. sinuosa*.

We found it with *Hypogymnia lugubris* var. *sublugubris, Nephromopsis chlorophylla* and *Menegazzia globulifera*. It has been recorded by Santesson in Naturhistoriska riksmuseet (2021) and Quilhot *et al.* (2012) from Navarino.

2, on *N. antarctica*, hb. Etayo 22143. 5, on *N. pumilio*, J. Etayo 22634 (UMAG). 28, on *Berberis microphylla*, hb. Etayo 22811. 42, old and dusty *N. pumilio* near the track, hb. Etayo 24674.

Hypotrachyna sorocheila **(Vain.) Divakar, A. Crespo, Sipman, Elix & Lumbsch**

Cetrariastrum sorocheilum (Vain.) Culb. & Culb.

We found it on rocks. Recorded by Etayo and Sancho (2008).

5, boulder, J. Etayo 22677 (UMAG). 14, on humus and bryophytes on subvertical wall, hb. Etayo 22199. 29, forming large thalli on a boulder, hb. Etayo 22896.

Hypotrachyna swinscowii **(Hale) Krog & Swinscow**

Records in Southern South America appear in Elvebakk *et al.* (2014). It appears in the Santesson's records in Fryday (2020) from Navarino.

Japewia tornoensis **(Nyl.) Tønsberg**

Characteristics of this species are its convex ascomata, without exciple, similar to *Arthonia*, reddish brown to black, a colorless to almost red hypothecium, branched-anastomosed paraphyses covered by a gel, asci of *Lecanora*-type and ascospores with a thick wall, c. 2 µm, 14–21 x 9–13 µm. Forming small thalli intermixed with *Lecanora epibryon*, *Parmelia saxatilis*, bryophytes and small herbs. We found it on thin twigs in alpine tundra as well.

It is a circumpolar species in the Northern Hemisphere, but also known from South to Central America, Subantarctic islands and Antarctica (Tønsberg, 1990; Tønsberg in Smith *et al.* 2009).

2, twigs of *Empetrum*, hb. Etayo 24671. 4, between *Lecanora epibryon* on small alpine herbs, hb. Etayo 22408. 22, on *Parmelia* gr. *saxatilis* on mineral soil in a slope, hb. Etayo 22768. 31, on bryophytes and *Ochrolechia androgyna* on alpine soil, J. Etayo 22920 (MAF). 33, on alpine soil between a grey *Lepraria*, hb. Etayo 22925.

Karschia sp.

At least in one locality we found a *Karschia* with epithecium and external exciple tinged dark blue, K-, asci 55–65 x 26–30 µm and ascospores initially hyaline, then brown, 20.5–23 x

9–12 µm. In other localities we found other similar samples with very similar ascospores, but brown pigment in exciple and epithecium, more typical for several species of *Karschia*. We have not studied in detail the two morphs.

2, *N. antarctica*, hb. Etayo 22157, 22178, 22183.

Lecanactis fraudans (Räsänen) Tehler

Lecanactis fraudans was known from the type locality in Tierra del Fuego, Fuegia media, Río Bueno, on bark of *N. pumilio*. We found it abundantly on wood and bark of the same tree in Navarino. Some features of this species are: ascomata flat with prominent margin and white pruina, 0.5–1.1 mm diam. Ascospores (0–)2–3-septate, with one end broader than the opposite, 26–33 x 4.5–6 µm. Some of the collected thalli are sorediate, with grey colored, grouped soralia, intermixed with scarce apothecia similar to the non-sorediate specimens.

Ascospores in Navarino samples are very similar to those recorded by Tehler (1992). Egea and Torrente (1994) distinguished the New Zealand species *L. exigua* Egea & Torrente based on larger ascomata and slightly thinner spores. Recorded by Etayo and Sancho (2008).

2, on bark of old *N. pumilio*, hb. Etayo 24651. 8, on old *Nothofagus* sp., hb. Etayo 22708; *ibidem* (sorediate), hb. Etayo 22712 (MAF). *Ibidem*, on wood of *N. pumilio*, hb. Etayo 22229; *ibidem*, on bark of *N. pumilio*, hb. Etayo 22227, 22228. 36, on bark of old *Nothofagus* sp., hb. Etayo 22932 (MAF); *ibidem,* hb. Etayo 22933. 42, on bark of *N. pumilio*, J. Etayo 24683 (UMAG).

Lecanora confusa Almb.

We found this species on thin twigs of *Berberis* and *Nothofagus* in places near the shore with species like *Arthonia radiata* and cf. *Athallia holocarpa*.

28, on twigs of *Berberis microphylla*, hb. Etayo 22815. 43 on twigs of *Berberis* and *Nothofagus*, hb. Etayo 24532.

Lecanora epibryon (Ach.) Ach.

Lumbsch (1994) recorded two subspecies that differenciates only in the presence of stictic acid, ssp. *broccha* (Nyl.) Lumbsch and without it, ssp. *xanthophora* Lumbsch. Both taxa are morphologicaly almost identical and have similar distribution. From Navarino Redón and Quilhot (1977) recorded *L. parmelina* Zahlbr., that according Lumbsch (1994) is a synonym of the ssp. *broccha*. At one occasion we found a sorediate thallus with well-delimited soralia even in the margin of apothecia that could fit well with *Lecanora novaeguineae* Lumbsch (Lumbsch, 1994), a species only known from Papua-New Guinea.

It has been recorded on alpine soil together with species like *Cladonia rangiferina, Pseudocyphellaria freycinetii* and *Thamnolia vermicularis*, and it can even grow over them (Etayo & Sancho, 2008).

3, on humus, J. Etayo 22275 (UMAG). 4, on acidic soil, J. Etayo 22408 (hb. Etayo). 16, on peaty soil, J. Etayo 22517 (MAF). 24, on soil, hb. Etayo 23196. 31, on soil, hb. Etayo 22913.

Lecanora expallens Ach.

Apparently very common on branches and trunks of *Nothofagus*, sometimes occupying large surfaces, rarely with apothecia (22790). It has been recorded from the Falkland Islands recently (Fryday *et al.* 2019; Orange, 2016).

5, on branches of *Nothofagus*, hb. Etayo 22625. 6, on old bark of *Nothofagus*, hb. Etayo 22650, 22649 (MAF). 15, with apothecia on wood of *N. pumilio*, hb. Etayo 22493. 28, on *Nothofagus* sp. hb. Etayo 22790 (UMAG). 39, on trunk of *Nothofagus* sp., J. Etayo 23020 (hb. Etayo, MAF). 42,

on bark of *N. pumilio*, hb. Etayo 24686. 43 on wood of *N. betuloides*, hb. Etayo 24531 (parasited by *Skyttea*). *Ibidem*, hb. Etayo 24687 (hb. Galloway). 2, on trunk of *N. pumilio*, hb. Etayo 22189. 11, on *N. pumilio*, hb. Etayo 22262. 12, on *N. betuloides*, hb. Etayo 22537 (MAF).

Lecanora flotoviana **Spreng.**

L. "flotowiana" Spreng.

Forming small and dispersed thalli between species like *Astroplaca ambitiosa* and *Gondwania sublobulata* on seashore rocks. This species is known from the Northern Hemisphere on wood and plant remains but has larger apothecia, to 3.3 mm diam. (Laundon, 2003) and dark brown disc without pruina. Curiously, the lectotype of *L. flotoviana* is lichenicolous on *Phaeophyscia sciastra* (Śliwa, 2007). One of our specimens grew on the thallus margin of *Peltigera collina*, and had peltate and sinuose, slightly pruinose apothecia, 0.8–1.1 mm diam., similar to *L. zosterae* (Ach.) Nyl.

A cosmopolitan species relatively common in Antarctica but easily mistaken for other small *Lecanora* like *L. dispersa* and *L. albescens* (Søchting *et al.* 2004). In Etayo and Sancho (2008) two species from the *Lecanora dispersa* group and *L.* cf. *semipallida* are recorded from Navarino and can belong here.

5, seashore rocks, J. Etayo 22635 (MAF). 14, on seashore rocks, hb. Etayo 22205. 12, on seashore rocks, hb. Etayo 22532. 29, on seashore rocks, J. Etayo 22872 (UMAG); *ibidem*, on *Peltigera collina* on seashore rock, hb. Etayo 22880; *ibidem*, seashore rock exposed W, U. Søchting 10361 (C). 44, on seashore rocks, J. Etayo 24522 (UMAG).

Lecanora fuegiensis **(Räsänen) Guderley**

A corticolous, *L. subfusca*-group species with almost globose ascospores and large crystals in the exciple. Recorded as *Lecanora* cf. *fuegiensis* by Etayo and Sancho (2008).

2, on *Nothofagus pumilio*, hb. Etayo 24661 (hb. Galloway). *Ibidem*, on *N. pumilio*, hb. Etayo 24655. 15, on bark of *N. pumilio*, hb. Etayo 22490. 26, on *N. pumilio*, hb. Etayo 22940.

Lecanora impudens **Degel.**

A sorediate, corticolous species with small apothecia of pink colored disk and white pruina.

2, on old *Nothofagus pumilio*, hb. Etayo 24667 (hb. Galloway). 34, on bark of old *N. pumilio*, hb. Etayo 23061. 39, on bark of *Nothofagus* sp., hb. Etayo 23064 (MAF).

Lecanora intricata **(Ach.) Ach.**

24, on boulder together with *Tephromela atra*, J. Etayo 22838 (UMAG).

Lecanora physciella **(Darb.) Hertel**

Considered as an Antarctic endemic (Søchting *et al.* 2004), now found in Navarino.

3, on alpine soil with *Bolax*, J. Etayo 22271 (UMAG). 4, on acidic soil, hb. Etayo 22408. 16, on peaty soil and grasses, J. Etayo 22517 (MAF); *ibidem* on *Cl. rangiferina* on soil, hb. Etayo 22520; *ibidem*, on peaty soil, U. Søchting 10241 (C). 18, on bryophytes on soil, hb. Etayo 22579. *Ibidem*, on grasses J. Etayo 22601 (MAF). 25, on humus on boulder, J. Etayo 22848 (UMAG). 33, on humus on *Bolax*, hb. Etayo 22913. 39, on dead *Bolax*, J. Etayo 23027 (UMAG).

Lecanora polytropa **(Hoffm.) Rabenh.**

We found small thalli, sometimes almost reduced to apothecia between other lichens like *Rhizocarpon geographicum* and *R. polycarpon*. It is a bipolar-alpine species recorded from Antarctica as well (Søchting *et al.* 2004).

2, pebbles on the soil, hb. Etayo 24656. 4, siliceous pebbles on the soil, hb. Etayo 22430. 12, on seashore rocks, hb. Etayo 22531. 21, on a boulder, J. Etayo 22752 (UMAG). MAF 15916 (UMAG).

Lecanora rupicola **(L.) Zahlbr.**

On seashore rocks, we found it parasitized by *Rimularia insularis*. It is similar to var. *bicincta* by its dark colored ascomata with a clear margin.

12, on seashore rock, hb. Etayo 22533; *ibidem*, J. Etayo 22541 (UMAG).

Lecanora symmicta **(Ach.) Ach.**

Recorded by Fryday *et al.* (2019) from the Falkland Islands and Etayo and Sancho (2008) from Navarino.

43, on thin twigs of *N. betuloides*, hb. Etayo 24532.

Lecidea atrobrunnea **(Ram. ex Lam. et DC.) Schaerer**

Øvstedal and Lewis Smith (2001) pointed out its variability in Antarctica, specially concerning hypothecium pigmentation. Our samples have a dark brown hypothecium and sometimes have dispersed areolas surrounded by a thick black hypothallus. Other Antarctic records appear in Vainio (1903) and Hertel (1984).

4, on schists, hb. Etayo 22425. 21, on rock, J. Etayo 22752 (UMAG); *ibidem* hb. Etayo 22753. 16, on rock, J. Etayo 15855 (MAF).

"Lecidea" globulispora **Nyl.**

Lecidea antiloga Stirt.

Thallus immersed, hardly visible, forming a film over acrocarpous bryophytes. Apothecia (120–)200–300(–400) µm diam., weakly convex, black; margin persistent, concolorous with disc, colorless, brownish in surface. Hymenium colorless, 40–50 µm tall, I+ blue. Epihymenium dark green, K+ intense green, N+ reddish brown. Hypothecium colorless. Paraphyses branched and anastomosed especially at the base c. 2 µm thick, with dark brown caps to 3–4 µm, surrounded by a dark green gel. Asci clavate, 8-spored, biseriate, *Bilimbia*-type, 36–40 x 10–14 µm. Ascospores colorless, simple, subglobose, with a large central oil drop, with a thin wall, 5.5–7 µm diam.

Several species of *Lecanora* and *Lecidea* with globose to subglobose ascospores have been described. The corticolous or lignicolous *Lecidea globulispora* has a fundamentally northern distribution (described as *Lecidea antiloga* from there) but also a scattered distribution in southern South America beeing particularly frequent on the nearby Falkland Islands. Alstrup (1993) described *Lecanora polysphaeridia* Alstrup on dead twigs and leaves of *Cassiope* in Greenland, but this species has polysporous asci, 24–32 per ascus. *Lecanora muscigena* Øvstedal & Fryday (Øvstedal *et al.* 2020) growing on terricolous bryophytes, has also globose ascospores, (6–)7.35±0.813(–9) µm diam. but it has creamy-white, effigurate squamules with a black hypothallus. Other similar corticolous species are: *Lecanora fuscescens* (Sommerf.) Nyl. with larger and more ellipsoidal ascospores, c. 8–9 × 5–6 µm, or the corticolous or lignicolous *L. boligera* (Th. Fr.) Hedl., *L. nylanderi* P. Crouan & H. Crouan or *L. paddensis* (Tuck.) T. Sprib., commented in Øvstedal *et al.* (2020).

This species seems to be always associated with thalli of *Endocena informis* and *Ochrolechia frigida* and near whitish decolorated bryophytes.

4, on bryophytes growing intermixed in *Bolax*, hb. Etayo 22436, 22437, 22440.

Lecidea promiscens **Nyl.**

Bipolar species known in the south from Australia, Argentina and Chile (Hertel, 1997). Recorded in Navarino by Etayo and Sancho (2008).

21, on rocks with *L. atrobrunnea*, hb. Etayo 22753 (UMAG, MAF). 25, on rocks, J. Etayo 22853 (MAF). 29, on rocks, hb. Etayo 22900 (MAF). 39, on pebbles on the ground, hb. Etayo 23030. 3, on pebbles on the ground, hb. Etayo 22296.

Lecidea santessonii **Hertel**

Navarino samples have dispersed squamules and are surrounded by a fimbriate, black hypothallus; they differ from *L. atrobrunnea* by their I- medulla. According to Hertel (1997), it was known from Cabo de Hornos.

2, pebbles on the ground, hb. Etayo 24659, 24666.

Lecidea turgidula **Fr.**

Growing on wood of *Nothofagus*, we found samples without (endophloeodic) and with a whitish thallus.

15, on wood of *N. pumilio*, hb. Etayo 22493. 36, on wood of *Nothofagus* near the track, J. Etayo 22931 (UMAG).

Lecidella carpathica **Körb.**

We found it with *Porina chlorotica* on seashore rocks. Recorded from the Falkland Islands by Fryday *et al.* (2019).

5, on seashore rocks, hb. Etayo 22616.

Lecidella elaeochroma **(Ach.) M. Choisy**

Recorded from the Falkland Islands by Fryday *et al.* (2019) but seems to be rare in Navarino.

37, on a big fallen trunk on beach, hb. Etayo 22986.

Lecidella patavina **(A. Massal.) Knoph & Leuckert**

We found only one sample with very convex apothecia with yellow pruina and large pycnidia on the thallus.

14, on seashore rocks, upper part, hb. Etayo 22210.

Lecidella stigmatea **(Ach.) Hertel & Leuckert**

Recorded by Ruprecht *et al.* (2020), probably from Cerro Bandera (Navarino) but without exact location.

28, on seashore rocks with *Pertusaria monogona*, hb. Etayo 22803.

Lecidella wulfenii **(Hepp) Körb.**

Forming small cushions between other lichens. Bipolar species also known from Antarctica (Øvstedal & Lewis Smith, 2001) and the Falkland Islands (Fryday *et al.* 2019).

29, on *Cetrariastrum sorocheilum* on rock, hb. Etayo 22896. 33, on *Bolax*, U. Søchting 10393 (C).

Lecidoma demissum **(Rustr.) Gotth. Schneid. & Hertel**

Bipolar and widely collected in the Northern and Southern Hemisphere, it is known from Antarctica and the South Orkney Islands (Øvstedal & Lewis Smith, 2001). We found it on rotting plants in alpine peat bogs together with *Lopadium pezizoideum* and *Lepraria* sp.

33, on rotting plants, hb. Etayo 22922.

Lepra amara **(Ach.) Hafellner**

Pertusaria amara (Ach.) Nyl.

With a similar morphology as European morphs, except that some samples have very large soralia (to 1 cm diam.) it was not recorded by Messuti and Vobis (2002) from Tierra del Fuego. Recorded as *Pertusaria "amara"* by Etayo and Sancho (2008).

5, on seashore rocks, hb. Etayo 22614. 6, on seashore rocks, hb. Etayo 22664. 26, on *Nothofagus pumilio*, hb. Etayo 22942. 34, on old bark of *N. pumilio*, hb. Etayo 23061. 41, on seashore rocks, J. Etayo 23222 (MAF).

Lepra monogona **(Nyl.) Hafellner**

Pertusaria monogona Nyl.

Characteristics are its K+ red thallus, disciform apothecia similar to soralia, asci 1-spored and ascospores large (140–180 x 60–85 µm) in our sample.

28, on seashore rocks, hb. Etayo 22803.

Lepraria caesioalba **(B. de Lesd.) J.R. Laundon**

Recorded from the Falkland Islands by Fryday *et al.* (2019).

16, on soil in a peat bog, hb. Etayo 22515. 13, on a vertical wall together with *Cystocoleus ebeneus*, hb. Etayo 22196. 21, on acidic soil, hb. Etayo 22746. 33, on acid alpine soil, hb. Etayo 22925. 38, on humus on rock, J. Etayo 23011 (UMAG). 37, (*L.* cf. *caesioalba*) on maritime rocks, J. Etayo 22991 (MAF).

Lepraria vouauxii **(Hue) R.C. Harris**

21, on humus on rocks, hb. Etayo 22754.

Lepraria membranacea **(Dicks.) Vainio**

Leproloma membranaceum (Dicks.) Vainio

41, on bryophytes on seashore rocks, hb. Etayo 23219.

Leptogium decipiens **P. M. Jørg.**

This species grows amongst other saxicolous lichens and has a thallus of small lobules covered by many small coralloid isidia.

29, on mossy rocks with *Peltigera collina*, J. Etayo 22867 (MAF); *ibidem*, U. Søchting 10358 (sub. *L.* cf. *laceroides*), 10362, 10363 (hb. Jørgensen).

Leptogium mandonii **P. M. Jørg.**

This is the isidiate counterpart of *L. andinum*, and its features are a lower part covered by long, white hairs of cylindrical cells and subglobose to cylindrical isidia, generally grouped on upper part of the thallus. Jørgensen (1975) studied many samples from Southern Chile (Punta Arenas, Torres del Paine, Puerto Natales and Canal Beagle).

3, on *Bolax*, J. Etayo 22294 (UMAG). 5, on humus on rocks, hb. Etayo 22633. 14, on humus on shaded wall, hb. Etayo 22202. 38, on soil in a slope, hb. Etayo 23009.

Leptogium menziesii **(Ach.) Mont.**

Characterized by its smooth thallus with laminal or marginal phyllidia and with long, white hairs below. Furthermore, it forms apothecia with smooth margins and grows on terricolous or epiphytic bryophytes. Recorded from Navarino by Santesson in Fryday (2020), Redón and Quilhot (1977), Etayo and Sancho (2008) and Quilhot *et al.* (2012). (Fig. 23).

