The Lichens of Rip Point, Nelson Island, South Shetland Islands, Antarctica

(lichen | taxonomy | Antarctica)

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INTRODUCTION

Nelson Island (lat. 62°14′41″- 62°22′11″S, long. 58°49′30″- 59°15′00″W) is one of the largest islands of the South Shetland archipelago, located south-west of King George Island (Fildes Peninsula), from which it is isolated by Fildes Strait. Rip Point (lat. 62°14′14″- 62°15′45″S, long. 58°59′13″- 59°02′30″W) is located on the northern side of Nelson Island, adjacent to Nelson Glacier (Fig. 1).

The lichens of Nelson Island have been reported by some earlier authors. Skottsberg (1912) gave the first ecological account of the Island. Dodge (1973) reported 13 species from Nelson Island, but this number does not correspond to the total, since Andreev (1988) reported 119 species from Fildes Peninsula, on the neighbouring (northern) King George Island. Some species are probably endemic to Nelson Island (Redon, 1985). The flora of this island is poorly known, so an accurate phytogeographical study of the South Shetland Islands is still impossible.

MATERIALS AND METHODS

During the 1990–91 and 1994–95 summer seasons, as part of the Brazilian Antarctic Program, we surveyed the northern area of Nelson Island (Rip Point), studying the flora. Using the phytosociological methods of Braun-Blanquet (1964), we chose 92 stands to be studied. In these a total of 2,022 squares 20×20cm were plotted and all the species in each were determined. Samples were collected and deposited in the HUNISC Herbarium after taxonomical assessment. Some were also obtained outside the Rip Point area.

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RESULTS

KEY TO THE LICHEN GENERA FOUND IN RIP POINT, NELSON ISLAND

1.1 Thallus absent or present and poorly developed or crustose, strongly attached to substratum by ventral surface 2

1.2 Thallus scamose, folious or fruticulose, adhered to the substrate by hairs, rhizinae, gomphus or disc 17

2.1 Thallus absent, appearing only lecanorine apothecia over the substratum 3

2.2 Thallus present, despite sometimes poorly developed, crustose 4

3.1 Muscicolous; apothecia orange to black; spores polarilocular .... *Caloplaca*

3.2 Saxicolous; apothecia with black disc and white border; spores simple .... *Lecanora*

4.1 Ascocap perithecioid 5

4.2 Ascocarp apothecioid.......................................6

5.1 Thallus olive-green, brown to black, generally growing near seashore line; nitrophilous or nitrophobous; spores simple.......... *Verrucaria*

5.2 Thallus whitish, nitrophilous; spores muriform .... *Microglaena*

6.1 Apothecia lecanorine 7

6.2 Apothecia lecideine or biatorine....................12

7.1 Thallus orange or yellow, K(+) purple red; apothecia concolour or blackish, not immerse. Spores hyaline, polarilocular .... *Caloplaca*

7.2 Thallus and apothecia otherwise coloured, or if thallus pallid yellow and immerse red or black apothecia, then K(+) yellow. If hyaline, the spores are not polarilocular, or the apothecia are not lecanorine..........................8

8.1 Thallus yellow with immerse red apothecia; spores hyaline, fusiform, 4-celled ....*Haematomma*

8.2 If yellow thallus present, the apothecia are otherwise in colour; if spores hyaline, then they are unicellular 9

9.1 Asci polisporous, with very small (–4.0µm) hyaline ascospores; apothecia immersed or emergent ....*Acrospora*

9.2 Asci 1-8-spored, forming medium to large, hyaline or pigmented ascospores; apothecia immersed or not..10

10.1 Apothecia more or less pseudo-perithecioid, with small disc, punctiform; ascospores hyaline, very large (up to 50µm)......... *Pertusaria*

10.2 Apothecia typically apothecioid, with large disc; ascospores hyaline or pigmented........11

11.1 Ascospores hyaline, 20-80µm large, simple ....*Ochrolechia*

11.2 Ascospores brown to black, smaller than 30µm, 2-4-locular............................*Rinodina*

12.1 Apothecia biatorine.......................... *Blastenia*

12.2 Apothecia lecideine 13

13.1 Ascospores dark coloured............................14

13.2 Ascospores hyaline......................................15

14.1 Thallus gray or yellowish; spores bicellular to muriform, with a gelatinous sheath............ ....*Rhizocarpon*

14.2 Thallus white to brown, sometimes yellowish; spores without gelatinous sheath, generally 1-septate, rarely transversally septate ...... *Buellia*

15.1 Ascospores polarilocular ....*Huea*

15.2 Ascospores hyaline 16

16.1 Thallus rust-reddish, apothecia with 0.2-0.7mm.................................... *Tremolecia*

16.2 Thallus whitish or if reddish, apothecia larger, 0.5-1.5mm............. *Carbonea/ Lecidea*

17.1 Thallus squamulose to folious.................... 18

17.2 Thallus fruticose (*Cladonia* species generally have a folious primordium)................ 27

18.1 Thallus with perithecia .... *Turgidosculum* (= *Mastodia*)

18.2 Thallus when fertile with apothecia 19

19.1 Thallus squamulose to dwarf folious.......... 20

19.2 Thallus typically folious 21

20.1 Phycobiont blue-green (*Nostoc*)...... *Pannaria*

20.2 Phycobiont green (trebouxioid)........ *Psoroma*

21.1 Thallus umbilicate, attached to substratum by a gomphus on ventral surface...... *Umbilicaria*

21.2 Thallus not umbilicate, attached otherwise to substratum... 22

22.1 Thallus hollow ....*Hypogymnia*

22.2 Thallus not hollow 23

23.1 Thallus orange, of small cushions of ascending lobes, K(+) purple..................... *Xanthoria*

23.2 Thallus folious, variable in colour, but not orange; K(–) 24

24.1 Thallus greenish-black to black; ventral surface smooth to slightly tomentose................. .... *Leptogium*

24.2 Thallus green, bluish or brown; ventral surface with tomentum, veins or rhizinae 25

25.1 Ventral surface white, with dark rhizinae .... *Physcia*

25.2 Ventral surface black or dark...................... 26

26.1 Thallus with soralia and isidia......... *Parmelia*

26.2 Thallus without soralia and isidia...*Physconia*

27.1 Thallus of brown or black hair-like filaments, branched 28

27.2 Thallus not consisting of branched brown hair-like filaments 29

28.1 Filaments minute (10-20µm diam.), forming a crust-like on soil or mosses ...... *Cystocoleus*

28.2 Filaments larger, not crust-like if well developed .... *Pseudophebe*

29.1 Thallus yellowish, consisting of flat (strap-shaped) laciniae with perforations caused by laminal soredia detachement; growing on coastal rocks .... *Ramalina*

29.2 Thallus if yellowish not perfored by soredial detachement or at least not flattened; growing on coastal areas or inland 30

