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**A NEW LOCALITY OF *ENTOLOMA JAHNII* (AGARICALES, BASIDIOMYCOTA)
IN POLAND**

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ABSTRACT: This brief note provides information about the third locality of *Entoloma jahnii*, a rare member of the section *Claudopus*, in Poland. The fungus was recorded in September 2010 in naturally regenerating beech-oak forest in the vicinity of Jeziory Wysokie village, Żary District, Lubuskie Province (W Poland). The basidiomata were found on small rotten pieces of wood, bark and leaves of deciduous tree, probably *Quercus* sp. The most important and characteristic features of *E. jahnii* are: small, pleurotoid basidiomata, hemispherical to irregularly shaped, finely white hairy-tomentose pileus, distant lamellae, eccentric, lateral or reduced stipe, relatively large spores, the presence of clamp connections at the bases of basidia, and the occurrence of capitate terminal hyphal elements on pileus and stipe. The current distribution of *E. jahnii* in Poland and information on its ecology is summarized, and details of the basidioma morphology are provided basing on the recorded specimens.

KEY WORDS: *Entolomataceae*, *Entoloma* sect. *Claudopus*, Żary district, Polish mycobiota

Introduction

The section *Claudopus* Noordel. of the genus *Entoloma* (Fr.) P. Kumm. comprises of ten species in Europe (Noordeloos 2004) and so far six of them have been reported to occur in Poland: *E. albotomentosum* Noordel. & Hauskn., *E. byssisedum* (Pers.: Fr.) Donk, *E. depluens* (Batsch: Fr.) Hesl., *E. jahnii* Wölfel & Winterhoff, *E. ollare* Ludwig & Röbbig and *E. parasiticum* (Quél.) Kreisel (Wojewoda 2003, Nita and Bujakiewicz 2006, Młeczko and Ociepa 2007, Nita and Bujakiewicz 2007, Kujawa 2009, Nita and Stefaniak 2010, Stefaniak 2010, Halama 2011). Fungi from this section are generally characterized by pleurotoid or omphalinoid, small basidiocarps and typically eccentric or lateral stipe, or the absence of a stipe. They are mostly saprotrophic, usually growing on dead organic matter such as rotten wood, bark, and debris of grasses and sedges, and also on the ground, but some have been found to be parasites of other mushrooms and mosses

(Noordeloos 1992, Noordeloos 2004). *Entoloma jahnii* is a minute species, often overlooked, associated with rotten wood of deciduous trees. This saprotrophic fungus is very rare in Europe, known from sparse localities in its western (Belgium, Germany), central (Austria, Poland) and northern parts (Denmark, Finland, Great Britain, Sweden) (Kriegelsteiner 2003, Læssøe 2008, Noordeloos 2008, Schafer 2008). This species has been known hitherto only from two localities in Poland (cf. Nita and Stefaniak 2010). Its presence was noted for the first time in the Potulice Forest District (the Lipka Forest Inspectorate), where the basidiocarps were found growing on a rotten log of *Betula*, in the phytocoenosis of *Carici elongatae-Alnetum* Koch association (Nita and Bujakiewicz 2007; Nita and Bujakiewicz 2009). The second locality is Krajkowo nature reserve (the Konstakowice Forest Inspectorate), where the basidiocarps were found on a small piece of deciduous wood – the part of a well decayed log of probably *Quercus robur* or *Carpinus betulus*, in the phytocoenosis of *Galio sylvatici-Carpinetum* Oberd. association (Nita and Stefaniak 2010, Stefaniak 2010). This paper presents the third locality of this rare species in our country (Fig. 1) together with concise description and illustration of macro and micromorphological features of basidiomata.

