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New species, combinations and records of lichenized fungi from the Falkland Islands (Islas Malvinas)

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Abstract: Ten new species in nine different genera are described from the Falkland Islands (Islas Malvinas): *Bryonora granulata* with a finely granular thallus containing perlatolic acid; *Bryoria mariensis*, a terricolous species with norstictic acid and unusual cortex cells; *Carbonea hypopurpurea* with a K+ purple hypothecium and a thallus containing confluentic and 2′-*O*-methylperlatolic acids; *Caloplaca megalariicola* lichenicolous on *Megalaria grossa*; *Cladonia flammea* with a red-orange coloration on the lower side of the primary squamules; *Cliostomum falklandicum*, on rocks and with a dispersed thallus containing only atranorin; *Lepraria malouina* with usnic and stictic acids; *Rimularia andreaeicola*, over bryophytes and lacking lichen substances; *R. subpsephota*, similar to *R. psephota* but with a discrete white thallus lacking norstictic acid; and *Usnea austrocampestris*, a straggling species in sect. *Neuropogon* from the mountain tops. *Rimularia andreaeicola* is also known from Tierra del Fuego and *R. subpsephota* from Tierra del Fuego and South Georgia, but the other species are known only from the Falkland Islands. The new combinations *Carbonea agellata, C. subdeclinans, Cliostomum aeruginascens* and *C. violascens* are also made; *Lecidea interrupta* Darb. and *Lecidea protracta* Darb. are reduced to synonymy with *Lecanora xantholeuca* (Müll. Arg.) Hertel; *Rhizocarpon simillimum* is reported for the first time from the Southern Hemisphere, from the Falkland Islands and New Zealand; and *Bryoria chalybeiformis* is reported for the first time from the Falkland Islands.

Key words: Henry Imshaug, lichens, South America, southern subpolar region, Subantarctic, taxonomy

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Introduction

The Falkland Islands are situated in the South Atlantic Ocean between 51° and 53°S and 57° and 62°W, and 483 km from the east coast of continental South America (Fig. 1). They are an overseas territory of the UK and are also claimed by Argentina (as Islas Malvinas). They have an area of 12173 km^2, making them the largest island group in the southern subpolar region, and consist of two main islands; East Falkland (Isla Gran Malvina) and West Falkland (Isla Soledad), with more than 230 smaller islands. Because they are relatively close to Argentina, they are considered to be continental islands but have a cold marine climate, with a small temperature range (−5 to +22°C), strong westerly winds, and are predominantly cloudy and humid. The mean January temperature is 8·8°C, and mean July temperature is 2·2°C (Moore 1968). Rain occurs on more than half the days in any year, with an average annual rainfall of *c.* 610 mm yr^{-1} (Moore 1968). Snow can occur throughout the year, except in January and February, but does not accumulate. The terrain is rocky and hilly, Mt. Usborne (705 m) being the highest point, with some boggy, undulating plains.

In the early Jurassic period, the Falkland Islands were situated in the centre of the Gondwana supercontinent, adjacent to the east coast of what is now South Africa. With the break-up of Gondwana in the late Jurassic (*c.* 167 mya), the Falkland Islands drifted to their present position off the coast of South America (McDowall 2005). Consequently, many of the geological features of the Falkland Islands are similar to those found in

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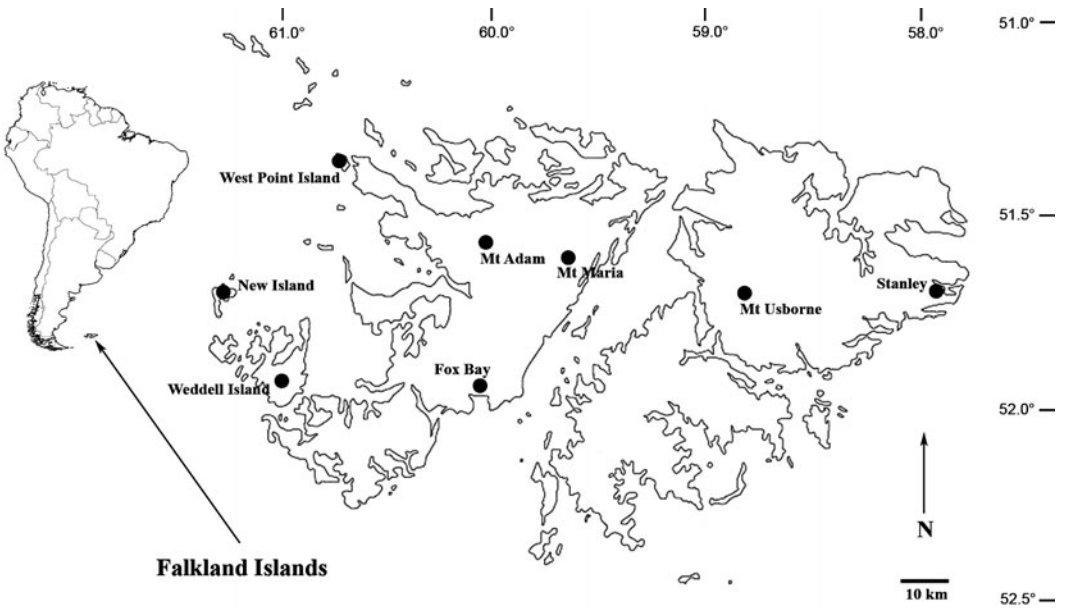

FIG. 1. The Falkland Islands, showing location of main collecting areas of Imshaug and Harris.

South Africa, with quartzite, sandstone and mudstone being the most common types of rock, and with igneous dykes of dolerite bearing witness to the final break up of Gondwana. No trace of this ancient connection with South Africa is apparent in the present-day biota of the islands, the main affinity being with Patagonia/Fuegia.

Although early botanists who visited the Falkland Islands, including J. D. Hooker (Hooker & Taylor 1844; Hooker 1847), collected some lichens, the islands were not given much attention until the first decade of the 20th century when two important Swedish expeditions, both with Carl Skottsberg as their botanist, visited the islands and collected many lichens (Darbishire 1912; Zahlbruckner 1917). However, as Skottsberg was not a specialist lichenologist, and these expeditions were part of larger expeditions aimed at collecting many different types of organism from a wider region, lichens were not comprehensively collected. This changed in the austral summer of 1968 when Henry Imshaug led an expedition, which also included his then graduate students Richard Harris (lichens) and John Engel (bryophytes), to investigate the cryptogamic biota of the islands. Between them, Imshaug and Harris made almost 3000 collections, representing by far the largest collection of lichens ever made from the islands (Imshaug 1969). Although many of their collections were accessioned into the herbarium of Michigan State University (MSC), some were filed under provisional (*in sched.*) names, whereas others remained in temporary storage in cardboard boxes (Fryday & Prather 2001). Some of these *in sched.* names have since been published (e.g., Messuti & Archer 1999; Fryday & Common 2001; Lumbsch *et al.* 2010), whereas others are referable to previously described species [e.g., *Lecanora falklandica* Imshaug *in sched.* is *Xenolecia spadicomma* (Nyl.) Hertel]. In 1999, the US National Science Foundation (NSF) made an award to Michigan State University to 're-activate' the MSC lichen collection, thus facilitating access to this extensive resource, which also includes large collections from the Caribbean Islands, southern South America, and other island groups in the southern subpolar region

(Fryday & Prather 2001). A further recent award by NSF has resulted in the label data from the entire accessioned lichen collection at MSC being entered into a database and made available online (Johnson *et al.* 2005). Many new lichen records for the Falkland Islands resulting from these collections have already been published (Calvelo & Fryday 2006), and new species have also been described (Messuti & Archer 1999; Fryday & Common 2001; Coppins & Fryday 2006; McCarthy & Fryday 2009).

The only other herbaria to house a significant number of lichen collections from the Falkland Islands are those of the Swedish Museum of Natural History (S), which houses the collections from Skottsberg's two expeditions, and that of the British Antarctic Survey (AAS). The lichen collection at AAS contains *c.* 400 collections from the Falkland Islands, of which around half were collected by Ronald Lewis Smith between the years 1964–2000. However, it also includes collections from other members of the British Antarctic Survey, including R. W. M. Corner, D. C. Lindsay, and other researchers (e.g., R. Upson). The only other significant collection of which we are aware is that made by D. H. Dalby in 2000 (Dalby 2000). This consists of some 300 collections but is in the collector's private herbarium and was not made available to us.

