

**A new species and new records of buellioid lichens
(Caliciaceae, Ascomycota) from the Kerguelen Islands**

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Abstract

Sixteen taxa of buellioid lichens are reported from the Kerguelen Islands in the southern Indian Ocean. *Buellia kerguelenica* Elix is new to science, while 12 taxa are new records for the islands. The new combination *Amandinea tristiuscula* (Nyl.) Elix is proposed for *Lecidea tristiuscula* Nyl. A detailed description and illustrations are provided for the latter species, and a key to the buellioid lichens of the islands is included.

The Kerguelen Islands are located in the southern Indian Ocean at 48°27'–50°01'S and 68°25'–70°33'E. The main island, Grande Terre, is 6,675 km² in area and is surrounded by a further 300 smaller islands and islets, forming an archipelago of 7,215 km². The highest point is Mont Ross in the Gallieni Massif, which rises along the southern coast of the island and has an elevation of 1,850 metres. The Cook Ice Cap (Calotte Glaciaire Cook) is a glacier with an area of about 403 km², and lies on the central-western part of the island. The island is volcanic in origin, mountainous with numerous bays, peninsulas and fiords. The archipelago has a subpolar oceanic climate, and is extremely windswept. Plant life is mainly limited to grasses, mosses and lichens, although the islands are also known for the indigenous, edible Kerguelen cabbage, *Pringlea antiscorbutica*.

Five species of buellioid lichens have previously been reported from the Kerguelen Islands, namely *Buellia disciformis* (Fr.) Mudd [as *B. parasema* deNot.] and *B. stellulata* (Taylor) Mudd (Tuckermann 1875); *Amandinea subplicata* (Nyl.) Øvstedal and *A. tristiuscula* (Nyl.) Elix (Crombie 1877) and *Buellia kerguelensis* C.W.Dodge (Dodge 1966). However, the report of *B. disciformis* from rocks is obviously incorrect, because that species is restricted to corticolous or lignicolous substrata.

In this contribution, *Buellia kerguelenica* Elix is described as new to science, and twelve new records of buellioid lichens are reported from the islands. A detailed description and illustrations are provided for the poorly known *Amandinea tristiuscula*.

Methods

Observations and measurements of photobiont cells, thalline and apothecial anatomy, asci, ascospores, pycnidial anatomy and conidia were made on hand-cut sections mounted in water and treated with 10% potassium hydroxide (K) and 50% nitric acid (N). Calcium oxalate was detected by treatment of thalline and apothecial sections with a 10% aqueous solution of sulfuric acid; it forms colourless, needle-shaped crystals. Asci were also observed in Lugol's Iodine (I), with and without pretreatment in K. Chemical constituents were identified by thin-layer chromatography (Elix 2014) and comparison with authentic samples. Most of the collections were made in 1971 by Dr R.C. Harris and the late Drs G.C. Bratt and H.A. Imshaug, and are lodged in MSC.

The new species

Buellia kerguelenica Elix, sp. nov. Fig. 1
Mycobank No. **MB 827345**

Similar to *Buellia subtegens* B.J.Murray, but differs in having irregular to angular, flat areoles, a much thinner hymenium (35–55 µm) and an inspersed subhymenium.

Type: Kerguelen Islands. Île Haute, shaded rock slope on SW edge of Table des Mouflons, 150 m alt., R.C. Harris 7084, 8.iii.1971 (MSC – holotype).