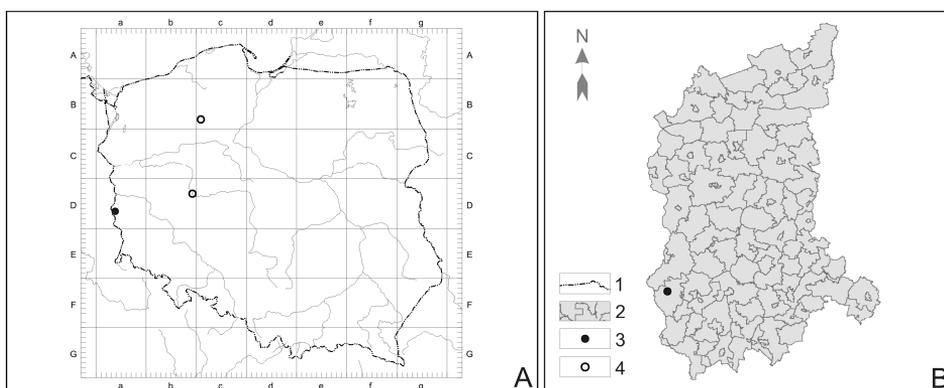


Fig. 1. The location of the *Entoloma jahnii* sites in Poland (based on a 100km ATPOL grid) (A), and in the Lubuskie Province (B): 1 – border of the country, 2 – administrative boundaries of the Lubuskie Province, 3 – new locality of the species, 4 – known localities of the species

Methods

This study is based on specimens gathered by the author in 2010 during field studies in the Żary district (W Poland). Basidiomata were gathered in one locality and were documented in the field using a digital camera. The description of macroscopic features is based on fresh material comprising 16 basidiomata in all stages of development, from a single collection. The microcharacters of 2 recorded basidiomata were observed and measured under a light microscope (Nikon E400, Plan Fluor 100×/1.30 oil, 40×/0.65) at 1000× (basidiospores, basidia) and 800× (hyphae of the pileipellis and stipeipellis). Free-hand sections of the rehydrated pieces of basidiomata were examined in 5% NH₄OH and in 1% aqueous Congo red solution. Morphological measurements were made according to the method described by Breitenbach and Kränzlin (1991). The 95% population limits for the mean were calculated and the lower and upper limits are presented. The minimum and maximum dimensions are given in parentheses. The basidiospore length/width ratio (Q) was also calculated. The length of basidia was

measured excluding sterigmata. All statistical analyses were performed using Statistica software (version 10, StatSoft). Terminology of morphological and anatomical features has been adopted from Vellinga (1988) and Noordeloos (1992). The reported size of basidiospores, basidia and hyphae of cortical layers were each time based on 101 measurements made on randomly selected samples. Microphotographs were taken using Nikon DS.-Fi1 digital camera. The voucher specimens have been deposited in WRSŁ (Herbarium of the Museum of Natural History, Wrocław University, Wrocław, Poland).

Description of the specimens

Entoloma jahnii Wölfel & Winterh., Österreichische Zeitschrift für Pilzkunde 2: 14. 1993 -. Selected illustrations: Wölfel in Wölfel and Winterhoff (1993: pl. 1); Winterhoff in Krieglsteiner (2003: 149); Wölfel in Noordeloos (2004: 1358, fot. 326); Nita in Nita and Stefaniak (2010: Fig. 2).



Fig. 2. Basidiomata of *Entoloma jahnii* recorded in the vicinity of Jeziory Wielkie village (coll. 30.08.2011; photo by M. Halama; scale-bar = 2.5 mm)

