Jamesiella scotica new to Fennoscandia

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Jamesiella scotica is reported as new to Fennoscandia from Leka Island in Trøndelag, Norway. It forms small patches on decomposing bryophytes on ultramafic boulders and rock outcrops. Previously unpublished information on the occurrences of J. scotica in the British Isles, and on Iceland is given.

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Introduction

Jamesiella Lücking, Sérus. & Vězda is a genus of four species (Lücking et al. 2005, 2006). Most of the species had previously been assigned to Gyalideopsis Vězda (James 1975, Vězda & Hafellner 1988). Jamesiella scotica (P. James) Lücking, Sérus. & Vězda had been regarded as endemic to the British Isles (Lücking et al. 2009) until recently when it was reported from Iceland (Price 2014; as Gyalideopsis scotica P. James) and from the U.S.A., Alaska (Tønsberg 2016). Field work on Leka Island in coastal Central Norway in 2017 yielded several specimens of Jamesiella scotica. As these new findings extend its range further, they are presented here.

Material and Methods

This study is mainly based on the author’s field work on Jamesiella scotica in the coastal lowlands of Leka Island in July and August 2017. The author’s collections are deposited in BG with a duplicate of one specimen of J. scotica in TRH. Elevational data given for the Norwegian collection localities are derived from Norgeskart (see References) based on field GPS data with the geodetic datum set to WGS84. Bryophyte samples from all specimens, except Tønsberg 47404, were sent to Tommy Prestø, NTNU University Museum, for identification.

The Species

Jamesiella scotica (P. James) Lücking, Sérus. & Vězda

Type: [Scotland.] VC 108, West Sutherland: Ben Hope. 29/47–,50–, overgrowing hepatics and bryophytes on wet, ± basic, epidiorite outcrop at 300 m, 30 September 1974, P. W. James (with F. Rose) (BM, holotypus; not seen).

Description of the Norwegian material: (Fig. 1). Growing on decomposing bryophytes. Thallus (the area on the bryophyte supporting hyphophores) up to 5 cm in diameter, whitish, sometimes patchily greenish and glossy, thin, engulfing the substrate, sometimes not evident between the
marginal hyphophores. Hyphophores numerous, evenly to unevenly scattered, rather variable in form, usually more or less globose to peg-like, rarely cylindrical, up to 0.20 mm tall and 0.14 mm wide; sometimes fastened by a tiny stalk; juvenile hyphophores (see Tønsberg 2016) pigment-deficient and translucent. Apothecia not observed. Photobiont in the greenish thallus patches and in the hyphophores, coccoid, to 10 µm in diameter.

Ecology and Distribution: (Figs 2–3). In the Norwegian material Jamesiella scotica overgrows the mosses Hypnum cupressiforme Hedw. (3 specimens) and Pseudoleskea nervosa (Bridel) Nyholm (2), as well as the hepatic Barbilophozia lycopodioides (Wallr.) Loeske (2). The bryophytes supporting Jamesiella were more or less moribund and occurred mostly on the upper portions, rarely the sloping faces, of boulders (Fig. 2) and rock outcrops (Fig. 3) of serpentinite, an ultramafic rock type. The altitudinal range was 47–53 m. Associated species (occurring on the bryophyte patches supporting Jamesiella scotica in the herbarium envelopes) included Arctomia delicatula Th. Fr. (2 specimens), Bryostigma muscigenum (Th. Fr.) Frisch & G. Thor (1), Dactylospora urceolata (Th. Fr.) Arnold (lichenicolous on thallus of Jamesiella scotica in Tønsberg 47404; spores brown, (3–)7-septate, a few submuriform, 17–22 × 5–7 µm; identification based on Fryday & Coppins 2012), Micarea peliocarpa (Anzi) Coppins & R. Sant. (1), Parmeliella triptophylla (Ach.) Müll. Arg. (1), and Thelenella muscorum (Fr.) Vain. var. muscorum (1).

Specimens of Jamesiella scotica examined: Norway, Trøndelag Co. [Nord-Trøndelag]: Leka, Leka Island, Solsem, near and E of path to Solsemhola, 65.06006°N 11.57008°E, alt. 53 m, over bryophytes on top of
boulder at edge of forest in coastal heath, 2017-07-01, Tønsberg 47292a (BG), 47292b (TRH); (same boulder) over bryophytes on sloping face of boulder, Tønsberg 47294; near path to Lekamøya, 65.05720°N 11.56763°E, alt. 51 m, over bryophytes on top of boulder, 2017-08-09, Tønsberg 47400; 65.05721°N 11.56689°E, 47 m, 2017-08-09, Tønsberg 47403, 47404).