Thallus crustose, areolate; areoles separate, rarely contiguous, irregular and angular, ± flat, 0.1–0.5 mm wide, dark brown to dark olive-brown, often centred around base of apothecia; prothallus not apparent; photobiont cells 5–12 µm wide. *Medulla* white, lacking calcium oxalate (H₂SO₄-), I-. *Apothecia* 0.2–0.5 mm wide, abundant, lecideine, roundish, broadly adnate to sessile; disc black, epruinose, plane to convex with age; proper exciple thin, distinct, slightly raised above the disc, excluded in older convex apothecia, in section 35–40 µm thick; outer part brown-black, K-, N+ orange-brown; inner part brown. *Epihymenium* 10–15 µm thick, dark olive-brown to aeruginose-black, K-, N+ purple-brown. *Hypothecium* 85–170 µm thick, dark brown to brown-black, K-. *Hymenium* 35–55 µm thick, colourless, not inspersed; subhymenium 20–25 µm thick, brown, inspersed with oil droplets; paraphyses 1–2 µm wide, sparingly branched, with apices 3–4 µm wide, with dark olive-brown caps. *Asci* 8-spored, *Bacidia*-type. *Ascospores* *Buellia*-type, 1-septate, pale brown then dark brown, ellipsoid, 9–[11.8]–14 × 6–[7.1]–9 µm, very rarely constricted at the septum, not curved; outer wall smooth to finely ornamented. *Pycnidia* immersed, black, punctiform; conidia bacilliform, 6–8 × 1 µm. *Chemistry:* Medulla K-, C-, PD-, UV-; no lichen substances detected.

Remarks

Both *Buellia subtegens* and *B. kerguelenica* are characterized by discontinuous, areolate thalli, the absence of a prothallus, similar-sized *Buellia*-type ascospores that are not constricted at the septum, an aeruginose epihymenium, a brown hypothecium, a non-amyloid medulla and bacilliform conidia. However, *Buellia subtegens* differs in forming convex, hemispherical areoles, in having a much thicker hymenium, 80–100 µm thick, and a non-inspersed subhymenium (Murray 1963). Presently *B. subtegens* is only known from Antarctica. *Buellia evanescens* Darb. is also rather similar to *B. kerguelenica*, but it has a colourless to very pale brown hypothecium and commonly constricted ascospores (Lamb 1968).

New combination

Amandinea tristiuscula (Nyl.) Elix, comb. nov. Figs 2, 3
Mycobank No.: **MB 826924**

Lecidea tristiuscula Nyl. in Crombie, *J. Bot. (London)* **15**, 190 (1877).

Buellia tristiuscula (Nyl.) Zahlbr., *Catal. Lich. Univ.* **7**, 424 (1931).

Type: Îles Kerguelen, Swain's Bay, on coastal rock, A.E. Eaton [Transit of Venus Expedition], i.1875 (BM 001097145 – holotype!).

Buellia kerguelensis C.W.Dodge, *Comité Français des Recherches Antarctiques (Paris)* **15**, 8 (1966).

Type: Kerguelen Islands, Presqu'île Courbet, Plaine des Drumlins, on pebbles of denuded moraines with *Usnea*, E. Aubert de la Rüe 77, 1963 (HUH – holotype!).

Thallus crustose, forming extended patches to c. 20 mm wide, epilithic, grey-white to grey-brown, to 0.4 mm thick, effuse and discontinuous to rimose-areolate, individual areoles 0.2–0.4 mm wide; prothallus black when abutting other lichens or not apparent; medulla white, lacking calcium oxalate (H₂SO₄-), I-; photobiont cells 7–14 µm wide. *Apothecia* 0.1–0.5 mm wide, lecideine, immersed then broadly adnate or becoming sessile and constricted at the base, scattered or crowded, rounded or irregular through mutual pressure; disc dark brown to black, epruinose, weakly concave to plane; proper excipulum distinct, persistent, often slightly higher than the disc, in section 35–60 µm thick; outer zone dark brown to black-brown, K-, paler brown within. *Epihymenium* 12–15 µm thick, dark brown, K-, N-. *Hypothecium* 150–250 µm thick, dark brown to brown-black, K-, N+ orange-brown. *Hymenium* 80–90 µm thick, colourless; subhymenium 30–50 µm thick, pale brown, densely inspersed with oil droplets; paraphyses 1.5–1.8 µm wide, simple to sparsely branched; apices 4–5 µm wide, with dark brown caps. *Asci* of the *Bacidia*-type, 8-spored. *Ascospores* at first of the *Orcularia*-type, later of the *Physconia*-type, 1-septate, pale olive-green to brown, ellipsoid, 17–[20.1]–24 × 8–[11.4]–14 µm, rarely constricted or dilated at the septum; outer spore-wall rugulate. *Pycnidia*

common, pyriform, superficial, black; conidia filiform, curved, 16–24 × 0.7–1 µm.
Chemistry: Thallus K–, C–, P–, UV–; no lichen substances detected.