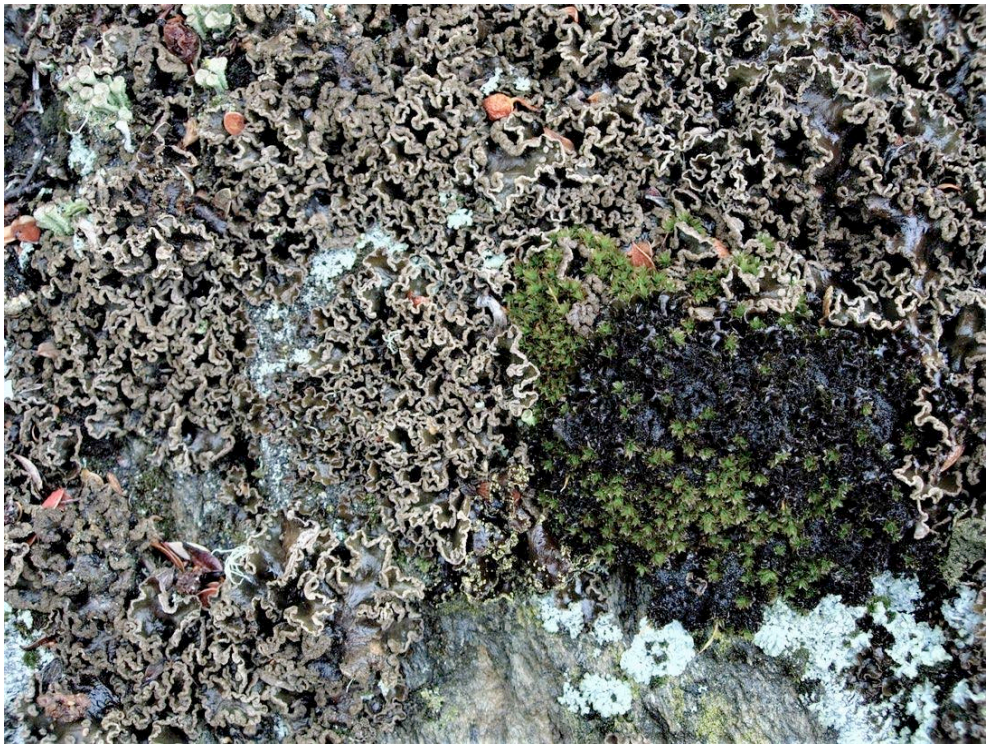

Fig. 23. ***Peltigera collina*** is a common species of ***Peltigera*** and in a different way it prefers ***Nothofagus*** trunks. In the photography living with ***Leptogium menziesii***. 2, on mossy soil, hb. Etayo 22180 (MAF). 15, on soil, J. Etayo 22472 (MAF). Ibidem, on trunk of ***N. pumilio***, hb. Etayo 22487. 17, on soil under ***N. pumilio***, hb. Etayo 22269, 22270 (UMAG). 18, on trunk of ***Nothofagus*** sp., J. Etayo 22564 (UMAG). 27, on a boulder, U. Søchting 10331 (C). 34, on mossy base of ***Nothofagus***, hb. Etayo 23037; ibidem, J. Etayo 23050 (MAF). 38, on humus in the forest, hb. Etayo 22995.

Leptogium puberulum **Hue**

According to Jørgensen (2001), this species is similar to *L. menziesii* but smaller, with smaller lobules that are more incised, and with smaller ascospores. Our samples were sterile.

found growing on the base of a boulder forming large, concentric thalli, up to 0.5 m diam., without apothecia but with conidiomata.

23, on siliceous boulder, hb. Etayo 22761 (UMAG); *ibidem*, on base of rock, U. Søchting 10270 (C, det. Jørg.).

Lichenomphalia cf. umbellifera **(L.) Redhead, Lutzoni, Moncalvo & Vilgalys**

We found only sterile small granules *Botrydina*-type growing directly on soil.

4, on alpine soil, J. Etayo 22433 (MAF).

Lopadium pezizoideum **(Ach.) Körber**

This seems to be the first austral record of this species considered living only in the Northern Hemisphere. We found it on rotten plants together with *Lecidoma demissum* and *Lepraria* sp.

33, on rotten plants, hb. Etayo 22922.

Massalongia patagonica **Kitaura & Lorenz**

Massalongia carnosa (Dicks.) Körb. was said to be a bipolar species that reaches Antarctica (Søchting *et al.* 2004) and was recently recorded from the Falkland Islands by Fryday *et al.* (2019). Jørgensen *et al.* (2019), however, stated that all Southern Hemisphere records of *M. carnosa* are really *M. patagonica*. It was known from Argentina, Chile and Malvinas Islands in South America.

1, on soil, MAF 15993. 13, on a vertical wall with *Cystocoleus ebeneus*, hb. Etayo 22196. 11, on soil with *O. frigida*, hb. Etayo 22241. 28, on bryophytes, J. Etayo 22807 (UMAG).

Mastodia tessellata **(Hook. f. & Harv.) Hook. f. & Harv.**

Turgidosculum complicatulum (Nyl.) J. Kohlm. & E. Kohlm., *Kohlmeyera complicatula* (Nyl.) S. Schatz

Recorded from Navarino by Garrido-Benavent *et al.* (2016, 2018) at the north east coast. This is the only known case of an ascomycete involving a foliose, green algae.

Megalaria grossa **(Pers. ex Nyl.) Hafellner**

Catillaria grossa (Pers.) Körb.

Interestingly, this unmistakable epiphytic species (in the Northern Hemisphere) appears in Navarino on *Bolax* cushions or on bryophytes. Galloway (2007) reported it from New Zealand, mainly on bark of trees and shrubs but also on dead tussock bases. Recorded from the Falkland Islands by Fryday *et al.* (2019).

3, on *Bolax*, hb. Etayo 22286. 5, on *Nothofagus* branches, hb. Etayo 22625. 32, on saxicolous bryophytes, J. Etayo 23231 (MAF). 43 on bark of *Berberis*, hb. Etayo 24533.

Megalaria phaeolomiza **(I.M. Lamb) Fryday & Lendemer**

With granulose thallus, sometimes hairy (in microscope with erect hyphae) and similar to *Agonimia*. Apothecia brown, crenulate; exciple cortex blue, gelatinized and composed of wide cells, 3–8 µm diam. Hypothecium reddish brown; paraphyses apices composed of moniliform cells and ascospores 17–19 x 8–13 µm with a thick wall, 1–1.5 µm.

2, on *N. antarctica*, hb. Etayo 22154. 11, on *N. pumilio*, hb. Etayo 22258. 26, on *N. pumilio*, J. Etayo 22944 (UMAG). 27, on young *N. pumilio*, hb. Etayo 22819. 36, young *Nothofagus* near the track, hb. Etayo 22928 (det. Sipman & A. Fryday).

Megaspora verrucosa **(Ach.) Hafellner & V. Wirth**

A rather uncommon species on Navarino mountains. More or less cosmopolitan, in South America it has been cited from Venezuela (Purvis *et al.* 1992), Argentina (Messuti & Vobis, 2002) and Chile (Galloway & Quilhot, 1998) at least. It reaches the Antarctic (Søchting *et al.* 2004).

16, on tundra floor, hb. Etayo 22518. 21, on *Empetrum*, hb. Etayo 22737. 24, on terrestrial bryophytes, J. Etayo 22836 (UMAG). 25, on rock humus, J. Etayo 22848 (UMAG). 31, directly on soil, practically without thallus, hb. Etayo 22913. 39, on dead *Bolax*, with *Lecanora epibryon*, J. Etayo 23027 (UMAG). *Ibidem*, MAF 15898 (UMAG).

Melanohalea elegantula **(Zahlbr.) O. Blanco, A. Crespo, Divakar, Essl., D. Hawksw. & Lumbsch**

Melanelia elegantula (Zahlbr.) Essl.

A fairly common species in Navarino, especially on young tree bark. With a rough surface and scattered isidia, sometimes with apothecia in the central area. A mild temperate species, collected in Antarctica on wood (Øvstedal & Lewis Smith, 2001). Recorded from the Falkland Islands by Fryday *et al.* (2019) and by Etayo and Sancho (2008) from Navarino.

2, on *N. antarctica*, hb. Etayo 22145. 5, on young *N. pumilio*, J. Etayo 22607 (UMAG). 12, on *N. betuloides*, hb. Etayo 22529. 14, subvertical rock, J. Etayo 22213 (MAF). 15, bark of *N. pumilio*, hb. Etayo 22489. 28, on *Nothofagus* sp., J. Etayo 22791 (UMAG). 29, on thick *Nothofagus*, hb. Etayo, 22861 (MAF, UMAG). 42, old *N. pumilio* roadside, with dust impregnation, hb. Etayo 24674.

Melanohalea ushuaiensis (Zahlbr.) O. Blanco, A. Crespo, Divakar, Essl., D. Hawksw. & Lumbsch
Melanelia ushuaiensis **(Zahlbr.) Essl**.

Common in Southern South America (Elvebakk *et al.* 2014; Esslinger, 1977). It has been recorded by Santesson in Naturhistoriska riksmuseet (2021), Redón and Quilhot (1977), Etayo and Sancho (2008) and Quilhot *et al.* (2012) from Navarino.

2, *Nothofagus pumilio*, hb. Etayo 24661. 5, on shales near the sea, hb. Etayo 22629. 43 *Berberis* trunk, hb. Etayo 24533, *ibidem*, *Berberis* twigs, J. Etayo 24534 (UMAG).

Menegazzia cincinnata (Ach.) Bitter

Yellow thallus, without soralia and with abundant thick and crenulate protruding ridges. Normally asci with 8 ascospores, that are hyaline and 24–30 x 12–17 µm. One of the samples (hb. Etayo 22947) has 4-spored asci, thallus with only a few holes and abundant pycnidia with pinkish to black ostiole and bacilliform conidia, 4–5 x 0.5 µm.

Recorded by Etayo and Sancho (2008) and Quilhot *et al.* (2012) from Navarino. Santesson (1942) recorded it from the entire Patagonian region, but not from Navarino.

11, on *N. pumilio*, hb. Etayo 22459. 19, on *N. pumilio*, hb. Etayo 22569.

26, on *N. pumilio*, hb. Etayo 22947.

Menegazzia globulifera R. Sant.

This species is characterised by its yellowish colour, usually sterile thallus and vesiculous soralia. Recorded as *M.* cf. *globulifera* already by Santesson in Naturhistoriska riksmuseet (2021), Redón and Quilhot (1977), Bjerke and Elvebakk(2001), Trest *et al.* (2015), Etayo and Sancho (2008) and Quilhot *et al.* (2012) from Navarino.

5, on *N. pumilio*, J. Etayo 22634 (UMAG). 6, on *Nothofagus* sp. Etayo 22670. 28, on *Nothofagus* sp. Etayo 22783. 36, on young *Nothofagus* on the edge of the slope, hb. Etayo 22929 (MAF, UMAG).

Menegazzia magellanica R. Sant.

Recorded by Santesson in Fryday (2020) from Hoste. Recorded as cf. already by Trest *et al.* (2015). Redón and Quilhot (1977) and Etayo and Sancho (2008) cited it from Navarino.

1, *N. pumilio*, J. Etayo 22139 (UMAG). 2, *N. pumilio*, hb. Etayo 22163. 5, on young *N. pumilio*, J. Etayo 22608 (MAF). 7, *N. pumilio* bark, hb. Etayo 22699. 10, on *N. betuloides* bark, hb. Etayo 22237. 11, on *N. pumilio*, hb. Etayo 22263. 19, on *N. pumilio*, hb. Etayo 22591. 29, rocks under the forest, hb. Etayo 22875; *ibidem*, 29, over *Nothofagus* sp., J. Etayo 22897 (UMAG). 42, *N. pumilio*, hb. Etayo 24692.

Menegazzia neozelandica (Zahlbr.) P. James

Characteristic by soralia formed around thallus holes. Bjerke and Elvebakk (2001) recorded along Chile but not in the most meridional places.

28, on *Nothofagus* sp., hb. Etayo 22780.

Menegazzia sanguinescens (Räsänen) R. Sant.

This is the largest *Menegazzia* in Navarino, it has wide, grey and long lobes that run parallel; the soralia are laminar and capitate. The medulla is UV+ blue-white and K+ yellow. Santesson in Fryday (2020) recorded it from Hoste and Redón and Quilhot (1977), Bjerke and Elvebakk (2001) and Quilhot *et al.* (2012) from Navarino.

11, on *Nothofagus pumilio*, hb. Etayo 22458. 26, on *N. pumilio*, J. Etayo 22945 (MAF).

Menegazzia tenuis **R. Sant**.

Recorded by Santesson in Fryday (2020) from Navarino and Hoste.

34, on *N. pumilio*, hb. Etayo 23054.

Menegazzia violascens **(Räsänen) Bjerke**

Recorded by Quilhot *et al.* (2012) from Navarino.

Micarea cf. alabastrites **(Nyl.) Coppins**

Both its external appearance, white subglobose ascomata, and internal, excipulum composed of radial hyphae that are well visible with K, regularly branched paraphyses and triseptate ascospores, 10–16(–19) x 2–3 µm remind this species.

Directly on the bark of young *Nothofagus*, next to *Lecanora* sp., *Ochrolechia pallescens*, *Megalaria phaeolomiza*, but also on old bark next to *Caliciaceae* like *Calicium adspersum* or *C. glaucellum*.

34, on old bark of *N. pumilio*, hb. Etayo 23057. 36, young *Nothofagus* on the edge of the slope, hb. Etayo 22928.

Micarea denigrata **(Fr.) Hedl.**

Characterised by its endoxylic or granular thallus, black, initially convex ascomata, with olive green epihymenium, K+ purple, abundantly branched paraphyses, 0.8–1.2 µm thick and (0–)1-septate ascospores. See differences to *M. misella* in Coppins (1983). According to this author it is restricted to the Northern Hemisphere.

12, in *Nothofagus* wood, hb. Etayo 22546.

Micarea incrassata **Hedl.**

Characterised by its granular thallus with intermixed brown cephalodia and black, convex apothecia, with a blue-green epihymenium and a thick reddish-brown hypothecium, K-. The ascospores, 9–12 x 3.5–4 µm, are simple or uniseptate.

We find it growing at sea level next to *Catapyrenium squamulosum*. Known from European and North American Arctic-alpine regions, as well as from the Kerguelen Islands and Antarctica (Søchting *et al.* 2004), being the only Arctic-alpine *Micarea* of bipolar distribution (Coppins, 1983). Recorded from the Falkland Islands by Fryday *et al.* (2019).

14, on soil, hb. Etayo 22217.

Micarea lignaria var. lignaria **(Ach.) Hedl.**

Recorded from the Falkland Islands by Fryday *et al.* (2019).

36, on wood, MAF 16088 (UMAG).

Micarea lignaria var. endoleuca **(Leighton) Coppins**

This variety is characterised by its thallus, which is C+ orange due to the presence of xanthones. Our specimens have apothecia of light blue or blue-grey colour and completely hyaline hypothecium.

2, *Nothofagus* wood, hb.. Etayo 24635. 42, old *N. pumilio* roadside, with dust supply, J. Etayo 24677 (UMAG).

Micarea magellanica **(Müll. Arg.) Fryday**

M. austroternaria Coppins & Kantvilas

M. magellanica is characterised by its well-developed, brownish-grey thallus, with convex ascomata and without a thallus margin, grouped together to form shapeless or tuberculate black masses, greenish epithecium, greenish-grey hypothecium and excipulum with a brown margin. Ascus of *Micarea*-type and ascospores 0–3-septate, of 10.5–16 x 4–5 µm in our specimens.

Austral species known from Chile (Chiloé P.N.), Tasmania (Coppins & Kantvilas, 1990) and New Zealand (Galloway, 2007). Its typical habitat is terrestrial in boggy soils in cold regions of the Southern Hemisphere. Coppins and Kantvilas (1990) discuss its affinity with *M. ternaria* from the Northern Hemisphere and the possibility that both are conspecific. Recorded by Etayo and Sancho (2008).

16, tundra soil, hb. Etayo 22522, 22523.

Micarea melaena **(Nyl.) Hedl.**

Our specimen is similar to *M. lignaria* but has ascospores with 1(–3) septa, 13–18 x 5–6 µm. Black, shiny, convex to hemispherical apothecia. Blue-green epihymenium and hymenium, K+ green, C-; black-green hypothecium, K+ green. *Micarea ternaria* (Nyl.) Vězda, differs in a less pigmented hypothecium. Recorded from the Falkland Islands by Fryday *et al.* (2019).

24, on bryophytes, hb. Etayo 22839.

Micarea peliocarpa **(Anzi) Coppins & R. Sant.**

According to Coppins (1983) this species, common in Europe and present in North America, is also known from New Zealand, therefore it was not unlikely to be found in South America.

Relatively common among *Xylographa parallela* thalli on fallen wood.

2, fallen wood, hb. Etayo 24646. 8, trunk of *N. pumilio*, hb. Etayo 24691.

Micarea prasinella **(Jutta) I.M. Lamb**

Granular thallus, green, with micareoid photobiont, slightly pedicellated apothecia, black, gelatinous hymenium, ascus of *Catinaria*-type and ascospores 1-septate.

This species was known from Alaska, Scotland, Oregon, Chile, New Zealand and Tasmania (Smith *et al.* 2009).

2, decomposing fallen wood, hb. Etayo 24638 (MSC0086669).

Micarea synotheoides **(Nyl.) Coppins**

Our sample is very similar to the Pyrenean specimens, but it has the epihymenium and a large part of the hymenium of a darker colour, brown-black, K+ violet. Primarily European in distribution and oceanic in nature, it also appears in Macaronesia and Japan (Coppins, 1983), where the type locality is located. New to Chile and Southern South America.

10, on bark of *N. betuloides*, hb. Etayo 22237.

Microcalicium conversum Tibell

Characterised by its short stipitate apothecia, dark green coloured mazaedium and cylindrical ascospores, coarsely ornamented with helicoidal striations. The holotype comes from Magallanes (Rubens River, 50 km SE of Puerto Natales). We found it growing together with *Chrysothryx candelaris* and various *Caliciaceae* on the bark of inclined trunks of *N. pumilio.*

Known from cold areas of Australia, New Zealand and Southern South America (Tibell, 1987).

1, *N. pumilio*, UMAG 22135.

Mycobilimbia tetramera **(De Not.) Vitik., Ahti, Kuusinen, Lommi & T. Ulvinen**

Recorded by Etayo and Sancho (2008) from Navarino, but seems not to have been recorded before.

4, on terricolous bryophytes, hb. Etayo 22426. 38, mossy soil, hb. Etayo 23014.

39, on dead *Bolax* together with *Lecanora epibryon*, J. Etayo 23027 (UMAG).

Mycoblastus campbellianus **(Nyl.) Zahlbr.**

From whitish to blue-grey thallus with light-blue soralia and farinaceous soredia, UV+ white, P+ orange-red, with virensic and perlatolic acids (Fryday *et al.* 2019). A southern species previously reported from New Zealand, Tasmania, Campbell and Macquarie Islands, Australia, Tierra del Fuego and Southern Chile by Kantvilas (2009). Recently recorded from the Falkland Islands by Fryday *et al.* (2019).

26, on *N. pumilio*, hb. Etayo 22968.

Mycoblastus coniophorus **(Elix & A.W. Archer) Kantvilas & Elix**

This normally epiphytic species is currently known from southern Chile and Juan Fernández Island in South America but also in Auckland Island, Macquarie Island, Tasmania and south-eastern Australia (Kantvilas, 2009).

10, mossy base of *N. betuloides*, J. Etayo 22236 (MAF). *Ibidem*, with thin thallus, on *N. betuloides*, hb. Etayo 22239 (determination by A. Fryday).

Mycocalicium subtile **(Pers.) Szatala**

Very abundant on a white thallus with *Trentepohlia* that grows on dry and protected bark of *N. pumilio*.

8, on protected bark of *Nothofagus* sp., MAF 15772, J. Etayo 22709 (UMAG).

Myriolecis hagenii **(Ach.) Śliwa, Zhao Xin & Lumbsch**

According to Fröberg (1997) *L. hagenii* is separated from *L. dispersa* by its smaller ascomata, darker disk, thin margin and absence of lichen substances. We found one sample of this species growing on *Nothofagus*.

29, on thick *Nothofagus*, hb. Etayo 22861 (MAF, UMAG).

Myriolecis aff. semipallida **(H. Magn.) Śliwa, Zhao Xin & Lumbsch**

Recorded by Etayo and Sancho (2008) from Navarino.

Nephroma antarcticum **(Wulfen) Nyl.**

An extraordinarily common species in Navarino on rocks and, especially, on *Nothofagus* trunks. It can be said that it is rare to see a trunk without it. As well as carrying numerous species of parasitic fungi (see lichen fungi), many lichens can also grow on it as it is a long lasting and abundant substrate. It is common to see small *Usnea* or *Pseudocyphellaria*, but even crustose lichens such as sorediate *Teloschistaceae* or several lichenized *Arthonia* or *Micarea* (Figs. 24 and 25).

Recorded by Santesson in Naturhistoriska riksmuseet (2021), Redón and Quilhot (1977), Etayo and Sancho (2008), Quilhot *et al.* (2012) and Trest *et al.* (2015) from Navarino.

2, *N. pumilio*, hb. Etayo 22150 (MAF, UMAG), hb. Etayo 22149, 22161, 22174. 7, on *N. pumilio*, hb. Etayo 22679, 22690, 22691, 22692. 9, on *N. pumilio*, hb. Etayo 22719 (MAF, UMAG). 11, on *N. pumilio*, J. Etayo 22446 (UMAG), hb. Etayo 22453.

Fig. 24. *Nephroma antarcticum* is one of the most visible lichens in Navarino, sometimes thalli arise more than 50 cm in diameter Photograph by Javier Etayo taken at Cerro Bandera on 9 January 2005.

Fig. 25. The brown colored *Nephroma cellulosum* is much more uncommon than the yellow-colored *N. antarcticum*. Photograph by Javier Etayo taken at Caleta Wulaia on 23 January 2005.

18, on *Nothofagus* sp., J. Etayo 22556 (MAF). 19, on *N. pumilio*, J. Etayo 22566 (UMAG). *Ibidem*, hb. Etayo 22570, 22596, 22602 (hb. Jørg.), 22603. 26, on *Nothofagus* sp., J. Etayo 22959 (UMAG). 27, on *Nothofagus* sp., hb. Etayo 22829, 22830, 22831. 29, on rocks near the coast, J. Etayo 22889 (UMAG). 34, in old *N. pumilio* forest, hb Etayo 23032, 23034, 23053 (UMAG). 38, on *N. pumilio*, MAF 15911, 16078, hb. Etayo 22993.

