

## ***Entoloma jahnii*, a rare species in Europe**

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The authors describe two localities of *Entoloma jahnii* Wölfel & Winterh., which were found during the mycocoenological research in Pomerania and Wielkopolska Regions in the phytocoenoses of *Carici elongatae-Alnetum* and *Galio sylvatici-Carpinetum* associations. The article consists of a description of gathered specimens and some remarks concerning ecology of this rare species.

**Key words:** mycocoenology, Pomerania region, Wielkopolska region, *Carici elongatae-Alnetum*, *Galio sylvatici-Carpinetum*

### INTRODUCTION

*Entoloma jahnii* is one of three members of section *Claudopus* in Poland (Wojewoda 2003), which are characterized by pleurotoid or omphalinoid basidiocarps and ex-centric or absent stipe.

It was described for the first time from Germany by Wölfel and Winterhoff (1993). Since then it was rarely found in several other European countries. In Poland this species was found in two localities: Lipka Forest Inspectorate (Pomerania Region) and Krajkowo nature reserve (Wielkopolska Region). The aim of this paper it to contribute to the present knowledge on distribution and ecology of this species.

## MATERIALS AND METHODS

The study was based on materials gathered by the authors in 2003-2006 and 2009 during the mycocoenological research in the western Poland.

The first locality refers to Lipka Forest Inspectorate (Fig.1) (Nita, Bujakiewicz 2007, 2009), where the species was collected in the phytocoenosis of the *Caricelongatae-Alnetum* association in Potulice forestry (plot size 400 m<sup>2</sup>). The alder forest is characterized by a very well developed mosaic structure of the herbal layer, with high hummocks built by *Alnus glutinosa* with an admixture of *Picea abies* in various ages. The hummocks are covered by thick carpets of mosses (mainly *Mnium hornum*, *Amblystegium varium* and *Amblystegium riparium*). On clusters, among mosses, occur various ferns, among others *Dryopteris dilatata*, *Thelypteris palustris* and *Athyrium filix-femina*. On the organic soil of the boggy hollows grow *Hottonia palustris*, *Oenanthe aquatica*, *Solanum dulcamara*, *Urtica dioica*, *Carex acutiformis* and *Carex elongata*. The hollows remain flooded for most of the year (at least 7 months). Logs and boughs of alder, spruce and birch in various stages of decomposition cover the bottom of the forest.

The second locality refers to Krajkowo nature reserve (Konstantynowo Forest Inspectorate) (Fig.1). The reserve is situated in the river Warta valley, about 35 km south of Poznań. This species was found in the permanent observation plot located in the *Galio sylvatici-Carpinetum* phytocenosis. This phytocenosis is part of the larger complex with spatial contact with *Quercu-Ulmetum minoris* association. The plot (400 m<sup>2</sup>) in Krajkowo reserve is characterized by extremely different ecological conditions than the one in Lipka Forest Inspectorate. The phytocenosis in which the species was found is mesophilous and is never flooded. It offers different substrates (the tree layer consists of *Quercus robur*, *Pinus sylvestris*, *Carpinus betulus*, *Ulmus laevis*) for the wood-rotting fungi and different moisture conditions.

The specimens gathered were identified on the base of the description of *Entoloma jahnii* Wölfel & Winterhoff 1993 in Noordeloos (2004). The observations of microscopic characters were made on fresh material in H<sub>2</sub>O and in 25% NH<sub>4</sub>OH solution. Measurements and drawings were made under 400x with Carl Zeiss Jenaval microscope. Spore dimensions are based on 20 observations of spores from both collections.

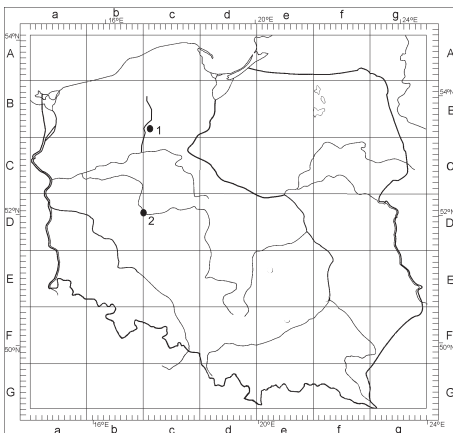


Fig. 1. Localities of *E. jahnii* in Poland: 1 – Lipka Forest Inspectorate, 2 – Krajkowo nature reserve.

