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Arthonia ligniariella new to Finland

LILITH WEBER, ANNINA KANTELINEN and LEENA MYLLYS

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Arthonia ligniariella Coppins is reported for the first time from Finland. The specimen was collected on a dead, standing pine tree in Vesijako strict nature reserve in southern Finland. It is likely an overlooked species in Finland and possibly rare. It should be looked for in old-growth forests on dead wood and bark of various tree species, as well as on moribund mosses.

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Introduction

Arthonia ligniariella was described by Coppins (1989) from a rotten *Fagus sylvatica* trunk in southern England and it has been reported from elsewhere in Great Britain on *Quercus* bark, rotting hardboard and moribund mosses. In Europe it is also known from Denmark on *Picea* in Thy National Park (Espersen & Søchting 2018), the Swiss alps, on rotting wood of stumps and bark in the subalpine belt (Nimis et al. 2018) as well as the Netherlands (Aptroot et al. 2004), without any information on the substrate. In North America, it has been reported from Canada, British Columbia, on bark of *Thuja plicata* in old-growth forest remnants (Houde et al. 2007, Spribille & Björk 2008) and from U.S.A., Alaska, on trunk of *Alnus incana* (Spribille et al. 2010). In Fennoscandia the species is also known from Sweden (Gustavsson 1995, Thor 2008) and Norway (Frisch et al. 2020) where it is found on *Quercus*, *Salix caprea*, *Picea abies* and *Pinus sylvestris*. Without specifying the substrate, Redchenko et al. (2010) reported the occurrence of *A. ligniariella* for Svalbard, a surprising find in view of the lack of typical phorophytes in the archipelago.

The Finnish specimen was collected from Vesijako strict nature reserve in 2015 (Fig. 1). The area represents one of the oldest forest remnants in southern Finland and it is known for its biodiversity (Kotiranta & Niemelä 1981, Virkkala et al. 1994). The collection area is an old mixed forest where *A. ligniariella* grew on a dead, standing *Pinus sylvestris*. The species was found together with *Cladonia* sp., *Hypogymnia tubulosa*, *Lepraria jackii*, *Micarea melaena* and *Vulpicida pinastri*.

Material and Methods

The specimen was collected from Vesijako strict nature reserve in 2015 as part of a study on deficiently known and threatened forest species on dead wood in Finland.



Figure 1. Old-growth forest in the Vesijako strict nature reserve.

The sample was initially studied using a Leica S4E dissecting microscope. Anatomical features were then examined on hand-cut apothecial sections and squash preparations mounted in water using a Leica CME compound microscope. Ascospore dimensions and other anatomical measurements were made in water and in 10% potassium hydroxide solution (K). Chemical spot tests were performed under a compound microscope using sodium hypochlorite (C), Lugol's solution (I) and K (Orange et al. 2001).

The species

Arthonia ligniariella Coppins

Figs 2, 3

Description of the Finnish specimen: Thallus inconspicuous. Ascomata round, convex, max. 0.2 mm wide, black to brownish grey. Hypothecium brown, 30–45 μm tall, K+ olive-brown intensifying. Hymenium 25–30 μm , hyaline, I-/KI-. Paraphysoids 1.2–1.5 μm wide, apices knobby and with light brown caps. Asci clavate, 25–30 \times 10 μm . Ascospores hyaline, 1-septate with one cell often broader, at septum slightly constricted, (7–) 9–11 \times 3–3.5 μm .