Since 2008, we have been examining collections from AAS and MSC with a view to completing a comprehensive account of the lichens of the Falkland Islands. However, because of the large number of apparently undescribed species that we encountered, especially among the crustose genera, we realized that this was an unrealistic goal with the limited time and resources available to us. Consequently, we decided to publish this contribution of our preliminary findings so that the part of our work that has been completed is available to other researchers. We are aware of numerous other, apparently undescribed, taxa from the Falkland Islands that require further investigation before they can be formally described. These will be treated in future publications.

Material and Methods

This study is based upon specimens collected by Henry Imshaug and Richard Harris and housed in the herbarium of Michigan State University (MSC), and those in the herbarium of the British Antarctic Survey (AAS), mostly collected by Ronald Lewis Smith. Apothecial characteristics were examined by light microscopy on hand-cut sections mounted in water, 10% KOH (K), 50% HNO_3 (N) or 0·15% aqueous IKI (I). Thallus sections were investigated in water, K and lactophenol cotton-blue. The ascus structure was studied in I, both without prior treatment and after pretreatment with K. Measurements of ascospores and paraphyses were made in K.

Thin-layer chromatography followed the methodologies of either Culberson & Kristinsson (1970), Elix & Ernst-Russell (1993), or Orange *et al.* (2001). Nomenclature for apothecial pigments follows Meyer & Printzen (2000).

The main collecting areas of Imshaug and Harris are shown in Fig. 1.

Additional comparative material examined. Lecanora capistrata (Darb.) Zahlbr.: **Falkland Islands** (all collected by H. A. Imshaug & R. C. Harris (MSC) unless otherwise noted): *East Falklands* (*Isla Gran Malvina*): Port Louis, rocks along shore, 25 vii 1902, *C. Skottsberg* (S—lectotype); Stanley, UTM Grid 21F VC 3472, *Empetrum*-heath and outcrops on Tumbledown Mtn, 150–225 m alt., 1968, *Imshaug* 39774; Kidney Island, UTM Grid 21F VC 4880, coastal rocks on SE shore between landing bay and SE Pt, 1968, *Imshaug* 40611, 40621; Port William, UTM Grid 21F VC 4777, coastal rocks on N side of Hell's Kitchen, 1969, *Imshaug* 41628. *West Falklands* (*Isla Soledad*): West Point Island, UTM Grid 21F TD 4403– 4404, *Hebe*-scrub on steep slope and cliffs facing the Woolly Gut, 1969, *Imshaug* 40901; New Island, UTM Grid 21F TC 0164, polsterboden on summit of cliffs at NW tip opposite Landsend Buff, 90 m alt., 1969, *Imshaug* 41722; Fox Bay, UTM Grid 21F TC 9037, coastal rocks at Kelp Pt, 1969, *Imshaug* 42204.

Rimularia psephota (Tuck.) Hertel & Rambold: **Chile**: Straits of Magellan, Nohmck, 14 iii 1872, Hassler Explor.-Exped. *T. Hill* (holotype—FH).

The Species

Bryonora granulata Fryday sp. nov.

MycoBank No.: MB 564649

Bryonorae castaneae similis sed apotheciis saturate atro-brunneis, thallo granulato et acidum perlatonicum (non norsticticum) continenti.

Typus: Falkland Islands, East Falkland, Stanley, headwaters of Mullet Creek Stream, UTM 21F VC 3270 [−51·709500°–57·980333°], 200 ft [61 m], mosaic of *Empetrum*-heath & peat bogs, 30 January 1968, *H. A. Imshaug* (41439) *& R. C. Harris* (MSC-0108533—holotypus; BCRU, AAS—isotypi).

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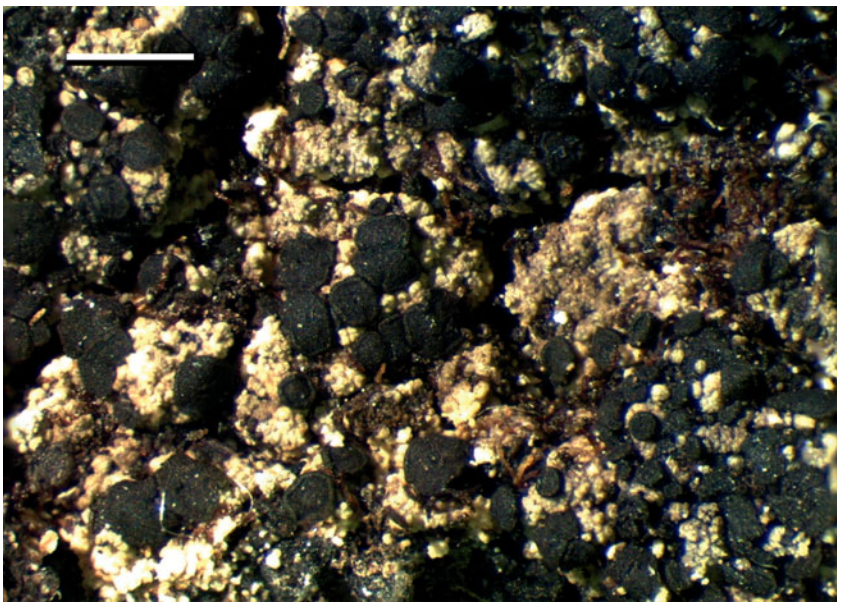

FIG. 2. *Bryonora granulata* Fryday (*Imshaug* 41439—holotype). Scale = 1·0 mm. In colour online.

(Fig. 2)

Thallus effuse, widespreading to 5–10 cm, on soil; made up of flattish, pale brown to greyish areoles 0·2–0·3 mm across that soon break down into ±sorediose granules 0·03–0·05 mm across. *Photobiont* chlorococcoid, cells (5–)8–12(–15) µm diam.

Apothecia flat to slightly convex, lecideine, 0·3–0·4 mm diam., disc dark to reddish brown (especially when wet), proper margin 0·05 mm wide, persistent, darker than the disc and slightly raised. *Hymenium* 70–80 µm high, epihymenial zone 10 µm high, brown (K+ greenish brown, N+ reddish brown); *paraphyses* sparingly branched and anastomosing, septate, 2 µm wide, gradually widening to 3–4 µm at the apex, the upper 10 µm with pale brown pigment and a dark brown cap. *Hypothecium* composed of randomly arranged, brown pigmented hyphae (K+ greenish brown, N+ reddish brown), 4–5 µm wide; periclinally layered and narrower (2 µm wide) towards exciple. *Exciple* brown, composed of randomly radiating hyphae, 5–6 µm wide. *Asci Lecanora*-type, 45–50 × 12–15 µm, cylindrical, becoming sub-clavate; *ascospores* simple (rarely 1-septate), hyaline, ellipsoid to somewhat fusiform, 12–15(–16) × 5·5–6·5 µm.

Conidiomata not observed.

Chemistry. C–, K–, Pd–; perlatolic acid by TLC.

Comments. This species is unique within the genus in having a thallus that contains perlatolic acid. The only other *Bryonora* species known from the Southern Hemisphere are *B. castanea* (Hepp) Poelt from New Zealand (Galloway 2007) and Antarctica (Poelt 1983; Øvstedal & Lewis Smith 2001) which has a thallus containing norstictic acid (K+ red), and *B. peltata* Øvstedal from Antarctica (Øvstedal & Lewis Smith 2001), which has a thallus containing protocetraric acid (Pd+ red).

Additional specimen examined. **Falkland Islands**: *West Falkland*: West Point Island, summit of Mt. Misery, UTM 21F TD 4201 [–51·374833°–60·703333°], 1100 ft [335 m], polsterboden, 1968, *Imshaug* (40697) *& Harris* (MSC, BG, NY, BM). *East Falkland*: Mt Usborne, The Gap, UTM 21F UC 7171 [–51·692333°–58·868167°], 900–950 ft [274–290 m], *Cortaderia*-heath, 1968, *Imshaug* (39895) *& Harris* (MSC, HO, M).

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Bryoria mariensis Øvstedal, Common & Fryday sp. nov.

MycoBank No.: MB 564650

Thallus decumbens, ad 10 cm longus, brunneo-nigrus. Pseudocyphellae rarae, brunneolae. Soralia rara, globosa, subterminalia, grisea. Thallus acidum norsticticum continens. *Pseudephebe pubescens* similis, sed thallus cum pseudocyphellae et soralia.

Typus: Falkland Islands, West Falkland, Port Howard, summit of Mt. Maria, UTM 21F UC 2079 [−51·607500°–59·593500°], 2158 ft. [658 m], feldmark, 28 January 1968, *H. A. Imshaug* (41327) *& R. C. Harris* (MSC-0080870—holotypus).