Nephroma antarcticum var. lobuligerum Müll. Arg.

Some saxicolous specimens from coastal rocks have abundant marginal pycnidia. Recorded by Etayo and Sancho (2008).

1, *N. pumilio*, hb. Etayo 22126, 22128, UMAG 22126. 2, *N. pumilio*, hb. Etayo 22150 (MAF, UMAG). 11, on *N. pumilio*, J. Etayo 22447 (UMAG). 15, on *N. pumilio*, hb. Etayo 22475, 22496. 19, on *N. pumilio*, hb. Etayo 22594. 34, on *N. pumilio*, hb. Etayo 23052. 41, coastal rocks, J. Etayo 23220 (MAF).

Nephroma cellulosum var. cellulosum (Ach.) Ach.

We always find it on steep to almost vertical mossy rocks in preferably shady situations. It appears in Santesson's database from Navarino (Fig. 25).

Known from Australia, New Zealand, Argentina and several locations in Chile, including Puerto Navarino (White & James, 1988). Recorded also by Etayo and Sancho (2008) and Quilhot *et al.* (2012) from Navarino and Santesson in Fryday (2020) reported it from Hoste and Navarino.

28, on subvertical rock, hb. Etayo 22795. 41, coastal rocks, J. Etayo 23217 (UMAG).

Nephroma cellulosum var. isidioferum J.S. Murray

This variety is distinguished by its sulcate thallus and abundant, normally squamiform phyllidia. The specimen found also has abundant apothecia.

According to White and James (1988) it is less common than the var. *cellulosum*, with which it usually coexists. These authors already mentioned it from Navarino.

27, mossy, vertical and shady rock under the forest, hb. Etayo 22819 (MAF).

Nephroma parile (Ach.) Ach.

This species is recorded and illustrated in Rozzi et al. (2012b) but it could belong to *N. cellulosum* var. *isidioferum*. White and James (1988) recorded it as epiphytic from region IX and X in Chile but not from more meridional forests.

Nephroma sp.

With a squamulose, brown, thin thallus; shell-shaped squamules, with brown, sorediate-isidiate border and paraplechtenchymatic cortex, always sterile. According to Jørgensen (pers. comm.) this could be a so far undescribed species of *Nephroma*.

28, on *Nothofagus* sp., hb. Etayo 22794 (det. Jørg.); *ibidem*, on *Xanthoparmelia submougeotii* on rocks, hb. Etayo 22797.

Nephromopsis chlorophylla (Willd.) Divakar, A. Crespo & Lumbsch

Tuckermannopsis chlorophylla (Tuck.) Hale

Some specimens have thick rounded soralia on the surface of the branches (22986). Recorded previously from Navarino by Santesson in Naturhistoriska riksmuseet (2021).

1, *N. pumilio* (o.c.). 5, on *N. pumilio*, 22634 (UMAG). 6, *N. betuloides*, hb. Etayo 22640. 8, on *N. pumilio* and *N. betuloides* (o.c.). 12, on soil and *N. betuloides*, hb. Etayo 22532 (MAF). 28, on *Nothofagus* sp., J. Etayo 22789 (MAF). 37, on thick trunk fallen on the beach, hb. Etayo 22986. 42, old *N. pumilio* roadside, on wood, hb. Etayo.

Normandina pulchella **(Borrer) Nyl.**

Relatively common as an epiphyte on *Nothofagus*, mixed with other lichens, as well as on humus in rocky areas. We did not observe any fertile specimens. Recorded by Etayo and Sancho (2008).

2, among species of *Psoroma* on *N. antarctica*, hb. Etayo 22156, 22167 (MAF). 4, between *Psoroma* and *Parmeliella concinna* on *N. antarctica*, J. Etayo 22409 (MAF). 15, between *Psoroma sphinctrinum* thallus on *N. pumilio*, hb. Etayo 22475. *Ibidem* on old bark of *N. pumilio*, hb. Etayo 22479 (MAF, UMAG). 19, over *Nephroma antarcticum* var. *lobuligerum* on *N. pumilio*, hb. Etayo 22594. 26, on humus, J. Etayo 22960 (MAF). 28, *Nothofagus* branches, hb. Etayo 22782. 29, on humus on mossy rock, hb. Etayo 22870. 38, mossy soil, hb. Etayo 23017 (hb. Jørgensen).

Notoparmelia cunninghamii **(Cromb.) A. Crespo, Ferencová & Divakar**

Parmelia cunninghamii Cromb.

With marginal linear soralia and medulla K+ yellow, then red. Common in Southern South America (Elvebakk *et al.* 2014). Recorded in Navarino by Santesson in Naturhistoriska riksmuseet (2021) and Etayo and Sancho (2008).

6, on wood, hb. Etayo 22642. 8, on *Nothofagus*, J. Etayo 22711 (UMAG). 28, *Nothofagus* wood, J. Etayo 22785 (MAF); *ibidem,* J. Etayo 22789 (MAF).

Notoparmelia protosulcata **(Hale) A. Crespo, Ferencová & Divakar**

Parmelia protosulcata Hale

Similar to *Parmelia sulcata* but with a K- or yellowish medulla and soralia with a tendency to be apical and orbicular. Common in Southern South America (Elvebakk *et al.* 2014). Recorded by Etayo and Sancho (2008).

2, fallen wood, hb. Etayo 24647. 5, humus on rocks, hb. Etayo 22632. 57, on *N. pumilio,* hb. Etayo 24517.

Ochrolechia androgyna **(Hoffm.) Arnold**

Quite variable, showing thalli with very different appearance, from thin (similar to *O. arborea*) to verrucose, epiphytic or on mosses. Samples from loc. 8 present completely sorediate thalli of whitish-yellowish color, with small and more yellow spots. Messuti and Lumbsch (2000), reported it from Tierra del Fuego and S. Chile (Puerto Natales) on *N. antarctica* bark only, while from Neuquén it is mentioned on *N. pumilio* and *Araucaria*.

2, *N. antarctica*, hb. Etayo 22183, 22188. 6, on old *Nothofagus* bark, J. Etayo 22645 (UMAG). 8, on *Nothofagus*, hb. Etayo 22713 (MAF). 11, on *N. pumilio*, hb. Etayo 22259. 25, on rock humus, J. Etayo 22848 (UMAG). 28, on *Nothofagus* sp., J. Etayo 22789 (MAF). 31, on mosses in alpine soil, J. Etayo 22920 (MAF). 34, *on N. pumilio*, hb. Etayo 23054. 42, old dust-impregnated *N. pumilio,* J. Etayo 24675 (UMAG).

Ochrolechia antarctica **(Müll. Arg.) Darb.**

Ertz *et al.* (2016) reinstated *O. antarctica* as a differenciated species from *O. parella* and recorded from southern South America, even Falkland Islands and Antarctica while *O. parella* probably does not occur in South Hemisphere.

Redón and Quilhot (1977) recorded this saxicolous *O. antarctica* from Navarino but several citations from southern Argentina and Chile appear in Messuti and Lumbsch (2000) as *O. parella* belong to this species.

5, coastal rocks, hb. Etayo 22613. 6, coastal rocks, J. Etayo 22664 (UMAG). 21, alpine siliceous flat stones, near *Usnea*, J. Etayo 15904, 22734 (MAF).

Fig. 26. *Ochrolechia frigida* (with some apothecia) and *Pseudocyphellaria freycinetii* (right) are common on soil, mosses and plant debris in exposed situations. Photograph by Javier Etayo taken at Cerro Bandera on 9 January 2005.

Ochrolechia arborea **(Kreyer) Almb.**

Found on horizontal branches of *N. pumilio* in the interior of the forest. Recorded as cf. by Etayo and Sancho (2008).

11, on *N. pumilio*, hb. Etayo 22451. 26, on *N. pumilio*, hb. Etayo 22968.

Ochrolechia frigida **(Sw.) Lynge**

O. malmei Räsänen

Easy to recognise by its thallus with diffuse soralia and spinules. Of the two chemotypes known in South America, type II is found, with gyrophoric and variolaric acids (Messuti & Lumbsch, 2000). It is extraordinarily common in the alpine region and on Navarino Island usually produces apothecia. Found on the ground covering plant remains, grasses, twigs of bushes, and even other lichens. On *Pseudocyphellaria freycinetii* it begins by colonising the edges of the thallus (Fig. 26).

A bipolar-alpine species that reaches the Antarctic (Søchting *et al.* 2004). Recorded by Redón and Quilhot (1977) and Etayo and Sancho (2008) from Navarino. Redón and Quilhot (1977) recorded *Ochrolechia* cf. *blandior* (Nyl.) Darb., that may be this species.

2, bryophytes, hb. Etayo 24643. 3, alpine soil with *Bolax*, J. Etayo 22276 (UMAG). 4, on acidic soil, J. Etayo 22407 (MAF), *ibidem*, J. Etayo 22434 (UMAG). 6, on humus in protected rock, hb. Etayo 22647. 11, on bryophytes and grasses, J. Etayo 22250 (MAF), 22252. 12, soil, with *M. carnosa*, hb. Etayo 22241. 14, on plant remains and cladonias, J. Etayo 22203 (UMAG). 16, peaty soil, J. Etayo 22526 (UMAG). 18, on tundra soil, J. Etayo 22598 (UMAG). 21, acidic soil, hb. Etayo 22748. 39, on soil and plant remains, J. Etayo 23025 (MAF).

Ochrolechia pallescens **(L.) A. Massal.**

Subcosmopolitan species that in South America has been cited from the south of Argentina

and Chile, mainly from different species of *Nothofagus*, but also on other substrates such as *Aextoxicon*, *Baccharis* or *Drimys* (Messuti & Lumbsch, 2000). Recorded by Redón and Quilhot (1977) and Quilhot *et al.* (2012) from Navarino.

11, on *N. pumilio*, hb. Etayo 22259. 26, on *N. pumilio*, hb. Etayo 22942. 36, young *Nothofagus* on the edge of the slope, hb. Etayo 22928.

Ochrolechia szatalaensis **Vers.**

Ochrolechia pseudotartarea (Vain.) Vers. was described from Punta Arenas, and collected from *N. antarctica* forests in southern Chile and Argentina. Calvelo (1992) mentions and gives a succinct description of this species, but Messuti and Lumbsch (2000) propose to synonomise it with *O. szatalaensis*. This is a corticolous or, rarely lignicolous species common in the Andean-Patagonian and Subantarctic forests. Some Argentinean and Chilean citations appear in Messuti and Lumbsch (2000).

2, on *Nothofagus antarctica*, J. Etayo 22177 (MAF). 15, on old bark of *N. pumilio*, hb. Etayo 22482. 38, *Nothofagus pumilio*, J. Etayo 23016 (UMAG). 32, on solitary rock, hb. Etayo 23235. 42, *N. pumilio* bark, hb. Etayo 24684.

Pachnolepia pruinata **(Torss.) Frisch & G. Thor**

Arthonia impolita (Hoffm.) Borrer

Apparently the first austral report of this common species from the Northern Hemisphere. Our specimen is identical to European samples of this species.

42, bark of *N. pumilio*, hb. Etayo 24685.

Pachyphiale fagicola **(Hepp) Zwack.**

We found a semi-hidden specimen among the squamules of two species of corticolous *Pannariaceae*, which we recognized thanks to the presence of the filamentous fungus *Refractohilum pluriseptatum*, typical of this host. With abundant apothecia; the ascospores are all sharply pointed and have (6–)7(–8) septa, 27–37 x 4–5 µm. In Europe, the spores of *P. fagicola* normally described as having obtuse apices, 3–7 septa and 15–35 x 3.5–5 µm large (Rose & James in Purvis *et al.* 1992), but according to drawings of European and North American specimens (Vězda & Poelt, 1974) of *P. fagicola*, its spores are mostly acute as in our specimen.

According to Vězda and Poelt (1974) this species was known throughout Europe, Siberia and North America. This is the first South American citation showing that it is a bipolar species.

7, bark of *N. pumilio*, hb. Etayo 22696.

Palicella glaucopa **(Hook. f. & Taylor) Rodr. Flakus & Printzen**

Thallus greyish, crustose, thin, K+ yellow, with pale to black apothecia, flattened, with a conspicuous margin; excipulum composed of radial hyphae that are less dense in the inner parts, hyaline on the inside but blue-green with indigo shades towards the outside, both pigments K+ blue-green; epihymenium of the same blue-violet colour, K+ bluish green; hyaline paraphyses, strongly branched and anastomosed, *Lecanora* or *Lecidella* type asci; ascospores hyaline, narrowly ellipsoidal, large, (13–)16–19 x (5.5–)6–7 µm.

In Flakus and Printzen (2014) this species appears well characterized. It is known from southern Argentina and Chile, where it seems to be common, judging by the number of citations in that publication and also according to our collections. First citation for Navarino.

2, on *N. antarctica*, hb. Etayo 22144. *Ibidem*, on bark of *Nothofagus*, hb. Etayo 24637 (hb. Fryday), 24655. *Ibidem*, on bark of *N. pumilio*, hb. Etayo 24637. 6, on flat bark of young *Nothofagus*, hb. Etayo 22673. 26, on *N. pumilio*, hb. Etayo 22967 (hb. Galloway). 27, on flat bark of *N. pumilio*, hb. Etayo 22819.

Pannaria athroophylla (Stirt.) Elvebakk & D.J. Galloway

Recorded from Navarino by Pineda Cáceres *et al.* (2020).

Pannaria contorta (Müll. Arg.) Passo & Calvelo

A description of this species appears in Passo and Calvelo (2006). It was collected by Santesson from Navarino in Naturhistoriska riksmuseet (2021) and recorded in Pineda Cáceres *et al.* (2020).

Pannaria farinosa Elvebakk & J. Fritt-Rasm.

Thallus color quite variable mostly grayish to brownish. One specimen (22631) with isidiate soralia. In the margin of the thallus, the soralia predominate, but in the interior, abundant globular isidia are formed that end up covering the surface. Not uncommon to see it covering other lichens such as *Pseudocyphellaria* (*e.g. P. granulata*).

A very common species in Navarino. Elvebakk *et al.* (2007) recorded it from Navarino and Isla Hoste and also Santesson in Naturhistoriska riksmuseet (2021), Etayo and Sancho (2008). Redón and Quilhot (1977) and Quilhot *et al.* (2012) recorded it as *P. leproloma* (Nyl.) P.M. Jørg., a species restricted to New Zealand (Elvebakk *et al.* 2007).

1, on *N. pumilio*, hb. Etayo 22138. 2, *N. antarctica*, hb. Etayo 22147, *N. pumilio*, hb. Etayo 22156; *N. antarctica* J. Etayo 22167 (MAF). 4, on *N. antarctica*, hb. Etayo 22410. 5, on *N. pumilio*, hb. Etayo 22631 (specimen with isidial soralia). 6, on *Nothofagus*, J. Etayo 22660 (MAF) (isidiate soralia). 7, on *Pseudocyphellaria granulata* on *N. pumilio*, hb. Etayo 22680, 22703; *ibidem*, on *N. pumilio*, J. Etayo 22684 (UMAG). 9, on *N. pumilio*, J. Etayo 22468 (MAF); *ibidem* 22720. 10, on *N. betuloides*, hb. Etayo 22240. 11, very abundant on *N. pumilio*, J. Etayo 22242 (MAF, UMAG), hb. Etayo 22261. *Ibidem*, hb. Etayo 22457 (MAF). 15, on *N. pumilio*, hb. Etayo 22498. 18, on *Nothofagus* sp., J. Etayo 22558 (UMAG). 19, on *N. pumilio*, hb. Etayo 22570; *ibidem*, J. Etayo 22590 (MAF). 26, on *Nothofagus pumilio*, hb. Etayo 22937; *ibidem* hb. Etayo 22948; *ibidem,* hb. Etayo 22950, 22982. 28, on rocky substrate, J. Etayo 22813 (UMAG). 34, on *N. pumilio*, between *P. granulata*, hb. Etayo 23042. 40, on *N. pumilio*, hb. Etayo 23238. 44, on *N. betuloides*, hb. Etayo 24490.

Pannaria hookeri (Borrer ex Sm.) Nyl.

We found it on rocks and mosses. Bipolar, circumarctic, it is known from the Northern Hemisphere, Southern South America, New Zealand and Antarctica (Øvstedal & Lewis Smith, 2001). Recorded by Etayo and Sancho (2008) from Navarino.

21, siliceous rock, whithout other lichens, hb. Etayo 22735. 23, siliceous rock, J. Etayo 22759 (UMAG); *ibidem* hb. Etayo 22765, US 10272, 10282 (hb. Jørgensen), 10286. *Ibidem*, U. Søchting 10269 (C). 25, medium size exposed rocks, hb. Etayo 22765.

32, over solitary rock, J. Etayo 2323 (MAF).

Pannaria hispidula (Nyl.) Hue

Psoroma hispidulum Nyl.

Frequent on soil or in cracks in rocks together with *Psoroma* species such as *P. cinnamomeum* or *P. hypnorum*. We also found it on old bark at the very base of *Nothofagus pumilio* (Fig. 27).

Recorded from Navarino by Etayo and Sancho (2008) and Quilhot *et al.* (2012).

Fig. 27. *Pannaria hispidula*, here living between mosses on *Nothofagus*. Photograph by Javier Etayo taken at Róbalo Lake, Omora Park, on 12 January 2005.

3, alpine soil with *Bolax*, J. Etayo 22279 (MAF), *ibidem*, hb. Etayo 22280. 10, *N. betuloides* moss base, J. Etayo 22236 (MAF). 11, over *N. pumilio*, hb. Etayo 22455. 15, over *Peltigera* sp. on *N. pumilio*, hb. Etayo 22480. 13, rock fissures, hb. Etayo 22192. 16, peaty soil, hb. Etayo 22511 (MAF). 28, bryophytes on rock, hb. Etayo 22784. 38, humus on rock, J. Etayo 23011 (UMAG). 57, on *N. pumilio* stump, hb. Etayo 24519.

Pannaria cf. microphyllizans (Nyl.) P.M. Jørg.

Psoroma sphinctrinum var. *microphyllizans* Nyl.

Forms large, gray-white, voluminous thalli, elevated above the substrate (bark) with abundant isidia and brown to black apothecia with thick margin. According to Jørgensen (pers. comm.) these specimens do not correspond to *P. microphyllizans* s.str., which should be studied in depth (Fig. 28).

2, on *N. pumilio*, hb. Etayo 22148 (UMAG, MAF), *ibidem*, J. Etayo 22153 (MAF). 15, abundant on *N. pumilio*, hb. Etayo 22479 (conf. Jørg.) (MAF, UMAG). 29, on rock with humus, hb. Etayo 22886 (conf. Jørg.).

Pannaria pallida (Nyl.) Hue

Psoroma pallidum Nyl.

Thallus similar to *P. sphinctrina*, with long lobes, but always whitish or light gray and with pink apothecia due to a thin layer of pruina. Austral species according to Galloway (2007. Recorded from Navarino by Etayo and Sancho (2008) and Quilhot *et al.* (2012) (Fig. 29).

2, *N. pumilio*, hb. Etayo 22157. 9, on *N. pumilio*, hb. Etayo 22723. 10, on *N. betuloides*, hb. Etayo 22235 (MAF, UMAG). 18, on *Nothofagus* sp., hb. Etayo 22549. 19, on *N. pumilio*, J. Etayo 22588 (MAF). 26, on old *Nothofagus* sp. bark, hb. Etayo 22961 (hb. Galloway).

Fig. 28. *Pannaria* aff. *microphyllizans*, with many squamiform isidia covering its surface. Photograph by Javier Etayo taken at Barranca Guarriaco on 14 January 2005.

Fig. 29. *Pannaria pallida* with *Pseudocyphellaria coriifolia* and *N. antarcticum*, three common lichens on trunks of *Nothofagus* in Navarino. Photograph by Javier Etayo taken at Puerto Guerrico on 10 January 2005.

Fig. 30. *Pannoparmelia angustata* growing on trees. It is not a common lichen in Navarino but very characteristic by its spongiostratum on the lower side of thallus. Photograph by Javier Etayo taken in an old forest at Róbalo Lake, Omora Park, on 19 January 2005.

Pannaria sphinctrina **(Mont.) Hue**

Psoroma sphinctrinum (Mont.) Nyl.

Growing together with *P. farinosa* and *Normandina pulchella* mainly on trunks of *Nothofagus*, but also on rocks near the coast. Recorded from Navarino by Etayo and Sancho (2008).

2, *N. pumilio*, hb. Etayo 22156 (hb. Jørgensen). 15, on *N. pumilio*, hb. Etayo 22475 (UMAG). 19, on *N. pumilio*, hb. Etayo 22589. 27, on bryophytes in shady and mossy rock, J. Etayo 22826 (MAF). 28, rocky ground near the sea, hb. Etayo 22800. 34, on *N. pumilio*, hb. Etayo 23044. 35, over *N. pumilio*, hb. Etayo 23239, 23240. 44, on *N. betuloides*, hb. Etayo 24490, 24492.