Remarks

This species is most likely to be confused with *A. variabilis* (see below) in that both have *Orcularia*-type ascospores in the early stages of their development, a subhymenium interspersed with oil droplets, similar thalli, numerous pycnidia, and both lack lichen substances. However, the ascospores of *A. variabilis* are smaller, 11–[16.0]–20 × 6–[8.7]–12 µm, and are consistently dilated at the septum (Blaha *et al.* 2016).

Authentic material of *A. tristiuscula* has only been seen from the Kerguelen Islands, although it has also been reported for Prince Edward Island (Øvstedal & Gremmen 2007), Heard Island (Øvstedal & Gremmen 2008) and Marion Island (Øvstedal & Gremmen 2014).

SPECIMENS EXAMINED

Kerguelen Islands. • Presqu'île Jeanne d'Arc, seashore just W of Port-Jeanne d'Arc, sea level, on rock, *R.C. Harris 6649*, 19.ii.1971 (MSC); • Isthme du Lac, stonefield on Anse de St. Marlo side of saddle, 220 m alt., on rock, *H.A. Imshaug 48799*, 4.iii.1971 (MSC).

New records

1. *Amandinea antipodensis* Elix, *Australas. Lichenol.* **81**, 69 (2017)

This species was previously known from the subantarctic Antipodes, Auckland, Campbell and the Snares Islands (Elix 2017b). It is characterized by the crustose, rimose, continuous, off-white to creamy white thallus with a granular upper surface, an interspersed subhymenium and hypothecium, a medulla containing high concentrations of calcium oxalate, *Physconia*- then *Buellia*-type ascospores, 13–[15.4]–18 × 5–[7.5]–9 µm, which become constricted at the septum and have rugulate outer walls, curved, filiform conidia, 12–18 × 0.7–1 µm, and a lack of lichen substances. A detailed description and illustrations are given in Elix (2017b).

SPECIMENS EXAMINED

Kerguelen Islands. • Île Haute, leeward shore on point on W side of Anse des Rennes, sea level, *R.C. Harris 7013 pr. p.*, 6.iii.1971 (MSC); • Île Haute, seashore at eastern-most point of island, sea level, *R.C. Harris 7018 pr. p.*, 6.iii.1971 (MSC).

2. *Amandinea austroconiops* Elix & Kantvilas, *Australas. Lichenol.* **78**, 23 (2016)

This species was previously known from Tasmania, the South Island of New Zealand, Macquarie Island and Campbell Island (Elix & Kantvilas 2016; Elix 2017a,b). It is characterized by the crustose, white to grey-white rimose-areolate thallus, broadly adnate to rarely sessile, lecideine apothecia, 0.3–1 mm in diam., relatively large, 1-septate *Physconia*- then *Buellia*-type ascospores, 15–[19.6]–25 × 8–[11.2]–14 µm, which become constricted at the septum and have rugulate outer walls, curved, filiform conidia, (15–)20–27 × 0.7–1 µm, an amyloid medulla, interspersed hymenium and a lack of lichen substances. A detailed description and illustrations are given in Elix & Kantvilas (2016).