30.1 Thallus black, without soredia; on rocks or mosses not coastal .... *Himantormia*

30.2 Thallus not black, with or without soredia; coastal or not 31

31.1 Thallus hollow 32

31.2 Thallus not hollow 34

32.1 Thallus variegated black and gray .... *Hypogymnia*

32.2 Thallus not variegated 33

33.1 Thallus with spiny branchlet tips, glossy .... *Cornicularia*

33.2 Thallus with branchlet tips not spiny, mat .... *Cladonia*

34.1 Thallus richly branched, variegated black and yellow .... *Usnea*

34.2 Thallus unbranched to richly branched, not variegated black and yellow 35

35.1 Thallus bearing phyllocladia ......*Stereocaulon*

35.2 Thallus not bearing phyllocladia .... *Sphaerophorus*

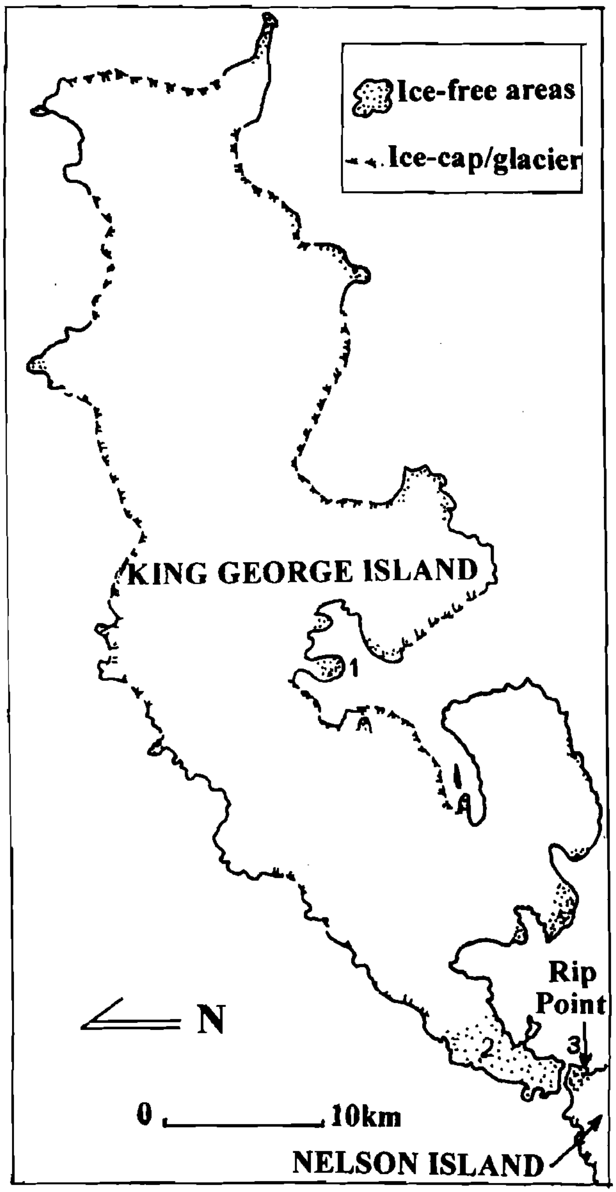

Fig. 1 — Map of King George and Nelson Islands showing the surveyed areas: 1 – Keller Peninsula; 2 – Fildes Peninsula; 3 – Rip Point.

THE GENERA AND SPECIES OF LICHENS

Acarospora Mass.

Acarospora macrocyclos Vain.

Thallus crustose, effigurate in the margin, tobacco-brown to blackish-brown; upper cortex in marginal lobes 10-25µm thick; algal stract 50-80µm; medula 200-300µm; downer cortex 20-30µm; phycobiont: *Trebouxia*. Apothecia immerse, plane and black disc, 0.4-1.0mm diam.; spores ellipsoid, 3.5-1.8µm in polisporic asci.

This species from section *Phaeothallia* Magn., occurred near bird colonies (ornitocoprophilous) and probably other species are represented too. These have not been identified up to now because of the taxonomical problems involving this genus. Castello & Nimis (1994) revised the Antarctic Acarosporaceae, but only the species of section *Xanthothallia* s.s. (yellow) of *Acarospora* were treated.

Bacidia Zahlbr.

Bacidia stipata Lamb

Thallus fruticulose, forming groups 8-18x7µm, varying from black to yellow-brown, with strongly adhered, cylindric to slightly applanate, irregularly ramified stipes. Primary thallus, hypothallus, soredia and rhizinae absent. Chemical reactions negative. Apothecia apically formed, lecideine, plane to concave, 0.8-1.2mm diam.; spores hyaline, 8 per ascus, from straight to allantoid, transversally septate, 5-8 cells, 24-34×2.5-3.0µm.

This nitrophilous species (section *Thamnopsis*, fruticulose) grows around bird colonies.

Buellia de Not.

This genus of crustose thallus (rarely fruticose) with lecideine apothecia and dark bicellular spores is represented by at least six species: *B. august*, *Buellia nelsonii*, *B. cladocarpiza*, *B. coniopsis*, *B. russa* and *B. anisomera*. All of them keyed out in Redon (1985).

KEY TO *BUELLIA* SPECIES

1.1 Thallus yellow; C generally (+) orange-yellow to orange-red 2

1.2 Thallus not yellow 3

2.1 Epithecia brown to blackish-brown, not aeruginose, HNO_3 (–); prothallus usually absent .... *B. anisomera*

2.2 Epithecia aeruginose or green blue-blackish, HNO_3 (+) carmesin-red; prothallus present, well developed, black .... *B. nelsonii*

3.1 Thallus brown or brownish.............................. 4

3.2 Thallus with other colours 5

4.1 Thallus formed by brownish or brown-reddish verrucae, with finely granulose surface and with whitish spots .... *B. augusta*

4.2 Thallus formed by small (0.5mm diam.) verrucae, not coloured as above .... *B. coniopsis*

5.1 Thallus formed by short stipes 5-15mm high, covered by small metallic granulae .... *B. cladocarpiz*

Buellia augusta Vain.

Thallus crustose reddish-brown to dark-brown, effuse, up to 1.5mm thick, verrucose-areolate with small white spots. Prothallus and hypothallus black. Hymenium 70-90µm thick, HNO_3 (–); asci clavate forming 8 spores. Spores blackish-brown, ellipsoid, 1-septate, (12-)14-16(-18)×6-8(-9)µm. Pycnidia immerse, containing filiform and arched conidia 20-25µm long. Chemical reaction negative.

This is a saxicolous species, strongly nitrophilous, being found around bird colonies.

Buellia nelsonii Darb.

Thallus crustose, rimose areolate, forming small patches, up to 1cm diam., yellowish, 0.1-0.2mm thick, with dark hypothallus; areola plane, 0.3-0.5mm diam.; soralia absent. Apothecia lecideine, sessile, plane, rarely somewhat convex. Hymenium 90-110µm high. HNO_3 (+) purple red; hypothecia dark-brown. Asci clavate with 6-8 spores. Spores brown to dark-brown, versiform but mostly ellipsoid, uniseptate (13.5-)16-20×6-8µm. Pycnidia immerse, globose, with blackish-brown ostiole. Conidia 5×0.7µm. This species is known only from the South Shetland Islands.

Buellia cladocarpiza Darb.

Thallus formed by short stipes, more or less disperse, 1.0-2.5×0.5-1.5cm high, whitish to cream, without soredia and prothallus. Apothecia sessile, 0.8-1.5mm diam., black, plane when young and then convex; hypothecia blackish-brown; hymenium 90-100µm thick, HNO_3 (–); asci clavate containing 8 spores. Spores ellipsoidal, 1-septate, rarely 3-septate, with two accessories septa, 18-25×8-11µm. Pycnidia absent. K(+) yellow; P(+) sulfur yellow.

This species is nitrophilous, probably endemic from the Antarctic.

Buellia coniopsis (Wahlenb. ex Ach.) Th. Fr.

Thallus crustose, gray to brown or reddish-brown, up to 6mm thick, rimose-areolate to cracked, areolate-verrucose or subscamose; prothallus brown to blackish-brown, fibrilose fimbriate to effuse, sometimes absent. Soralia absent. Apothecia 0.4-1.0mm diam., sessile, not pruinose, plane to convex; hymenium HNO_3 (–), (60-)70-75(-95)µm thick; hypothecia brown to blackish-brown, asci clavate, forming 8 spores. Spores brown, ellipsoid, slightly 1-septate, (12-)14-17×7-9(-11)µm. Pycnidia frequent, slightly prominent; conidia filiform, 20-25×0.6-0.7µm. Chemical reaction negative.

This is a nitrophilous, bipolar species.

