

## ***Barrmaelia pseudobombarda* (Ascomycota), a rare European species with a peculiar disjunct distribution**

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Accepted 9. September 2015

**Key words:** *Xylariaceae*, *Salix*. – Ecology, new record, taxonomy. – Mycobiota of Norway.

**Abstract:** The pyrenomycetous species *Barrmaelia pseudobombarda* (*Xylariaceae*) is recorded for the first time in Norway. It was found on *Salix phylicifolia* in the Anarjohka river valley in Finnmark. The record represents the first find of *B. pseudobombarda* in the Nordic countries coming from the northernmost locality of this species in the world. It has earlier only been reported from the northern part of Italy and must be considered a rare species in Europe.

**Zusammenfassung:** Die Pyrenomyceten-Art *Barrmaelia pseudobombarda* (*Xylariaceae*) wird zum ersten Mal für Norwegen angeführt. Sie wurde an *Salix phylicifolia* im Anarjohka Flusstal in der Finnmark gefunden. Der Nachweis ist der erste Fund von *B. pseudobombarda* in den nordischen Ländern vom bisher weltweit nördlichsten Fundpunkt dieser Art. Sie wurde früher nur aus dem nördlichen Teil von Italien gemeldet und muss als in Europa sehr selten gelten.

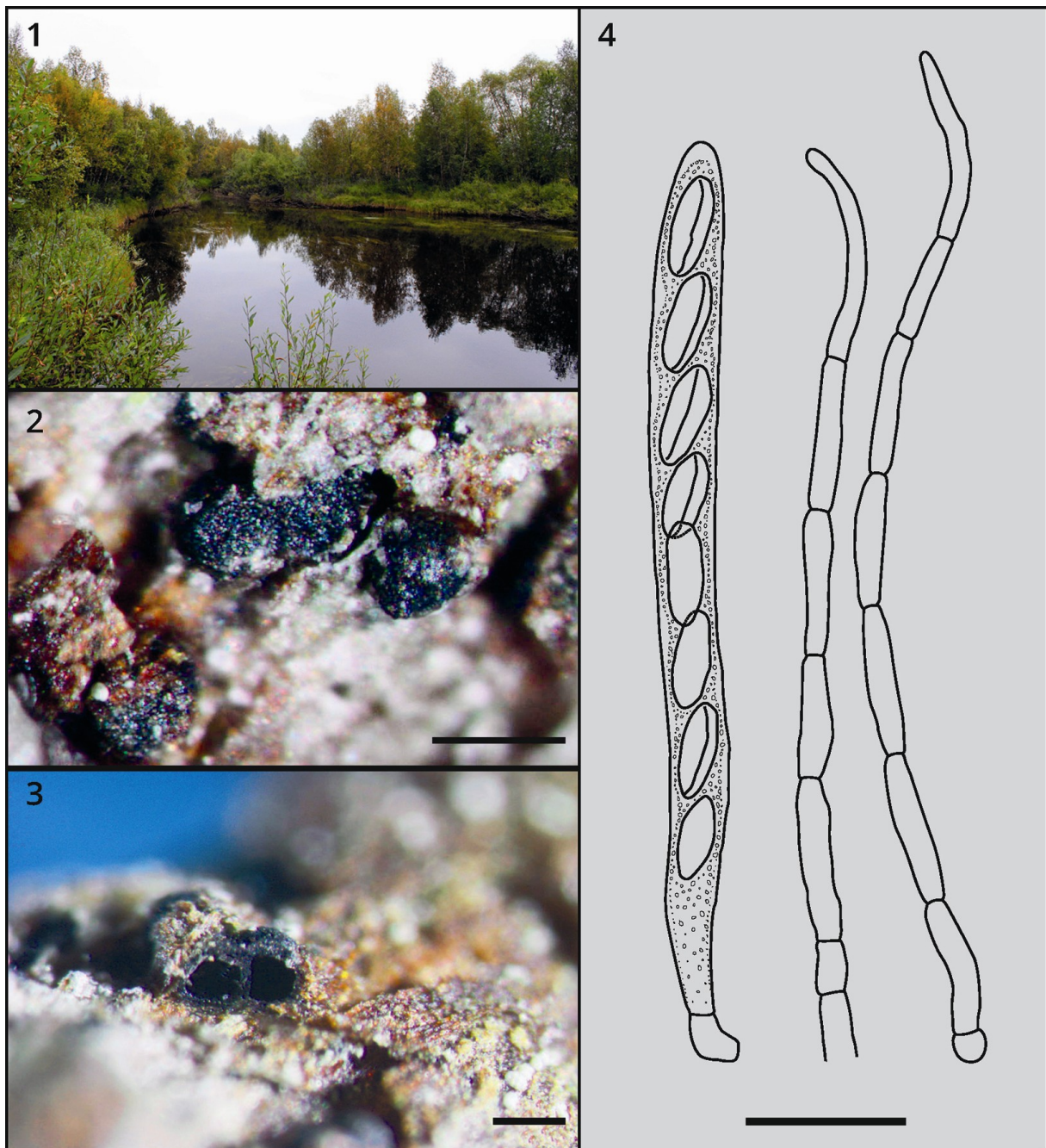
In August 2010, *Barrmaelia pseudobombarda* (SACC.) RAPPAZ was found SW of Basevuovdi, in the upper, southern part of the Anarjohka river valley in Finnmark (Figs. 1, 5). This area is a highly continental part of North Norway with relatively high summer temperatures (normal mean of the warmest month, July, 13.1 °C; DNMI 1991) and low precipitation (interpolated annual precipitation 366 mm; MOEN 1998). The Anarjohka area was one of three representative areas that were studied during an inventory of fungi in Finnmark, viz. the 2-year project “The Ascomycetes in Finnmark” (MATHIASSEN & GRANMO 2012). The species was found on a dead stem of *Salix phylicifolia*, the most common species of *Salix* in this part of the valley.