SPECIMENS EXAMINED

Kerguelen Islands. • Presqu'île Jeanne d'Arc, 2 km SSE of Port-Jeanne d'Arc, sea level, on old wood, *G.C. Bratt 71/297*, 24.ii.1971 (MSC); • Presqu'île Ronarc'h, sea cliffs 0.25 km E of Port-Douzième, sea level, on rock, *G.C. Bratt 71/766*, 22.ii.1971 (MSC); • Île Haute, coastal rocks along bay NE of Anse des Rennes, sea level, *R.C. Harris 6616*, 18.ii.1971 (CANB, MSC); • Presqu'île Jeanne d'Arc, lower part of stream in Ravin du Charbon, 50–100 m alt., on rock, *R.C. Harris 6640*, 19.ii.1971 (MSC); • Presqu'île Jeanne d'Arc, dry field just behind Port-Jeanne d'Arc, 20 m alt., on small stones, *R.C. Harris 6777*, 23.ii.1971 (MSC); • Île Haute, wet stony area on N side of isthmus, E of cabin, sea level, *R.C. Harris 6943*, 5.iii.1971 (MSC); • Péninsule Courbet, sheltered cliffs near summit of Pointe Molloy, 50–100 m alt., on rock,

H.A. Imshaug 48302, 16.iii.1971 (MSC); • Île Longue, first small headland E of Port-Bizet, on rock, *H.A. Imshaug 49188*, 19.iii.1971 (MSC).

3. *Amandinea babingtonii* (Hook.f. & Taylor) Søchting & Øvstedal, *Biblioth. Lichenol.* **88**, 615 (2004)

This species was previously known from the Antarctic Peninsula, Bouvetøya and the South Shetlands Islands (Øvstedal & Lewis Smith 2001; Søchting *et al.* 2004). It is characterized by a crustose, brownish grey thallus with subeffigurate margins, a thin, brown marginal prothallus, a non-amyloid medulla that lacks calcium oxalate, broadly adnate to sessile, lecideine apothecia, 0.3–0.5 mm in diam., ellipsoid to slightly curved, 1-septate *Physconia*- then *Buellia*-type ascospores, 15–[17.6]–20 × 7–[8.0]–9 µm, which become constricted at the septum and have microrugulate outer walls, curved, filiform conidia, 10–21 × 0.7 µm, and a lack of lichen substances. A detailed description and illustrations are given in Lamb (1968, as *Buellia babingtonii*).

SPECIMEN EXAMINED

Kerguelen Islands. • Péninsule Courbet, Pointe Denis on Baie de l'Aurore Australe, W of Port-aux-Français, on rock, *H.A. Imshaug 49083*, 15.iii.1971 (MSC).

4. *Amandinea fuscoatrata* (Zahlbr.) Elix, *Australas. Lichenol.* **77**, 39 (2015)

This species was previously known from New Zealand, Tasmania and southern-most South America (Blaha *et al.* 2016; Elix *et al.* 2018). It is characterized by the crustose, rimose-areolate, pale to dark grey or grey-brown thallus, the initially immersed then broadly adnate to sessile apothecia, the non-amyloid medulla, non-interspersed subhymenium, 1-septate, *Physconia*- then *Buellia*-type ascospores, 11–16 × 5–10 µm, curved, filiform conidia, 15–25 µm long, and an absence of lichen substances. A detailed description and illustrations are given in Blaha *et al.* (2016).

SPECIMEN EXAMINED

Kerguelen Islands. • Presqu'île du Prince de Galles, summit of cliffs and top of hill at Pointe Guite, 97 m alt., on rock, *H.A. Imshaug 48700*, 28.ii.1971 (MSC).

5. *Amandinea lignicola* var. *australis* Elix & Kantvilas, *Australas. Lichenol.* **72**, 7 (2013)

This taxon was previously known from Australia, New Zealand and Campbell Island (Elix & Kantvilas 2013a; Mayrhofer *et al.* 2016; Elix 2018). It is distinguished by a conspicuous, well-developed, whitish to pale grey or olive-brown, crustose to squamulose thallus with a smooth to often granular or sorediate upper surface. It is further characterized by having a non-interspersed hymenium, *Physconia*- then *Buellia*-type, 1-septate, ellipsoid ascospores, (11–)13–20 × (5–)6–8 µm, with a smooth to weakly ornamented outer wall, curved, filiform conidia (12–)18–26 × 0.7–1 µm, and an absence of lichen substances. A detailed description and illustrations are provided in Elix & Kantvilas (2013a).