Buellia russa (Hue) Darb.

Thallus crustose, cream to cupric or gray, variable in colour, effuse, forming orbicular to irregular patches, sometimes confluent or covering large areas, 0.2-1.5mm thick, areolate to verrucose-areolate, areola 0.3-0.8mm diam., angled, plane to convex, more or less isodiametric, separed by thin cracks, sometimes with an hypothalamus, black to brown; soralia absent. Apothecia generally present, immersed when young, not pruinose, plane to convex; hymenium (70-)75-85(-100)μm high. HNO_3 (–); hypothecia pallid-brown, reddish-brown to dark-brown; asci clavate containing 6-8 spores; spores brown to dark-brown, straight, 1-septate, (12-)13-18(-20) ×(6-)7-9(-10)μm; pycnidia forming dark spots; conidia straight 3-4×0.5-0.7μm. K(–) or (+) yellowish to dark red; p(–) or (+) yellow.

This is a nitrophilous, largely polymorphic species.

Buellia anisomera Vain.

Thallus crustose, lemon-yellow to sulphur-yellow, effuse, 0.3-1.0(-2) mm thick, rimose-areolate to verrucose. Prothallus normally absent. Soredia absent. Apothecia 0.5-1.3mm diam., sessile when mature, rounded, black, plane to convex. Hymenium up to 100μm thick. HNO_3 (–); asci clavate, with 8 spores. Spores olive-brown to dark-brown, 1-septate, sometimes 3-septate 16-24×6-9μm. Pycnidia generally present; conidia 5-6×0.8-1.0μm. C (+) orange yellow to orange.

This saxicolous species is probably endemic to the Antarctic.

Caloplaca Th. Fr.

This is a problematic genus that needs a complete taxonomic revision, including the Antarctic material (Redon, 1985). About 22 species were reported from the Antarctic, most discussed by Dodge (1973) under *Gasparrinia* tornabene, *Polycaulina* Hue and *Caloplaca* Th. Fr. Five are reported in Redon (1985), *C. millegrana* (Muell. Arg.) Zahlbr. for the first time in South Shetland Islands. Andreev (1988), studying the lichens of Fildes Peninsula, King George Island, cited 12 species. In Nelson Island, we were able to identify six species: *Caloplaca regalis* (Vain.) Zahlbr., *C. athallina* Darb., *C. sublobulata* (Nyl.) Zahlbr., *C. cinericola* (Hue) Darb., *C. mawsonii* (Dodge) Dodge [= *C. citrina* (Hoffm.) Th. Fr. according to Ovstedal (1986)] and *C. nigrescens* Golubk. & Savich.

KEY TO *CALOPLACA* SPECIES

1.1 Thallus fruticose .... *C. regalis*

1.2 Thallus crustose, indefinite or effigurate, or absent 2

2.1 Thallus present, crustose, areolate, well developed, on rocks 3

2.2 Thallus granular, frequently confined to apothecium base; growing on mosses 4

3.1 Thallus orange; apothecia 0.6-1.5mm diam. .... *C. cinericola*

3.2 Thallus yellow; apothecia 0.2-0.6mm diam. .... *C. sublobulata*

4.1 Apothecia up to 1.1mm diam., with yellow disc, margin paler; ascospores 10-12×7-9μm .... *C. athallina*

4.2 Apothecia 0.2-0.5(-0.7)mm diam.; disc yellow, orange to blackish 5

5.1 Disc orange, blackening and pruinose; ascospores 14.5-17×6-9μm .... *C. nigescens*

5.2 Disc yellow-brownish and ascospores 8-11 × 7-8μm .... *C. mawsonii*

Caloplaca athallina Darb.

Thallus absent; apothecia substipitate, isolated or in groups, with yellow disc and paler margins, up to 1.1mm diam.; parathecium and hypothecium hyaline; asci 8-spored; spores hyaline, polarilocular, bicellular, 10-12×7-9μm. Pycnidia not observed. K blood red.

Muscicolous.

Caloplaca cinericola (Hue) Darb.

Thallus yellow to orange, up to 1cm. diam., granulose-areolate, areoles up to 1mm diam., plane, contiguous; below white. Apothecia 0.6-1mm diam., constricted at the base, exciple smooth, margin entire, thin crenulate when old, proeminent or not; disc pale orange to almost red, plane; asci 70-80×16-17μm, stipe 10-15μm long, 8-spored; ascospores 12-16×7-8μm, polaribilocular, locules 3-4μm. Spermogonia immersed; spermatiophorous septate 3-4μm diam., only slightly constricted at the septa; spermatia cylindric, truncate, 3-4×1μm.

Saxicolous.

Caloplaca sublobulata (Nyl.) Zahlbr.

Thallus crustose, yellow, 0.1-0.4mm thick. Apothecia lecanorine, with thin margin, round to angled, numerous in the thallus centrum, 0.2-0.4(-0.5)µm diam., with plane disc; hymenium 80-100µm tall. Hypothecium hyaline; spores polaribilocular, bicellular, hyaline, 12-17×6.5-8.5µm. Pycnidia immerse; conidia simple, ellipsoid 2.5-3.0×0.8-1.0µm.

Saxicolous, on coastal rocks.

Caloplaca nigrescens Golubk. & Savich

Thallus indeterminate, granulose, dark gray, without hypothallus, homoeomerous; cortex lacking. Apothecia sessile, 0.2-0.5(-0.7)mm diam., orange blackening, margin thick, disc concave to plane, slightly orange pruinose; amphithecium present; parathecium 60µm thick at the margin; paraphysis septate, 3µm thick, branched above the asci apex; asci clavate, 50-55×14-18µm, 8-spored; ascospores irregularly distichous, hyaline, polaribilocular, ellipsoid, 14.5-17×6-9µm.

Growing on mosses.

Caloplaca mawsonii (Dodge) Dodge
(= C. citrina)

Thallus formed by small pulvinate areoles, 0.2-0.5mm diam.; margins smooth, stramineous or more yellowish, K-; cortex 35µm thick; apothecia often covering the whole areole, disc plane, yellow-brown, finally blackening, K purple; amphithecium 200µm thick; parathecium not clearly differentiated; hypothecium 20µm thick; paraphysis slender, forked just below the apex; asci cylindric, 50-55×8-10µm, 8-spored; ascospores monostichous, hyaline, polaribilocular, broadly ellipsoid, 8-11×7-8µm.

Caloplaca regalis (Vain.) Zahlbr.

Thallus fruticulose, 0.5-3.0cm tall, forming stipes 2-9cm diam., yellow to orange, forming irregular or dichotomously ramified stipes, branches short-nodose; hypothecium white, thin. Apothecia lecanorine, 1-8(-16)mm diam., terminal on the branches, disc concave to plane, constricted at base, with prominent to thin margin, crenulate to rugose; hymenium 110-120µm tall; hypothecium hyaline; asci 8-spored, hyaline, polarilocular, bicelled, ellipsoid, 11-14×5.0-6.5µm; pycnidia present; conidia large, 37-50×1µm.

Saxicolous ornithocoprophilous.

Candelaria Mass.
C. murrayii Poelt

Thallus folious, yellow, with pruinose lobes 1-3×0.1-0.3mm, granulose and sorediose in border; upper cortex 10-15µm thick; under cortex same but not pigmented. Apothecia and pycnidia absent. Chemical reactions negative.

This species differs from *Xanthoria candelaria* mostly by the red reaction with KOH.

Candelariella Muell. Arg.
C. vitellina (Hoffm.) Muel. Arg.

Thallus crustose, granulose, bright yellowish, verrucose to areolate. Apothecia 0.5-1.5 mm diam. lecanorine, yellow, rounded, plane to convex, hymenium up to 90µm thick; asci containing 24 to 32 spores. Spores hyaline, bicelled, with small transverse septum, 8-14×4-6µm. Chemical reactions negative.