Pileus 1.2-11.5 × 1-9.6 mm, in young basidiomata hemicircular, rounded flabelliform to almost reniform, then circular to irregular in shape, hemisphaerical, convex, plano-convex to even plano-concave with deflexed, irregular undulate margin with age, not hygrophanous, not translucently striate, white to pale pink (the colour caused by the lamellae shining through), in young basidiomata densely and finely hairy, then tomentose almost all over (Table 1). Lamellae, adnate-emarginate to free, distant (5-10 reach the stipe), in young basidiomata arcuate, then subventricose to ventricose, white then dusted with pink spores, with entire – concolourous edge. Stipe 0.4-2.7 × 0.2-0.9 mm, initially nearly central, soon excentric to lateral or almost lacking, white tomentose. Context very thin, smell indistinct, taste not analysed. Basidiospores (9.3) 11.2-11.5 (13.5) × (6.8) 8.5-8.8 (10.3), Q = (1.1) 1.3-1.3 (1.5) μm, very variable in shape, iso- to heterodiametrical, 5-6 angular. Basidia (26.5) 34.0-35.5 (48.6) × (10.6) 14.1-14.8 (17.4) μm, clavate, with 4 (rarely 2) sterigmata, clamped (clamps visible mostly in young basidia). Cystidia absent. Pileipellis a cutis with transitions to a trichoderm of cylindrical to inflate, 5.5-15 μm wide hyphae. The surface of stipe and cap with abundant, protruding cylindrical, inflate, and capitate terminal elements of hyphae, (4.7) 8.0-8.6 (12.4) μm wide on stipe, and (5.7) 11.4-12.2 (17.8) μm wide on pileus (Fig. 3).

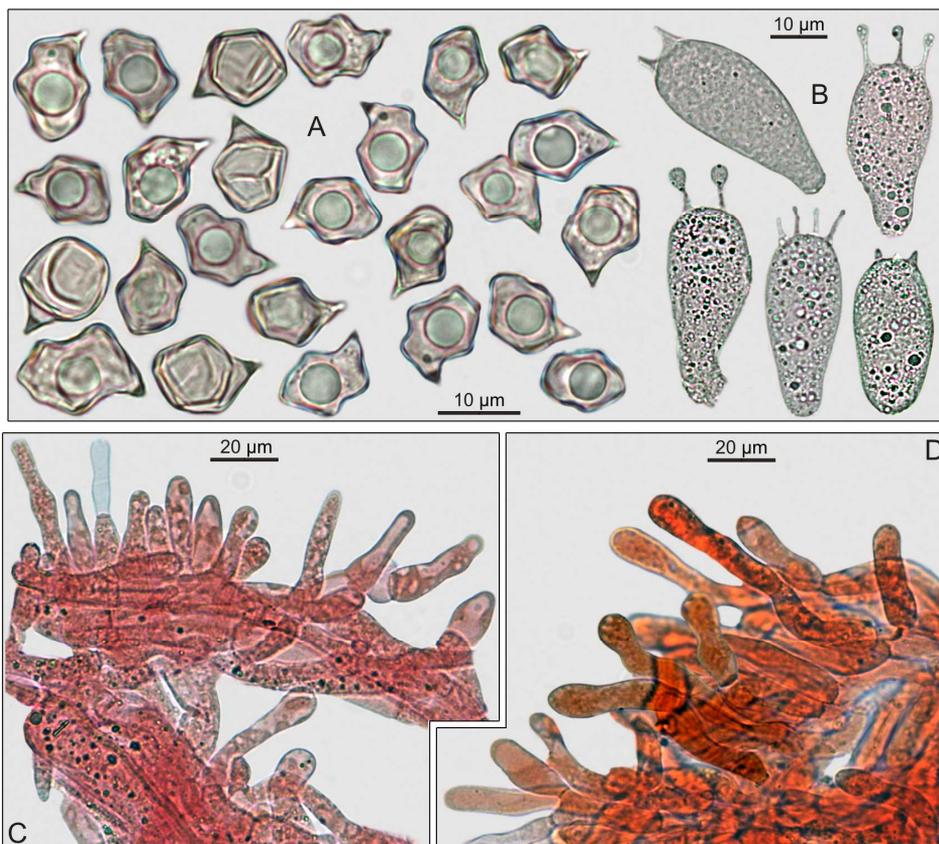


Fig. 3. Basidiospores (A), basidia (B), terminal hyphae of stipitipellis and pileipellis (C, D) of *Entoloma jahnii* recorded in the vicinity of Jeziory Wielkie village (coll. 30.08.2011; photo by M. Halama)