Pannoparmelia angustata **(Pers.) Zahlbr.**

Yellowish thallus, with narrow lobes; inferior lobes corticate and covered by fascicles of moniliform hyphae forming a spongiostratum. Ascospores subspherical. Notes about its distribution in southern South America appear in Elvebakk *et al* (2014). Previously recorded by Santesson in Naturhistoriska riksmuseet (2021), Etayo and Sancho (2008) and probably by Redón and Quilhot (1977) under *Anzia anzioides* (Fig. 30).

2, *N. antarctica*, hb. Etayo 22145 (UMAG). 5, on young *N. pumilio*, J. Etayo 22607 (UMAG). 19, on *N. pumilio*, hb. Etayo 22569. 26, on *Nothofagus pumilio*, J. Etayo 22944 (UMAG), 22970; *ibidem* hb. Etayo 22949. 29, on mossy rock, J. Etayo 22865 (MAF); *ibidem*, hb. Etayo 22881.

Parmelia saxatilis **(L.) Ach.**

Very variable, at exposed rocks it can become dark brown. According to Elvebakk *et al.* (2014) it is common in Southern South America. It appears recorded by Santesson in Fryday (2020), Redón and Quilhot (1977), Etayo and Sancho (2008) and Quilhot *et al.* (2012) from Navarino.

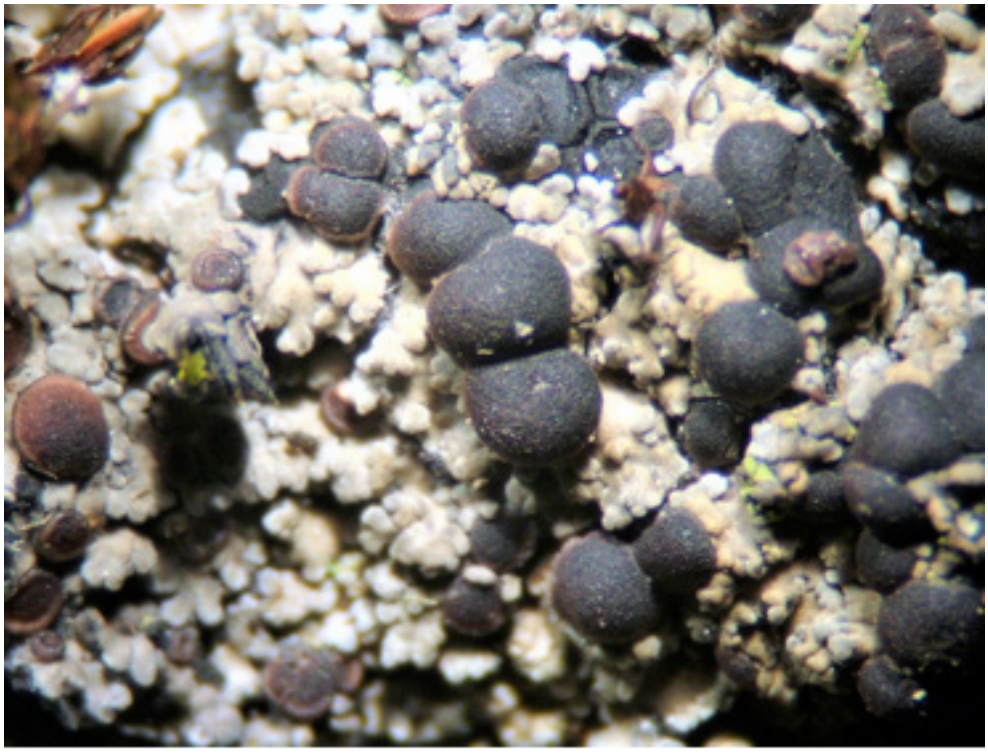

Fig. 31. *Parmeliella concinna*, an epiphytic species especially common on *N. pumilio*. Photograph by Javier Etayo taken at Cerro Bandera on 15 January 2005.

5, on rocks, hb. Etayo 22606. 6, on humus on rock, J. Etayo 22646 (UMAG). 21, acidic soil on rock, hb. Etayo 22749. 28, very abundant on horizontal rocks, MAF 15907, hb. Etayo 22793; *ibidem*, J. Etayo 22799 (UMAG).

Parmelia sulcata **Taylor**

According to Elvebakk *et al.* (2014) it is common in Southern South America. Recorded already by Santesson in Naturhistoriska riksmuseet (2021), Redón and Quilhot (1977), Etayo and Sancho (2008), Quilhot *et al.* (2012) and Trest *et al.* (2015) from Navarino.

1, *N. pumilio*, hb. Etayo 22130, 22136 (UMAG). 2, *N. pumilio*, hb. Etayo 22163. 8, on *N. pumilio* and *N. betuloides*, hb. Etayo 22225. 4, on the top of a rock, rich in nitrates, together with *Polycauliona candelaria*, J. Etayo 22429 (UMAG). 12, schists near the sea, J. Etayo 22544 (MAF).

Parmeliella concinna **I.M. Lamb**

Apparently common in Navarino but probably undercollected. It has round thalli normally grouped together forming larger structures; apothecia with lecideine margin and dark brown to black disk (Fig. 31).

2, on *Nothofagus pumilio*, hb. Etayo 22155, 22184 (MAF). *Ibidem*, on *N. pumilio*, hb. Etayo 24650. 4, *N. antarctica*, J. Etayo 22409 (MAF). 17, *N. pumilio*, J. Etayo 22264 (det. Jørg.).

Parmeliella magellanica **P.M. Jørg.**

Described by Jørgensen (2004), consisting of small squamules with soralia growing from the border and apothecia with a hairy margin. Forms small thalli between other lichens. Recorded from Navarino by Etayo and Sancho (2008).

17, on bark of *N. pumilio*, hb. Etayo 22264. 7, on wood of *N. pumilio*, hb. Etayo 22693, 22698. 10, on *N. betuloides*, fertile, U. Søchting 10155 (C). 11, on *N. pumilio*, hb. Etayo 22455. 26, on old *N. pumilio*, hb. Etayo 22936; *ibidem*, hb. Etayo 22981 (conf. Jørg.). 27, on *Nothofagus*, U. Søchting 10334 (C). 38, on *N. pumilio*, J. Etayo 22996 (MAF). 35, on *N. pumilio*, hb. Etayo 23246. 42, on old *N. pumilio* on the edge of a path, J. Etayo 24679 (UMAG). 42, on wood of *N. pumilio*, hb. Etayo 24682 (UMAG).

Parmeliopsis hyperopta **(Ach.) Vain.**

Apparently rare in Navarino; we found only once a trunk with several thalli of it. Elvebakk *et al.* (2014) recorded it several times in Southern South America. Recorded from Chile by Galloway and Quilhot (1998).

15, on old *N. pumilio*, hb. Etayo 22484. 37, branches of a dead *Nothofagus* sp., J. Etayo 23063 (UMAG).

Parmotrema reticulatum **(Taylor) M. Choisy**

Rimelia reticulata (Taylor) Hale & Fletcher

Recorded by Fryday *et al.* (2019) from the Falkland Islands.

26, rocks, J. Etayo 22951 (UMAG). 28, on branches of *Nothofagus*, hb. Etayo 22802.

Peltigera andensis **Vitik**.

Shiny, non-hairy thallus, with isidia along margins or on fissures and with the lower surface without discernible veins.

It is an endemic species from the Neotropical Kingdom, distributed mainly in the Andean range (Martínez *et al.* 2003).

1, on earthy slope, hb. Etayo 22141. 28, on rock humus, hb. Etayo 22781.

Peltigera austroamericana **Zahlbr**.

A species that is known from South America and reachs Central Mexico (Martínez *et al.* 2003).

15, soil, hb. Etayo 22474 (MAF, UMAG).

Peltigera canina **(L.) Willd.**

Almost cosmopolitan species (Martínez *et al.* 2003). Included in the Santesson list in Fryday (2020) and by Etayo and Sancho (2008) from Navarino.

2, on ground under forest, hb. Etayo 22166 (MAF). 57, soil and stumps, hb. Etayo 24512, 25513, 24514 (UMAG).

Peltigera collina **(Ach.) Schrader**

Fundamentally Holarctic but can reach Holantarctic zones like Patagonia and Tierra del Fuego (Martínez *et al.* 2003). Quite common on logs and mossy rocks in near-shore locations. Recorded by Santesson in Naturhistoriska riksmuseet (2021) and Etayo and Sancho (2008) from Navarino (Fig. 32).

7, on bark of *N. pumilio*, hb. Etayo 22705 (MAF); *ibidem*, hb. Etayo 22706. 5, on fallen logs, J. Etayo 22617 (UMAG). 14, *Nothofagus*, hb. Etayo 22198, 22214. 28, on *Nothofagus* sp., J. Etayo 22805 (UMAG). 29, on mossy rock, J. Etayo 22867 (MAF); *ibidem*, hb. Etayo 22880; *ibidem*, on *Nothofagus* sp., J. Etayo 22898 (UMAG).

40, on mossy rock, hb. Etayo 23237.

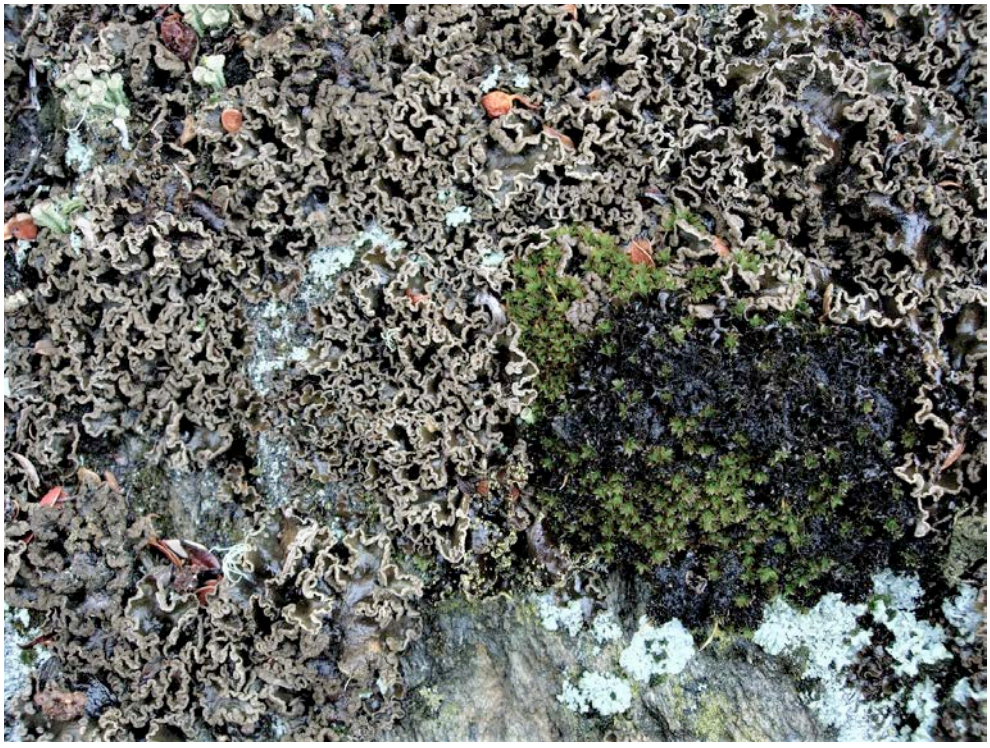

Fig. 32. *Peltigera collina* is a common species of *Peltigera* and different from other species of the genus prefers *Nothofagus* trunks. In the photography living with *Leptogium menziesii*. Photograph by Javier Etayo taken at the trail between Wulaia and Caleta José on 24 January 2005.

Peltigera didactyla **(With.) J.R. Laundon**

Cosmopolitan species that reaches Antarctica (Søchting *et al.* 2004). Recorded in Santesson in Fryday (2020) and by Etayo and Sancho (2008) from Navarino.

2, on peaty soil, hb. Etayo 24648. 15, on soil, J. Etayo 22472 (MAF), hb. Etayo 22476 (MAF, UMAG).

Peltigera aff. extenuata **(Nyl. ex Vain) Lojka**

One of the samples from Navarino studied by Zúñiga *et al.* (2015) with molecular tools is close to *P. extenuata*.

Peltigera aff. frigida **R. Sant.**

According to Martínez *et al.* (2003) is restricted to Tristan da Cunha and Tierra del Fuego. One of the samples from Navarino studied by Zúñiga *et al.* (2015) with molecular tools is close to *P. frigida*.

Peltigera horizontalis **(Huds.) Baumg.**

Fundamentally Holarctic with suboceanic preferences (Martínez *et al.* 2003). Recorded by Etayo and Sancho (2008).

15, on old bark of *N. pumilio*, hb. Etayo 22486 (UMAG). 19, on soil in *N. pumilio* forest, hb. Etayo 22574. 29, humus on rocks near the coast, J. Etayo 22890 (MAF). 34, soil in the forest, J. Etayo 23051 (UMAG).

Peltigera lepidophora **(Nyl.) Bitter**

Fundamentally Holarctic but also found in South America (Martínez *et al.* 2003).

41, soil on coastal terraces, hb. Etayo 23218.

Peltigera neopolydactyla **(Gyeln.) Gyeln.**

A Holarctic species (Martínez *et al.* 2003) that we found in Navarino.

36, on soil in *Nothofagus* forest, hb. Etayo 22934 (conf. Burgaz).

Peltigera patagonica **Räsänen**

This species is recorded from Navarino and illustrated in Rozzi *et al.* (2012b).

Peltigera polydactylon **(Neck.) Hoffm**.

Almost cosmopolitan species (Martínez *et al.* 2003). Listed in Santesson (Fryday, 2020) from Hoste Island. Recorded from Navarino by Redón and Quilhot (1977) as *P. polydactyla* (Neck.) Hoffm. and Quilhot *et al.* (2012).

Peltigera ponojensis **Gyeln.**

A considered Holarctic species (Martínez *et al.* 2003) recorded from Navarino by Zúñiga *et al.* (2015) based on molecular studies.

15, on old bark of *N. pumilio* (mixed with *P. horizontalis*), hb. Etayo 22486 (UMAG). 44, on *N. betuloides*, hb. Etayo 24496.

Peltigera pulverulenta **(Taylor) Nyl.**

Very distinctive because of its thick thallus, brown when wet, white when dry, due to the large amount of short trichomes that cover its surface. Ascomata embedded in cavities on the lobular edges.

A species that is known from South America and reachs Central Mexico (Martínez *et al.* 2003). Often the only lichen living on or between the fissures between *Bolax* cushions. Recorded by Etayo and Sancho (2008).

3, alpine soil with *Bolax*, hb. Etayo 22282. 16, on *Bolax* bushes, J. Etayo 22508 (MAF). *Ibidem*, tundra soil, hb. Etayo 22519. 31, alpine soil, J. Etayo 22903 (UMAG). 39, on *Bolax*, J. Etayo 23023 (UMAG).

Peltigera rufescens **(Weiss) Humb.**

Almost cosmopolitan species (Martínez *et al.* 2003). Recorded from Navarino by Etayo and Sancho (2008), Rozzi *et al.* (2012b) and Zúñiga *et al.* (2015) based on molecular data.

3, on soil, hb. Etayo 22295. 5, on soil in cliffs, hb. Etayo 22611 (UMAG). 15, soil on slope, hb. Etayo 22481 (MAF, UMAG). 29, rocks under the forest, hb. Etayo 22878 (MAF).

Peltigera spuriella **Vain.**

With a slightly hairy surface except at the base of the ascomata. It is endemic from the Neotropics and distributed mainly in the Andean range (Martínez *et al.* 2003).

2, on the soil, hb. Etayo 22164, 22165 (MAF). 28, on humus, J. Etayo 22804 (UMAG).

Peltigera truculenta **De Not.**

This species was recorded by Santesson in Naturhistoriska riksmuseet (2021) from Navarino. It appears also recorded in Fryday *et al.* (2019) from Falkland Islands.

Peltularia fuegiana **Henssen & P.M. Jørg.**

Thallus habitually saxicolous, but we also found on humus and even on wood, with *Scytonema* hardly lobate, with many pseudoisidia; apothecia with proper margins lacking algae,

Fig. 33. *Peltularia fuegiana*, a small lichen with cyanobacteria not easy to find. Photograph by Javier Etayo taken at the high part of Róbalo Valley, Omora Park, on 19 January 2005.

convex, brown to black, abundant. Epihymenium and exciple black greenish, hypothecium pinkish, and ascospores 1-septate, ellipsoid to ovoid, (9–)12–15 x 4–5 µm (Fig. 33).

16, on humus, in horizontal terraces, U. Søchting 10224 (C). 24, siliceous rock, U. Søchting 10260 (C) (det. Jørgensen). 21, on humus, U. Søchting 10261 (C) (det. Jørgensen). 42, on wood of an old *N. pumilio*, edge of a path, hb. Etayo 24678.

Pertusaria kalelae **Messuti**

Although Messuti and Vobis (2002) note that the ascospores of this taxon are smooth, at least some mature specimens show a reticulated wall in the central part of the spores, similar to *P. pustulata* (see Clauzade & Roux, 1985).

17, on *N. pumilio*, hb. Etayo 22268. 34, on *N. pumilio*, hb. Etayo 23039.

Pertusaria microcarpa **Nyl.**

Similar to *Coccotrema,* with small crater-like apothecia and one spore per ascus. It is one of the last epiphytic lichens to disappear with increasing altitude, near the edge of the forest. It was recorded by Etayo and Sancho (2008) from Navarino and from the Falkland Islands by Fryday *et al.* (2019).

11, on *N. pumilio*, hb. Etayo 22258. 17, on *N. pumilio*, hb. Etayo 22265 (UMAG). 20, on *Nothofagus* sp., hb. Etayo 22974. 26, on *N. pumilio*, hb. Etayo 22940, 22968.

Pertusaria pachythallina **(Räsänen) Messuti**

Sterile, with subglobose dispersed P+ orange isidia with a grey top, not containing algae. On moss and soil or saxicolous. Recorded by Etayo and Sancho (2008) from Navarino and from

the Falkland Islands by Fryday *et al.* (2019). One muscicolous sample with dark isidia and thallus P- is very similar to *Lepra argentea* Fryday known from the Falkland Islands (Fryday *et al.* 2019).

2, on bryophytes, hb. Etayo 24643. 16, on peaty soil, hb. Etayo 22528. 18, rock protosol, hb. Etayo 22555. 22, on protosol in rock, J. Etayo 22771 (UMAG). 25, on humus in rock, J. Etayo 22857 (MAF). 15, rock with mosses, hb. Etayo 22494 (studied by A. Fryday). 22, on rock, hb. Etayo 22772.

Pertusaria perrimosa **Nyl.**

With ascomata immersed in poorly delimited thalline verrucae, often flattened and only slightly protruding from the thallus, which produces norstictic acid. Known from the Falkland Islands (Fryday *et al.* 2019; Messuti & Vobis, 2002).

41, coastal rocks, hb. Etayo 23221 (conf. E. Timdal).

Pertusaria spegazzinii **Müll. Arg.**

Cited by Messuti and Vobis (2002) and Fryday *et al.* (2019) from Argentinian Tierra del Fuego, the Falkland Islands and South Georgia, also cited from Antarctica Øvstedal and Lewis Smith (2001).

14, coastal rock, with *Haematomma erythromma*, hb. Etayo 22207.

Pertusaria aff. alpina **Hepp ex Ahles.**

With thallus yellowish, UV+ orange, and conical, yellowish white ascomata, 4–8–spored asci and ascospores 45–50 x 20–24 µm it is very similar to *P. alpina* but we found it growing always on wood. None of the species of *Pertusaria* keyed out in Fryday (2019a) fits well with this species.

2, on wood, hb. Etayo 24641. 11, on wood of *N. pumilio*, hb. Etayo 22461 (MAF). 7, on wood of *N. pumilio*, hb. Etayo 22693. 42, on wood of *N. pumilio*, hb. Etayo 24698 (hb. Galloway).

Phaeophyscia endococcina **(Körb.) Moberg**

A cool-temperate to circumboreal-montane species that reaches the Antarctic (Øvstedal & Lewis Smith, 2001). Our specimen accords well with the one mentioned for Antarctica by these authors, but it lacks skyrin and has larger apothecia and smaller ascospores. Elvebakk and Moberg (2002) cited it from Torres del Paine (Chile).

5, on schists near the sea, hb. Etayo 22628. 12, on schists near the sea, hb. Etayo 22543.

Phaeophyscia orbicularis **(Neck.) Moberg**

This species is not mentioned in Elvebakk and Moberg (2002) from Southern South America.

5, quite rare on thin exposed twigs, hb. Etayo 22623.

Phaeophyscia sciastra **(Ach.) Moberg**

With isidiate soralia. Cited by Elvebakk and Moberg (2002) from several Chilean locations (Morro Chico and Paine) and by Etayo and Sancho (2008) from Navarino.

29, on subvertical coastal rocks, together with *Dermatocarpon miniatum*, hb. Etayo 22871.

Physcia adscendens **(Fr.) Oliv.**

Elvebakk and Moberg (2002) cited it from southern South America as epiphytic, especially on *Nothofagus antarctica*. We found it on coastal rounded boulders together with *Polycauliona candelaria*. Recorded by Etayo and Sancho (2008).

5, on thin twigs, hb. Etayo 22623, 23490. 12, on rounded coastal rocks, J. Etayo 22530 (UMAG). 28, on *Berberis microphylla*, hb. Etayo 22815.