This is a crustose yellow lichen K(–). Castello & Nimis (1994) consider *Eklundia* Dodge to be a synonym of *Candelariella*, together with the species described by Dodge.

Catillaria Mass. emend. Th. Fr.
C. corymbosa (Hue) Lamb

Thallus small fruticulose, 0.7-1.8cm diam. formed by applanate or irregularly angled, striated, irregularly ramified, covered byorediform granules stipes. 4-10×0.2-0.8mm., yellowish. Chemical negative. Apothecia biatorine, red to red-brown, apical or lateral, 0.7-1.5mm diam., plane to convex; hymenium 55-65µm thick; hypothecium yellow; asci clavate with 6-8 spores; spores hyaline, fusiform, 2-celled, 12-15(-17)× (4.0-)-4.5µm. Pycnidia not formed.

This is the only species of the genus, from section *Hypocaulon*, found in the area, characterised by its fruticose habit in rocks.

Cladonia Wigg.

This genus is represented by six species: *C. gracilis* (L.) Willd., *C. furcata* (Huds.) Schrad., *C. metacorallifera* Asah, *C. pyxidata* (L.) Hoffm., *C. chlorophaea* (Floerke) Spreng. and *Cladina rangiferina* (L.) Wigg. A complete key to these species is presented by Redon (1985). The genus is treated also by Filson & Archer (1985), which discusses the Macquarie Island species.

KEY TO CLADONIA SPECIES

1.1 Podetia strongly branched, without persistent and squamose primary thallus.... *C. rangiferina*

1.2 Podetia not branched or scarcely branched, generally with a persistent primary thallus ... 2

2.1 With red apothecia............... *C. metacorallifera*

2.2 With other coloured apothecia 3

3.1 Axillae and scyphi perforate; podetia granulose to slightly scamose, pallid brown to dark brown...................................... *C. furcata*

3.2 Axillae and scyphi not perforate 4

4.1 Podetia with soredia .... *C. chlorophaea*

4.2 Podetia esorediate... 5

5.1 Podetia subulate, with more than 3cm high; scyphi absent or with equal diameter of the podetia .... *C. gracilis*

5.2 Podetia spiraled, shorter than 3cm; scyphi present, with a larger diameter than podetia, deep and regular .... *C. pyxidata*

Cladonia chlorophaea (Floerke) Spreng.

Primary scales persistent or evanescent, up to 7mm diam., crenate to lancinate, with ascending margins, more or less concave; upper surface glaucous, olive-glaucous to pallid-glaucous; under surface white, darkening to center, with granulose soralia. Podetia with short scyphi, 1-3cm tall, 2.5-4.0cm thick, well developed, glaucous to olivaceous, corticate at base, with soralia; scyphi proliferating at border and granulose soralia on inner side. Apothecia biatorine, 1-3mm diam., convex, brown, sessile or on scyphi border stipes. Spores ellipsoidal to fusiform, 14×3.5-4.0μm. Pycnidia in scyphi border or on primary thallus. K(–) or (+) yellow; P(+) red.

On soil among mosses, showing different chemical races.

Cladonia furcata (Huds.) Schrad.

Primary thallus persistent or evanescent, 2-5(-10)×0.8-6mm, plane, ascendant; upper surface glaucous or olive-green; under surface white. Podetia subulate, 2-14×0.5cm, cylindrical, with attenuate tips of with proliferating scyphi; totally corticated, smooth or areolate, without soralia, greenish-gray or brownish. Apothecia brown, 1-4mm diam., convex, pedicelate; spores oblong-fusiform, 9-15×2.5-3.5μm. Pycnidia on scyphi borders. Chemical reaction K(–) or (+) yellow; P(+) red.

On soil among mosses.

Cladonia gracilis (L.) Willd.

Primary thallus present or not, 2.5(-10)×0.8-6mm, lacinate to catenulate, plane, ascendant; upper surface glaucous to olive green; underside whitish. Podetia subulate, 2-14×0.5cm, cylindrical with attenuate apex or with proliferating scyphi; totally corticate, smooth to areolate, without soralia, grayish-green to brownish. Apothecia brown, 1-4mm diam., convex, pedunculate; spores oblong-fusiform, 9-15×2.5-3.5μm. Pycnidia on the scyphi border. K(–) or (+) yellow; P(+) red.

On soil among mosses.

Cladonia metacorallifera Asah.

Primary scales persistent, small, 1-2×2-4mm, yellowish, crenate, scarce or dense, plane or ascendant; under surface white; soralia absent. Podetia 1-4×1.5-3.5mm, yellowish, with apically larger or rarely attenuate, entirely granulose or verruculose, sometimes with small scales, without soralia. Apothecia frequent, sessile in scyphi border, solitaries to gregarious, convex, red, 1.5-3.5mm diam. Spores oblong to ellipsoid fusiform, 6-12×2.5-4.0μm. Pycnidia in scyphi borders. Chemical reactions KC(+) yellow.

On soil among mosses.

Cladonia pyxidata (L.) Hoffm.

Primary scales more or less persistent, 2-7(-15) ×4mm, crenulate and cut, without soredia, ascendant, more or less concave; upper surface glaucous, under surface white. Podetia simple, 0.5-3.0cm×2.5mm, ended in 6mm large scyphi, deep, regular, without soredia, granular; under part of podetia corticate, ecorticate at the upper part; surface verrucose to granulose, without soredia. Apothecia with short stipes in the scyphi border, brown, 0.5-3.0(-8.0)mm diam.; spores oblong to ellipsoid-fusiform, 9-14×3.5-4.0μm. Pycnidia in scyphi borders and on the primary thallus. P(+) red.

On soil among mosses.

Cladonia rangiferina (L.) Wigg.

Primary thallus crustose, thin, rarely observed, fugaceous. Podetia forming large cespitose groups, normally robust, up to 7cm tall, gray-pallid to purple-brown, branched; most branches isotomic, tricotomic or tetratomic, with perforated axils; lateral branches up to 23mm long, usually oriented on one plane and curved on apex; podetia corticate, areolate; aureoles yellowish. P(+) red. This species was transfered to *Cladina*.

On soil among mosses.

Cornicularia (Schreb.) Ach.

Cornicularia aculeata (Schreb.) Ach. [= *Coelocaulon aculeatum* (Shreb.) Link] and *C. epiphorella* (Nyl.) Du Rietz were found.

KEY TO THE *CORNICULARIA* SPECIES

1.1 Thallus up to 20cm diam., with lateral short spiky branches; fasciculate-isidioid branchlets absent .... *C. aculeata*

1.2 Thallus up to 3cm diam., without lateral spiky branches; fasciculate-isidioid branchlets present... *C. epiphorella*

Cornicularia aculeata (Schreb.) Ach.

Thallus erect, shrubby, forming loose colonies up to 10cm high and 20cm in diam., repeatedly irregularly branched; branches up to 3mm diam., light to dark brown, cylindrical, hollow, imperforate, with small spiny tips and short spiky side branchlets.

Muscicolous.

Cornicularia epiphorella (Nyl.) Du Rietz

Thallus erect shrubby, forming very small colonies 2.5×3cm, infrequently irregularly branched; branches up to 1mm diam., light to dark brown, shiny, cylindrical, hollow, imperforate, bearing numerous small fascicles of small isidioid branchlets, each ca. 1.5×0.4mm.

Muscicolous.

Cystocoleus Thwait.

Cystocoleus niger (Huds.) Hariot [= *C. ebeneus* (Dillw.) Thwaites]

Thallus forming small pulvinate groups 1.5×5mm, black, formed by numerous densely interwoven, slender black filaments, better distinguished under a lens.