SPECIMEN EXAMINED

Kerguelen Islands. • Presqu'île Jeanne d'Arc, seashore just W of Port-Jeanne d'Arc, sea level, on old wood, *R.C. Harris 6642*, 19.ii.1971 (MSC).

6. *Amandinea nitrophila* (Zahlbr.) Elix, *Australas. Lichenol.* **77**, 40 (2015)

This species was previously known from New Zealand, Heard Island, southern-most South America (Blaha *et al.* 2016) and Campbell Island (Elix 2017b). It is characterized by the crustose, rimose- to verrucose-areolate, grey-white to grey-brown or brown thallus, broadly immersed to adnate apothecia, a non-amyloid medulla, interspersed subhymenium, 1-septate, *Physconia*- then *Buellia*-type ascospores, 12–20 × 7–12 µm, curved, filiform conidia, 12–27 µm long, and an absence of lichen substances. A detailed description and illustrations are provided in Blaha *et al.* (2016).

SELECTED SPECIMENS EXAMINED

Kerguelen Islands. • Péninsule Courbet, rock outcrops 0.5 km W of church at Port-aux-Français, sea level, on rock, *G.C. Bratt 71/574*, 13.iii.1971 (MSC); • Presqu'île Ronarc'h, sea cliffs 0.25 km E of Port-Douzième, sea level, on rock, *G.C. Bratt 71/765*, 22.ii.1971 (MSC); • Péninsule Courbet, E side of base of Pointe Molloy Peninsula, sea level, on rock, *R.C. Harris 6573*, 16.ii.1971 (MSC); • Presqu'île Jeanne d'Arc, lower part of stream in Ravin du Charbon, 50–100 m alt., on rock, *R.C. Harris 6632*, 19.ii.1971 (MSC); • Presqu'île Jeanne d'Arc, small bay at mouth of stream 1 km W of Port Jeanne d'Arc, sea level, on rock, *R.C. Harris 6795*, 24.ii.1971 (MSC); • Presqu'île du Prince de Galles, summit of cliffs and top of hill at Pointe Guite, 97 m alt., on rock, *H.A. Imshaug 48699*, 28.ii.1971 (MSC).

7. *Amandinea subcervina* (Nyl.) Elix, *Australas. Lichenol.* **81**, 9 (2017)

This species was known previously from southern-most South America (Lamb 1968), Macquarie Island (Elix 2017a), Campbell Island and Stewart Island (Elix 2017b). It is characterized by a continuous, rimose to rimose-areolate, pale grey to grey-brown or tawny brown thallus that lacks secondary lichen substances and is often delimited by a dark prothallus, its small, often immersed, lecideine apothecia, 0.2–0.5 mm in diam., with *Physconia*- then *Buellia*-type ascospores, 15–[17.9]–22 × 8–[9.8]–13 µm, which become constricted at maturity and have a rugulate outer spore-wall, and curved, filiform conidia, 12–22 × 0.7–1 µm. A detailed description is given in Lamb (1968) and illustrations in Elix (2017a).

SPECIMENS EXAMINED

Kerguelen Islands. • Presqu'île Ronarc'h, sea cliffs 1.5 km E of Port-Douzième, 50–100 m alt., on rock, *G.C. Bratt 71/663*, 18.iii.1971 (MSC); • Péninsule Courbet, E side of base of Pointe Molloy Peninsula, sea level, on rock, *R.C. Harris 6565*, 16.ii.1971 (MSC); • Péninsule Courbet, bluff above Baie Norvégienne, near mouth of Rivière du Château, 25 m alt., on rock, *R.C. Harris 7140*, 14.iii.1971 (MSC).