Physcia caesia **(Hoffm.) Fürnr.**

Elvebakk and Moberg (2002) gave an overview of its distribution in Southern South America. We found it on coastal rocks together with *Ph. adscendens*, *Polycauliona candelaria* and *Sarcogyne privigna*. Recorded from Navarino by Redón and Quilhot (1977), Etayo and Sancho (2008) and Quilhot *et al.* (2012).

5, on schists near the sea, hb. Etayo 22628. 12, on coastal rocks, hb. Etayo 22531. 29, rocks in the forest, hb. Etayo 22875.

Physcia dubia **(Hoffm.) Lettau**

Differs from the previous one by its thin lobes that form small rosettes and by labriform soralia. Found with *Xanthoparmelia* spp. and *Rhizocarpon geminatum* on rocks near the coast. Elvebakk and Moberg (2002) cited it as being well distributed in Southern South America and Antarctica, on nitrogen enriched rocks or near water sources.

5, rock at 10 m a.s.l. hb. Etayo 22676.

Physconia muscigena **(Ach.) Poelt**

Sterile, without apothecia or asexual reproductive structures. Sometimes covering subvertical rocks in coastal cliffs accompanied by *Phaeophyscia endococcina*. We found it parasited at least by four species of lichenicolous fungi in the locality below (Etayo & Sancho, 2008). Bipolar-alpine, frequent in the Northern Hemisphere and on several Antarctic and Subantarctic islands (Øvstedal & Lewis Smith, 2001) as well as Chilean continental areas (Elvebakk & Moberg, 2002). Recorded from Navarino by Etayo and Sancho (2008) and Quilhot *et al.* (2012).

37, subvertical wall near the sea, MAF 15921, *ibidem*, J. Etayo 22989 (UMAG).

Physconia perisidiosa **(Erichs.) Moberg**

Elvebakk and Moberg (2002) reported it as new for South America and the Southern Hemisphere, from Torres del Paine, Pali-Aike and Isla Navarino. From this island was also recorded by Santesson in Fryday (2020).

5, on bryophytes on coastal rocks, J. Etayo 22619 (UMAG).

Placidium squamulosum **(Ach.) O. Breuss**

Catapyrenium squamulosum (Ach.) O. Breuss var. *squamulosum*

Our specimen can be recognized by its adnate squamules, medulla with cells thickened to simulate a paraplethenchyma, hyaline excipulum, small ascospores, 13–16 x 5.5–6 µm and laminar pycnidia with oblong ellipsoidal conidia.

Cosmopolitan and most eurioic taxon of the genus (Breuss, 1993). In the Andean Cordillera known from Ecuador to Chile and Argentina. Recorded from the Falkland Islands by Fryday *et al.* (2019).

14, on soil on rocks with *Micarea incrassata*, hb. Etayo 22217.

Placidium cf. lachneoides **(O. Breuss) O. Breuss**

According to Breuss (1993) it is known in South America from Andes to Patagonia.

37, soil, with *Polyblastia terrigena*, hb. Etayo 22984 (conf. O. Breuss).

Placopsis bicolor **(Tuck.) de Lesd.**

23, siliceous rocks, J. Etayo 22759 (UMAG); *ibidem*, hb. Etayo 22760. 24, siliceous rocks, J. Etayo 22834 (MAF). 24, siliceous rocks MAF 15861 (UMAG).

Placopsis perrugosa **(Nyl.) Nyl.**

Recorded by Etayo and Sancho (2008) as *P. contortuplicata* I.M. Lamb. Sequences of the considered *P. contortuplicata* from Isla Navarino have shown this species is probably not present here. By its brown, verrucose surface of lobules it must belogn to *P. perrugosa*.

5, on coastal schists, hb. Etayo 22615 (MAF).

Placopsis microphylla **(I.M. Lamb) D.J. Galloway**

No lobulation, with the middle part formed by isidia-like granules ending in a pycnidium and with yellowish excavated soralia.

21, vertical wall, with small *Usnea*, hb. Etayo 22732 (MAF).

Placynthiella dasaea **(Stirton) Tønsberg**

Thallus made up of green or brown granules, from 20–30 µm, up to 50 µm in diameter, C+ pink, with abundant apothecia with protruding and thin, in section paraplectenchymatous, margins. Well known in the Holarctic it was also recorded from Bolivia by Flakus and Kukwa (2012).

2, on decomposed wood, with bryophytes on *N. pumilio*, hb. Etayo 24653. 15, on fairly decomposed wood of *N. pumilio*, hb. Etayo 22483.

Placynthiella uliginosa **(Schrad.) Coppins & P. James**

Thallus C-, soon convex apothecia and ascospores 15–16 x 6.5–7.5 µm, fit with the features of this species. Found growing on the thallus of *Notoparmelia cunninghamii*.

28, *Nothofagus*, J. Etayo 22785 (MAF).

Platismatia glauca **(L.) W.I. Culb. & C.F. Culb.**

Thalli can reach large sizes, often with well-developed coralloid isidia on the edge of the lobes. A fairly common species in Navarino. Collected by Santesson on Navarino and Hoste Islands (Fryday, 2020) and recorded from Navarino by Redón and Quilhot (1977) and Quilhot *et al.* (2012) (Fig. 34).

1, on *Nothofagus pumilio*, hb. Etayo 22129 (UMAG). 2, *N. pumilio*, J. Etayo 22162 (MAF). 6, on old *Nothofagus* bark, J. Etayo 22651 (UMAG). *Ibidem*, on *N. pumilio*, J. Etayo 22651 (UMAG). 8, in *N. pumilio* and *N. betuloides* (o.c.). 22, on rock, J. Etayo 22775 (UMAG), *ibidem*, MAF 15924.

Podostictina berberina **(G. Forst.) Moncada & Lücking**

Pseudocyphellaria berberina (G. Forst.) D.J. Galloway & P. James

Similar to *P. endochrysa* but hairless on its upper surface. Like that species with a yellow medulla and pseudocyphellae. Known from southern South America, including Magallanes (Galloway, 1986), but not cited from Navarino, where it seems to be quite rare.

36, young *Nothofagus*, hb. Etayo 22927.

Podostictina endochrysa **(Delise) D.J. Galloway & de Lange**

Pseudocyphellaria endochrysa (Delise) Vain.

According to Galloway (1986) known from Southern Argentina and Chile, as well as from the Falkland Islands and South Georgia in an altitudinal range of 0–240 m. In Navarino it reaches an altitude of 600 m and is abundant in alpine meadows alongside *Pseudocyphellaria freycinetii*. Recorded from Navarino by Redón and Quilhot (1977), Galloway *et al.* (1995), Etayo and Sancho (2008) and Quilhot *et al.* (2012) (Fig. 35).

Fig. 34. *Platismatia glauca* may also form large thalli in Magellanic forests. Photograph by Javier Etayo taken at Caleta Mejillones on 10 January 2005.

Fig. 35. *Podostictina endochrysa* is common in alpine meadows with *Pseudocyphellaria freycinetii* but it can live also on *Nothofagus* trunks or forest soil. Photograph by Javier Etayo taken at Omora Park on 26 January 2005.

1, mossy soil, hb. Etayo 22122. 2, *N. pumilio*, MAF 15658, hb. Etayo 22151 (UMAG). 3, alpine soil with *Bolax*, well fertile, J. Etayo 22272 (UMAG). 4, on acidic soil, J. Etayo 22413 (MAF). 8, on *Nothofagus*, J. Etayo 22714 (UMAG). 11, on *N. betuloides*, U. Søchting 10158, 10159 (C). 13, *Nothofagus* base, hb. Etayo 22195 (UMAG, MAF). 16, on alpine soil, MAF 15927, 15703, 15692. 18, on mossy soil, hb. Etayo 22551. 19, on *N. pumilio*, J. Etayo 22572 (UMAG). *Ibidem*, hb. Etayo 22592. 24, alpine soil, J. Etayo 22832 (MAF). 34, on soil under *N. pumilio* forest, hb. Etayo 23033, 23046, 23047; *ibidem*, hb. Etayo 23035, 23038 (MAF). 35, on *N. pumilio*, hb. Etayo 23245. 38, sloping ground, hb. Etayo 23009.

Podostictina scabrosa (R. Sant.) D.J. Galloway & de Lange

Pseudocyphellaria scabrosa R. Sant.

Lemon yellow soralia, yellow medulla and pseudocyphellae; the latter are very uncommon. Already known from Navarino (Redón & Quilhot, 1977), and collected by Santesson in on Hoste Island (Fryday, 2020). Recorded from Navarino by Redón and Quilhot (1977), Etayo and Sancho (2008) and Quilhot *et al.* (2012).

11, on *N. pumilio*, hb. Etayo 22445.

Podostictina vaccina (Mont.) D.J. Galloway & de Lange

Pseudocyphellaria vaccina (Mont.) Malme

Characterized by its yellow medulla (sometimes very pallid to white), green algae and thick, coriaceous lobes with a scabrous-areolate surface, slightly pubescent on the margins.

Known from latitude 40° to Tierra del Fuego and from South Georgia growing on soil in steppes with *Pseudocyphellaria freycinetii* and *Thamnolia vermicularis* (Galloway, 1986). Collected by Santesson on Navarino and Hoste Island (Fryday, 2020) and also reported by Galloway *et al.* (1995) and Etayo and Sancho (2008).

38, on humus in the forest, hb. Etayo 22994. 34, on soil under old forest of *N. pumilio*, hb. Etayo 23035.

Poeltidea perusta (Nyl.) Hertel & Hafellner

Recorded from the Falkland Islands by Fryday *et al.* (2019) and probably from Cerro Bandera (Navarino) by Ruprecht *et al.* (2020) without exact location.

2, on pebbles on the soil, together with *Usnea aurantiaco-atra*, hb. Etayo 24664. 5, coastal rocks hb. Etayo 22614.

Polyblastia gothica Th. Fr.

There may be several different species involved under this name. According to Clauzade and Roux (1985) ascospores are 18–28 x 7–9 µm, while in Purvis *et al.* (1992) their size is 20–30(–36) x 10–15 µm. The Antarctic specimens studied by Øvstedal and Lewis Smith (2001) have ascospores 20–30 µm in length.

In Navarino, this species forms conspicuous blackish thalli with abundant sessile, pyriform, black, 0.35–0.45 mm broad ascomata, initially with abundant, branched paraphyses, which disappear when they are mature, 8-spored asci and ascospores simple or 1–3 septate (young and colorless), golden or light brown and murales when adult, 32–43 x 11–13 µm (Etayo 22289) or 19–30 x 13–15 µm (Etayo 22902).

Øvstedal and Lewis Smith (2001) and Søchting *et al.* (2004) cited it for the Antarctic, recognising its bipolar distribution.

3, *Bolax* bushes, hb. Etayo 22289. 30, peaty soil, hb. Etayo 22902. 38, sandy soil, hb. Etayo 23014.

Polyblastia terrigena **Zschacke**

Differs from *P. gothica* in its visible involucrellum and its pale ascospores.

37, on soil, with *Catapyrenium squamulosum*, hb. Etayo 22984 (det. Breuss).

Polycauliona adscendens **(S.Y. Kondr.) Frödén, Arup & Søchting**

5, on exposed twigs with *P. candelaria*, hb. Etayo 22623, 23488.

Polycauliona candelaria **(L.) Frödén, Arup & Søchting**

Xanthoria candelaria (L.) Th. Fr.

A cosmopolitan species that reaches the Antarctic (Søchting *et al.* 2004). Both on coastal rocks, next to *Physcia adscendens*, and on bark of small exposed trunks, next to *Usnea* spp. and *Melanelia ushuaiensis*. Collected by Santesson in 1940 (Fryday, 2020) on Navarino. Recorded from Navarino by Redón & Quilhot (1977), Etayo and Sancho (2008) and Quilhot *et al.* (2012).

4, high rock, with nitrates, with *Parmelia sulcata*, J. Etayo 22429 (UMAG). 5, on cliff with bryophytes, hb. Etayo 22607. *Ibidem*, on coastal rocks, hb. Etayo 22618. *Ibidem*, on twigs, hb. Etayo 22623, 22624. *Ibidem*, on coastal rocks, MAF 15630. 12, on rounded coastal rocks and *N. betuloides*, J. Etayo 22530 (UMAG), hb. Etayo 22529, 22531. 28, on *Nothofagus* sp., hb. Etayo 22779; *ibidem*, on bryophytes, J. Etayo 22806 (UMAG). 42, on old *N. pumilio* at the roadside, with dust supply, hb. Etayo 24676. 43, twigs of *Berberis* and *Nothofagus*, hb. Etayo 24532.

Polycauliona phlogina **(Ach.) Arup, Frödén & Søchting**

Caloplaca scythica Khodosovtsev & Søchting

Found on a weathered piece of leader in a maritime site in Navarino by M. Z. Søgaard in 2008 (see Vondrák *et al.* 2010).

Porina chlorotica **(Ach.) Müll. Arg.**

Pseudosagedia chlorotica (Ach.) Hafellner & Kalb

This species is well known in the Northern Hemisphere. McCarthy (1993) also cites it from the South, from South Africa, Australia, New Zealand and Macquarie Island. First record for Southern South America. We found it on an acidic coastal rock.

5, coastal rocks, hb. Etayo 22616.

Porpidia crustulata **(Ach.) Hertel & Knoph**

The species is recorded from Navarino by Rozzi *et al.* (2012b) and is named by Ruprecht *et al.* (2020) without locality, probably was collected in Cerro Bandera.

Porpidia navarina **U. Rupr. & Türk**

Described in Ruprecht *et al.* (2016) as similar to the Arctic *P. flavicunda*. Only been found in Cerro Bandera (Navarino Island) so far.

Porpidia tuberculosa **(Sm.) Hertel & Knoph**

Thallus whitish, K-, C-, medulla I-; apothecia with hyaline excipulum surrounded by a green border, and citriform ascospores, 12–16.5 x 6.5–7.5 µm.

Samples are heterogeneous and some may belong to other related species. Ruprecht *et al.* (2020) recorded *P. macrocarpa* in their study, likely from Cerro Bandera (Navarino) but without indication of locality.

2, stone under *N. pumilio*, hb. Etayo 22186. *Ibidem*, rocky ground in the forest, hb. Etayo 24663. 4, siliceous stones on soil, hb. Etayo 22430. 21, on rocks, hb. Etayo 22756. 20, on stone, hb. Etayo 22976.

Fig. 36. Several species of *Protousnea*, some very long, cover in some occasions the trunks in *Nothofagus magellanica* forests. Photograph by Javier Etayo taken at Puerto Eugenia on 11 January 2005.

Protousnea dusenii **(Du Rietz) Krog**

Scrobiculate surface, with many isidia, whose final ramifications may have whorled branches. It is cited from Navarino by Krog (1976), Quilhot *et al.* (2012) and Etayo and Sancho (2008).

28, on *Nothofagus*, hb. Etayo 22787.

Protousnea magellanica **(Mont.) Krog**

Characterised by its abundant brown apothecia with smooth margin on the main lacinia and by its dull, flaccid, foveolate surface; thallus strongly dichotomously branched, especially near the ends, which have a broom-like appearance. Reported from Navarino by Krog (1976), Quilhot *et al.* (2012) and Etayo and Sancho (2008) (Fig. 36).

8, on *Nothofagus* sp. Etayo 22708. 9, on *N. pumilio*, hb. Etayo 22720. 34, on *N. pumilio*, hb. Etayo 23056 (UMAG).

Protousnea malacea **(Stirt.) Krog**.

With a hanging thallus that can reach up to half a meter, rigid, dull, foveolate and with an angular surface, sometimes articulated, dichotomously ramified, sterile, without isidia or secondary broom-like branches, forming a filiform thallus (Calvelo, 1998; Krog, 1976). Some samples are similar to *Usnea articulata*. Patagonian species recorded from Navarino by Etayo and Sancho (2008) (Fig. 36).

8, trunk of *N. pumilio*, hb. Etayo 22234. 14, *Nothofagus*, hb. Etayo 22215. 29, on *Nothofagus* sp., hb. Etayo 22882. 43 on *N. betuloides*, hb. Etayo 24528.

Fig. 37. *Pseudocyphellaria citrina* has been confused for a long time with *P. crocata*. Photograph by Javier Etayo taken at Puerto Eugenia on 11 January 2005.

Protousnea scrobiculata **(Cengia Sambo) Krog**

It is the only terricolous species of the genus. According to Krog (1976) it is typical of *Empetrum nigrum* heaths along with species of *Alectoria*, *Cetraria* and *Hypogymnia*. Common in the high parts of Navarino.

3, alpine soil, hb. Etayo 22274. 4, in acidic soil, hb. Etayo 22415. 21, alpine siliceous plates, together with *Neuropogon* and *Ochrolechia antarctica*, J. Etayo 22734 (MAF); *ibidem*, soil, hb. Etayo 22738. 14, soil, hb. Etayo 22216.

Pseudephebe minuscula **(Nyl.) Brodo & D. Hawksw.**

Quite common in alpine areas, where it is blackening large areas of the rocks.

Garrido-Benavent *et al.* (2020) studied this species and *P. pubescens* (L.) M. Choisy and came to the conclusion that this last species lives only in Europe, while *P. minuscula* is a bipolar species with records in Antarctica, South America and South Asia.

Some authors recorded *P. pubescens* from Navarino, like Redón and Quilhot (1977), Etayo and Sancho (2008) and Laguna-Defior (2017) but these records must belong to *P. minuscula*.

3, on small stones on alpine soil with *Bolax*, J. Etayo 22272 (UMAG). 4, acidic rock (o.c.). *Ibidem*, on *Bolax*, Etayo 22440. 25, crested rock, J. Etayo 22847 (UMAG). 16, on highly exposed acidic rocks, MAF 15925, 15691.

Pseudocyphellaria citrina **(Gyeln.) Lücking, Moncada & S. Stenroos**

In his monography of *Pseudocyphellaria* from cool temperate South America Galloway (1992) considered *P. crocata* as common in Chile and Argentina from 30ºS southwards 56ºS and remarked that it was a very variable species. More recently, Lücking *et al.* (2017) has shown that material identified as *P. crocata* in the Americas represented thirteen species, and that none of

them is *P. crocata*. Thus, the presence of *P. crocata* is very unlikely in Navarino where it has been recorded by Santesson in Fryday (2020), Redón and Quilhot (1977), Galloway (1992), Galloway *et al.* (1995), Etayo and Sancho (2008) and Quilhot *et al.* (2012). Thus, our samples fit well with description of *P. citrina* recorded by Lücking *et al.* (2017) who also had a record from Navarino (Fig. 37).

2, on *Nothofagus pumilio*, hb. Etayo 22179. 5, on fallen logs, J. Etayo 22617 (UMAG). 7, on *N. pumilio*, hb. Etayo 22686 (hb. Galloway, MAF). 14, *Nothofagus*, hb. Etayo 22198. 8, on *N. pumilio*, hb. Etayo 22224. 29, rocks in the forest, hb. Etayo 22876.

Pseudocyphellaria coriifolia (Müll. Arg.) Malme

One of the most common species of the genus in Navarino. Santesson collected it in 1940 from Navarino and Hoste islands (Fryday, 2020) and Galloway (1992), Galloway *et al.* (1995), Redón and Quilhot (1977), Etayo and Sancho (2008) and Quilhot *et al.* (2012) from Navarino.

1, on *Nothofagus pumilio*, hb. Etayo 22131, 22134. 2, *N. pumilio*, J. Etayo 22170 (MAF), hb. Etayo 22171. 7, on *N. pumilio*, J. Etayo 22681 (MAF); *ibidem*, hb. Etayo 22682, 22683; *ibidem*, J. Etayo 22687 (UMAG). 8, on *N. pumilio*, hb. Etayo 22222; *ibidem*, J. Etayo 22711 (UMAG). 11, on *N. pumilio*, hb. Etayo 22452, 22463, 22465 (UMAG). 9, *N. pumilio*, J. Etayo 22466 (MAF); *ibidem* 22720. 15, on *N. pumilio*, J. Etayo 22502 (MAF). 19, on *N. pumilio*, J. Etayo 22567 (UMAG). John H. W. Haggis, 22944 (UMAG). 26, on *N. pumilio,* J. Etayo 22944 (UMAG); *ibidem*, hb. Etayo 22953. 27, mossy, shady rock, J. Etayo 22824 (MAF). 28, on bryophytes, J. Etayo 22807 (UMAG); *ibidem*, vertical rock exposed to the W, U. Søchting 10342 (C). 29, on thick *Nothofagus*, hb. Etayo 22863. *Ibidem*, *Nothofagus* base, U. Søchting 10355 (C). 34, on old *N. pumilio*, hb. Etayo 23036, 23043, 23044. 36, old *Nothofagus* sp. bark, J. Etayo 22935 (UMAG). 38, on old *Nothofagus* bark, hb. Etayo 23013. 40, on *N. pumilio*, hb. Etayo 23238. 35, on *N. pumilio*, hb. Etayo 23243, 23244. 44, on *N. betuloides*, hb. Etayo 24493, 24494.

Pseudocyphellaria dubia Du Rietz

Mainly known from Tierra del Fuego where it grows in *Nothofagus* forests, both on logs and on mossy rocks (Galloway, 1986). Santesson collected it in 1940 from Navarino and Hoste islands (Fryday, 2020). Recorded from Navarino by Galloway *et al.* (1995) and Quilhot *et al.* (2012).