(Fig. 3)

Thallus fruticose, up to 10 cm wide, prostrate, no distinct main branches, thickest branches up to 0·4 mm diam. but usually <0·2 mm diam., branching isotomic dichotomous, young branches brown, old branches blackish; with pseudocyphellae and soralia. *Pseudocyphellae* rare, straight, up to 0·3 mm long and 0·05 mm broad, in young branches sometimes with medulla showing, otherwise closed and blackish. *Soralia* globose, 0·3–0·5 mm diam, concolorous with thallus, on end of branches or terminating small side-branches near branch tips; soredia 14–20 µm diam. *Cortex* approaching *Nodobryoria*-type (see Common & Brodo 1995), with pseudoparenchymatous surface cells which look knobbly on the surface, below that prosoplechtenchymatous hyphae in a massive gelatinous matrix.

Chemistry. C−, K+ red (acicular crystals – microscope), Pd+ yellow; norstictic acid by TLC. Lichenan present in cell wall.

Distribution and ecology. Known only from grassland and *Empetrum*-heath, apparently not attached to rock, at three different localities from *c*. 500–650 m on Mt. Maria, West Falkland.

Comments. This taxon resembles *Pseudephebe pubescens* more than any known *Bryoria* sp., but a number of characters exclude that genus, such as the pseudocyphellae, the soralia and the presence of norstictic acid (see Brodo & Hawksworth 1977). The genus *Nodobryoria* Common & Brodo (Common & Brodo 1995) might be considered, due to the cortex type, but the cell walls of that genus lack lichenan (Common 1991).

Additional specimens seen. **Falkland Islands**: *West Falkland*: Port Howard, Mt. Maria, UTM 21F UC 2078-2079 [−51·608833°–59·595667°], 2000–2150 ft [610–655 m], feldmark and outcrops on summit ridge, 1968, *H. A. Imshaug* (41393) *& R. C. Harris* (MSC); *ibid.*, slope above Castle Rock, alt 500 ft., on short dry grassland and *Empetrum*, 1992, *R. I. Lewis Smith* 8506 (AAS).

Bryoria chalybeiformis (L.) Brodo & D. Hawksw.

Two species of *Bryoria* have been reported previously from the Falkland Islands; *B. austromontana* P. M. Jørg. & D. J. Galloway and *B. implexa* (Hoffm.) Brodo & D. Hawksw. (Øvstedal & Lewis Smith 2004). In addition to the species described above, *B. chalybeiformis* is also reported here from the islands based on the following collection:

Falkland Islands: *West Falkland*: West Point Island, at summit of Bold Hill, 21F TC 0764 [−51·695333°–61·242333°], 527 ft. [161 m], *Empetrum*-heath, 1968, *H. A. Imshaug* (41794) *& R.C. Harris* (MSC).

Carbonea hypopurpurea Fryday sp. nov.

MycoBank No.: MB 564651

Carboneae vorticosae similis sed hypothecio K+ purpureo, thallo acida confluentica et 2′-*O*-methylperlatolica continenti.

Typus: Falkland Islands, West Falkland, Port Howard, outcrops on pass SW of Mt. Maria summit, UTM 21F UC 2078 [−51·6105°–59·5985°], 2000 ft [610 m], 28 January 1968, *H. A. Imshaug* (41294) *& R. C. Harris* (MSC-0136484—holotypus; BCRU—isotypus).

(Fig. 4A)

Thallus effuse, widespreading up to 5 cm across, with black prothallus when adjacent to other lichens; areolate, areoles *c*. 0·2–0·5 mm across; pale grey, flat to slightly convex, cortex absent but with thin epinecral layer (*c*. 5 µm). *Medulla* I−. *Photobiont* chlorococcoid, cells 10–15 µm diam.

Apothecia frequent to scattered, lecideine, black, ±orbicular becoming angular, 0·4–0·6 mm diam., flat with an indistinct proper margin when young but soon becoming immarginate, margin ± white pruinose when emerging from thallus but soon concolorous

FIG. 3. *Bryoria mariensis* Øvstedal, Common & Fryday (*Imshaug* 41327—holotype). Scale = 1·0 mm. In colour online.

with disc, 0·05 mm wide, disc rough. *Hymenium* 60–70 µm tall; *paraphyses* unbranched, rarely with a short side branch, not anastomosing, non-septate, lax in K, *c.* 1·5 µm wide, slightly swollen to 3 µm at apex with upper 5–10 µm with blue-black pigment; *epihymenium* not granular, with blue-black pigment (N+ red: cinereorufa-green) often in clumps. *Hypothecium* brown, K+ purple. *Asci* ± cylindrical when young, becoming slightly clavate,

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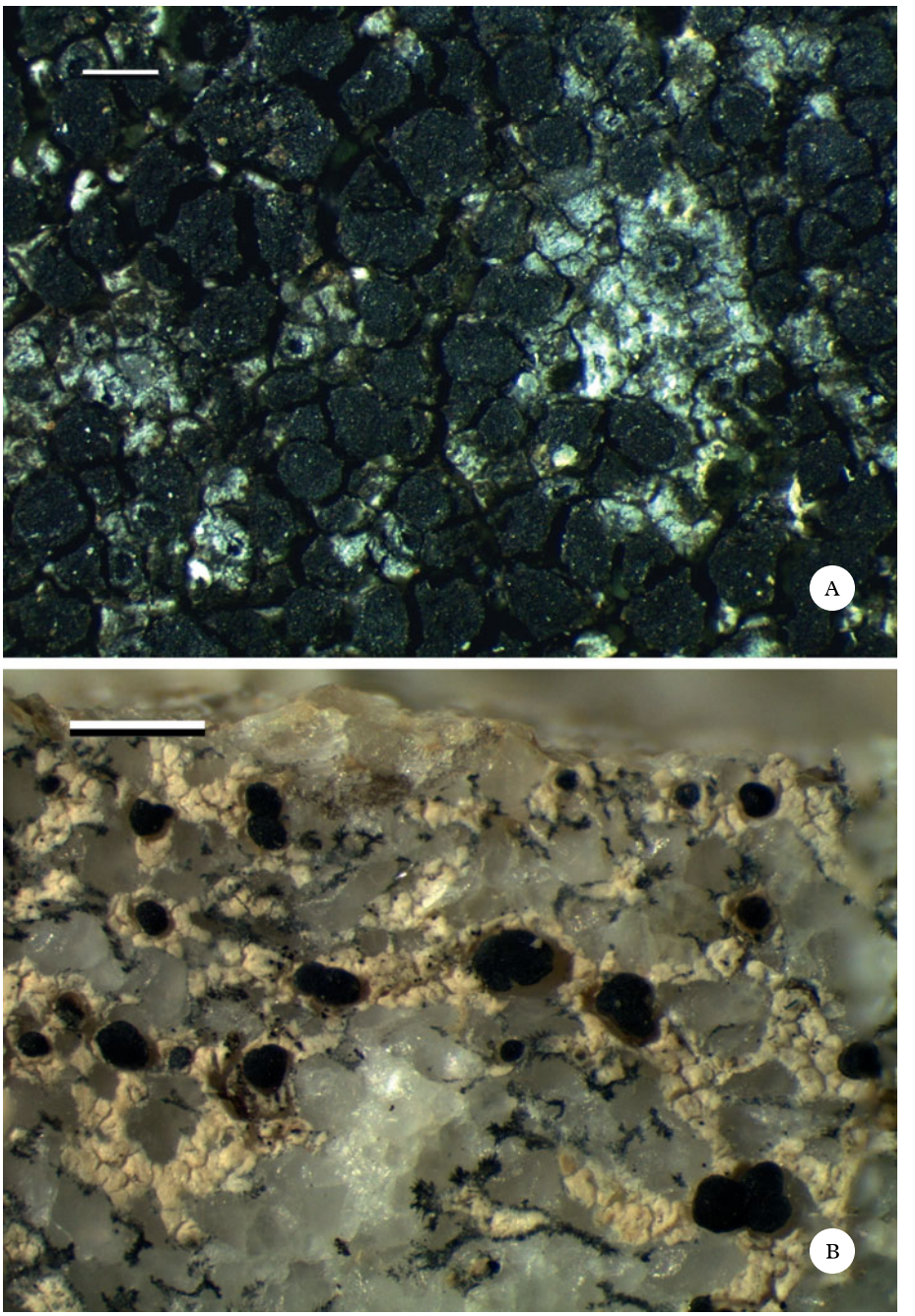

FIG. 4. A, *Carbonea hypopurpurea* Fryday (*Imshaug* 41372—holotype); B, *Cliostomum falklandica* (*Imshaug* 41673—holotype). Scales: A = 0·5 mm; B = 1·0 mm. In colour online.