This is the first record of *Barrmaelia pseudobombarda* from Norway and the Nordic countries. Elsewhere in Europe, the species has been reported from Italy only (cf. SACCARDO 1873, PETRINI 1993, RAPPAZ 1995).

### Materials and methods

Geographical coordinates were taken in the field using a GPS receiver: Garmin GPSmap 60CSx. The collection was studied using Wild M10 dissecting microscope and Leitz DMRBE light microscope. Microscopic slides were prepared from dried herbarium material and mounted in water for measurements and photographs. Photographs were taken with an Olympus UC30 digital camera. The specimen is deposited in the herbarium of Tromsø University Museum, Norway (TROM). Collector abbreviation GM = G. MATHIASSEN.

**Material examined:** Norway, Finnmark, Karasjok, about 0.5 km SW of Basevuovdi, in the upper, southern part of the Anarjohka river valley, 25°38'39"N 68°54'22"E, 21. August 2010, *Salix phylicifolia*, leg. et det. G. MATHIASSEN & A. GRANMO, GM 12401 B (TROM).



Figs. 1–4. *Barrmaelia pseudobombarda*. – Fig. 1. The location of *B. pseudobombarda* in the Anarjohka river valley. – Fig. 2. Ascomata in bark (bar = 250 µm) – Fig. 3. Section of ascomata in bark (bar = 200 µm). – Fig. 4. Asci with spores, and paraphyses (bar = 20 µm). Phot. MATHIASSEN.

**Description of the Norwegian specimen of *Barrmaelia pseudobombarda***

**Stromata:** clypeoid.

**Perithecia:** 0.2–0.3 mm diam., ± globose to broadly pyriform, scattered or dense in small groups. Partly coalescing when growing in bark, raising the cortex and bursting through the periderm (Figs. 2–3).

**Asci:** 100–112 × 7.5–8.7 µm, cylindrical, unitunicate, inamyloid and 8-spored. Stipe up to 25 µm long.

**Paraphyses:** up to 4.5 µm wide at base, but gradually tapering towards apex, numerous, long and septate.

**Ascospores:** 12.5–15 × 3.8–5 µm, ellipsoidal to inequilaterally ellipsoidal, with rounded ends, one-celled, brown to light brown, usually obliquely uniseriate. Germ slit distinct, straight, the whole length of the spore (Fig. 4).



Fig. 5. World distribution of *Barrmaelia pseudobombarda* until 2010 (bar = 500 km). Map: E. HØGTUN ©, Tromsø University Museum, 2015.

**Ecology:** *Barrmaelia pseudobombarda* was found on *Salix phylicifolia* in Norway. In Italy it has been found on *Quercus* and *Rosa*, and probably also on *Salix* (SACCARDO 1878), as *Anthostomella intermedia* (see comments below, and RAPPAZ 1995). Lately, *B. pseudobombarda* has also been found on *Fagus sylvatica* in France (FOURNIER, in litt.).