Findings of Jamesiella scotica in Iceland: Iceland, south coast of Snæfellsnes Peninsula (West Iceland), Þúfübjarg, 64°44'8.484''N  23°46'40.8''W (Garmin GPS), over bryophytes in sheltered crevice amongst lava outcrops on plateau above low sea cliffs, 2014-07, A. Acton, (herb. Acton AA5000; not seen); north coast of Snæfellsnes Peninsula (West Iceland), at the south end of Kolgrafaðjörður, 64°54'N 23°06'W (from map), one small patch over bryophytes on damp flushed rock along margin of small stream, 2014-07-22, A. Acton (observation, sample not retained).

Specimens studied of bryicolous Jamesiella anastomosans in Norway: Norway, Hordaland: Bergen, Åstveit, 60.44935°N 5.30874°E, alt. 24 m, over bryophytes on trunk of Fagus sylvatica, 2017-06-01, Tønsberg 47103; Bergen, E of lake Svartediket, 60.39008°N 5.38921°E, alt. 132 m, over bryophytes on trunk of Betula pubescens, 2017-06-11, Tønsberg 47113. Rogaland: Utsira, Kvalvik N, 59.31050°N 4.88939°E, alt. 19 m, over bryophytes on low boulder in pasture, 2017-10-05, Tønsberg 47582.

Discussion

The Norwegian material agrees well with the description given by James (1975) and Lücking et al. (2009) based on specimens from the British Isles. In that material, however, hyphophores may be somewhat larger, up to 0.3 mm high and 0.2 mm wide (Lücking et al. 2009). Neither James (1975) nor Lücking et al. (2009) mention the pigment deficient, juvenile hyphophores. According to Coppins & Coppins (2000) “apothecia are very rare and have the appearance of red-brown to blackish, collapsed discs, although they become plump and translucent when wet”.

In the Norwegian material of J. scotica, some hyphophores are situated on green and healthy bryophyte leaves showing no hint of decay. It is likely that J. scotica is not a colonizer of moribund bryophytes, but the cause of the decay of the bryophytes that support them.

An outcrop in the vicinity of some of the Norwegian specimens supported Porpidia nadvornikiana (Vězda) Hertel, a species restricted to ultramafic rock types such as serpentinite/serpentinite (Fryday 2005, Fryday et al. 2009, Palice & Tønsberg 2016). In the British Isles J. scotica has been reported over “decomposing hepatics and mosses on base-rich mountain rock and soil” (Lücking et al. 2009), and characterized as oceanic montane by Coppins & Coppins (2000). “To date, J. scotica is known from 24 hectares (10 km grid squares) in Scotland, and it is known from one hectad each in North Wales and the English Lake District. The altitude range of the species in the British Isles is from about 40 to 1000 m; at higher altitudes it seems to be restricted to calcareous rocks, but at low altitudes calcareous conditions don't seem to matter” (Brian Coppins, pers. comm. 2018). In Iceland the species has been found a few times in the western, coastal lowlands (Andy Acton, pers. comm. 2018): “4 small, separate patches found growing over bryophytes in sheltered crevice amongst lava outcrops on plateau above low sea cliffs not far from sea-level”; “one small patch growing over bryophytes on damp flushed rock along margin of small stream, close to sea level”; for further details, see above. The only specimen of J. scotica known so far from North America was collected in the U.S.A., Alaska, and grew over Paraleucobryum longifolium (Hedw.) Loeske on mossy granitic seashore rock, perhaps sustained by ocean spray (Tønsberg 2016).

In Europe two species of Jamesiella are known, J. anastomosans (P. James & Vězda) Lücking, Sérus. & Vězda and J. scotica. The former species is distinct from the latter by the spine-like, pale greyish, pale greenish or glassy and translucent hyphophores. It has been found in Norway overgrowing bryophytes (on trees, Tønsberg 47103, 47113, and on rock, Tønsberg 47582;
Figure 2. Boulder supporting bryophytes with *Jamesiella scotica* (upper portions and on the sloping face to the left). Photo T. Tønsberg, 1 July 2017.
for locality details, see the specimens listed above), but it is mainly a corticolous or, less often, lignicolous species (see the Norwegian Lichen Database). Although the hyphophores are only fractions of one mm wide and tall, *J. scotica* is easy to identify, even in the field, by the red-brown, isidiiform hyphophores.

Outside the British Isles *J. scotica* is known from a few and scattered localities, all in coastal lowlands. It should be considered to be poorly known. More field work is necessary to assess its distribution (including its altitudinal range) and substratum preferences.

*Jamesiella scotica* is here reported new to Fennoscandia.

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References

Norgeskart: http://www.norgeskart.no/
Norwegian Lichen Database: http://nhm2.uio.no/lichens