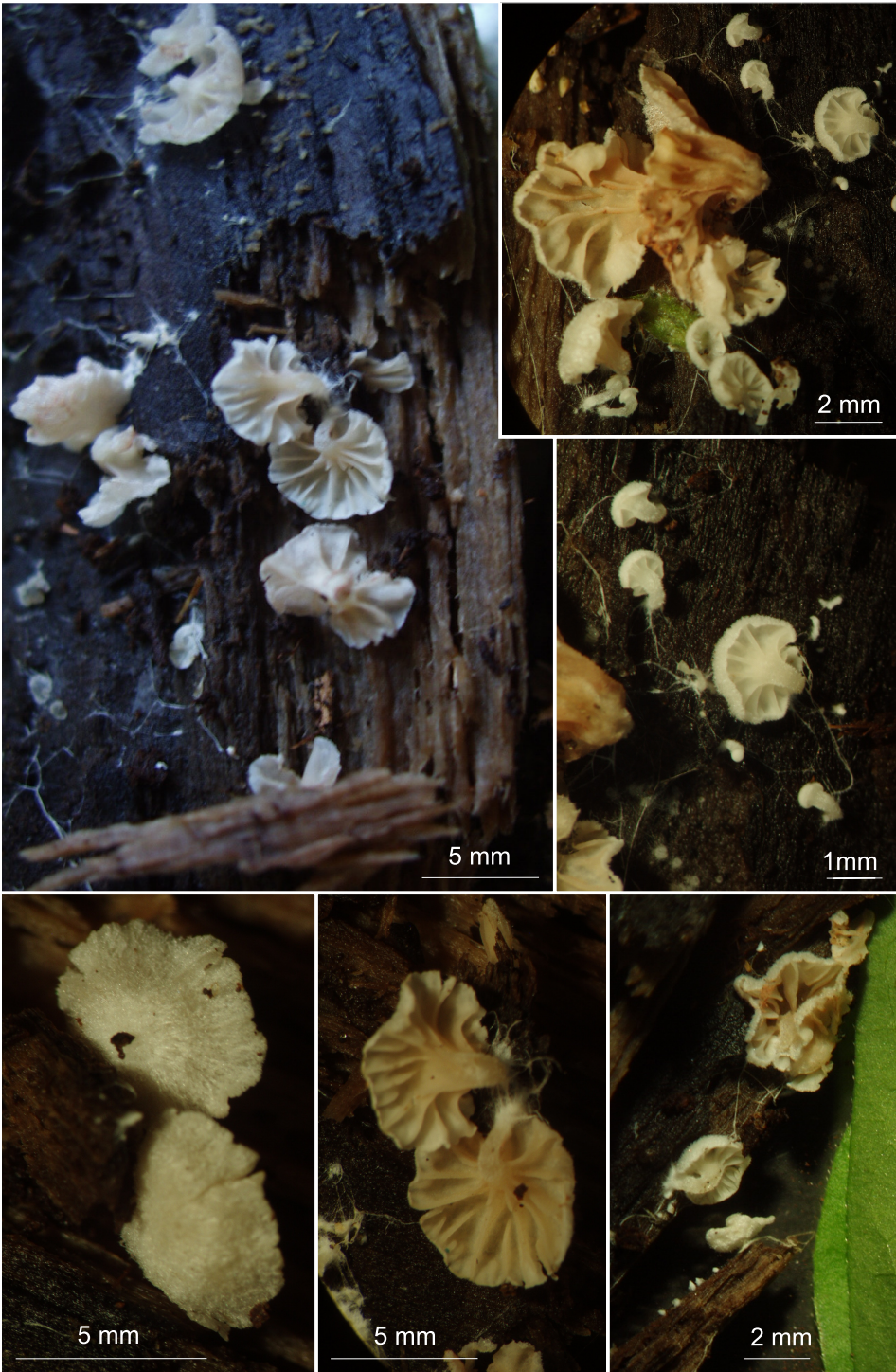


Fig. 2. Fresh carpophores of *E. jahnii* (phot. M.Nita).