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Lecanora-type, 45–50 × 15–17 µm; *ascospores* hyaline, simple, oblong with rounded ends becoming slightly ellipsoid, (12–)15–17(–19) × 5–6(–7) µm. *Exciple* poorly developed, blue-black pigmented.

Conidiomata not observed.

Chemistry. Confluentic and 2′-*O*-methylperlatolic acids by TLC.

Distribution and ecology. *Carbonea hypopurpurea* is currently known only from the mountains of West Falkland. The only associated species on the three collections are *Pertusaria spegazzinii* and *Poeltidea perusta*.

Comments. The holotype is densly covered with apothecia (Fig. 4A) but they are much more widely scattered in the two other collections. However, apothecial characteristics and thalline chemistry are identical and they are clearly referable to the same taxon.

Additional specimens examined. **Falkland Islands**: *West Falkland*: Port Howard, Mt. Maria, UTM 21F UC 2078-2079, 2000–2150 ft., feldmark and outcrops on summit ridge, 1968, *H. A. Imshaug* (41372) *& R. C. Harris* (MSC); Mt. Adam, basin E of summit, UTM 21F TC 8781, 1900–2000 ft., *Cortaderia*-heath, 1968, *H. A. Imshaug* (41106) *& R. C. Harris* (MSC).

Two other taxa described from the Falkland Islands or southern Argentina are also referable to *Carbonea*.

Carbonea agellata (Darb.) Fryday comb. nov.

MycoBank No.: MB 564662

Lecidea agellata Darb., *Wiss. Ergebn. Schwedisch. Südpolar-expedit. 1901–1903.* **4:** 4 (1912); type: Falkland Islands, Port Louis, 25 July 1902, *C. Skottsberg* 130 (S!).

Carbonea subdeclinans (Müll. Arg.) Hertel ex Fryday comb. nov.

MycoBank No.: MB 564652

Lecidea subdeclinans Müll. Arg. *Nuovo G. bot. Ital.* **21**: 45 (1889).—*Lecidella subdeclinans* (Müll. Arg.) Hertel, *Beih. Nova Hedwigia* **79**: 451 (1984); type: Argentina, saxicola in Staten Island [Isla de los Estados], Port Cook, 1888, *C. L. Spegazzini* 68 (G!).

In 1992 Hertel annotated an original specimen of *Lecidea agellata* in S (L988; sub *Pertusaria alterimosa*) "The type specimen of *Lecidea agellata* Darb. could not be traced yet. According to the protologue of *L. agellata* this taxon is characterised by e.g.: 'apothecia immersa, thallus K−, margine nigro divisus' – characters which do not fit with those of this collection." In 1994, Hertel annotated the specimen in S as *Carbonea subdeclinans* (Müll. Arg.) Hertel, but does not appear to have published this combination. The type collection of *L. agellata* has since been found and agrees well with the published description (including having immersed apothecia) and, in addition, has a KC+ orange thallus. Further, the additional material of *L. agellata* available in MSC shows a complete range in apothecia from immersed to sessile.

The asci of the type specimens of both *L. agellata* and *L. subdeclinans* have an apical cushion that extends to the top of the tholus (*Lecanora*-type) and, consequently, both species belong in *Carbonea* rather than *Lecidella*. *Carbonea agellata* appears to be relatively frequent on the Falkland Islands but is unknown elsewhere, whereas *C. subdeclinans* is known only from the type collection on Isla de los Estados and, given the similarities between the two species, it is tempting to include *C. agellata* as a synonym of *C. subdeclinans*. However, there are significant anatomical differences between *L. agellata* and the type specimen of *L. subdeclinans* (narrower ascospores, aeruginose epihymenium, orange-brown hypothecium) that suggest that the two species are not conspecific and, consequently, *L. agellata* and *L. subdeclinans* are here transferred to *Carbonea* as distinct species pending further investigation.

Additional specimens of C. agellata *examined* (all MSC and collected by *H. A. Imshaug & R. C. Harris*). **Falkland Islands**: *East Falkland*: Darwin Settlement, coastal cliffs on S side of Carcass Bay, Darwin Harbour, UTM 21F UC 6457, 1968, *Imshaug* 40233, 40246 B; *ibid.*, Boca House on Brenton Lock, UTM 21F UC 6359, *Imshaug* 40308; Fox Bay, coastal rocks at Kelp Pt., UTM 21F TC 9037, 1968, *Imshaug* 42210 A. *West Falkland*: West Point Island, *Hebe*-scrub near The Waterfall, UTM 21F TD 4301, 100–300 ft., 1968, *Imshaug* 40688 A; Hill Cove, cliffs along sea at Point Settlement, UTM 21F TC 8390, 1968, *Imshaug* 41277.

Caloplaca megalariicola Øvstedal sp. nov.

MycoBank No.: MB 564653

Caloplacae buelliae similis, sed excipulo proprio pallido, ascosporis minoribus et hospitis (*Megalaria*) differt.

Typus: Falkland Islands, West Falkland, West Point Island, steep slope and cliffs facing the Woolly Gut, UTM 21F TD 4403-4404 [−51·355667°–60·670333°], *Hebe*-shrub, 22 January 1968, *H. A. Imshaug* (40896 p.p.) *& R. C. Harris* (MSC-0108536—holotypus).

Thallus inapparent.

Apothecia up to 0·4 mm diam., without algae in margin; *disc* rust red-orange-red, margin paler, orange to pale orange. *Hymenium* 65–75 µm high, uncoloured, not inspersed with oil droplets, paraphyses end cell enlarged to 3 µm diam; epipsamma medium coarse. *Ascospores* 8 per ascus, 12–16 × 5–7 µm, septum 3–4 µm broad.

Chemistry. Anthraquinones. Specimen too small for TLC.

Distribution and ecology. Known only from the type locality from *Hebe*-scrub on West Point Island, West Falkland. Lichenicolous on *Megalaria grossa*.

Comments. This species has some resemblance to *Caloplaca buelliae* Olech & Søchting, but differs in the pale margin of the apothecia, the smaller ascospores and the different host (*C. buelliae* is found on *Buellia granulosa* and *B. anisomera* on the South Shetland Islands and South Orkney Islands, see Øvstedal & Lewis Smith 2001). We have seen no similar species in Arctic areas (Hansen *et al.* 1987; Øvstedal *et al.* 2009). Previously no other *Caloplaca* has been found on *Megalaria* (U. Søchting, pers.comm. 2010).

Additional specimen examined. **Falkland Islands**: *West Falklands*: West Point Island, S end of the Woolly Gut, UTM 21F TD 4403 [−51·355667°–60·670333°], *Hebe*-shrub in steep sided coves, 1968, *H. A. Imshaug* (40738 A) *& R. C. Harris* MSC).

Cladonia flammea Øvstedal sp. nov.

MycoBank No.: MB 564654

Cladoniae luteoalbae similis, sed infra textura et hyphis angustibus squamulae primaerae differt, et acidae thamnolicum, decarboxythamnolicum, diacetylgracilliformicum, monoacetylgracilliformicum et skyrinicum continente differt.

Typus: Falkland Islands, East Falklands, Mt. Usborne, valley SW of Mt. Usborne, UTM 21F UC 7068 [−51·720667°–58·877500°], *c.* 200 ft. [61 m], *Cortaderia* heath and sandstone outcrops along stream, 10 January 1968, *H. A. Imshaug* (40175) *& Harris* (MSC-0108537—holotypus).

(Fig. 5A)

Primary thallus as colonies covering several cm^2 with scattered groups of squamules; squamules irregularly divided, ascending to flat-lying, upper side pale yellow-grey, wrinkled-sculptured, to 3 mm high and equally broad. *Upper cortex* uncoloured (in section), almost cartilaginous, 10–45 µm high, with elongated lumina oriented towards surface but walls often indistinct. *Lower cortex* absent. *Medullary tissue* with algae 350–370 µm high, ending in fairly uniform, short hyphae ends; hyphae *c.* 2·5 µm diam. *Lower surface* whitish, not arachnoid, yellow-orange at base, with indistinct veins.

Podetia rare, arising from squamule lamina, pale yellow-grey, tapering, with an open end, up to 6 mm high and 1 mm broad, corticated, in upper part with erect squamules, in lower part without squamules but cortex fissured. Uppermost part often eroded in some podetia.

Apothecia not observed.

Pycnidial gel brownish.