This was the only Deuterolichen found.

Haematomma Mass.

Haematomma erythromma (Nyl.) Zahlbr.

Thallus crustose, areolate or continuous, 2-5×0.8-1.2cm, effuse, pale yellow, with a thin, finely granulose upper cortex; areola angled. Phycobiont: *Trebouxia*. Apothecia lecanorine, with deep red disc, immerse or not, sessile, 0.3-0.6mm diam.; hymenium hyaline to brownish; asci clavat, with 8 hyaline, fusiform, straight transversally septate, 4-celled spores, 18-22×5-6μm. Chemical reactions: K(+) yellow; C(+) orange-red.

This was the only species found from this genus. Redon (1985) commented that the apothecia are infrequent, but this is not the case at Rip Point.

Himantormia M. Lamb.

Himantormia lugubris (Hue) M. Lamb.

Thallus fruticose, up to 5cm tall, formed by flattened, strap-shaped branches up to 3cm long and 2mm broad and 0.5mm thick; branches black, covered by an isabelline thallus mantle towards the base mat to slightly shining, longitudinally striate. Apothecia lecanorine. Pycnidia rare.

This species was found growing among mosses (were it has a very fine branched thallus) and rock surfaces, inland, in places not used as breeding sites by birds.

Huea Dodge & Baker

Two species were found: *Huea austroshetlandica* (Zahlbr.) Dodge and *H. coralligera* (Hue) Dodge & Baker. Andreev (1988) reported them, among others, as *Blastenia* to King George Island.

KEY TO *HUEA* SPECIES

1.1 Thalline cortex decomposed; thallus areolate ... . *H. austroshetlandica*

1.2 Thalline cortex of intrincate hyphae with subsphaerical cells; thallus surface coralloid........ .... *H. coralligera*

Huea austroshetlandica (Zahlbr.) Dodge

Thallus crustose, ashy 100-150μm thick, with small areoles, plane separated by very narrow cracks; cortex 30μm thick, gelatinous, indistinct; phycobiont: *Trebouxia*. Apothecia lecideine, sessile, black, dispersed, 0.4-0.8mm diam., margin entire, disc plane to convex; asci cylindrical, 60-10μm, 8-spored; ascospores distichous, hyaline, polaribilocular, ellipsoid, locules 4-5μm long; 11-14×7-8μm. Chemical reactions negative (K and C).

Saxicolous.

Huea coralligera (Hue) Dodge & Baker

Thallus white, opaque, 12cm diam., indeterminate, without visible hypothallus, of granules coalescing into verrucae 1-1.5mm diam., up to 400μm thick, surface rugose-striate; cortex 10-40μm thick. Apothecia 0.4-1.0mm diam., black, sessile, margin thin, entirely, slightly prominent, persistent, disc plane, becoming convex; paraphysis hyaline, tips clavate 5μm diam.; asci clavate 90×20μm, 8-spored; ascospores distichous, hyaline, paribilocular, ellipsoid, locules 4-6 μm long, 14-18×7.5-10μm.

Saxicolous.

Hypogymnia (Nyl.) Nyl.

Hypogymnia lugubris (Pers.) Krog.

Thallus folious, formed by hollow lobules; upper surface ashy, with blackish shiny spots intermixed; under surface dark-brown to black, smooth, fixed to substratum by medullary hyphae, without rhizinae. Apothecia not found. Pycnidia abundant; conidia 3-4×0.8-1.0μm.

This species was preciously known only from King George Island (Lindsay & Ochyra, 1982 and Redon, 1985). This is the first report of this species on another island of the South Shetland. Considered to be rare, we found *H. lugubris* in three locations of Rip Point.

Lecania Mass.

Lecania brialmontii (Vain.) Zahlbr.

Thallus fruticose, 6-13μm high, erect to partially prostrate, cylindric, partially verrucose; stipes 0.4-0.6mm diam., obtuse at apex, solid, partially without cortex. Apothecia lateral, 1-3mm diam., with continuous or crenulate margin, pallid disc; hymenium 100μm tall; asci forming 8 fusiform, straight to semi-allantoid, 16-20×1μm spores. Chemical reactions negative.

This species from section *Thamnolecania* (Vain.) Zahlbr. was found frequently in Rip Point.

Lecanora Ach.

Lecanora mons-nivis Darb. (thallus absent) and *Lecanora skottsbergii* Darb. (crustose thallus) were found.

Lecanora mons-nivis Darb.

Thallus absent or very poorly developed, granulose, yellow white. Phycobiont: *Trebouxia*. Apothecia lecanorine, 0.5-1.0mm diam., sessile, round to irregular, with white borders, crenulate to entire. Asci 8-spored. Ascospores hyaline, ellipsoid, simple, 12-14×5-7μm.

Saxicolous.

Lecanora skottsbergii Darb.

Thallus thick, white, areolate; areoles with granulose surface, separate by deep cracks. Apothecia lecanorine, round, up to 3mm diam., with black disc, plane, with large thalline margin; hypothecia brownish; asci forming 8 spores; ascospores hyaline, simple, 12-14×4-5μm. Pycnidia not observed. Thalline reactions: K(+) yellow.

Lecidea Ach. l.s.

This genus is now considered to comprise several different genera; *Carbonea* and *Thamnolecia* were found in Rip Point. *Carbonea assentiens* (Nyl.) Hertel (= *Lecidea sciatrapha* Nyl.) is the commonest species in Rip Point, easily distinguished by the whitish colour and K(+) yellow reaction. *Thamnolecia atrata* (Ach.) Hertel [= *Lecidea dicksonii* (Gmel.) Ach.], a ferruginous-red species, was found frequently. Both are nitrophobous. More genera and species may be present, but need confirmation.

Leptogium (Arch.) Gray

Following Lindsay's (1974) concepts of this genus, two *Leptogium* species were reported at Rip Point: *Leptogium puberulum* Hue and *L. menziesii* Mont., the latter probably being a new record for the Antarctic.

KEY TO *LEPTOGIUM* SPECIES

1.1 Distinctly hydrophilous, growing on wet moss turfs and carpets; ventral surface heavily tomentose .... *L. menziesii*

1.2 Not hydrophilous, growing on rocks; ventral surface not or only slightly tomentose .... *L. puberulum*

Leptogium menziesii Mont.

Thallus folious, thin, 2-15cm diam., up to 0.1mm thick, metallic black when wet, olivaceous when shiny, irregularly lobed, lobe tips ascending; dorsal surface smooth, slightly shining, ventral surface lightly to heavily tomentose. Apothecia occasional, lecanorine, sessile to shortly stipitate, up to 3mm diam., with reddish brown, plane to slightly concave disc; ascospores 8 per ascus, hyaline, thin walled, 3-septate, fusiform, 14-18×5-7μm.

This species is found among *Tortula* spp. and *Bryum* spp. on wet soils (hydrophilous). The first report from the Antarctic.

Leptogium puberulum Hue

Thallus folious, up to 0.1mm thick and 4cm diam., brown when wet, dark olivaceous when dry, irregularly lobed, lobes heavily crisped, tips appressed to substratum or ascending; dorsal surface smooth and ventral nude or with faint tomentum. Sterile.

This species is not hydrophilous, growing on dry cliffs, scree or fluvio-glacial gravel in non-enriched habitats.

Microglaena Koerb.

M. antarctica Lamb

Thallus crustose, up to 2.5cm diam., verrucose-areolate, 1-2mm thick, white to ivory, opaque; areoles 0.3-1.0mm diam., isolated over each verrucae, with naked or slightly papillate apex; asci clavate, bitunicate, with 4-7(-8) spores; ascospores muriform, oblong-ellipsoid to ellipsoid-fusiform, 42-90×13-35μm. Pycnidia immerse, black; conidia filiform, straight to curve, 15-24×0.6-0.8μm. Chemical reactions: K(–) or (+) yellow-brownish.