8. *Amandinea variabilis* Elix, Blaha & H.Mayrhofer, *Australas. Lichenol.* **79**, 43 (2016)

This species was previously known from southern Victoria, Tasmania, New Zealand (Blaha *et al.* 2016) and Campbell Island (Elix 2017b). It is characterized by having immersed then broadly adnate or sessile apothecia, *Orcularia*- then *Physconia*-type ascospores, (11–)13–16.0–18(–20) × 6–8.7–12 µm, which are not constricted but swollen at the septum, a subhymenium interspersed with oil droplets, and no lichen substances. *Amandinea otagensis* (Zahlbr.) Blaha, H.Mayrhofer & Elix is similar, but differs in having mainly immersed apothecia, a non-interspersed subhymenium and shorter ascospores, 12–[14.1]–16(–17) µm. A detailed description is given in Blaha *et al.* (2016).

SELECTED SPECIMENS EXAMINED

Kerguelen Islands. • Bras de la Fonderie, coastal rocks and cliffs W of Col Demi-Lune, sea level, on rock, *G.C. Bratt 71/548*, 8.iii.1971 (MSC); • Presqu'île Jeanne d'Arc, small bay at mouth of stream 1 km W of Port-Jeanne d'Arc, sea level, on rock, *R.C. Harris 6787*, 24.ii.1971 (MSC); • Péninsule Courbet, feldmark N of Port-aux-Français on E end of Plateau des Drumlins, on rock, *H.A. Imshaug 49062*, 14.iii.1971 (MSC); • Péninsule Courbet, Pointe Denis on Baie de l'Aurore Australe, W of Port-aux-Français, on rock, *H.A. Imshaug 49082*, 15.iii.1971 (MSC); • Île Longue, first small headland E of Port-Bizet, on rock, *H.A. Imshaug 49186*, 19.iii.1971 (MSC).

9. *Buellia melanostola* (Hue) Darb., *Lichens. British Antarctic (Terra Nova) Expedition, 1910. Natural History Report 3*, 63 (1923)

This species was previously known from the Antarctic Peninsula, Bouvetøya, South Georgia and the South Orkney Islands (Øvstedal & Lewis Smith 2001). It is characterized by a thin, crustose, dark brownish grey to black-brown, effuse to verruculose thallus with a black, marginal prothallus, a non-amyloid medulla that lacks calcium oxalate, broadly adnate to

sessile, lecideine apothecia, 0.3–0.5 mm in diam., an olive-brown, N+ purple-brown epiphytenium, a brown hypothecium, ellipsoid, 1-septate *Orcularia*- then *Physconia*-type ascospores, 15–[19.1]–22 × 8–[11.0]–14 µm, which become constricted at the septum and have microrugulate outer walls, the bacilliform conidia, 3–4 × 0.7 µm, and a lack of lichen substances. A detailed description and illustrations are given in Lamb (1968). *Buellia perlata* (Hue) Darb. is very similar, but has a thicker, verrucose, pale grey thallus and smaller ascospores, 14–[16.1]–18 × 6–[7.8]–9 µm (Lamb 1968).

SPECIMENS EXAMINED

Kerguelen Islands. • Péninsule Courbet, 1.5 km N of Port-aux-Français, near Rivière du Château, 50 m alt., on rock, *R.C. Harris 6873*, 28.ii.1971 (MSC); • Péninsule Courbet, on SE side of rock dome (La Taupinière) and on surrounding talus, 250 m alt., on rock, *H.A. Imshaug 48888*, 6.iii.1971 (MSC).