Chemistry. Thamnolic acid (major), decarboxythamnolic acid (minor), diacetylgracilliform acid (minor), monoacetylgracilliformin (trace) and skyrin (minor) (det. J. A. Elix 2009). The last three compounds are responsible for the yellow-orange pigmentation.

Distribution and ecology. Reported only from moribund bryophytes on the Falkland Islands.

Comments. Specimens of this taxon were mistaken for *Cladonia luteoalba* by Stenroos & Ahti (1992, specimens in MSC and AAS seen), but that species has primary squamules with upturned margins and the lower side is uniformly pale sulphur yellow (usnic acid). In addition, the lower surface of the primary squamules of *C. luteoalba* is composed of a layer of anticlinal hyphae, *c.* 5·5 µm diam., which are loose towards the surface and have curling ends (resulting in an arachnoid lower surface, see photo in Stenroos 1990), and thamnolic acid is unknown in *C. luteoalba* (Stenroos 1990; Øvstedal *et. al* 2009). Stenroos (1990) examined a large number of *Cladonia luteoalba* specimens, and found that the real podetia of *C. luteoalba* are escyphose and ecorticate.

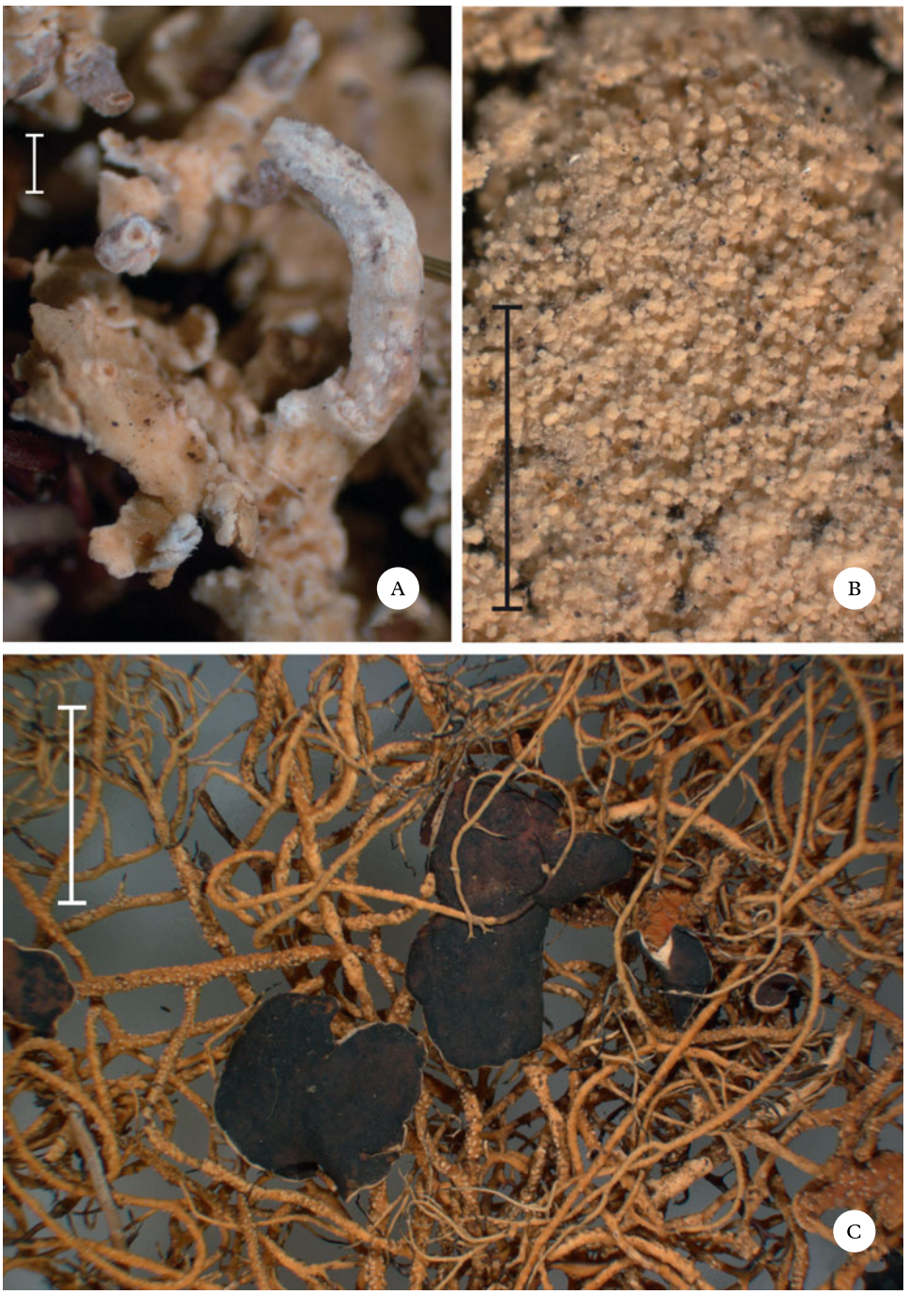

FIG. 5. A, *Cladonia flammea* Øvstedal; B, *Lepraria malouina* Øvstedal; C, *Usnea campestris* Øvstedal. Scales: A & B = 1·0 mm; C = 7·0 mm. In colour online.

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The pigments which give the red-orange coloration are also found in *Cladonia gracilliformis* and *C. bellidiflora* (J. Elix, pers.comm. 2009), but these species are very different from *C. flammea*. At present, the affinities of this species within *Cladonia* are uncertain.

Additional specimens seen. **Falkland Islands**: *East Falkland*: Stanley, Mt. Tumbledown, alt 83 m, on soil, 2009, *Soon Gyu Hong* 091112-04 (AAS) (cf); Fish Creek, Goose Green, 5 m alt., 1963, *Corner* 98 (AAS). *West Falkland*: Fox Bay, outcrops on ridge NE from Sulivan House, UTM 21F TC 8952 [−51·839333°–60·061333°], 500 ft. [305 m], 1968, *H. A. Imshaug* (42366 B) & *R. C. Harris* (MSC).

Cliostomum falklandicum Fryday & Coppins sp. nov.

MycoBank No.: MB 564655

Ab omnibus speciebus generis *Cliostoma* habito saxicola et thallo atranoro unico continenti differt.

Typus: Falkland Islands, East Falklands, Port William, between Yorke Bay and Whalebone Cove, UTM 21F VC 4473 [−51·684000°–57·796000°], 75 ft. [23 m], outcrops on clay ridge, 1 February 1968, *H. A. Imshaug* (41673) & *Harris* (MSC-0111545—holotypus).

(Fig. 4B)

Thallus effuse, consisting of small, discrete patches up to 0·5 mm across, but forming larger patches in depressions; areolate, areoles *c.* 0·1 mm across; creamy white with a minutely arachnoid surface, cortex absent; often with a black, fimbriate prothallus. *Medulla* with numerous minute crystals giving it a pale brown colour, mostly dissolving in K. *Photobiont* chlorococcoid, cells 10–12 µm diam.

Apothecia lecideine, black, blue-black when wet, ±orbicular to slightly elongate, often with a wavy margin, 0·3–0·6 mm diam., flat to convex, ±immarginate; flat with a thin proper margin when young, margin 0·02 mm wide, concolorous with disc or unpigmented; *disc* rough. *Hymenium* 35–40 µm tall; *paraphyses* unbranched, sparingly branched towards apex, septate, lax in K, *c.* 2 µm wide, slightly swollen to 3 µm at apex, upper 5–10 µm with blue-black pigment; *epihymenium* granular with scattered minute colourless crystals, mostly dissolving in K. *Hypothecium* hyaline, composed of randomly orientated hyphae. *Asci* ±cylindrical when young, becoming clavate, *Bacidia*-type, 25–30 × 12–20 µm; *ascospores* hyaline, 1-septate, 9–11 × 4–5 µm. *Exciple* poorly developed with narrow anastomosing medullary hyphae with swollen, ±blue-black pigmented cortical cells; with numerous minute colourless crystals dissolving in K.

Conidiomata not observed.

Chemistry. C−, K+ yellow, Pd−; atranorin by TLC.

Distribution and ecology. Known only from the type collection, which is on the upper surface of a flat, angular quartzite pebble, *c.* 10 × 5 cm in area.

Comments. The dispersed thallus of this species is probably a result of the substratum upon which the lichen was growing and is probably not a diagnostic character. It is probable that other specimens of this species will have a more continuous, areolate thallus.

Two other taxa referable to *Cliostomum*, which were described from southern Argentina by Müller Argoviensis, were also collected on the Falkland Islands by Imshaug and Harris. These two taxa are currently misplaced in *Catillaria* and, although the chemical and morphological variation of these two taxa is still unresolved, the opportunity is taken here to transfer the two names to *Cliostomum* so that other researchers will be aware of them.