14, *Nothofagus*, hb. Etayo 22198. 15, *N. pumilio*, J. Etayo 22501 (MAF). 26, on *Nothofagus* sp., hb. Etayo 22964. 28, over *Nothofagus* sp., J. Etayo 22816 (UMAG).

Pseudocyphellaria faveolata (Delise) Malme

Very rare in Navarino, where it was only found in a coastal locality, on fallen and horizontal trunks of thick *N. betuloides*, in lichen communities dominated by *Pseudocyphellaria* spp. Collected by Santesson in 1940 from Hoste Island (Fryday, 2020) and by Etayo and Sancho (2008) from Navarino.

44, on *Nothofagus betuloides*, hb. Etayo 24491 (UMAG).

Pseudocyphellaria freycinetii (Delise) Malme

Collected by Santesson in 1940 from Hoste Island (Fryday, 2020) and recorded from Navarino by Redón and Quilhot (1977), Galloway *et al.* (1995), Etayo and Sancho (2008) and Quilhot *et al.* (2012) (Fig. 38).

13, on vertical wall (o.c.). 14, on a mossy vertical wall, next to *P. glabra* (o.c.). 11, on an acidic soil (o.c.). 3, alpine soil with *Bolax*, J. Etayo 22271 (UMAG). 4, on acidic soil, hb. Etayo 22408, 22412; *ibidem*, J. Etayo 22418 (MAF). 6, on rock humus, hb. Etayo 22652 (UMAG). 16, on tundra

Fig. 38. *Pseudocyphellaria freycinetii* is a common species in Navarino, especially growing on soil, mosses or cushion plants. Photograph by Javier Etayo taken at Róbalo Lake, Omora Park, on 20 January 2005.

soil, hb. Etayo 22513, *ibidem*, J. Etayo 23168 (UMAG), *ibidem*, MAF 15928. 18, on mossy soil in *Nothofagus* sp. forest, J. Etayo 22550 (MAF). 20, soil, hb. Etayo 22973. 23, rocky protosoil, J. Etayo 22766 (UMAG). 27, mossy and shady rock, hb. Etayo 22822; *ibidem*, J. Etayo 22827 (UMAG). 29, 30º sloping rocks in the forest, hb. Etayo 22878 (MAF); *ibidem* hb. Etayo 22883. 38, on soil in sloping forest, hb. Etayo 23003; *ibidem*, hb. Etayo 23007 (MAF, UMAG). 39, alpine soil, hb. Etayo 23021, 23022, 23027.

Pseudocyphellaria glabra (J.D. Hooker & Taylor) Dodge

Locally frequent, especially in rocky areas near the sea, very variable, thalli can be completely covered with digitiform isidia or develop them scarcely on the edge of the thallus. It appears in the Santesson list from Navarino and Hoste islands (Fryday, 2020) and is cited by Etayo and Sancho (2008) from Navarino.

6, rocky ground near the sea, subvertical, J. Etayo 22638 (MAF, UMAG), hb. Etayo 22656. 13, subvertical rock, hb. Etayo 22191. 27, on vertical rocky ground, hb. Etayo 22828. 28, rocky outcrop, hb. Etayo 22777 (MAF). 44, on *N. betuloides*, hb. Etayo 24523 (UMAG).

Pseudocyphellaria granulata (C. Bab.) Malme

Santesson collected it in 1940 from Navarino and Hoste Islands (Fryday, 2020). Recorded also from Navarino by Redón and Quilhot (1977), Galloway *et al.* (1995), Etayo and Sancho (2008), Quilhot *et al.* (2012), Rozzi *et al.* (2012b) and Trest *et al.* (2015).

1, on *N. pumilio*, hb. Etayo 22133, 22127 (UMAG). 2, on *N. pumilio*, J. Etayo 22168 (MAF, UMAG), hb. Etayo 22169. 6, on *N. betuloides*, J. Etayo 22639 (UMAG); *ibidem*, hb. Etayo 22665. 7, on *N. pumilio*, hb. Etayo 22680. 8, on *N. pumilio*, hb. Etayo 22223. 15, on *N. pumilio*, hb. Etayo

22485, 22471 (MAF). 19, on *N. pumilio*, J. Etayo 22582 (MAF). 26, on *N. pumilio*, J. Etayo 22939 (UMAG). 27, on *P. granulata* in mossy and shady rock, J. Etayo 22825 (MAF). 28, on *Nothofagus* sp. trunk, J. Etayo 22808 (UMAG). 29, on *Nothofagus* branches, J. Etayo 22873 (MAF). 34, on *N. pumilio*, hb. Etayo 23042, 23041 (MAF), 23048 (UMAG, MAF). 38, on *N. pumilio*, hb. Etayo 23005, 23008. 35, on *N. pumilio*, hb. Etayo 23241.

Pseudocyphellaria hillii (Dodge) Galloway

A common species in Navarino that lives frequently together with *P. lechleri* from which it is distinguished by the isidia or phyllidia on the laminal ridges. Apothecia are normally absent but abundant in some cases.

Recorded from Navarino by Etayo and Sancho (2008).

1, on *N. pumilio*, hb. Etayo 22137. 2, *N. pumilio*, hb. Etayo 22181 (UMAG). 6, on *Nothofagus* sp., hb. Etayo 22661. 7, on *N. pumilio*, hb. Etayo 22688; *ibidem* J. Etayo 22702 (UMAG). 14, subvertical rock, hb. Etayo 22212. 8, trunk of *N. pumilio*, hb. Etayo 22231. 9, on *Nothofagus* sp., hb. Etayo 22725. 11, on *N. pumilio*, hb. Etayo 22261 (MAF), hb. Etayo 22456, 22464 (UMAG). 15, on *N. pumilio*, hb. Etayo 22476. 18, on *Nothofagus* sp., J. Etayo 22557 (UMAG). 19, on *N. pumilio*, J. Etayo 22576 (UMAG). *Ibidem*, hb. Etayo 22581. 26, on old bark of *Nothofagus* sp., hb. Etayo 22962. 28, on horizontal rock, J. Etayo 22793 (MAF); on trunk of *Nothofagus* sp., hb. Etayo 22809. 29, on thick *Nothofagus*, hb. Etayo 22864. 34, on *N. pumilio*, hb. Etayo 23054. 38, on *Nothofagus*, hb. Etayo 23002. 57, on *N. pumilio*, J. Etayo 24516 (UMAG). 44, on *N. betuloides*, hb. Etayo 24495.

Pseudocyphellaria hirsuta (Mont.) Malme

Similar to *P. obvoluta* from which it differs by having cyanobacteria instead of green algae. From *P. dubia* it differs in the absence of soralia.

Known from Argentina and Chile, including Navarino (Galloway, 1986; Galloway *et al.* 1995). It is included in the Santesson lichens collected in 1940 from Navarino (Fryday, 2020) but we have not collected it on the island.

*Pseudocyphellaria intricat*a (Del.) Vainio

Very uncommon on Navarino, we only found small thalli on bryophytes growing on coastal rocks.

28, on saxicolous bryophytes hb. Etayo 22782 (UMAG); *ibidem*, J. Etayo 22793 (MAF); *ibidem* U. Søchting 10355 (C). 29, on rocks in the forest, hb. Etayo 22875.

Pseudocyphellaria lechleri (Müll. Arg.) Du Rietz

It is included in Santesson list of lichens from Navarino and Hoste Islands (Fryday, 2020) and also recorded by Redón and Quilhot (1977), Galloway *et al.* (1995), Etayo and Sancho (2008), Trest *et al.* (2015) and Lücking *et al.* (2017) from Navarino (Fig. 39).

1, on *N. pumilio*, hb. Etayo 22123 (UMAG). 2, on *N. pumilio*, hb. Etayo 22174. 5, on soil in cliffs, J. Etayo 22612 (MAF). 7, on *N. pumilio*, hb. Etayo 22688. 13, on vertical wall, hb. Etayo 22197. 4, on *N. antarctica*, J. Etayo 22423 (MAF). 9, on *N. pumilio*, hb. Etayo 22467 (UMAG). 19, on *N. pumilio*, hb. Etayo 22581. 26, on *Nothofagus* sp., J. Etayo 22958 (UMAG). 28, bryophytes in rock, hb. Etayo 22784. 38, on *Nothofagus*, J. Etayo 23001 (MAF); *ibidem*, hb. Etayo 23006.

Pseudocyphellaria mallota (Tuck.) Magnusson

Similar to *P. dubia* from which it differs by having narrowly laciniate lobes with incised margins well attached to the substrate. Its surface is also more coriaceous to scabrid, less tomentose and of a darker colour. The lower surface is darker and tomentose than the upper side that has conspicuous yellow pseudocyphella (Galloway, 1986).

Fig. 39. *Pseudocyphellaria lechleri* is terricolous, muscicolous or inhabits trunk bases and is common in Navarino. Photograph by Javier Etayo taken at Cerro Bandera on 9 January 2005.

Magellanic lichen that reaches Valdivia and Juan Fernández and Tierra del Fuego and Chilean Antarctica (Galloway *et al.* 1995). It is included in the Santesson lichens from Navarino (Fryday, 2020) but seems to be uncommon on the island.

29, small specimens on rocks in the forest, hb. Etayo 22875.

Pseudocyphellaria neglecta **(Müll. Arg.) H. Magn.**

Only known with certainty from three localities. It has a thicker thallus than *P. citrina* and has marginal and laminal phyllidia instead of soredia. Rare in Navarino, on one occasion we found an enormous thallus with lobes 4 cm wide (Etayo 22823). It has been recorded from Navarino by Lücking *et al.* (2017).

7, on bark of *N. pumilio*, hb. Stage 22704. 8, on *Nothofagus*, hb. Etayo 22716.

27, on fallen *Nothofagus* trunk, hb. Etayo 22823.

Pseudocyphellaria pluvialis **R. Sant.**

Similar to *P. hirsuta*, from which it differs in its convex lobes, which are normally rolled downwards and are tomentose only at the edges, with the centre of the thallus remaining glabrous.

Chilean endemic, known only from Chiloé, Valdivia and Aisén (Galloway, 1986). According to Redón (1976) this is a Valdivian element of the Chilean flora. First record from Navarino.

29, humus on rocks near the coast, hb. Etayo 22887.

Psoroma antarcticum **Hong & Elvebakk**

Previously known from Antarctica, Navarino, South Georgia and Bouvet Island (Park *et al.* 2018). It seems to be more uncommon than *P. hypnorum* in Navarino.

23, peaty soil, J. Etayo 22758 (UMAG, MAF).

Fig. 40. *Psoroma hypnorum* apothecia covered by a felt of short hairs. Photograph by Javier Etayo taken at Torres del Paine National Park on 30 January 2005.

Psoroma cinnamomeum **Malme**

Terrestrial, with brown squamules, and thick, crenate edges. Differs from *Psoroma hypnorum* in the colour of the thallus, which in the latter is greyish green with brown tones, and the apothecia which are cupuliform with a hairy lower surface, while in *P. cinnamomeum* the thallus is reddish brown and the apothecia are slightly concave without hairs. Both coexist on alpine soils, together with *Pannaria hispidula*. South American-Antarctic species (Søchting *et al.* 2004), recorded from Navarino by Etayo and Sancho (2008). Also recorded from the Falkland Islands by Fryday *et al.* (2019).

13, rock fissures, hb. Etayo 22192. 3, alpine soil with *Bolax*, hb. Etayo 22281.

16, peaty soil, hb. Etayo 22511 (MAF). 30, over *Bolax*, US 10376. 33, over decomposing *Bolax*, with *Bacidia bagliettoana*, J. Etayo 22921 (MAF); *ibidem*, over *Bolax*, US 10394 (conf. Jørg.). 38, on a sloping floor, mixed with *Ps. hypnorum*, hb. Etayo 23010. 39, on *Bolax*, J. Etayo 23024 (UMAG).

Psoroma fruticulosum **James & Henssen**

This species has large black pycnidia which open up through cracks and a thick, sometimes almost fruticose thallus. Known so far from Australia and Argentina (Calvelo, 1992).

23, rock, U. Søchting 10264 (C) (conf. P.M. Jørg.), U. Søchting 10204 (C).

Psoroma hypnorum **(Vahl) Gray**

The ascomata of this species are variably pilose, with samples found without (alpine floor) or with abundant short, dense hairs (on bryophytes in coastal rocks). Some samples (Etayo 23014) have a thick and squamulose thalline margin. More extensive studies about this complex are required. Recorded from Navarino by Etayo and Sancho (2008) and from the Falkland Islands by Fryday *et al.* (2019) (Fig. 40).

Fig. 41. *Ramalina terebrata* is common on seashore rocks. Photograph by Javier Etayo taken at Caleta Mejillones on 10 January 2005.

3, alpine soil with *Bolax*, hb. Etayo 22281; *ibidem*, hb. Etayo 22293. 4, alpine soil (o.c.). 15, on soil, hb. Etayo 22473, *ibidem* on soil and *Leptogium menziesii*, hb. Etayo 22487. 16, peaty soil, hb. Etayo 22511, *ibidem*, MAF 15860. 20, on soil, J. Etayo 22975 (UMAG), U. Søchting 10309 (C), 10313 (conf. Jørg.) (C). 23, on humus, U. Søchting 10271 (hb. Jørg.). 28, on bryophytes growing on rock, hb. Etayo 22784. 29, humus on rock, J. Etayo 22884 (MAF). 38, on sloping ground, hb. Etayo 23010; *ibidem*, on mosses on the soil, hb. Etayo 23014.

Psoroma paleaceum (Fr.) Timdal & Tønsberg

Recorded by Santesson in Naturhistoriska riksmuseet (2021) from Navarino.

Psorophorus pholidotus (Mont.) Elvebakk

Psoroma reticulatum (Hue) Zahlbr.

Characterised by its squamulose yellow-green thallus and abundant apothecia, as well as by its corticolous growth. Recorded from Navarino by Redón and Quilhot (1977) and Etayo and Sancho (2008).

1, on *N. pumilio*, hb. Stage 22124. 10, on *N. betuloides* bark, hb. Etayo 22237.

19, on *N. pumilio*, J. Etayo 22568 (UMAG).

Punctelia stictica (Delise ex Duby) Krog

According to Stenroos (1991) this species is the only one of the genus that reaches the southernmost part of South America, citing it from the Chilean Antarctic and Argentinean Tierra del Fuego. A bipolar species also known from Europe, Africa and North America. Elvebakk *et al.* (2014) recorded it also in southern South America. Recorded from Navarino by Santesson in Fryday (2020) and Etayo and Sancho (2008).

5, on bryophytes growing on cliffs, J. Etayo 22607 (UMAG). *Ibidem,* on thin twigs, hb. Etayo 22623. 12, schistose rock near the coast, J. Etayo 22538 (MAF).

Ramalina canariensis **J. Steiner**

It was recorded by Santesson in Naturhistoriska riksmuseet (2021) from Navarino.

Ramalina farinacea **(L.) Ach.**

43, thin twigs of *Berberis*, hb. Etayo 24535.

Ramalina cf. **laevigata Fr.**

Fryday *et al.* (2019) recorded *R. laevigata* from the Falkland Islands.

43, on *Berberis* twiggs, hb. Etayo 24535.

Ramalina terebrata **Hook. & Taylor**

Forms small thalli on shrub branches or tree roots and much larger thalli on protected coastal rocks. Recorded from Navarino by Redón and Quilhot (1977), Etayo and Sancho (2008) and Rozzi *et al.* (2012b) (Fig. 41).

5, on cliffs, both on subvertical rocks and on branches, hb. Etayo 22610, *ibidem* MAF 15931, 16050. 28, on *Berberis microphylla*, hb. Etayo 22814. 29, humus on coastal rocks, J. Etayo 22887 (UMAG). 44, on coastal rocks, Etayo 24521 (UMAG).

Rhizocarpon geminatum **Körb.**

Bipolar species that reaches the Antarctic (Øvstedal & Lewis Smith, 2001). Recorded from Navarino by Etayo and Sancho (2008).

5, rock at 10 m a.s.l., hb. Etayo 22676. 12, schistose rock near the coast, hb. Etayo 22538 (MAF).

Rhizocarpon geographicum **(L.) DC.**

Forms small thalli on small stones on the ground between *Rh. polycarpum* and *Lecanora polytropa*. Often on rocks together with *Tremolecia atrata*. On the ridges of the Dientes de Navarino on Navarino Island, the thallus is very thin, composed almost entirely of black hypothallus, with few whitish or yellowish areoles only discernible with a magnifying glass. Recorded from Navarino by Redón and Quilhot (1977), Rozzi *et al.* (2012b) and Quilhot *et al.* (2012).

2, ground stones, hb. Etayo 24666, 24673. 4, siliceous soil stones, hb. Etayo 22430. 5, rock at 10 m hb. Etayo 22676, *ibid.* MAF 15932, 15715. 18, in rocky ground, J. Etayo 22560 (MAF). 21, rocky ground, J. Etayo 22755 (UMAG). 25, ridge rock, J. Etayo 22843 (MAF, UMAG). 43, coastal rocks, hb. Etayo 24540.

Rhizocarpon polycarpum **(Hepp) Th. Fr.**

We found it terricolous in the alpine zone, forming thalli with scattered, very thin areoles and small sessile apothecia, in many cases on stones in the ground between *Rh. geographicum*, *Tephromela atra* and *Lecanora polytropa*.

Bipolar species, common in the Northern Hemisphere, known from South Georgia, Australia, South Orkney, South Shetland and the Antarctic Peninsula (Øvstedal & Lewis Smith, 2001). Recorded from the Falkland Islands by Fryday *et al.* (2019).

2, ground stones, hb. Etayo 24660, 24673. 4, siliceous ground stones, hb. Etayo 22430. 31, on rock, hb. Etayo 22919. 39, soil stones, J. Etayo 23031 (UMAG).

Rimularia andreaeicola **Fryday**

Described in Fryday and Øvstedal (2012) from the Falkland Islands, this is the first record outside those islands.

4, bryophytes on the ground, hb. Etayo 22432 (rev. A. Fryday).

Rimularia hepaticicola **Kantvilas & Coppins**

Muscicolous thallus, black apothecia with a distinct margin, very agglomerated forming masses of tuberculate black apothecia. Apothecia orange, K+ purple, hymenium blue, K+ orange. Asci of the *Lecanora*-type, 8-spored; ascospores biseriate inside asci, simple, ellipsoidal, thin-walled, 10–12 x 4.5 µm.

16, on bryophytes, hb. Etayo 22514 (hb. Printzen). 27, on moss, U. Søchting 10318 (C). 26, humus on rock, hb. Etayo 22980 (hb. Galloway). 37, on plant debris, hb. Etayo 22985. 33, on plant debris and bryophytes, hb. Etayo 23062 (hb. Printzen).

Rinodina aurantiaca **Sheard**

Rinodina aurantiaca was described as endemic in an area between British Columbia and North California and Alberta to Colorado and Arizona (Sheard & Mayrhofer, 2002). It is a small corticolous species similar to *R. capensis* but with a more convex, pruinose disc with pannarin crystals and less prominent margin.

Loc. 13, A. Gómez–Bolea s.n. (BCN, conf. M. Giralt).

Rinodina conradii **Körb**.

Unmistakable because of its thick-walled triseptate ascospores. We found it next to *Bibbyaa bullata*, on humus and on top of degraded *Bolax* bushes. Recorded from the Falkland Islands by Fryday *et al.* (2019).

14, humus and bryophytes on subvertical wet wall, hb. Etayo 22201. 3, *Bolax* bushes, hb. Etayo 22288.

Rinodina lecideina **Mayrh. & Poelt**

28, on rounded pebbles on the beach together with *Haematomma erythroma*, hb. Etayo 22818.

Rinodina olivaceobrunnea **C.W. Dodge & G.E. Baker**

33, on *Bolax*, U. Søchting 10393 (C).

Rinodina peloleuca **(Nyl.) Müll. Arg.**

Characterised by its grey rusty thallus with abundant pycnidia, bacilliform conidia, 3–4 x 0.5 µm, and a brown, K+ orange-yellow epihymenium, as well as its *Physconia*-type ascospores, 21–23 x 10–11.5 µm.

Common in coastal rocks between orange *Teloschistaceae* and *Lecanora flotowiana*.

A southern species that was known from New Zealand and reaches the Antarctic (Øvstedal & Lewis Smith, 2001). Recorded from the Falkland Islands by Fryday *et al.* (2019).

5, rocks splashed by sea water, hb. Etayo 22627; *ibidem* J. Etayo 22635 (MAF). 12, on coastal rocks, hb. Etayo 22532. 14, white-yellow band of coastal rocks, with *G. sublobulata*, hb. Etayo 22208 (det. Giralt). 28, coastal rocks, hb. Etayo 22817 (det. Giralt).

Rusavskia elegans **(Link) S.Y. Kondr. & Kärnefelt**

Xanthoria elegans (Link) Th. Fr.

Recorded from Navarino by Quilhot *et al.* (2012).

32, very common on isolated rocks, hb. Etayo 23229.

Fig. 42. *Santessoniella* cf. *polychidioides* with apothecia on base of *Nothofagus pumilio*. Photograph by Javier Etayo taken at Cerro Bandera on 9 January 2005.