This perithecioid lichen, distinctly nitrophobous, was found frequently inland.

Ochrolechia Mass.

Ochrolechia antarctica (Muell. Arg.) Darb. (saxicolous) and *O. frigida* (Sw.) Lynge (muscicolous) were found in Rip Point.

Ochrolechia antarctica (Muell. Arg.) Darb.

Thallus crustose, areolate, ochroid-pallid, thin or continuous and smooth, to rimose-areolate; areoles plane. Apothecia lecanorine, subsphaerical to depressed, 3-4mm diam., with thick border; asci ovoid 4-8 spored; ascospores hyaline, simple, ellipsoid, 55-65×27-33μm. Chemical reactions negative.

Ochrolechia frigida (Sw.) Lynge

Thallus crustose, white or dirty white, granulose to verrucose, with coralline structure and regular outline. Apothecia lecanorine, up to 2mm diam., sometimes larger, with thin to thick thalline border and pink, concave to plane disc; hymenium 180-200μm tall; hypothecia yellow; asci forming 6-8 ellipsoid, hyaline, simple spores, 25-40×15-26μm.

Muscicolous or on plant debris.

Pannaria Del.

Pannaria hookeri (Borr. ex Sm.) Nyl., a nitrophobous species was found in Rip Point. It is saxicolous or muscicolous and nitrophobous. It is similar to *Psoroma*, differing only in the possession of blue-green phycobiont (Lindsay, 1974). Ovstedal & Smith (1993) describe a new *Pannaria* (*P. austro-orcadensis* Ovst.) from the Antarctic, which is common, widespread and locally abundant in Signy Island, with one collection from Elephant Island (South Shetland). This species sometimes grows with *Pannaria hookeri*, which differs in having heteromerous thallus with distinctly flattened lobes, having in inner parts an indistinct lower cortex, merging into the dark hypothallus, also with *Nostoc* clusters.

Parmelia Ach.

Parmelia saxatilis (L.) Ach.

Thallus folious, up to 15cm rosettes, white to gray; central part covered by verrucose to papilliform isidia; under surface black, brown to the border, with lots of black, cylindrical to irregularly ramified rhizinae. Apothecia and pycnidia absent.

It was found in some localities growing on rocks or soil covered by mosses.

Pertusaria DC.

Pertusaria epibryon Redon

Thallus crustose, granulate, continuous, up to 8cm diam., ca. 0.5mm thick. Upper cortex 20-25μm thick, covered by an amorphous cap up to 10μm thick. Phycobiont: *Trebouxia*. Apothecia lecanorine, 0.8-1.2mm diam., constricted at base, with a thick thalline border. Disc blackish. Hymenium 220-300μm high. Hypothecia pallid. Asci cylindrical containing 8 simple, hyaline, 42-45×23-25μm ascospores.

It was found frequently parasitic on mosses. Redon (1985) reported it from Deception, King George, Greenwich and Robert Islands in the South Shetland archipelago.

Physcia Ach. emend. Vain.

Physcia caesia (Hoffm.) Hampe

Thallus folious, forming rosettes up to 3cm diam., gray with a blue tonality, with imbricate lobules. Dorsal surface mate, with globulose to subglobose, granular, gray to blackish soralia, with numerous whitish and small pseudocyphellae. Ventral surface yellowish to shiny, with numerous dark-brown rhizinae. Apothecia absent. Pycnidia forming small black points on the dorsal surface. Conidia cylindrical, hyaline, 4-5×0.5µm.

It is an saxicolous and ornithocoprophilous folious lichen found commonly at Rip Point. The genus in Central and South America was revised by Moberg (1990).

Physconia Poelt

Physconia muscigena (Ach.) Poelt

Thallus folious, up to 5cm diam., with small to large lobules, upper surface brown to dark-brown, covered by a whitish pruina, without soralia, isidia and hairs. Ventral surface dark-brown, paler on the margin. Rhizinae black. Apothecia not found.

This is a muscicolous folious lichen.

Placopsis Nyl.

Placopsis contortuplicata Lamb

Thallus crustose up to 13.5cm diam., effigurate, lobulate. Central part verrucose to cerebriform. Verrucae 0.4-1mm diam., gray to pallid gray. Cephalodia sub-spherical, up to 9mm diam., orange-brown to yellowish, with *Nostoc* alga. Phycobiont: *Trebouxia*. Apothecia lecanorine, sessile 1-2.5mm diam., constricted at base; border entire, not prominent. Hymenium with 120-180µm. Hypothecia pallid yellowish; asci cylindrical, with 8 ascospores. Ascospores 18-20×8.5-13µm, hyaline, ellipsoid. Pycnidia immerse in thallus verrucae, brown to black. Conidia filiform, straight to curved, 20-25×0.5µm.

This is a nitrofobous species; it grows on soil and stones forming large associations, especially with the moss genus *Andreaea* and *Usnea* species.

Pseudophebe Choisy

Pseudophebe pubescens (L.) Choisy

Thallus black, forming flattened turfs up to 8cm diam., consisting of repeatedly dichotomously branched filaments up to 6cm long and 0.9mm diam., not closely appressed to substratum or forming rosettes.

It was found in only one locality. It is also known as *Alectoria pubescens* (L.) Howe Jr., according to Lindsay (1974). *P. minuscula* (Nyl. ex Arnold) Brodo et Hawksw., cited to South Shetland by Redon (1985) was not found in our survey. *P. pubescens* is similar to species of the genera *Bryoria* (which is muscicolous and brown to black-brown thallus; found in the South Shetland Island) and *Alectoria* (which has erect, white and hollow thallus; pseudocyphela present; muscicolous, with positive chemical reactions; found only in South Orkney, Southern part of South America, and Northern Hemisphere).

Psoroma Nyl.

Psoroma hypnorum (Vahl.) Gray

Thallus squamose up to 7cm diam., greenish to green-gray with brown tinge. Scales up to 3.5×6.3mm diam., with crenulate border. Apothecia cupuliform, sessile, up to 6mm diam. Disc strongly concave, reddish-brown to blackish-brown. Asci containing 8 ascospores, only occasionally developed, hyaline, ellipsoid, simple, 17-19×8-10µm.

This species was found frequently in Rip Point, being macroscopically similar to *Ponnaria hookeri*, differing in the green phycobiont.

Romalina Ach.

Romalina terebrata Hook. f. et Tayl.

Thallus fruticose, erect to sub-prostate, yellowish to yellowish-green, with plane simple or ramified branches, with numerous pseudocyphellae with turn to granulose or hyaline soralia, which perforate the thallus. Fixed to substrata by a basal undifferentiated disc. Thalline reactions negative.

It was frequently found around bird colonies, being saxicolous and ornithocoprophilous.

Rhizocarpon Ram. emend. Th. Fr.

This genus is represented by at least two species at Rip Point: *R. geographicum* (L.) DC. and *R. disporum* (Naeg.) Muell. Arg. [= *R.*

griseolum (Hue) Darb.]. This is a difficult genus which needs a detailed taxonomical revision. Some notes about taxonomy are provided by Ovstedal (1986).

KEY TO *RHIZOCARPON* SPECIES

1.1 Thallus yellowish .... *R. geographicum*

1.2 Thallus ashy .... *R. griseolum*

Rhizocarpon griseolum (Hue) Darb.

Thallus gray or pale ashy rufescent, areolate. Areoles 0.2-0.6mm diam., 200-600µm thick, rounded or cuneate, with smooth surface. Cortex 20-30µm thick. Phycobiont: *Trebouxia*. Apothecia black, 0.5-1.0mm diam., between the areoles, disc plane then convex; hypothecium 30µm thick. Asci 56-18µm, 2-8-spored. Ascospores distichous, dark-brown, halo evanescent, 8-locular, 33-38×11-13µm in 8-spored, 44-53×19-25µm in 4-spored.