Cliostomum aeruginascens (Müll. Arg.) Fryday comb. nov.

MycoBank No.: MB 564656

Patellaria aeruginascens Müll. Arg., *Nuovo G. bot. ital.* **21:** 47 (1889).—*Catillaria aeruginascens* (Müll. Arg.) Zahlbr., *Cat. Lich. Univers.* **4:** 27 (1926) [1927]; type: ad corticum et lignum *Berberidis* in Staten Island, 1882, *C. Spegazzini* (G!).

Cliostomum violascens (Müll. Arg.) Fryday comb. nov.

MycoBank No.: MB 564657

Patellaria violascens Müll. Arg., *Nuovo G. bot. ital.* **21:** 46 (1889).—*Catillaria violascens* (Müll. Arg.) Zahlbr., *Cat. Lich. Univers.* **4:** 84 (1926) [1927]; type: ad corticum *Drimydis* in Staten Island et ad Ushuwaia in Beagle Channel, 1882, *C. Spegazzini* (G!).

Lecanora xantholeuca (Müll. Arg.) Hertel

New synonyms: *Lecidea interrupta* Darb., *Wiss. Ergebn. Schwdeisch. Südpolarexpedit. 1901–1903.* **4:** 3 (1912); type: Falkland Islands, East Falkland, Port Stanley, 8 April 1902, *C. Scottsberg* (S!).

Lecidea protracta Darb., *Wiss. Ergebn. Schwdeisch. Südpolarexpedit. 1901–1903.* **4:** 4 (1912).—*Lecidella protracta* (Darb.) Hertel *Beih. Nova Hedwigia* **79:** 450 (1984); type: Falkland Islands, [no date or locality], *C. Scottsberg* (S!).

Remarks. When Hertel (1984) transferred *Lecidea protracta* to *Lecidella,* he commented that it was very close to the *Lecanora marginata* group and that better developed material was required. Later (Hertel 1992), he annotated the type species "*Lecanora protracta*", although he never published that combination. Based on examination of the specimens in MSC, one of us (AMF) had previously expressed doubts as to whether *Lecanora capistrata* (Darb.) Zahlbr. and *Lecidella protracta* (Darb.) Hertel were distinct species (Fryday 2004). Further investigation, including examination of type material, has shown that *L. protracta* apparently differs from *Lecanora xantholeuca* only in having pruinose apothecia that react Pd+ orange in section (Hertel 1984; Knoph & Leuckert 1994). As the type specimen of *L. protracta* has mostly non-pruinose apothecia, we consider this to be insufficient grounds to recognize *L. protracta* as a distinct species, and include it as a synonym of *Lecanora xantholeuca*.

Lecanora xantholeuca is similar to *L. capistrata* but typically has a smooth, continuous-rimose, clear yellow thallus, apothecia with a persistent, raised proper margin with a much better developed exciple, and shorter, bacilliform conidia 10–15(–18) µm long [flexuose, (25–)30–35(–50) µm long in *L capistrata*].

Lecanora xantholeuca is known only from the Falkland Islands where it grows on siliceous rock outcrops from coastal cliffs to mountain summits.

Selected specimens seen (all MSC). **Falkland Islands** (all collected by H. A. Imshaug & R. C. Harris unless otherwise noted): *East Falklands* (*Isla Gran Malvina*): sinum Port William, Stanley, ix 1850, *W. Lechler* (G—lectotype; *Plantae Insularum Maclovianae* #56); Stanley, UTM Grid 21F VC 3871, outcrop on Sapper Hill, 135 m alt., 1968, *Imshaug* 39793; Mt. Usborne, UTM Grid 21F UC 7371, feldmark on leeward side of Mt. Usborne 1 summit, *c.* 700 m alt., 1968, *Imshaug* 39919; Darwin Settlement, UTM Grid 21F UC 6457, coastal cliffs on S side of Carcass Bay, Darwin Harbour, 1968, *Imshaug* 40234; Port William, UTM Grid 21F VC 4373, outcrop on Engineer Point headland, The Narrows, *c.* 15 m alt., 1968, *Imshaug* 40633. *West Falklands* (*Isla Soledad*): Hill Cove, UTM Grid 21F TC 8390, cliffs along sea at point Settlement, 1968, *Imshaug* 41277.

Lepraria malouina Øvstedal sp. nov.

MycoBank No.: MB 564658

Thallus leprosus, acidae usnicum et sticticum continens.

Typus: Falkland Islands, West Falkland, Weddell Island, summit of Circum Peak, UTM 21F TC 3039 [−51·927500°–60·923500°], 650 ft. [198 m], 6 January 1968, *H. A. Imshaug* (42023) & *R. C. Harris* (MSC-0108539—holotypus).

(Fig. 5B)

Thallus entirely leprose, pale yellow-grey, 5–6 cm wide, cracked. *Prothallus* thin and scarcely visible, pale. *Hypothallus* thick, 0·6–0·8 mm high, pale, loosely organized, with the lowermost part brown to dark brown where the hyphae attach to the substratum. Hyphae hyaline, *c.* 2 µm diam., ±smooth, septate, often branched at septa. No marginal lip. *Rhizohypahe* absent. *Granules* 35–40 µm diam., no pseudocortex formed, with ±short, protruding hyphae.

Chemistry. Usnic acid (major), stictic acid complex (major).

Etymology. Derived from the French name for the islands, Îles Malouines, named after the fishermen and mariners of St. Malo (France) who were the first to settle here.

Distribution and ecology. Known only from rock on the Falkland Islands.

Comments. The terminology of Lendemer (2011) is used. In South America, 30 species of *Lepraria* are currently recognized (Flakus & Kukwa 2007; Lendemer 2010; Elix *et al.* 2010; Flakus *et al.* 2011), none of which have the chemical content encountered in the present species. *Lepraria* species with usnic acid, *Lecanora ecorticata* J. R. Laundon [syn. *Lepraria ecorticata* (J. R. Laundon

Kukwa], *Lepraria coriensis* (Hue) Sipman and *L. usnica* Sipman, belong to other genera, and do not form a monophyletic clade (Nelsen *et al.* 2008).

Additional specimens examined. **Falkland Islands**: *West Falkland*: West Point Island, steep slope and cliffs facing the Woolly Gut, UTM 21F TD 4403-4404 [−51·355667°–60·670333°], *Hebe*-shrub, 1968, *H. A. Imshaug* (40895) & *R. C. Harris* (MSC); *ibid.*, near The Waterfall, 21F TD 4302 [−51·368000°–60·685333°], 100–300 ft. [30–91 m], *Hebe*-shrub, 1968, *H. A. Imshaug* (40691, 40701) & *R. C. Harris* (MSC); *ibid.*, summit of Mt. Misery, UTM 21F TD 4201 [−51·374833°–60·703333°], 1100 ft. [335 m], polsterboden (but on rock), 1968, *H. A. Imshaug* (40675) & *R. C. Harris* (MSC).

Rhizocarpon simillimum (Anzi) Lettau

This is a microscopically distinctive species because of its small (12–16 × 6–8 µm), 1-septate, pigmented ascospores, K+ purple epihymenium and exciple, and amyloid medulla. It is reported here new to the Southern Hemisphere from several collections on siliceous rocks from the Falkland Islands, from coastal to alpine habitats. It is also reported from one inland locality on South Island, New Zealand.

The thallus of Northern Hemisphere collections is reported to contain either stictic acid or no substances (Timdal & Holtan-Hartwig 1988) and the collections reported here also mostly lack lichen substances. However, two populations from the Falkland Islands (Imshaug 41482, 41485 & 42109, see below) have a thallus containing gyrophoric acid. Nevertheless, as they are otherwise identical to collections lacking lichen substances, they are included in *R. simillimum*.