Santessoniella cf. polychidioides **(Zahlbr.) Henssen**

Dichotomous thallus, with *Scytonema* and cortex, apothecia of paraplectenchymatic excipulum and simple ascospores. Appearance similar to *Leptogium teretiusculum* (Fig. 42).

2, *N. pumilio* base, hb. Etayo 22187 (det. Jørg.).

Sarcogyne privigna **(Ach.) A. Massal.**

Widely dispersed apothecia between granite grains in communities with *Physcia* and *Dufourea australis* in coastal rocks.

12, on coastal rocks, hb. Etayo 22531.

Schismatomma sp.

Covers large surfaces, giving a white colour, completely sorediate and with *Trentepohlia* it lives on sloping trunks not exposed to direct water, together with *Chrysothryx candelaris* and *Chaenotheca stemonea*.

2, *N. pumilio*, hb. Etayo 22182. 11, on *N. pumilio*, hb. Etayo 22262. 26, on old *N. pumilio*, J. Etayo 22969 (MAF).

Sclerococcum nothofagi **Etayo, sp. nov. (Fig. 43)**

Mycobank no: MB 842283

Diagnosis: Differs from other epiphytic *Sclerococcum* species in its muriform ascospores, with 3–7 transversal and 0–4 longitudinal septa, slightly constricted at the septa, with obtuse apex, 18–32 x 8–10.5 µm.

Typus: Navarino, Puerto Williams, trail that crosses Virgen de Lourdes towards Barranca Guarriaco by a military zone on soil over smooth slopes and thick High-Deciduos beech (*Nothofagus*

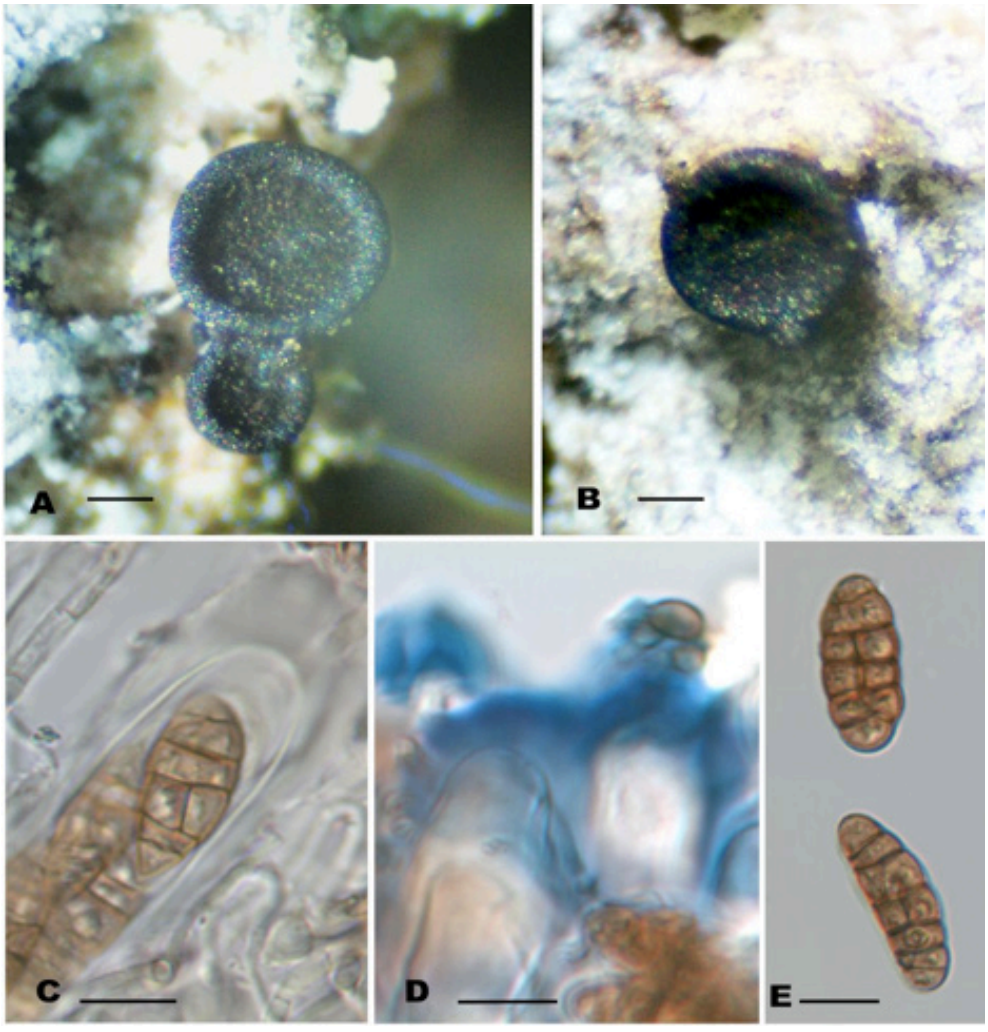

Fig. 43. *Sclerococcum nothofagi* sp. nov.. A, B, ascomata of *S. nothofagi* growing on the cortex of *Nothofagus*, sometimes on biofilm of algae or lichens. C, asci in KOH showing the external hyaline cap. D, asci in KI with the external cap stained with the Lugol's solution. E, ascospores muriform. Escales: A and B = 100 µm, C, D and E = 10 µm. Photograph by Javier Etayo.

pumilio) forests near the road, on old bark of *N. pumilio*, S54°56'46,0'', W67°34'52,2'', 14 January 2005, 90 m, J. Etayo 22482 (MAF-holotypus, hb. Etayo-isotypus).

Ascomata dispersed, black, flat, 250–400 µm diam., with thin, concolorous margin, 30–50 µm thick. Exciple laterally 70–80 µm wide, inside subhyaline, KI-, with hyphal texture, outside dark brown, K- and paraplechtenchymatous; lower exciple brown, paraplechtenchymatous, 40–60 µm wide, with thin-walled cells. Epithecium dark brown. Hypothecium greenish brown. Hymenium colourless, 100–110 µm thick. Paraphyses septate, hyaline, capitate at the apex, with intracellular brown pigment. Asci 8-spored, long clavate to subcylindrical, with an external amyloid cap, KI+ blue, but without amyloid tholi, 85–91 x 12–18 µm. Ascospores ellipsoidal, soon brown, muriform, with 3–7 transversal and 0–4 longitudinal septa, slightly constricted in the septa, with obtuse apex, 18–32 x 8–10.5 µm (21).

This is a corticolous species, whose dispersed apothecia are living with lichens, sometimes it looks like if they were lichenicolous. *Sclerococcum* Fr. was shown to be the correct name for *Dactylospora* Körb. (Diederich *et al.* 2018). Josef Hafellner said that *Dactylospora* has brown,

1–3-submuriform ascospores (see Nash III *et al*. 2004), although some species, even lichenicolous, have more septa and submuriform spores. Ihlen *et al*. (2004) recorded two species: *S. deminutum* (Th. Fr.) Ertz & Diederich on various lichens and *S. frigidum* (Hafellner) Ertz & Diederich on *Brigantiaea fuscolutea* with spores 7-septate to muriforme, but S. *nothofagi* is the one we have seen with clearly submuriform or muriform spores.

Sclerococcum. urceolatum (Th. Fr.) Ertz & Diederich, has 3–5(–7) septate to submuriform spores, but they are 15–23 x 4–6 µm and grow commensalistic on crustose terricolous lichens. Sarrión *et al*. (2002) described *D. mediterranea* Sarrión & Hafellner with (3–5)–7 to submuriform spores, saprobic and corticolous in forests of central Spain; its spores are 17–24 x 5–6.5 µm.

The most similar one, with normally submuriform, sometimes muriform spores is *D. frigida* Hafellner, a lichenicolous species on *Brigantiaea fuscolutea* (Hafellner, 1985). Apart from its lichenicolous habit it differs in its larger ascomata, 0.5–0.8 mm diam., smaller hymenium to 80 µm, greenish brown to greenish blue epithecium, smaller asci, 60–70 x 12–15 µm and less muriform ascospores with 5(–7) transversal and 1–2 longitudinal septa with a KI+ blue sheath and smaller in size, 17–22 x 6–8 µm.

This species is known only from the type locality, where it grows on old and thick cortex of *Nothofagus pumilio*.

Siphula fastigiata **(Nyl.) Nyl.**
Shackletonia hertelii (Søchting, Øvstedal & Sancho) Søchting, Frödén & Arup

A characteristic lichen growing on acidic soil or humus in Navarino. Although considered as sterile, we have found in some occasions some stromatic structures bordered by a thick margin similar to *Ochrolechia* apothecia. These are, however, formed by several cavities of perithecial aspect, easily seen from above because of several ostioles or similar structures. Hymenium I+ blue, asci unitunicate, cylindrical, ascospores 3-septate, hyaline. A. Fryday (pers. comm.) told us that these apothecia have traditionally been considered as a parasitic fungus, but this does not seem to us to be the case. Medulla K+ purple (thamnolic acid?).

21, acidic soil in the upper part of the rock, hb. Etayo 22744 (rev. A. Fryday). 11, on soil above a big rock, hb. Etayo 22462. 21, acidic soil, hb. Etayo 22742. 26, humus on rock, hb. Etayo 22980, U. Søchting 10294 (C).

Siphula ramalinoides **Nyl. ex Crombie**

The type of *S. ramalinoides* was collected at Puerto Bueno (Chile) and it is endemic to South America, south of latitude 42º; most samples are from Tierra del Fuego and the Straight of Magellan (Kantvilas & Elix, 2002). Our sample fits well morphologically with the type presented in Kantvilas and Elix (2002).

24, within terrestrial bryophytes, hb. Etayo 22835.

Siphulastrum mamillatum **(Hook. F. & Taylor) D.J. Galloway**

Squamulose thallus completely covered with isidia, blackish brown in colour. Black, lecideine apothecia, without algae in the edge. Typical of this genus is its I+ orange-red hymenium. Fryday *et al*. (2019) recorded this species from the Falkland Islands.

25, alpine soil between the rocky ground, hb. Etayo 22856; *ibidem*, J. Etayo 22648 (UMAG).

Sirenophila ovis-atra Sø chting, **Søgaard & Sancho**

Maritime species growing in the black '*Verrucaria*' zone. Described in Søchting *et al.* (2016) from Navarino, Macquarie Island and the Falkland Islands.

Sphaerophorus globosus **(Huds.) Vainio**

Can form large dirty orange cushions on peat bogs, on top of rocks or soil or even among tundra bushes and not uncommonly fertile.

A boreal to temperate species that reaches the Antarctic (Søchting *et al.* 2004). Recorded from Navarino by Santesson in Naturhistoriska riksmuseet (2021), Redón and Quilhot (1977), Etayo and Sancho (2008) and Quilhot *et al.* (2012).

11, peat bog, hb. Etayo 22247. 4, in acidic soil, J. Etayo 22407 (MAF, UMAG) 22427, hb. Etayo 22428. 16, tundra soil, hb. Etayo 22504 (UMAG), *ibidem* MAF 15929, 15704. 18, on tundra soil, J. Etayo 22598 (UMAG). 21, acidic soil (o.c). 29, on soil, J. Etayo 22892 (UMAG).

Sporastatia testudinea **(Ach.) A. Massal.**

4, rocky ridge at 700 m, L.G. Sancho (MAF s.n.).

Stereocaulon alpinum **Laurer**

Some samples (Etayo 22420) have orange, K- main branches. A bipolar-alpine species that reaches the Antarctic (Søchting *et al.* 2004). Recorded from Navarino by Santesson in Naturhistoriska riksmuseet (2021), Redón and Quilhot (1977) and Quilhot *et al.* (2012).

3, alpine soil with *Bolax*, J. Etayo 22285 (UMAG). 4, soil, between mosses and grasses, hb. Etayo 22420. 12, near the coast MAF 15935. 13, vertical wall near *Cystocoleus ebeneus*, hb. Stage 22196.

Stereocaulon glabrum **(Müll. Arg.) Vain.**

According to Aptroot and Knaap (1993) it is a southern species restricted to the Antarctic region, New Zealand and South America. Recorded from Navarino by Etayo and Sancho (2008) and from the Falkland Islands by Fryday *et al.* (2019).

21, on alpine soil, hb. Etayo 22726. 16, peaty soil, hb. Etayo 22510. 33, alpine soil, hb. Etayo 22917.

Sticta fuliginosa **(Hoffm.) Ach.**

The rarest species of the genus *Sticta* in Navarino. We found it, sterile and with abundant isidia covering its thallus, on *Nothofagus* at sea level in one single locality.

26, on humus, J. Etayo 22965 (MAF). 28, on *Nothofagus*, hb. Etayo 22788; *ibidem* MAF 15962. 29, on mossy rocks, J. Etayo 22861 (UMAG).

Sticta gaudichaldia **Delise**

Brownish *Sticta* of papyraceous thallus, without asexual reproductive structures. Found in Navarino on mossy soil and on low forest branches at the edge of the alpine floor. Recorded from south of Chile (Osorno, Magallanes) and Argentina (Tierra del Fuego, Falkland Islands by Galloway *et al.* (1995).

21, on soil and branches of *N. antarctica*, hb. Etayo 22727.

Sticta hypochra **Vainio**

Characterised by its distinctly stalked thallus and abundant groups of isidia on the edge of the lobes. Recorded from Navarino by Santesson in Naturhistoriska riksmuseet (2021), Redón

and Quilhot (1977), Galloway *et al.* (1995), Etayo and Sancho (2008), Quilhot *et al.* (2012) and Trest *et al.* (2015, as "cf. *hypochra*").

6, on the basis of *Nothofagus*, hb. Etayo 22658 (UMAG, MAF). 16, on unknown dead trunk, hb. Etayo 22507. 18, on *Nothofagus* sp., MAF, UMAG 22548. 19, on *N. pumilio*, hb. Etayo 22573. 27, mossy, shady rock, J. Etayo 22822 (UMAG). 34, on *N. pumilio* moss base, J. Etayo 23045 (MAF).

Sticta weigelii **(Ach.) Vain.**

Recorded from Navarino by Redón and Quilhot (1977), Quilhot *et al.* (2012) and from the Falkland Islands by Fryday *et al.* (2019).

Tasmidella variabilis Kantvilas, **Hafellner & Elix var. inactiva Kantvilas, Hafellner & Ellis**

White thallus with black ascomata with a thin and persistent margin, 0.6–1 mm in diameter. Epithecium dark green. Hypothecium reddish-brown, K+ purple over time. Subhymenium up to 150 µm, hyaline. Hymenium hyaline, c. 80 µm. Asci 8-spored; ascospores 14–20 x 8–10 µm, thick-walled.

Kantvilas *et al.* (1999) described two varieties: var. *variabilis* with yellowish olive thallus, UV+ orange-pink, C+ orange and K- and var. *inactiva*, with thallus UV-, C- and K+ yellow. This variety was only known from Tasmania growing on small twiggs in *Nothofagus cunninghamii* forests.

15, on the bark of *N. pumilio*, hb. Etayo 22489 (det. A. Fryday).

Tephromela atra (Huds.) Hafellner

Recorded from rocks in Navarino by Redón and Quilhot (1977) and Quilhot *et al.* (2012). Surely it refers to the common next species.

Tephromela atroviolacea **(Flot. in Nyl.) Fryday**

Thallus with yellowish tones and UV+ blue-white medulla, but with immersed ascomata with violet hymenium and an aspicilioid appearance. In addition, these specimens have small widely ellipsoidal ascospores of c. 10 x 5–6 µm. Fryday (2011) states that it is frequent in the Falkland Islands and Isla de los Estados, but very rare in other locations like Kerguelen Islands and Argentinian Tierra del Fuego.

5, coastal rocks, J. Etayo 22636 (MAF). 14, white band of coastal rocks, hb. Etayo 22210. 24, rocky outcrop, J. Etayo 22838 (UMAG). 26, lake rocks, hb. Etayo 22978. 39, stones from the ground, J. Etayo 23031 (UMAG).

Tephromela cf. tropica **Kalb**

Corticolous and with large, whitish blue, K-, UV- soralia and apothecia similar to *T. atra*. Our sample was compared with the lignicolous *T. lignicola* Orange & Fryday (Fryday, 2019a) from the Falkland Islands and it is really another species (Fig. 44).

27, on smooth bark of *N. pumilio*, hb. Etayo 22819. 48, on *N. pumilio*, hb. Etayo 23106.

Tephromela skottsbergii **(Darb.) Fryday**

Similar to *T. atra* but characterized by inspersed hymenium and slightly shorter conidia (Fryday, 2011). Our specimen forms islets on thalli of *Haematomma erythromma* on coastal rocks.

Widespread and frequent in the southern subpolar region, where it has been confused with *T. atra*. In South America has been recorded from Tierra del Fuego and Falkland Islands by Fryday (2011).

41, on the *Haematomma erythromma* thallus in coastal rocks, hb. Etayo 23223.

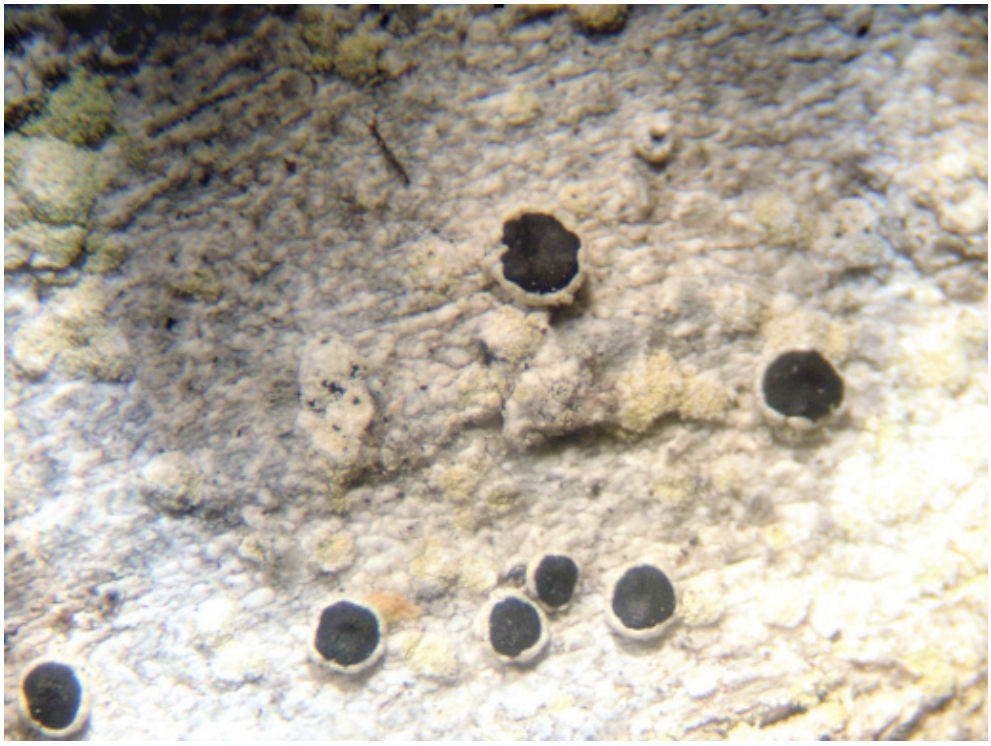

Fig. 44. *Tephromela* cf. *tropica* growing on *Nothofagus pumilio* with its whitish soralia and apothecia. Photograph by Javier Etayo taken at Laguna Parrillar, Brunswick Peninsula, on 4 February 2005.

Tetramelas graminicola **(Øvstedal) Kalb**

Buellia graminicola Øvstedal

Yellowish-grey thallus, granular, sometimes with a grey surface. Ascomata of 0.7–1.2 mm in diameter, widespread, sessile, flat disc, epruinose and with a persistent margin. Dark brown exciple, K+ yellow in solution. Hymenium without oily droplets, paraphyses capitate at the apex, black in colour. Ascospores 3-septate, brown, ellipsoidal, thick-walled, 25–32 x 10–11.5 µm.

According to Nordin (2000) it has 6-O-methylarthothelin as its main substance (C+ yellow). We did not carry out chemical analyses, but all the characteristics of this species known from South Georgia fully coincide with our specimens, except for the flexuous or even crenulate margin (Nordin, 2000). On these islands it grows on the basis of grasses (*Parodiochloa flabellata*) and *Colobanthus* shoots. Søchting *et al.* (2004) collected similar samples but with different chemotypes from the Antarctic, and point out the need for a more extensive study of this group. We found it directly on whitish *Bolax* bushes. Fryday (2019a) keyed out a *Buellia* sp. growing on *Bolax* and peat but without description.

16, on *Bolax* bushes, hb. Etayo 22524. 18, on soil bryophytes, hb. Etayo 22579. 29, on plant debris, UMAG 22894. 39, on dead *Bolax*, with *Lecanora epibryon*, J. Etayo 23027 (UMAG).

Thamnolia vermicularis **(Sw.) Schaer.**

Abundant on alpine soil together with *Cetraria aculeata*, *C. islandica*, *Ochrolechia frigida*, and *Sphaerophorus globosus*. Recorded from Navarino by Redón and Quilhot (1977), Etayo and Sancho (2008), Quilhot *et al.* (2012) and Laguna-Defior (2017) (Fig. 45).

Fig. 45. *Thamnolia vermicularis* forming tufts on alpine rocks intermixed with species of *Usnea*. Photograph by Leopoldo G. Sancho taken at Cerro Bandera on 9 January 2005.