The species is found growing in both wood and bark (SACCARDO 1878, RAPPAZ 1995). In France, the species was found growing on a decorticated beech branch (FOURNIER, in litt.), whereas in Norway it was growing in bark in the top of a very thin willow stem. The stromatal blackening of the wood surface and in the bark, as described by RAPPAZ (1995), was not observed in the Norwegian sample.

**Distribution:** The record of *Barrmaelia pseudobombarda* from the Anarjohka area in North Norway represents the northernmost find of the species in the Nordic countries and on the European mainland. The species is earlier only reported from the northern part of Italy but it was recently also found in southern France (cf. RAPPAZ 1995, J. FOURNIER in litt.), thus making the find in Anarjohka very interesting and unexpected. JACQUES FOURNIER (in litt.) informed us recently that he found a single collection of this species in 1999 at a high altitude locality (700 m a.s.l.) in the Pyrenean mountain range in southern France. A recently reported occurrence from Germany (Heiligenhafen, Schleswig-Holstein, leg. MAREN KAMKE 25. 2. 2014; <http://www.pilze-deutschland.de/>) was misidentified, and the first author determined it to represent typical *B. oxyacanthae* based on stereo- and micrographs.

The geographical distance between Anarjohka and the two areas in southern Europe (Italy and France) is huge (Fig. 4), and the disjunct distribution pattern for this species is peculiar. A few other pyrenomycetous species have, however, a similar disjunctive distribution pattern on the European mainland, e.g. *Glyphium grisonense* MATH., *Hypoxyton macrosporum* P. KARST., *Saccardoella kanderana* MATH., and *Lophium elegans* H. ZOGG (cf. MATHIASSEN 1989, 1993; MATHIASSEN & GRANMO 2012; MATHIASSEN & al. 2014). MATHIASSEN (1985) considered the disjunct distribution pattern for *G. grisonense* and *H. macrosporum* as phytogeographically very interesting, and stated that the distribution probably was due to climatic factors dating back to the last ice age. This is probably also the case for *B. pseudobombarda*. The species must be considered as very rare in Europe.

**Nomenclatural and taxonomic notes:** In her treatment of the genus *Rosellinia*, PETRINI (1993: 270) examined and commented upon the type material of our taxon, viz. *Rosellinia pseudobombarda* SACC. (in herb. PAD; cf. SACCARDO 1873). She excluded the species from *Rosellinia*, and pointed out that it was close to *Anthostomella* SACC. RAPPAZ (1995: 142) also examined the type specimen, and made a rather comprehensive description of this species in his treatment of the genus *Anthostomella* and related Xylariaceous fungi. He transferred it to the new genus *Barrmaelia* RAPPAZ, and made the combination *B. pseudobombarda* (SACC.) RAPPAZ.

He also examined a collection from SPEGAZZINI of *Anthostomella intermedia* SACC. on *Rosa* sp. (PAD; herb. SACCARDO), and found the microscopical features to be identical with the type material of *Rosellinia pseudobombarda*. He therefore synonymized *A. intermedia* with *Barrmaelia pseudobombarda*. He did not, however, examine SACCARDO's own collection on *Salix vitelliana*, the type of *Anthostomella inter-*

*media* (SACCARDO 1878: tab. 172), as he did not receive it from Padova. So he considered it as lost (RAPPAZ, in litt.), and therefore proposed SPEGAZZINI's collection on *Rosa* sp. as a neotype. SACCARDO's specimen on *Salix vitelliana* (SACCARDO 1878: tab. 172) may well be the same taxon as SPEGAZZINI's collection on *Rosa*, but we do not know for certain, as we were unable to travel to PAD and the herbarium does not lend out types (Curator in PAD ROSSELLA MARCUCCI, in litt.). Only a careful analysis can tell, assuming the material still exists.

We express our gratitude to ERNST HØGTUN for technical assistance and to ROB BARRETT for improving our English. We also thank FRANÇOIS RAPPAZ (Switzerland) for valuable comments, JACQUES FOURNIER (France) for information about the new find of *Barrmaelia pseudobombarda* in France, and MAREN KAMKE for photos of *B. oxyacanthae* from Germany. Thanks also to the herbarium authorities in Denmark (C), Finland (H, JOE, JYV, KUO, OULU, TUR), Iceland (AMNH), Italy (PAD), and Norway (BG, O, TRH) for retrieving all possible collections of *Anthostomella intermedia* and *B. pseudobombarda*. The investigation has been financially supported by Artsdatabanken (The Norwegian Biodiversity Information Centre), and the University of Tromsø.

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