Specimens seen (all MSC). **Falkland Islands**: *East Falkland*: Mt. Usborne, side of valley SW of Mt. Usborne, UTM 21F UC 7068 [−51·720000°–58·869833°], 200 ft. [61 m], large shale outcrop, 1968, *Imshaug* (40209) & *Harris*; Port William, The Narrows, Engineer Point, UTM 21F VC 4373 [−51·683833°–57·826333°], 50 ft. [15 m], outcrops on headland, 1968, *Imshaug* (40639) & *Harris*; *ibid.*, north of Hell's Kitchen, UTM 21F VC 4678 [−51·638667°–57·777167°], 100 ft. [30 m], peat bog, 1968, *Imshaug* (41627) & *Harris*; Stanley, Mullet Creek, UTM 21F VC 3270, [−51·716167°–57·976167°], 100 ft. [30 m], stream below fiord, 1968, *Imshaug* (41482, 41485) & *Harris*. *West Falkland*: West Point Island, summit of Mt. Misery, UTM 21F TD 4201 [−51·374833°–60·703333°], 1100 ft. [335 m], polsterboden, 1968, *Imshaug* (40676) & *Harris*; Fox Bay, E of East Head, along N slope of coast ridge, UTM 21F TC 9435 [−51·994833°–59·996500°], 100–200 ft. [30–61 m], *Empetrum*-heath, 1968, *Imshaug* (42109) & *Harris*; *ibid.*, NW side of Weasels Bay, UTM 21F TC 9038 [−51·960833°–60·053333°], small sea cliffs near beach, 1968, *Imshaug* (42238) & *Harris*.— **New Zealand**: *South Island*: Mt Cook National Park, Hooker Valley, near front of Hooker Glacier, north of Stocker Stream, *c.* 3000 ft [914 m]., in heath-scrub, 1970, *Imshaug* 47470 (MSC).

Rimularia andreaeicola Fryday sp. nov.

MycoBank No.: MB 564659

Ab omnibus speciebus generis *Rimulariae* habito bryicola, thallo brunneo granulato et lichenalibus substantilis absentis differt.

Typus: Falkland Islands, East Falkland, Mt. Usborne, Table Rock, UTM 21F UC 7868 [−51·719500°–58·766000°], 1800 ft. [549 m], feldmark outcrops on summit, 9 January 1968, *H. A. Imshaug* (40082-B) & *R. C. Harris* (MSC-0108540—holotypus; BCRU—isotypus).

(Fig. 6A)

Thallus of ±dispersed brown, often grey pruinose, bullate areoles (0·13–)0·15–0·20 mm across; growing over *Andreaea* sp. *Cortex* not clearly defined but cortical cells brown, 5 µm across. *Medulla* I−. *Photobiont* chlorococcoid, cells 8–12(–15) µm.

Apothecia black, lecideine, orbicular, occasionally somewhat angular, flat 0·5–0·7 mm diam., proper exciple thick (0·5 mm), raised and persistent. *Hymenium* hyaline, I+ blue, 130–140 µm tall; *epihymenium* 10–15 µm thick, pale brownish. *Paraphysoids* 1·0–1·5 µm thick, septate and moniliform, richly branched and anastomosing, apices swollen to 4 µm with dark cap. *Asci c.* 55–60 × 20–30 µm, broadly cylindrical to sub-clavate, *Rimularia*-type. *Ascospores* hyaline, simple, 8 per ascus, 15–18(–21) × 10–12 µm, thick-walled (*c.* 1 µm thick). *Hypothecium* pale to mid brown merging into the exciple. *Excipulum* dark brown, cupular, 100 µm wide.

Conidiomata not seen.

Chemistry. C−, K−, KC−, Pd−. No substances detected by TLC, but material very scanty.

Comments. The collection from Mt. Maria (West Falkland) differs in that the thalline

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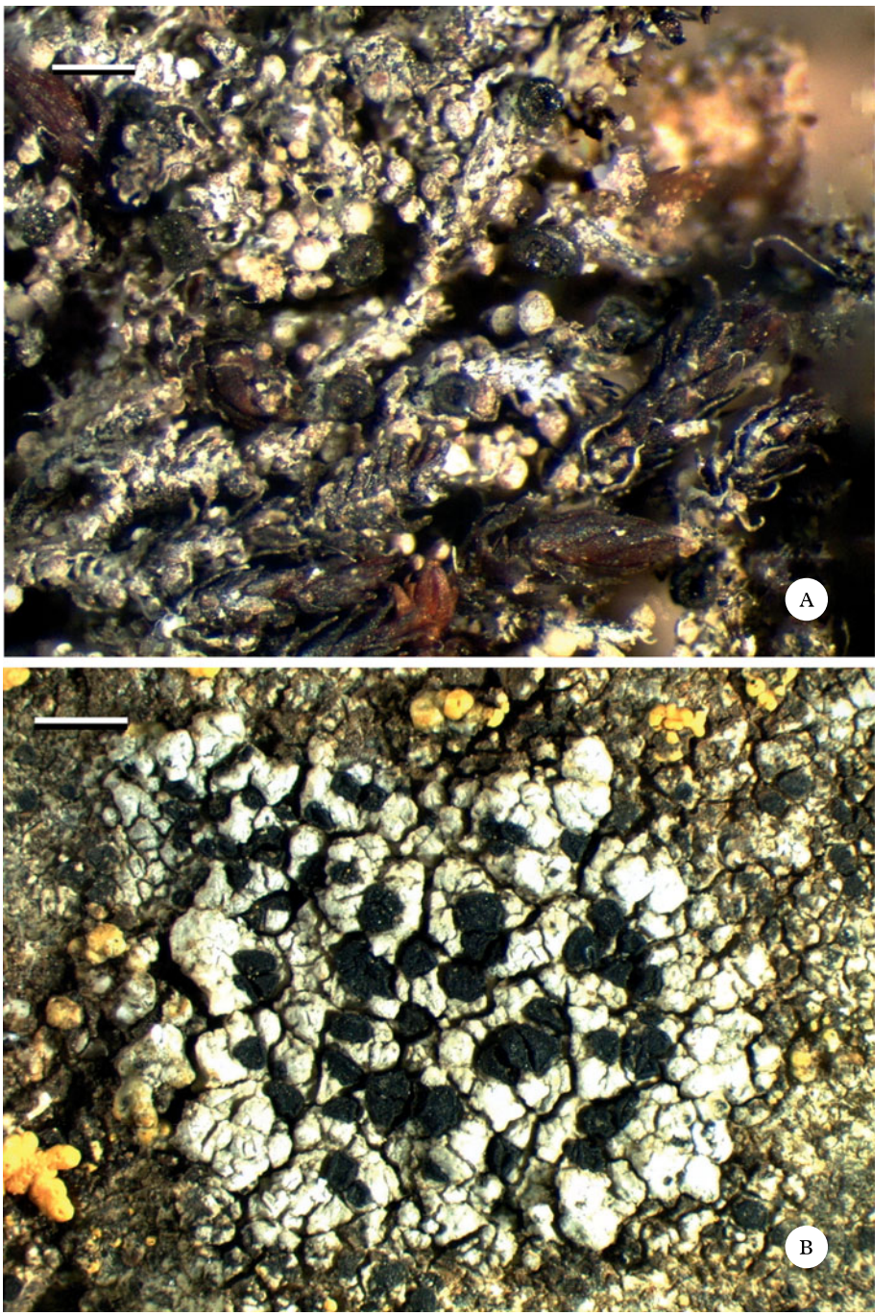

FIG. 6. A, *Rimularia andreaeicola* Fryday (*Imshaug* 40082-B—holotype); B, *Rimularia subpsephota* Fryday (*Imshaug* 42143—holotype). Scales: A = 0·5 mm; B = 1·0 mm. In colour online.

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granules are creamy white rather than brown. However, as all other characters agree with *R. andreaeicola*, and the specimen is extremely small, it is included in *R. andreaeicola* pending the availability of better developed material.

The only other bryophilous species of *Rimularia* are the Northern Hemisphere *R. sphacelata* (Th. Fr.) Hertel & Rambold, which has a thallus containing norstictic acid, and the Australasian *R. hepaticola* Kantvilas, which contains porphyrilic acid. In addition, neither of these species, nor any other species of the genus known to us, has a thallus consisting of dispersed, brown, bullate areoles. Associated species include *Bartlettiella fragilis*, *Pertusaria spegazzinii*, *Poeltidea perusta* and *Schaereria porpidioides* on the Falkland Islands, and *Endocena informis* on Tierra del Fuego.

Additional specimen examined. **Chile**: *Magallanes and Antártica Chilena Region*: Isla Navarino, way Cerro Bandera to Laguna El Salto, 54°58′17·3″S, 067°67′59·0″W, 600–800 m, siliceous boulders, 2005, *J. Etayo* (22432), *L. García & A. Gómez-Bolea* (hb. Etayo).—**Falkland Islands**: *East Falkland*: Mt. Usborne, Table Rock, UTM 21F UC 7868 [−51·719500°–58·766000°], 1800 ft. [549 m], feldmark outcrops on summit, 1968, *Imshaug* (40125-B) *& Harris* (MSC). *West Falkland*: Port Howard, east slope of Mt. Maria UTM 21F UC 2179 [−51·601833°–59·585000°], 1800 ft. [549 m], 1968, *Imshaug* (41397) *& Harris* (MSC).