10. *Buellia pygmaea* (Räsänen) Elix, H.Mayrhofer & J.M.Rodr., *Australas. Lichenol.* **83**, 5 (2018)

This species was previously known from Tierra del Fuego (Elix *et al.* 2018). It is characterized by a crustose, areolate thallus of white to yellow-white areoles that can be aggregated or dispersed, irregular, angular, ± flat, 0.1–0.4 mm wide, on a prominent black prothallus. The medulla lacks calcium oxalate, but is always amyloid. This species has immersed, lecideine apothecia, 0.1–0.3 mm in diam., an interspersed subhymenium, ellipsoid, 1-septate *Buellia*-type ascospores, 8–[10.5]–12 × 5–[7.2]–8 µm, not constricted at the septum, that have microrugulate outer walls and bacilliform conidia, 4.5–6.5 × 1 µm. It contains norstictic acid. A detailed description and illustrations are given in Elix *et al.* (2018).

SPECIMEN EXAMINED

Kerguelen Islands. • Presqu'île Jeanne d'Arc, rock pinnacles S of Mont du Refuge, 500–600 m alt., on rock, *R.C. Harris 6744*, 22.ii.1971 (MSC).

11. *Buellia stellulata* var. *tasmanica* Elix & Kantvilas, *Australas. Lichenol.* **73**, 32 (2013)

This taxon was previously known from Australia (Elix & Kantvilas 2013b), New Zealand (Elix *et al.* 2017) and southern-most South America (Elix *et al.* 2018). Morphologically, it is identical to *Buellia stellulata* (Taylor) Mudd var. *stellulata*, but it can be readily distinguished chemically because the latter contains additional 2'-*O*-methylperlatolic acid (major) and confluent acid (minor). A detailed description is given in Elix & Kantvilas (2013b).

SPECIMEN EXAMINED

Kerguelen Islands. • Presqu'île Jeanne d'Arc, rock outcrop 1.5 km W of Port-Jeanne d'Arc, 100 m alt., on rock, *R.C. Harris 6774 pr. p.*, 23.ii.1971 (MSC).

12. *Monerolechia badia* (Fr.) Kalb, *Biblioth. Lichenol.* **88**, 312 (2004)

A detailed description of this cosmopolitan species is given in Elix (2011).

SPECIMEN EXAMINED

Kerguelen Islands. • Péninsule Courbet, rock outcrops 0.5 km W of church at Port-aux-Français, sea level, on rock, *G.C. Bratt 71/572*, 13.iii.1971 (MSC).

Distribution

A total of 16 buellioid lichens have been identified from the Kerguelen Islands. Two species were found on old wood, although there are no endemic trees on the island. One of those species, *Amandinea austroconiops*, is very common on rocks on Kerguelen, so the colonization of wood appears fortuitous. The second taxon, *Amandinea lignicola* var. *australis* is more interesting, in that it also occurs in southern Australia, New Zealand and Campbell Island. Two of the species in the Kerguelen Islands were previously known only from Antarctica and South Georgia (*A. babingtonii* and *B. melanostola*), nine taxa have a southern cool-temperate to

subantarctic distribution (*A. antipodensis*, *A. austroconiops*, *A. fuscoatratura*, *A. nitrophila*, *A. subcervina*, *A. subplicata*, *A. tristiuscula*, *A. variabilis*, *B. pygmaea* and *B. stellulata* var. *tasmanica*), and two species are cosmopolitan (*Buellia stellulata* and *Monerolechia badia*). At the present time, *B. kerguelenica* is known only from these islands.