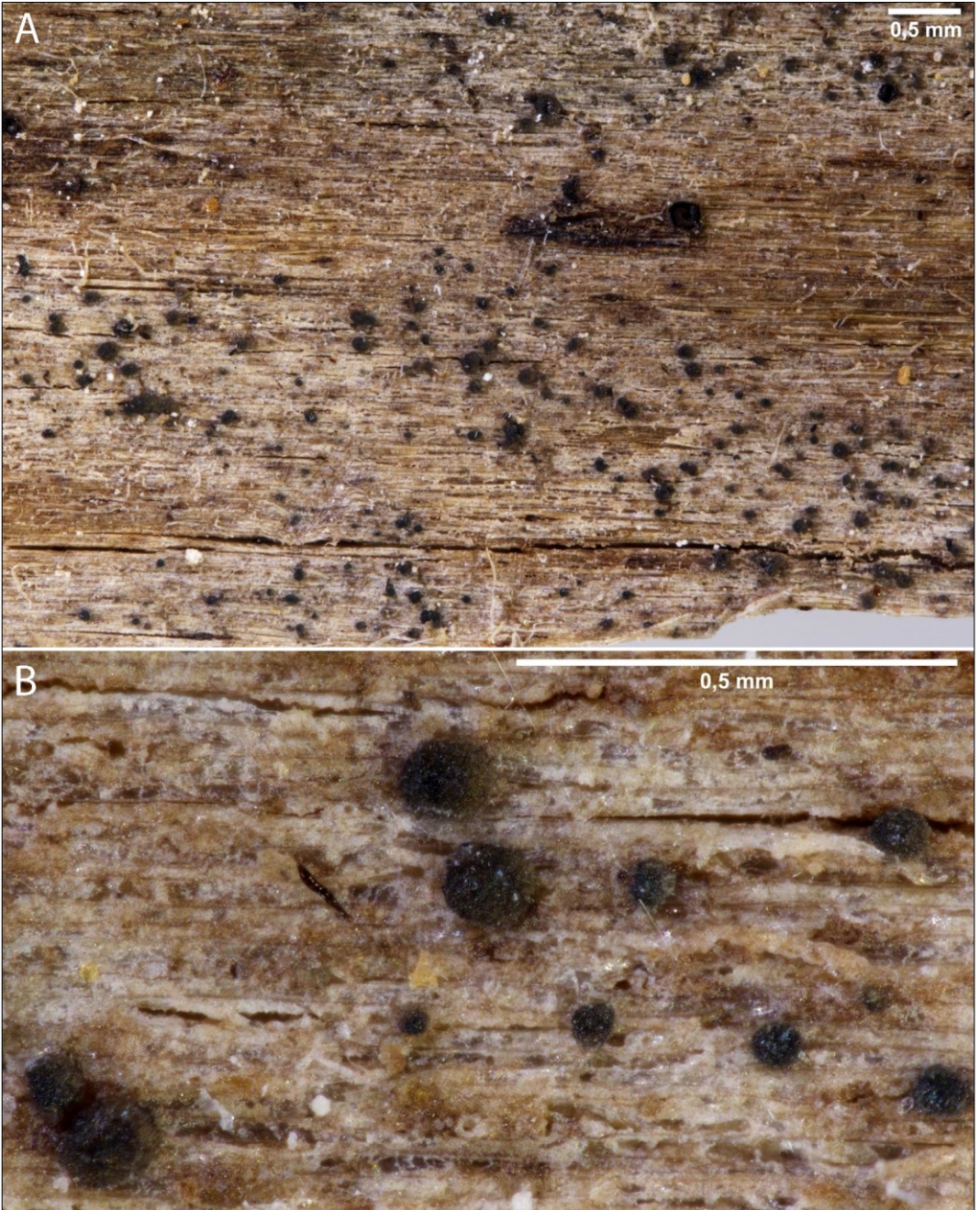


Figure 2. A and B. *Arthonia lignariella* (Kantelinen 3463, H) on decaying wood.