The collections were deposited at the Herbarium of the Department of Plant Ecology and Environmental Protection (POZM), the Adam Mickiewicz University, Poznań.

## RESULTS

The description refers to specimens from the first locality. Characteristic features of the collected carpophores agree essentially with diagnoses given by Noordeloos (2004).

*Pileus* pleurotoid (Fig. 2), 1-8 mm wide, white, very thin (translucent), strongly pubescent, especially in the center, at the margin translucently striate and crenulated.

*Stipe* 1-3 mm long, 0.5-1 mm wide, excentric, sometimes rudimentary, bent, white and hairy. In the upper part slightly widened, at the base with long mycelium, which covers the substrate radially from the point of attachment.

*Lamellae* slightly or strongly decurrent, first white, then with pink tint, at maturity salmon pink, mixed, quite wide and thick.

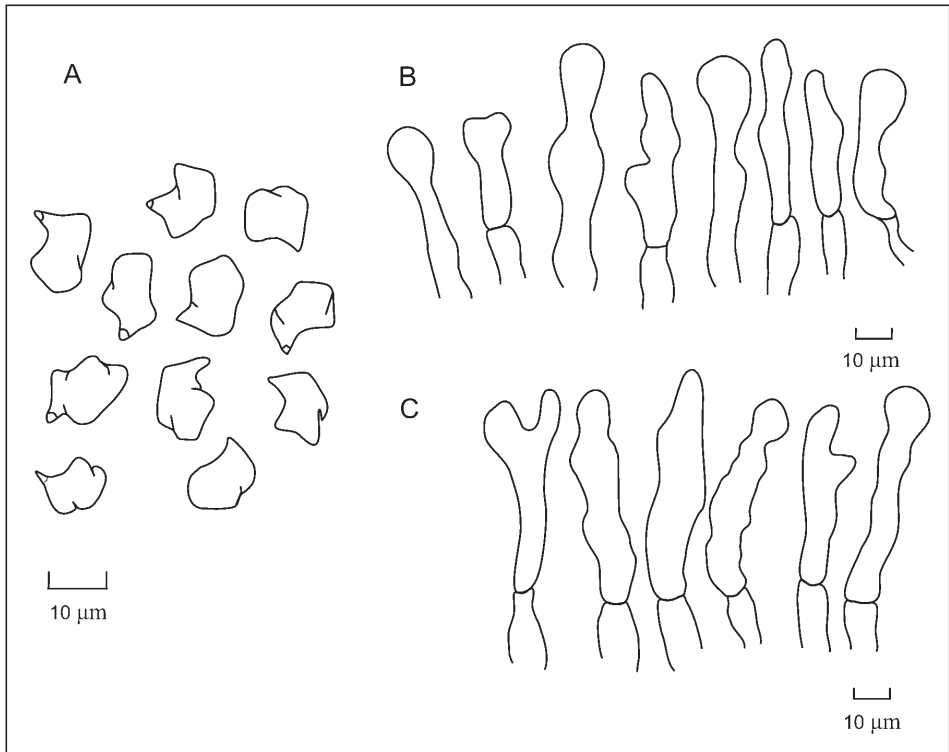


Fig. 3. Microscopic elements of *E. jahnii*: spores (A), capitate and cylindrical hyphae on the stipe (B) and the cap (C) surface.

*Basidia* mostly 4-spored, rarely 2-spored, with clamps. *Cheilo-* and *pleurocystidia* absent. *Sporae* 9.4-12.5 (15) (refers to the second locality) x 6.9-10  $\mu\text{m}$ , variable in shape (Fig. 3 A), iso- and heterodiametric, 5 to 6 angled. The surface of stipe and cap with protruding capitate and cylindrical *hyphae* (Fig. 3 B, C). Clamp connections present.