Saxicolous.

Rhizocarpon geographicum (L.) DC

Thallus crustose, areolate, with sparse to contiguous areoles, up to 2mm thick, more or less angular, plane-convex, yellow to greenish-yellow. Hypothallus blackish in border. Apothecia lecideine, 0.3-1.5mm diam., among rounded or angled aureoles, plane, rarely subconvex. Hypothecia brown; hepithecium reddish. Hymenium hyaline to brownish, in the upper part reddish-to violet-brown. Asci clavate, 8-spored. Ascospores dark, with a gelatinous halo, muriform, 20-40×10-22µm.

Saxicolous.

Rhizoplaca Zopf

Two species of this genus were found: *Rhizoplaca aspidophora* (Vain.) Redon and *R. melanophthalma* (Ram.) Leuck. et Poelt, both occurring also on timber.

KEY TO *RHIZOPLACA* SPECIES

1.1 Thallus and apothecia yellow ... *R. aspidophora*

1.2 Thallus yellow-greenish; apothecia disc dark-blue to black .... *R. melanophthalma*

Rhizoplaca aspidophora (Vain.) Redon

Thallus folious, with 0.2-4.0mm diam. areoles, convex or rounded, yellowish, adhered to substrate by a gomphus; apothecia lecanorine, 1-3(-5)mm diam., peltate, sometimes lobulate, stipitate, with stipe up to 7mm high. Disc pallid-yellow to ochroid, plane and finely convex. Hymenium 60µm high; asci clavate, 8-spored. Ascospores hyaline, simple, ellipsoid, 10-15×3.5-4.5µm.

Saxicolous or lignicolous.

R. melanophthalma (Ram.) Leuck. et Poelt

Thallus folious, compressed, lobulate, yellowish to greenish, fixed by a gomphus to substrate. Apothecia lecanorine, large, disc bluish-black to black; asci 8-spores. Ascospores simple, hyaline, 9-11×5-5.5µm.

Saxicolous or lignicolous.

Rinodina (Ach.) Gray emend. Mass.

Rinodina petermanii (Hue) Darb.

Thallus crustose, forming circular to confluent unities, lobulate and effigurate at border, verrucose at center, pallid-brown to reddish-brown, sometimes reddish, yellowish. Prothallus and soralia absent. Apothecia generally present, 0.5-1.5mm diam., sessile, rounded, constricted at base, with thalline entire or crenulate border, concolour; disc plane or semiconvex, black to brownish-black, sometimes with a white pruina. Asci clavate, 8-spored. Ascospores brown, ellipsoid, 1-septate, 14-17×7-9µm. Pycnidia imerse, reddish-brown to black. Conidia filliform, arcuate, 15-20×0.6µm. This species is now referred to as *Amandinea* M. Choisy.

Saxicolous and ornithocoprophilous.

Sphaerophorus Pers.

Sphaerophorus globosus (Huds.) Vain.

Thallus fruticulose, forming colonies up to 25cm diam., up to 10cm high, very branched. Branches with main axis up to 2mm diam., cylindric, white to dark brown. Apothecia absent. Filson (1985) gives descriptions of other two species of this genus found in Macquarie Island.

Stereocaulon Hoffm.

Stereocaulon alpinum Laur.

Thallus fruticulose, with erect to prostrate pseudopodetia, up to 5cm high, anisotomically branched, white, covered partial or entirely by a gray-spongy tomentum. Cephalodia small, subspherical, up to 1mm diam., dark-gray, partial or totally immerse in the tomentum. Phyllocladia white, verrucose or coralloid. A second species, *S. glabrum* (Muell. Arg.) Vain. is also reported to Antarctica, but not to South Shetland Islands.

Muscicolous.

Turgidosculum Kohlm. & E. Kohlm.

Turgidosculum complicatum (Nyl.) Kohlm. et Kohlm.

Syn.: Mastodia tesselata (Hook. f. et Harv.) Hook. f. et Harv.

Thallus folious, up to 2cm diam., up to 0,5mm thick, olivaceous black, irregularly lobed; dorsal and ventral surfaces smooth, without rhizinae, attached to substratum by a central umbilicus or by hyphae. Perithecia concolour, up to 1mm diam.; ascospores 8 per ascus, hyaline, simple, ellipsoid, 12-16×4-6µm.

This is a common species, especially in coastal areas (it is halophilous and saxicolous). Confusion mày occur with *Leptogium puberulum*, but *Turgidosculum* has perithecia and green phycobiont (*Prasiola*). This is the correct name of *Mastodia tesselata*.

Umbilicaria Hoffm. emend. Frey

Umbilicaria rufidula (Hue) Filson

Thallus folious, more or less monofilous, up to 15cm diam., attached by a central point of attachment. Dorsal surface grey to brown and ventral black, with abundant simple or uni-branched rhizinae, up to 2mm long, blackish at base and grayish at the apex. Apothecia absent. This species was referred to in Antarctica as *U. antarctica*.

Saxicolous.

Usnea Wigg. emend Ach.

Three species were found: *Usnea aurantiaco-atra* (Jacq.) Bory, *U. antarctica* Du Rietz and *U. acromelana* Stirt.

KEY TO *USNEA* SPECIES

1.1 Soralia absent, frequently with apothecia 0.15-1.70cm diam. .... *U. aurantiaco-atra*

1.2 Soralia present, rarely with apothecia 2-8mm .... diam. 2

2.1 Proeminent pulvinate to subglobose, compact, blackish soralia present; main branches not papilose; P(+) yellow .... *U. acromelana*

2.2 Soralia plane, rarely convex, generally whitish or yellowish, pulverulent; main branches papilose; K(+) red .... *U. antarctica*

Usnea acromelana Stirt.

Thallus fruticulose, filamentous, adhered by a basal disc, 2-3cm high, scarcely subdichotomously branched, cylindrical, rigid, 0.5-1mm diam.; surface without papillae; basal basal yellowish and upper darkening. Central axis 1/5 to 1/3 of the branches diam. Soralia in the upper part of the branches, grayish to blackish, compact. Apothecia rare, 2-3mm diam., with yellowish receptacle and blackish disc. Chemical reactions: K(+) red; P(+) yellow; K (inactive phase) (–).

Saxicolous.

Usnea antarctica Du Rietz

Thallus fruticulose, filamentous, adhered by a basal disc, up to 10cm high, with numerous subdichotomously branches, cylindric, rigid, without lateral fibrils largest; surface without papillae; basal basal yellowish and upper darkening to black or purple-black, variegate to entirely black. Central axis 1/3 to 1/2 of the branches diameter. Soralia abundant in the upper part of the branches, whitish-yellow and occasionally blackish, granulose-pulverulent. Apothecia scarce, 5-8mm diam., without cilia, pallid receptacle and blackish disc. Chemical reactions: K(–); P(–) (inactive). K(+) and P(+) red or yellow.

Saxicolous.

Usnea aurantiaco-atra (Jacq.) Bory

Thallus fruticulose, filamentous, adhered by a basal disc, 2-3cm high, scarcely or abundantly subdichotomously branched, cylindric, rigid, normally without lateral fibrils, 5-10cm high; large number of branches are born in a common basal point, the main ones yellow, 1.5-2.5mm diam.; surface verrucose-papillate or escrobiculate corrugate. The apical branches annular-variegate, blackish and yellow, acuminate. Central axis 1/2 or more of the branch diam. Soralia absent. Apothecia frequent, 0.15-1.30cm diam., with yellowish receptacle and blackish disc, without fibrilae, verrucose-papillate. Chemical reactions: 1 - K(+) brown; P(+) red; K (inactive phase) (–) and P(–).