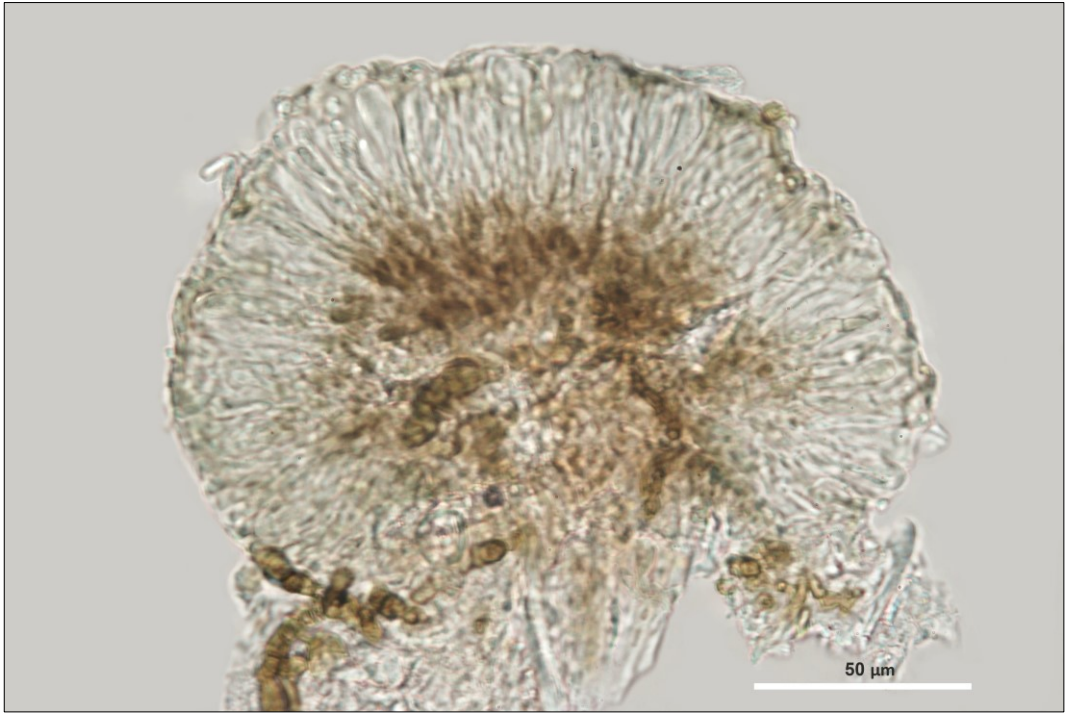


Figure 3. Apothecial section of *Arthonia ligniariella* (Kantelinen 3463, H).

Specimen examined: Finland, EH, Vesijako strict nature reserve, old-growth forest, on dead, standing *Pinus sylvestris* (height 8.5 meters, diameter 56 cm), on wood (decay stage 2, (see Renvall 1995)), 61.35042°N, 25.10242°E, 2 July 2015, coll. Kantelinen 3463 (H 9229516), det. Kantelinen & Weber.

Discussion

In the field, *A. ligniariella* could be confused with *A. ligniaria* Hellb. or *A. mediella* Nyl. and species from the *Arthonia exilis*-group, especially *A. apatetica* (A. Massal.) Th. Fr. and *A. patellata* Nyl., in some cases also with *Micarea contexta* Hedl. and *M. eximia* Hedl. which are also lignicolous species with dark apothecia and a thin thallus. *Arthonia mediella* can have a roughened yellowish thallus which however might be excluded, especially on wood. In comparison with *A. ligniariella* the apothecia are larger (up to 0.5 mm) and the red-brown hypothecium and 3(–4)-septate spores are distinct microscopic differences. The species of the *A. exilis*-group have amyloid hymenia and react I+ red, K/I+ blue and have larger and generally more flattened apothecia. The *Micarea* species are superficially very similar but they differ internally, e.g., by having a dark, K+ green hypothecium. *Arthonia ligniariella* is very similar to *A. ligniaria* but the latter has larger ascospores (17–22 (–24) × 7–9 μm) and wider paraphysoids (1.7–2 μm mid-hymenium). Our specimen shows slightly smaller asci and ascospores than described by Coppins (1989), who measured for *A. ligniarella* spores of 10.5–14 × 3–3.8 μm and asci of (26–) 30–45 (–52) × 12–15 μm.

Arthonia ligniariella is a small species with an indistinct thallus and is therefore likely to be overlooked. It is so far known only from a few collections from North America and Europe. The species may be a rare one, as it appears to be restricted to old-growth forests.

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