Rimularia subpsephota Fryday sp. nov.

MycoBank No.: MB 564660

Rimulariae psephotae similis sed thallo albido, uno centimetro diametro, et acidum norsticticum absenti.

Typus: Falkland Islands, West Falkland, Fox Bay, N of East Head, UTM 21F TC 9435 [−51·992667°–60·000833°], along shore, 7 February 1968, *H. A. Imshaug* (42143) *& R. C. Harris* (MSC-0136487—holotypus; BCRU—isotypus).

(Fig. 6B)

Thallus white to pale grey, composed of thick convex areoles (0·3–0·5 mm) usually in small (to 1 cm diam.) patches, but effuse and with thinner thallus with a black fimbriate prothallus when growing on quartzite. *Cortex* not clearly defined but with a thin (3 μm) pale brown layer immediately above the photobiont layer and a hyaline epinecral layer (10–50 μm) that is I+ violet. *Medulla* with numerous fine granules (not dissolving in K or N), I+ violet. *Photobiont* chlorococcoid, cells 8–12(–15) μm.

Apothecia black, lecideine, rounded to angular, occasionally lirellate with slit-like disc, flat 0·4–0·6 mm diam., proper exciple thick (0·5 mm), raised and persistent. *Hymenium* hyaline, I+ blue, 80–100 μm tall; *epihymenium* 10–15 μm thick, brownish grey (K+ violet-brown; Sedifolia-grey). *Paraphysoids* 1·5–2·0 μm thick, septate and moniliform, richly branched and anastomosing, apices swollen to 5 μm with dark cap. *Asci c.* 50 × 15–20 μm, broadly cylindrical to sub-clavate, *Rimularia*-type; *ascospores* hyaline, simple, 8 per ascus, 13–15 × 9–10 μm, thick-walled (*c.* 1 μm thick). *Hypothecium* hyaline above (subhymenium) of randomly arranged swollen hyphae, pale to mid brown merging into the exciple. *Excipulum* dark brown, cupular, 50–70 μm wide, of dark-walled, elongated cells 10–15 × 3–5 μm.

Conidiomata not seen.

Chemistry. C−, K−, KC−, Pd−. No substances by TLC.

Comments. Collections of this species have previously been identified as *R. psephota* (Tuck.) Hertel & Rambold. However, although that species also has an epihymenium containing sedifolia-grey (K+ violet) and a thallus with an amyloid medulla (I+ violet), it also has a more widespreading, darker grey thallus containing norstictic acid. All collections of *R. subpsephota* were made from maritime rocks, or at least rocks close to the sea.

Additional specimens examined (all MSC except where noted). **Argentina** (all collected by *H. A. Imshaug & K. E. Ohlsson*): [*Tierra del Fuego*: Depto Ushuaia,] Bahia Primera, Cabo Kendall peninsula, 54°49′S, 64°07′W, littoral zone, 1971, *Imshaug* 52320; Cabo San Bartolome, N side of peninsula, 54°54′S, 64°42′W, littoral zone, 1971, *Imshaug* 53186.—**Falkland Islands** (all collected by *H. A. Imshaug & R. C. Harris* except where noted): *East Falkland*: sinum Port William, ix 1850, *W. Lechler* [B! (4421; lectotype of *Lecanora atroviolacea*); *Plantae Insularum Maclovianae* #60]; Port William, N shore of Cape Pembroke, peninsula S of Kelly Rocks, UTM 21F VC 4674 [−51·680167°–57·774667°], 1968, *Imshaug* 39836. *West Falkland*: West Point Island, along NE shore adjacent to Cape Terrible, 21F TD 4006 [−51·327833°–60·726500°], coastal rocks, 1968, *Imshaug* 40776, 40778; *ibid.*, Devils Nose, 21F TD 4104

[−51·350667°–60·714833°], 50 ft. [15 m], sea cliffs, 1968, *Imshaug* 40855; Hill Cove, Point Settlement, UTM 21F TC 8390 [−51·496333°–60·116833°], cliffs along sea, 1968, *Imshaug* 41260; Weddell Island, along E side of Ottos Bay, 21F TC 3243 [−51·895000°–60·896667°], coastal rocks, 1968, *Imshaug* 42037.— **South Georgia**: Royal Bay, above Köppen Point, GR 162 098 (*sic.*) [?-54·5075°–36·0100°], 30 m, on dry, south-facing bird perching stone, 1972, *D. C. Lindsay* 4092 (M, sub *Tephromela atrocaesia*).

Usnea austrocampestris Øvstedal sp. nov.

MycoBank No.: MB 564661

Usneae aurantiaco-atrae similis, sed axis tenuis (19–43%) et habitus terricola.

Typus: Falkland Islands, West Falklands, Port Howard, summit ridge of Mt. Maria, UTM UC 2078-2079 [−51·608833°–59·595667°], 2000–2150 ft. [610–655 m], feldmark and outcrops, 28 January 1968, *H. A. Imshaug* (41396) *& R. C. Harris* (MSC-0108542—holotypus).

(Fig. 5C)

Thallus fruticose, yellow-green, straggling on ground, with no holdfast, up to 22 cm long, anisotomically branched, main branch not clearly distinguished, thickest branches to 0·8 mm diam., papillate, annulated towards ends. In section, the central axis varies from 19–43% of total branch diameter.

Apothecia in central part of thallus, lateral, on larger branches only, flat, up to 7 mm diam.; *disc* dark brown to black, thalline margin very thin, to 0·1 mm broad. *Exciple* on outside with low ridges and papillae, no rays present.

Chemistry. Usnic, salazinic, norstictic acids by TLC.

Distribution and ecology. Straggling on soil on mountain tops in West Falkland. Endemic.

Comments. This taxon keys out as *U. aurantiaco-atra* (Jacq.) Bory in Walker (1985), but differs from that species in at least two characters: the central axis, which in *U. aurantiaco-atra* (on Falkland Islands) is 53–95% of total diam., and the ecology (always with a distinct holdfast on rock in *U. aurantiaco-atra*).

The '*Neuropogon*-group' of *Usnea*, although easily recognizable, has been regarded at different taxonomic levels, from genus level to no value at all (see discussion in Wirtz *et al.* 2006 and Lumbsch & Wirtz 2011). In the most recent monograph, Walker (1985) recognized 15 species, but later molecular studies (Wirtz *et al.* 2006; Seymour *et al.* 2007; Lumbsch *et al.* 2011; Lumbsch & Wirtz 2011) have revealed that there are more species present. The phylogenetic relationships within this group have recently been investigated by Lumbsch & Wirtz (2011), who found that *U. aurantiaco-atra* is nested with *U. acromelana*.

Motyka (1936) treated the *U. aurantiaco-atra* complex and found 5 species, mainly based on minor morphological and anatomical characters. Lamb (1939) treated the same complex, and recognized 4 species, but later (1964) modified it to two. The two taxa were divided on chemical content: *U. aurantiaco-atra* with usnic acid only or usnic and fumarprotocetraic acids, whereas *U. melaxantha* contained usnic, salazinic and norstictic acids. Walker (1985) regarded these as subspecies of *U. aurantiaco-atra*. Lamb (1939, 1964), who collected on the Falkland Islands, does not mention any straggling specimens, while Walker (1985), writes; "Thalli may rarely become subdecumbent or straggling and then may be sparsely pigmented, sterile and infrequently to richly branched. . .", but this is her only mention of straggling specimens. It seems that only Imshaug and Harris have collected from these populations on the summits of the West Falkland mountains. However, Engel (1990), who divided the vegetation of the Falkland Islands into *c.* 10 units, found that the Mesic Feldmark was "characterized by a rather conspicuous fruticose lichen flora (principally *Neuropogon*)". This is a vegetation type found almost exclusively on the mountain tops, such as Mt. Usborne 1 (alt. 700 m). Also, a small number of liverworts were found exclusively in such vegetation (Engel 1990). Among the vascular flora, three species are confined to upland localities, viz. *Azorella selago*, *Acaena microcephala* and *A. pumila* (Moore 1968), all species that are widespread in southernmost South America, but not restricted to upland areas there.

Additional specimens examined. **Falkland Islands**: *West Falkland*: Mt. Adam, summit ridge, 2200–2297 ft. [671–700 m], feldmark, 1968, *H. A. Imshaug* (41038, 41072) *& R. C. Harris*; Port Howard, summit of Mt. Maria, 2158 ft. [658 m], feldmark, 1968, *H. A. Imshaug* (41319) *& R. C. Harris*.

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