Material examined

Niziny Sasko-Łużyckie lowlands, Obniżenie Dolnołużyckie depression, Kotlina Zasięcka valley, the district of Żary, ca 0.2 km W of the Centre of Natural Forest Education in Jeziory Wysokie village, Lubsko Forest Inspectorate – Forest Promotion Complex “Bory Lubuskie” (ATPOL: Da-63), in naturally regenerating beech-oak forest, on a forest-path on rotten bark and small piece of well decayed deciduous wood (*Quercus* sp.?), and on very rotten pieces of deciduous leaves attached to the wood, 30 August 2011, coll. and det. M. Halama (in WRSL).

Notes on morphology and ecology

Entoloma jahnii can easily be distinguished from the European members of the section *Claudopus* by the peculiar capitate hyphal elements on the surface of pileus and stipe, and by large basidiospores. The macroscopical features of collected basidiomata agree well with diagnoses given by Wölfel and Winterhoff (1993) and Noordeloos (2004), and microscopical characters fall within the estimated range of variability reported in the literature (Tab. 1). The basidiomata of this inconspicuous fungus resemble a small *Crepidotus* or *Clitopilus*, and this could be the reason for its rare collections. It has been

observed both on wood and on bark. The specimens from the type collection of *E. jahnii* were found on fallen branches of *Alnus glutinosa* and *Populus × canadensis* (Wölfel and Winterhoff 1993), but records from other deciduous trees (*Betula* sp., *Fraxinus excelsior*, *Quercus robur* or *Carpinus betulus*, *Salix cinerea*, *Salix* sp.), are also known (Krieglsteiner 2003, Noordeloos 2004, Nita and Stefaniak 2010). It is worth mentioning, that some of the basidiomata observed during present study were growing on the very rotten deciduous leaves attached to the piece of decayed wood. To the best of my knowledge this is most probably the first record of *E. jahnii* on such a substrate. It is likely that the presence of basidiomata on leaves was not necessarily due to decomposition of foliage, but the leaves could be merely a substrate on which basidiomata have developed.

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Table 1. Comparison of micromorphological features of *Entoloma jahnii* from six descriptions.

Reference	Length and width of spores [μm]	Shape of spores	Q	Length and width of basidia [μm]	Width of terminal hyphae of stipitipellis [μm]	Width of terminal hyphae of pileipellis [μm]
Wölfel and Winterhoff 1993	9.7-12.9 (-15) \times 7.6-10.2(-11.4)	iso- to heterodiametrical; 5-6 angular	(1.05) 1.15-1.45 (1.55)	32-47 \times 12-14	20-85 \times 4-13 \times 7-19	
Noordeloos 2004	(9-) 10.0-14.0 (-15) \times 7.5-11(-11.5)	iso- to heterodiametrical; 5-6 angular	1.0-1.5 (-1.55)	30-47 \times 10-14	-	5-15
Nita and Stefaniak 2010	9.4-12.5 (15) \times 6.9-10	iso- to heterodiametrical; 5-6 angular	-	-	-	-
Krieglsteiner 2003	10-13 \times 7.5-10.5	5-6 angular	-	-	-	-
Schafer 2008	9.5-13 (15) \times 7.5-10 (11.5)	-	-	-	-	-
present study	(9.3) 11.2-11.5 (13.5) \times (6.8) 8.5-8.8 (10.3)	iso- to heterodiametrical; 5-6 angular	(1.1) 1.3-1.3 (1.5)	(26.5) 34.0-35.5 (48.6) \times (10.6) 14.1-14.8 (17.4)	(5.7) 11.4-12.2 (17.8)	(4.7) 8.0-8.6 (12.4)