Saxicolous.

Verrucaria Wigg.

Five *Verrucaria* species were found at Rip Point: *Verrucaria tesselatula* Nyl., *V. elaeoplaca*

Vain., *V. microspora* Nyl., *V. dispartita* Vain., *V. racovitzae* Vain.

KEY TO *VERRUCARIA* SPECIES

1.1 Thallus excipule entirely black in transverse section 2

1.2 Thallus excipule hyaline in transverse section ...3

2.1 Growing inland, halophobous; thallus rimose to areolate .... *V. racovitzae*

2.2 Growing near the seashore, receiving the impact of sea waves, halophilous; thallus continuous, thin, not rimose .... *V. dispartita*

3.1 Thallus continuous, effuse or in isolated groups, sometimes evanescent, not rimose .... *V. microspora*

3.2 Thallus rimose 4

4.1 Cracks with black colour.................. *V. tesselat*

4.2 Cracks with the same colour as thallus .... *V. elaeoplaca*

Verrucaria elaeoplaca Vain.

Thallus crustose, verrucose-areolate, with convex, irregular and angulose areoles, 1.2-2.0mm diam., sulcate by black lines up to 0.15mm large; thallus up to 0.3-1mm thick, rarely 2.5mm; surface not pruinose, generally brown to grayish-brown, with a slightly pink tonality. Perithecia numerous, 0.2-0.3mm diam., more or less semi-spherical or convex; blackish to brown, prominent; periphyses numerous; paraphysis not visible generally; asci clavate, thin-walled, 8-spores; ascospores hyaline, ellipsoid, simple, 14-18×8-11µm. Pycnidia in form of small brownish point. Conidia straight, 3-3.5×0.6-0.7µm. Hymenial gelatine I(+) vinaceous-red.

Verrucaria microspora Nyl.

Thallus crustose, black, more or less smooth, varying from a gelatinous state and olive colour; perithecia erumpent; excipulum hyaline; paraphysis evanescent; asci cylindric-clavate, thin-walled, 8-spores; ascospores hyaline, ellipdois, 7-14×4-7µm.

Verrucaria racovitzae Vain.

Thallus crustose, rimose with 0.1mm large sulcate, with irregularly angulose areoles, 0.5-1.4mm diam., olivaceo-glaucous and sometimes similar to *V. elaeoplaca*; hypothallus black. Perithecia numerous, covered by the thallus up to the ostiole, forming semi-spherical verrucae 0.7-0.9mm diam., apex blackish-brown to black, mamillate; excipulum blackish-brown; periphyses present; paraphysis evanescent; asci cylindric-clavate, thin-walled, 8-spores; ascospores hyaline, ellipsoid, 15-16.5×9-11µm. Pycnidia not prominent, blackish, rounded or slightly elongate. Conidia straight, 3.0-3.5×0.5-0.7µm. Hymenial gelatine I(+) vinaceous red.

Verrucaria tesselatula Nyl.

Thallus crustose, 0.15-0.20mm thick, smooth, areolate, with plane areoles, anguloses, 0.5-1.0mm diam., isolated by well defined blackish rimae, 0.15mm large; not pruinose. Perithecia numerous, up to 0.2mm diam., with a blackish and convex apex which emerges slightly above the thallus; ostiole small; excipulum globose and hyaline; paraphysis abscent; asci clavate, thin-walled, 8-spores; ascospores hyaline, ellipsoid, 11-7×7-8µm. Hymenial gelatine I(+) pink.

Xanthoria (Fr.) Th. Fr.

Two species were found: *Xanthoria candelaria* (L.) Th. Fr. and *X. elegans* (Link.) Th. Fr.

KEY TO *XANTHORIA* SPECIES

1.1 Thallus folious, with ascending lobes and soralia... *X. candelaria*

1.2 Thallus folious, appearing crustose, with lobes adhered to substratum, without soralia ....*X. elegans*

Xanthoria candelaria (L.) Th. Fries

Thallus small, folious, forming a 15×8mm mat, formed by numerous and irregularly branched lobules, up to 3×0,5mm, soralia formed in the margins; dorsal surface orange; ventral surface white slightly venose; rhizinae scarce, white, simple, up to 0,5mm long; generally sterile. K(+) purple-red.

Saxicolous ornithocoprophilous.

Xanthoria elegans (Link.) Th. Fr.

Thallus folious, forming rosettes, up to 5cm diam., appearing crustose, orange to red, lobulate, 5×2mm applanate to subcylindric lobules; corticate; sub- to dichotomously branched; ventral surface of lobules white, with scarce white rhizinae;

apothecia frequent, sessile, lecanorine, up to 2mm diam., disc concolour with thallus with crenulate borders; asci 8-spored, hyaline, polarilocular, 10-15×5-8µm. K(+) purple-red.

Saxicolous and ornithocoprophilous.

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SUMMARY

A total of 69 species of lichen were identified in a phytosociological study of Rip Point, Nelson Island, South Shetland Islands, during two Brazilian Antarctic Expeditions (Jan. 1991-Mar. 1991 and Dec. 1994-Mar. 1995). The sampling sites are shown on a map. Biotic and abiotic influences on their distribution are discussed. A key to species and taxonomical descriptions are provided.

REFERENCES

ANDREEV, M. P., (1988), De Lichenoflora Insulae King-George (Antarctis) Notula. *Novosti Sistematiki Nis. Rast.*, **25**: 118-124.

BRAUN-BLANQUET, J., (1964), *Pflanzensociology*. 3. Aufl. Wien, Springer, 865p.

CASTELLO, M. & NIMIS, P. L., (1994), Critical notes on Antarctic yellow Acarosporaceae. *Lichenologist*, **26**(3): 283-294.

DODGE, C. W., (1973), *Lichen flora of the Antarctic Continent and adjacent islands*. Phoenix Publishing, Canaan, New Hampshire, USA. 399pp.

FILSON, R. B., (1985), Studies in Macquarie Island Lichens 3: the genus *Sphaerophorus*. *Muelleria*, **6**: 169-172.

FILSON, R. B. & ARCHER, A. W., (1985), Studies in Macquarie Island Lichens 4: The genera *Cladia* and *Cladonia*. *Muelleria*, **6**: 217-235.

LINDSAY, D. C., (1974), The Macrolichens of South Georgia. *Br. Ant. Survey Scientific Reports*, **89**: 1-77.

LINDSAY, D. C. & OCHYRA, R., (1982, 1984), The lichen genus *Hypogymnia* (Nyl.) Nyl. in the Antarctic. *Fragmenta Floristica et Geobotanica Ann.*, **28**(3): 412-415.

MOBERG, R., (1990), The lichen genus *Physcia* in Central and South America. *Nordic J. Bot.*, **10**(3): 319-342.

OVSTEDAL, D. O., (1983), Some Lichens from Vestfjella, Dronning Maud Land, Antarctics. *Cryptogamie, Bryol. Lichénol.*, **4**(3): 217-226.

OVSTEDAL, D. O., (1986), Lichens and lichen parasites from the British-Swedish-Norvegian Antarctic Expedition 1949-52 to Dronning Maud Land. *Cryptogamie, Bryol. Lichén.*, 7(1): 63-70.

OVSTEDAL, D. O. & SMITH, R. I. L., (1993), A new *Pannaria* species from the Antarctic. *Cryptogamie, Bryol. Lichénol.*, **14**(4): 337-340.

REDON, J., (1985), *Liquenes Antarticos*. Publ. Inst. Ant. Chileno INACH, Santiago, Chile. 121pp.

SKOTTSBERG, C., (1912), Die Vegetationsverhaeltnisse des Grahamlandes. Wiss. Ergebn. Schwed. Suedpolarexped. 1901-1903. 4,1.