In Lipka Forest Inspectorate during summer and autumn visits carpophores of *Entoloma jahnii* were observed on a rotten log of *Betula* (leg. J. Nita). They were growing on the underside of the log, which was soaked in the boggy bottom, just after a periodical flood. The number of carpophores varied during the observation period of 3 years (8 visits) from 1 to over 100. During two observations carpophores of *Entoloma jahnii* were accompanied by *Pluteus podospileus*.

In Krajkowo reserve ten carpophores of this species were found on the small piece of wood which was part of an old and well decayed log of probably *Quercus robur* or *Carpinus betulus* lying on the ground among the *Dryopteris filix-mas* and other plants. This was the moistest part of the plot. No other species of fungi were found on this piece of wood. The species was found only once, on July 29th 2009 (leg. M. Stefaniak).

## DISCUSSION

Until recently, *Entoloma jahnii* has been reported from Poland only from the locality in Lipka Inspectorate Forest. Krajkowo nature reserve is the second locality of this species.

This saprotrophic species has been noted in Germany (Krieglsteiner 2003), Belgium (Noordeloos 2004), Denmark (Læssøe 2008), Finland (Noordeloos 2008), Sweden (Ludwig 2007) and in the British Isles (Schafer 2008), where it was found on barked, rotten wood of frondose tree species: *Alnus*, *Betula*, *Populus*, *Fraxinus* and *Quercus*. The species is regarded to be confined to moist and dry deciduous forests and copses (Noordeloos 2004). It also shows the association with frondose tree species. This species was found by the authors in two forest associations which offer different ecological conditions, the main differences are moisture conditions and availability of wood of different tree species. The locality in Lipka Forest Inspectorate was temporarily flooded, whereas Krajkowo nature reserve is rather dry and never flooded. The first locality offered also different substrates (*Alnus glutinosa*, *Betula* sp.) compared to Krajkowo nature reserve (*Quercus robur*, *Carpinus betulus*, *Ulmus laevis*).

The localities show full scale of substrates and ecological conditions in which this species can occur – from moist to mesophilous forest associations. *Entoloma jahnii* is red-listed in the Mecklenburg-Vorpomern region (Schwik et al. 1999), and in Denmark (The Danish Red Data Book 2010). Fruitbodies of this species are frequently found in hidden places, such as the underside of logs, branches, or pieces of wood (Noordeloos 2004), and can be easily overlooked. This feature seems to be one of the reasons of its rarity, nevertheless in our opinion this species is really rare in Poland. In recent years many studies on macrofungi were conducted in broadleaved forests and copses (e.g., Bujakiewicz 1989; Bujakiewicz et al. 2005; Bujakiewicz, Stefaniak 2009; Friedrich 1994; Kujawa 2009; Lisiewska, Malinger 2001; Ławrynowicz

et al. 2002; Nita, Bujakiewicz 2005) in which, according to literature and the author's own observations suitable ecological conditions occur; still the species is known only from two localities. In our opinion it would be appropriate to include this species on the Polish Red List (Wojewoda, Ławrynowicz 2006) with the category E.

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*Entoloma jahnii*, gatunek rzadki w Europie

## Streszczenie

Artykuł zawiera informację na temat dwóch stanowisk *Entoloma jahnii* Wölfel & Winterh. w Polsce. Gatunek ten notowano w Nadleśnictwie Lipka (Pojezierze Krajeńskie) oraz w rezerwacie przyrody „Krajkowo” (Wielkopolska), w fitocenozach *Carici elongatae-Alnetum* oraz *Galio sylvatici-Carpinetum*, podczas wieloletnich badań mikocenologicznych na stałych powierzchniach badawczych.

W pracy zawarto szczegółowy opis i ilustracje cech zebranych owocników tego gatunku, oraz uwagi dotyczące jego rozmieszczenia i ekologii. Autorzy podkreślają powiązanie *E. jahnii* z lasami i zaroślami liściastymi, oraz proponują ujęcie tego gatunku na czerwonej liście grzybów wielkoowocnikowych w Polsce.