Key to the species of buellioid lichens in the Kerguelen Islands

- 1 Thallus lignicolous 2
 1: Thallus saxicolous 3
- 2 Ascospores 15–25 × 8–14 µm; subhymenium inspersed .. **Amandinea austroconiops**
 2: Ascospores 11–20 × 5–8 µm; subhymenium not inspersed
 **Amandinea lignicola** var. **australis**
- 3 Thallus containing lichen substances 4
 3: Thallus lacking lichen substances 6
- 4 Thallus K+ red; norstictic acid present **Buellia pygmaea**
 4: Thallus K–; norstictic acid absent 5
- 5 Atranorin, ± roccellic acid present **Buellia stellulata** var. **tasmanica**
 5: Atranorin, 2'-*O*-methylperlatolic, ± confluent, ± roccellic acids present
 **Buellia stellulata** var. **stellulata**
- 6 Thallus squamulose, initially lichenicolous **Monerolechia badia**
 6: Thallus crustose, never lichenicolous 7
- 7 Medulla I+ purple-blue; ascospores 15–25 × 8–14 µm **Amandinea austroconiops**
 7: Medulla I– 8
- 8 Medulla containing calcium oxalate, H₂SO₄+ **Amandinea antipodensis**
 8: Medulla lacking calcium oxalate, H₂SO₄– 9
- 9 Ascospores with marked, medial wall-thickenings, *Orcularia*- to *Physconia*-type . 10
 9: Ascospores *Buellia*-type 12
- 10 Subhymenium not inspersed; conidia bacilliform, 3–4 µm long
 **Buellia melanostola**
 10: Subhymenium inspersed; conidia curved, filiform, 16–24 µm long 11
- 11 Ascospores 17–[20.1]–24 × 8–[11.4]–14 µm **Amandinea tristiuscula**
 11: Ascospores 11–[16.0]–20 × 6–[8.7]–12 µm **Amandinea variabilis**
- 12 Ascospores persistently *Buellia*-type; conidia bacilliform, 6–8 µm long
 **Buellia kerguelenica**
 12: Ascospores with weak medial wall-thickenings during spore ontogeny, mature
 spores *Buellia*-type; conidia curved, filiform, 10–27 µm long 13
- 13 Ascospores 11–16 × 5–10 µm **Amandinea fuscoatratura**
 13: Ascospores 12–25 × 7–16 µm 14
- 14 Thallus margins subeffigurate **Amandinea babingtonii**
 14: Thallus margins not subeffigurate 15

- 15 Disc gyrose; subhymenium not inspersed **Amandinea subplicata**
 15: Disc not gyrose; subhymenium inspersed or not 16
- 16 Subhymenium not inspersed; thallus thick, chinky **Amandinea subcervina**
 16: Subhymenium inspersed; thallus thin, rimose-areolate **Amandinea nitrophila**

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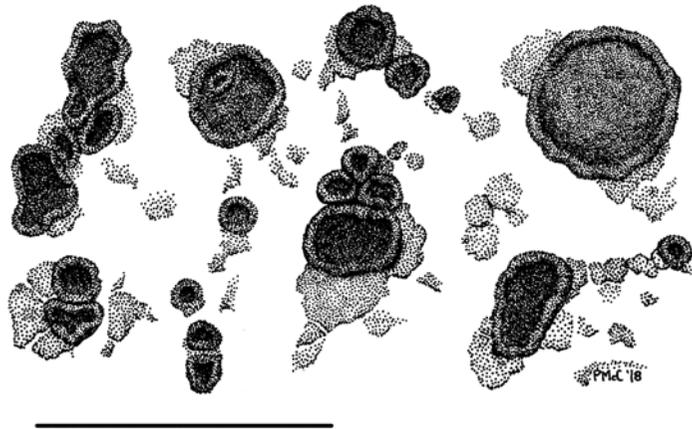


Figure 1. *Buellia kerguelenica* (holotype in MSC). Scale bar = 1 mm.



Figure 2. *Amandinea tristiuscula* (Harris 6649 in MSC). Scale bar = 2 mm.

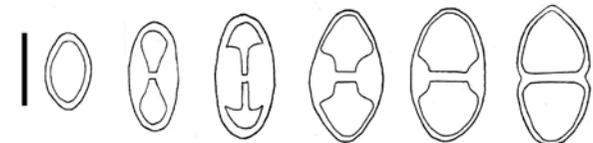


Figure 3. Ascospore ontogeny of *A. tristiuscula*. Scale bar = 10 µm.