3, alpine soil with *Bolax*, J. Etayo 22278 (UMAG). Loc. 4, on acidic soil, J. Etayo 22407 (MAF), 22415; *ibidem*, hb. Etayo 22417, 22428. 16, on alpine soil, MAF 15909, 15704, hb. Etayo 22505; *ibidem*, hb. Etayo 22521. 12, schists near the coast, J. Etayo 22545 (MAF). 18, on soil, hb. Etayo 22563; *ibidem*, on peaty soil J. Etayo 22598 (UMAG). 21, alpine soil, J. Etayo 22730 (UMAG); *ibidem*, hb. Etayo 22733; *ibidem* MAF 15937. 22, protosoil on slope, hb. Etayo 22768. *Ibidem*, J. Etayo 22774 (MAF). 25, on humus on rocks, J. Etayo 22855 (UMAG). 31, on alpine soil, J. Etayo 22904 (UMAG). 393, on alpine soil, J. Etayo 23026 (UMAG); *ibidem* hb. Etayo 23029.

Thelenella muscorum (Fr.) Vain. var. octospora (Nyl.) Coppins & Fryday

Muscicolous thallus, forms a thin whitish layer on the leaves of the bryophytes, apparently without algae. Perithecioid ascomata with a light brown wall. Abundant branched-anastomosed paraphyses, with oil droplets inside. Asci fissitunicate, with apically thickened wall, K-, with 2–8 ascospores, 100–155 x 20–36 µm. Muriform ascospores, fusiform or ellipsoidal with acute apices, 33–56 x 10–17.

According to Smith *et al.* (2009) the species was known from Europe.

42, on bryophytes on *Nothofagus* basis, hb. Etayo 24690 (duplicate McCarthy).

Thelotrema hians Stirt.

Among the species of subantarctic thelotremoid lichens that appear in Lumbsch *et al.* (2010) this taxon coincides with *T. hians* by the following characteristics: K+ red thallus, thelotremoid ascomata and ascospores 53–65 x 12–13 µm, with 13–15 cells, I+ light blue. *T. hians* was only known from New Zealand.

42, bark of *N. pumilio*, hb. Etayo 24681.

Thelotrema lepadinum **(Ach.) Ach.**

Mentioned by Lumbsch *et al.* (2010) from Magallanes and Chilean Antarctica.

11, on *N. pumilio*, hb. Etayo 22256.

Thelotrema subtile **Tuck.**

Asci 8-spored, each one with 9–13 transverse septa, 38–50 x 8–12 µm. The excipulum and thalline hyphae are I+ violet, as are the ascospores.

This species has recently been cited from Subantarctic areas, specifically Argentina, Chile and New Zealand by Lumbsch *et al.* (2010). In Chile, from the Brunswick Peninsula.

38, on *N. pumilio*, hb. Etayo 23004 (hb. Sipman).

Thelotrema sp. **1**

Related to *T. lepadinum* and *T. subtile*, it differs from the latter in its higher hymenium and larger ascospores. Spores are sometimes seen with a central longitudinal septum.

It appears in the form of small thalli among other lichens, such as *e.g. Coccotrema cucurbitula*.

18, on *Nothofagus* sp., hb. Etayo 22564, 22565 (hb. Sipman).

Thelotrema sp. **2**

This specimen shows very large ascospores, typically wide, de 85–110 x 31–37 µm, 1(–3) per ascus, submuriform.

26, on bark of *Nothofagus* sp., hb. Etayo 22957 (hb. Sipman).

Trapeliopsis flexuosa **(Fr.) Coppins & P. James**

We found thalli with many apothecia on fallen hard wood.

5, fallen wood, J. Etayo 22621 (UMAG); *ibidem*, J. Etayo 15716 (MAF). 15, wood of *N. pumilio*, hb. Etayo 22491.

Trapeliopsis granulosa **(Hoffm.) Lumbsch**

We find it with abundant apothecia on carbonized wood of burnt trunks together with *Hypocenomyce scalaris*.

Its bipolar distribution was already pointed out by Øvstedal and Gremmen (1995) who cited it from Isla Argentina (Antarctica) on *Polytrichum* turf. Fryday *et al.* (2019) recorded it from the Falkland Islands.

37, burnt wood, hb. Etayo 22987, J. Etayo 22988 (UMAG).

Tremolecia atrata **(Ach.) Hertel**

A cosmopolitan species that reaches the Antarctic (Søchting *et al.* 2004). Fryday *et al.* (2019) recorded it from the Falkland Islands.

4, on schists, hb. Etayo 22425. 18, on rocky ground, hb. Etayo 22560, 15847. 25, ridge rock, MAF 22843. In the micrometeorological station above Cerro Bandera, 700 m. (MAF).

Umbilicaria decussata **(Vill.) Zahlbr.**

In the micrometeorological station above Cerro Bandera, 700 m (not yet included in MAF).

Umbilicaria nylanderiana **(Zahlbr.) H. Magn.**

Bipolar-alpine species, very common in alpine and polar areas of the North Hemisphere, also recorded from maritime Antarctica (Olech, 2004; Sancho *et al.* 1992).

Recorded by Santesson in Naturhistoriska riksmuseet (2021) from Navarino.

14, on small boulders, MAF 20723.

Fig. 46. *Usnea aurantiaco-atra* with a violet hue and without apothecia seems to be parasited but no macroscopic lichenicolous fungi are associated. Photograph by Javier Etayo taken at Cerro Bandera on 9 January 2005.

Umbilicaria polyrrhiza **(L.) Fr.**

It is recorded from the Falkland Islands by Fryday *et al.* (2019).

In the micrometeorological station above Cerro Bandera, 700 m (not yet included in MAF).

Umbilicaria umbilicarioides **(Stein.) Krog & Swinscow**

18, on an isolated stone, hb. Etayo 22599; J. Etayo 20716 (MAF, UMAG). 23, on rocks, hb. Etayo 22762.

Umbilicaria vellea **(L.) Hoffm.**

13, on rock, MAF 20721 (UMAG).

Usnea acromelaena **Stirt.**

Recorded by Walker (1985), Santesson in Naturhistoriska riksmuseet (2021), Quilhot *et al.* (2012) and Laguna-Defior (2017) from Navarino.

Usnea aurantiaco-atra **(Jacq.) Bory**

Very characteristic by its large apothecia with black disc. Antarctic and Subantarctic species that reaches Southern South America (Søchting *et al.* 2004). Some thalli are totally black and violet, but they do not seem to have associated lichenicolous fungi. Recorded by Santesson in Naturhistoriska riksmuseet (2021), Redón and Quilhot (1977), Walker (1985), Etayo and Sancho (2008), Rozzi *et al.* (2012b), Fernández-Moriano *et al.* (2016), Laguna-Defior (2017) and Lagostina *et al.* (2021) from Navarino (Fig. 46).

2, on boulder J. Etayo 24633 (UMAG); *ibíd.*, pebbles on the ground, hb. Etayo 24664. 3,

pebbles on the ground, J. Etayo 22290 (UMAG). 4, on acidic soil, hb. Etayo 22406. 16, on rocks MAF 15871, 15872. 18, on rocks, hb. Etayo 22559 (UMAG). 21, on rock, J. Etayo 22751 (MAF). 22, on rock, hb. Etayo 22776. 25, rock in ridges, hb. Etayo 22845. 31, rocks, J. Etayo 22915 (UMAG). 34, rocks, MAF 16018 (UMAG).

Usnea contexta **Motyka**

Recorded by Fernández-Moriano *et al.* (2016) and Laguna-Defior (2017) from Navarino.

Usnea kuehnemannii **Motyka**

1, on *N. pumilio*, hb. Etayo 22142. 6, on *Nothofagus* sp., hb. Etayo 22666. 8, *Nothofagus* sp., hb. Etayo 22718. 38, on *N. pumilio*, J. Etayo 22992 (UMAG).

Usnea patagonica **F.J. Walker**

Recorded by Walker (1985) and Santesson in Naturhistoriska riksmuseet (2021) from Navarino.

Usnea perpusilla **(I.M. Lamb) F.J. Walker**

Recorded from Navarino by Etayo and Sancho (2008).

21, on rocks, MAF 15870 (UMAG).

Usnea cf. sphacelata **R. Br.**

Several thalli of *Usnea* with grey colored soralia are recorded here. Recorded from Navarino by Etayo and Sancho (2008).

4, rocks, hb. Etayo 22444. 28, on *Nothofagus* sp., hb. Etayo 22779; hb. Etayo, 22810 (MAF). 5, on thin twigs from an exposed bush, hb. Etayo 23489. 12, on *N. betuloides*, hb. Etayo 22536. 29, on twigs, J. Etayo 22895 (UMAG, MAF).

Usnea subantarctica **F.J. Walker**

Recorded by Laguna-Defior (2017) from Navarino.

Usnea trachycarpa **(Stirton) Müll. Arg.**

Recorded from Navarino by Santesson in Naturhistoriska riksmuseet (2021), Redón and Quilhot (1977), Walker (1985), Etayo and Sancho (2008), Quilhot *et al.* (2012), Rozzi *et al.* (2012b), Laguna-Defior (2017) and Lagostina *et al.* (2021) (Fig. 47).

14, on siliceous rocks, hb. Etayo 22204 (UMAG). 16, on small stones, MAF 15711. 3, pebbles on the ground, J. Etayo 22290 (UMAG). 4, on rocks, hb. Etayo 22405, 22406; *ibidem* MAF 15817. 21, on rocks, MAF 15876. 22, on rocks, hb. Etayo 22776. 25, rocks in a ridge, hb. Etayo 22846 (UMAG).

Usnea ushuaiensis **(I.M. Lamb) Wirtz, Printzen & Lumbsch**

Recorded by Laguna-Defior (2017) from Navarino.

Usnea sp. 1

A saxicolous species with isidiate soralia and black isidia.

28, seashore rocks, with *Parmelia saxatilis*, hb. Etayo 22812 (MAF). 37, seashore rocks, hb. Etayo 22991.

Fig. 47. *Usnea trachycarpa*, a saxicolous species with light colored apothecial discs. Photograph by Javier Etayo taken at Cerro Bandera on 9 January 2005.

Usnea sp. 2

With many cilate apothecia *florida*-type.

37, on thick fallen log in the beach, hb. Etayo 22986.

Verrucaria cf. **degelii R. Sant.**

Recorded from Navarino by Pérez-Ortega *et al.* (2010).

Verrucaria dispartita **Vain.**

Barely visible thallus and sessile ascomata with a rough surface, it is characterised by its small ascospores less than 10 µm long.

According to Øvstedal and Lewis Smith (2001) it is an Antarctic endemism. It is found together with *V. durietzii* and *V. tessellatula* on a coastal rocky outcrop.

41, on coastal rocks, hb. Etayo 23224.

Verrucaria durietzii **I.M. Lamb**

It is very characteristic because of its sublobed thallus crossed by stripes.

It is known from New Zealand, the Falkland Islands and Antarctica (Øvstedal & Lewis Smith, 2001).

41, on coastal rocks, hb. Etayo 23224.

Verrucaria halizoa **Leight.**

Thin, green thallus with ascomata of 0.25–0.3 mm diameter, thick involucrellum up to the middle of the ascomata and hyaline excipulum below. Ascospores of 11–13.5 x 4.5–5.5 µm. In coastal rocks in protected locations. Recorded from Navarino by Pérez-Ortega *et al.* (2010).

28, sea pebble, hb. Etayo 22817.

Verrucaria margacea **(Wahlenb. in Ach.) Wahlenb.**

Thallus light greenish in colour, with large ascomata of 0.4–0.5 mm in diameter, with the involucrellum extended laterally and a brownish excipulum only in its upper half. The ascospores are large, 27–32 x 9–14 µm, with a large central oildrop.

25, on stones from the stream, hb. Etayo 22850.

Verrucaria puncticulata **(P.M. McCarthy) P.M. McCarthy**

Similar to *V. hydrela* Ach. but with a dotted thallus. Ascospores 15–19 x 7–10 µm. Known from Australia (McCarthy, 1995).

23, stones from the stream that flows into a glacial lake, very abundant, hb. Etayo 22764.

Verrucaria cf. **serpuloides I.M. Lamb**

Recorded from Navarino by Pérez-Ortega *et al.* (2010).

Verrucaria tessellatula **Nyl.**

It is characterised by its rimose, brownish thallus, with black edges and hyaline bordered ascomata except for the upper part. According to Øvstedal and Lewis Smith (2001) Antarctic-South Shetland endemic. Very common on stones washed by high tide, which it colours brown.

5, rocks splashed by seawater, hb. Etayo 22626. 41, on coastal rocks, hb. Etayo 23224.

Vězdaea aestivalis **(Ohl.) Tsch.-Woess & Poelt**

Green thallus, composed of goniocysts without hyaline projections towards the outside. Adnate ascomata with a convex disc and without a clear border, light brown disc, 0.4–0.7 mm in diameter, without discernible epihymenium or hypothecium. Hymenium cream coloured, formed by a large number of asci, each one of them wrapped in a net of septate paraphyses, very short, ramified-anastomosing, of 1.5–3 µm, often capped at the apices, which reach 3–5.5 µm. Asci claviform, 8-spored; ascospores biseriate inside the ascus, narrowly ellipsoidal, straigth, sometimes curved, simple, rarely 1-septate with a thick central drop, of smooth wall, 15–20 x 4–7 µm.

We find it well fruiting on land on a cliff edge at about 10 m high very close to the coast. Until now, it was only known from Europe.

5, soil on rock at 10 m a.s.l., hb. Etayo 22678.

Villophora darwiniana **Søchting, Søgaard & Arup**

On bark of *Nothofagus*. Recorded from several localities on Navarino Island by Søchting *et al.* (2021).

Villophora isidioclada **(Zahlbr.) Søchting, Frödén & Arup**

Recorded from maritime rocks on Navarino Island by Søchting *et al.* (2021).

Villophora onas **Søchting, Søgaard & Arup**

Saxicolous on basaltic overhang. Recorded from Paso Mladineo on Navarino Island by Søchting *et al.* (2021).

Villophora wallaceana **Søchting & Søgaard**

On bark of *Nothofagus pumilio*. Described from pristine forest on Navarino Island by Søchting *et al.* (2021), and is so far endemic to the island.

5, on exposed twigs, hb. Etayo 22623, 23488.

Xanthoparmelia mougeotii **(Schaer. ex D. Dietr.) Hale**

Elvebakk *et al.* (2014) recorded it as probably common in Southern South America. Recorded by Santesson in Fryday (2020).

12, schists near the coast, hb. Etayo 22535.

Xanthoparmelia submougeotii **Hale**

The type material comes from Juan Fernández Island (Chile) (Hale, 1990), but the species seems to be known also from Magallanes (Adler & Calvelo, 2002). These authors refer to it as a Patagonian-Andean element. According to Elvebakk *et al.* (2014) it is very common in Southern South America. Recorded from Navarino by Etayo and Sancho (2008).

5, rock, 10 m a.s.l., hb. Etayo 22676, vertical and protected wall, hb. Etayo 22200. 28, siliceous rocks near the sea, hb. Etayo 22797, 22801. 37, rocky outcrops near the sea, hb. Etayo 22983.

Xanthopsoroma soccatum **(R. Br. ex Cromb.) Elvebakk**

Psoroma soccatum R. Br. ex Cromb.

This austral species is distinguished by its corticolous habitat and by the formation of small squamules (smaller than 1 mm in diameter) on a wide black hypothalus, which carry labriform to laminar soralia, all of which are of a yellowish colour (usnic acid and terpenoids). Our specimen has no apothecia.

11, abundant on *N. pumilio*, hb. Etayo 22454 (MAF) (conf. Jørg.).

Xenolecia spadicomma **(Nyl.) Hertel**

Named as *Bellemerea diamarta* (Ach.) Hafellner & Roux in Etayo and Sancho (2008) as the host for *Opegrapha reactiva* (Alstrup & D. Hawksw.) Etayo & Diederich. This species has a rimose-areolate thallus, cream to orange colored, apothecia are black flat to concave and large ascospores, 24–26 x 8–10 µm in our samples and it is characterised by its particular habitat, living on inundated rocks of streams.

Common on pebbles around the shore of Róbalo Lake; these pebbles are ochre colored because of this species. The type comes from Isla Wellington (Chile) and it is also known from Falkland Islands to northern Patagonia (Fryday & Thus, 2017).

26, on pebbles in or near the water, hb. Etayo 22943.

Xylographa parallela **(Ach.) Fr.**

Recorded from Navarino by Spribille *et al.* (2014).

2, fallen wood, hb. Etayo 24646; woodland interior, hb. Etayo 24644. 17, on *N. pumilio* wood, hb. Etayo 22268. 15, *N. pumilio* wood, hb. Etayo 22493, 22498. 36, on *Nothofagus* wood on the edge of the track, J. Etayo 22931 (UMAG). 42, *N. pumilio* wood, hb. Etayo 24682 (UMAG, MAF).

Xylographa aff. trunciseda **(Th. Fr.) Minks ex Redinger**

Endophloeodal thallus, it has convex apothecia, brownish-orange to brownish-black coloured, with or without a thin border. Its features fit well with this species which, however, is not cited from the Southern Hemisphere (Spribille *et al.* 2014).

26, on *Nothofagus* wood, hb. Etayo 22956.

Xylographa aff. **vermicularis T. Sprib.**

Recorded from Navarino by Spribille *et al.* (2014).

Xylographa vitiligo **(Ach.) Laundon**

We found it together with *X. parallela*, some thalli being very sorediate, with long, greenish to brownish, soralia, K+ yellow, P+ orange, that could belong to this species or be the rarely sorediate form of *X. vitiligo* (Spribille *et al.* 2014).

2, wood in the forest, hb. Etayo 22185, 24645. 15, wood of *N. pumilio*, hb. Etayo 22498.

Zahlbrucknerella maritima **Henssen**

Recorded by Santesson in Naturhistoriska riksmuseet (2021) from Navarino.

Lichenicolous fungi. A complement to Etayo and Sancho (2008).

Corticiruptor corallinus **Etayo**

This species was described in Etayo and Sancho (2008) as a fungus growing on *Pseudocyphellaria crocata* but it really was growing on *P. citrina* (see this species in the catalogue).

Lambiella insularis **(Nyl.) T. Sprib.**

Rimularia insularis (Nyl.) Rambold & Hertel

On *Lecanora rupicola* thallus, forming small spots of a few mm diam. that end up deteriorating the thallus of the host. We recorded before from Navarino but from another location.

12, on rocks near the coast, hb. Etayo 22533.

Sclerococcum australis **(Triebel & Hertel) Ertz & Diederich**

It was already recorded from Navarino (Etayo & Sancho, 2008), not on this host, but on *Coccotrema, Lecidea* and *cf. Porpidia*.

2, on *Poeltidea perusta* on pebbles on the ground, together with *Usnea aurantiaco-atra*, hb. Etayo 24664.

Tremella haematommatis **Diederich**

This is the only species of *Tremella* known as a parasite of *Haematomma*. It was described (Diederich, 1996) on *H. puniceum* from U.S.A. (Florida and Louisiana). We have found it on one occasion on *H. notophagi*. Basidiomata are very similar to those described but basidia are not completely developed. It is a new record for South America.

2, on *Haematomma nothofagi* on *N. pumilio*, hb. Etayo 24637.

Excluded species of lichens from Navarino

Belleremea diamarta **(Ach.) Hafellner & Roux**

This species was recorded in Etayo and Sancho (2008) as the host for *Opegrapha reactiva* (Alstrup & D. Hawksw.) Etayo & Diederich. However, it belongs to an austral genus different to *Bellemerea* (see *Xenolecia spadicomma* in this paper).

Chaenotheca furfuracea **(L.) Tibell**

It appears between Santesson records from Navarino (Fryday, 2020), See above text about *C. brachypoda*.

Flavoparmelia caperata **(L.) Hale**

Recorded by Quilhot *et al.* (2012) from Navarino, but probably erroneously. We have not found in Navarino anything similar to this species.

Massalongia carnosa **(Dicks.) Körb.**

See discussion under *M. patagonica* in this paper.

Ochrolechia parella **(L.) A. Massal.**

A subcosmopolitan, saxicolous, siliceous species, generally found in South America in coastal rocks. Several citations from southern Argentina and Chile appear in Messuti and Lumbsch (2000) as *O. parella* but its real name is *O. antarctica* (Ertz *et al.* 2016).

Pseudephebe pubescens **(L.) M. Choisy**

See discussion under *P. minuscula* in this paper.

Pseudocyphellaria crocata **(L.) Vain.**

See discussion under *P. citrina* in this paper.

Usnea antarctica **Du Rietz**

This species has been recorded from Navarino and Southern South America by several authors like Walker (1985), Etayo and Sancho (2008) and Laguna-Defior (2017). It was considered an Antarctic species that reaches Southern South America (Søchting *et al.* 2004). Recent leaded by Lagostina *et al.* 2021 confirm that this species is probably inexistent at Navarino neither in other South America zones.

Xanthoria parietina **(L.) Th. Fr.**

Etayo and Sancho (2008) recorded *Arthonia sytnikii* S. Kondr. growing on *X. parietina* on coastal rocks, but this host really belongs to *Dufourea*.

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