

MEOTTOMYCES DISSIMULANS (AGARICALES, BASIDIOMYCOTA), NEW FOR POLAND

MAREK HALAMA¹ & RYSZARD RUTKOWSKI

Abstract. This paper reports the first sites of *Meottomyces dissimulans* (Berk. & Broome) Vizzini in Poland. About a dozen basidiomata in all stages of development were observed in poplar and alder-willow thickets. The macro- and micromorphological characters of the Polish specimens are described and illustrated, and the distribution of the species in Poland is given.

Key words: distribution, micromorphology, *Phaeogalera dissimulans*, *Phaeogalera oedipus*, Polish mycobiota

Marek Halama, Museum of Natural History, Wrocław University, ul. Sienkiewicza 21, 50-335 Wrocław, Poland; e-mail: marek.halama@uwr.edu.pl

Ryszard Rutkowski, ul. Wspólna 194, 34-331 Świnna, Poland

INTRODUCTION

The genus *Meottomyces* Vizzini includes saprotrophic fungi occurring in the hemiboreal-temperate zone of the Northern Hemisphere. Members of the genus are characterized by their small to medium-size basidiomata with a viscid, hygrophanous and glabrous pileus (except for vanishing veil fragments over marginal area), often with an olivaceous tinge. The lamellae are adnate, subdistant and finally brown-ochre in color. The stipe has an annulate zone. Species of *Meottomyces* produce smooth (in SEM), ellipsoid to phaseoliform (in side view) basidiospores with a small germ pore. They possess clavate-elongate cheiloleptocystidia and form clamp-connections. There are three well recognized *Meottomyces* species worldwide, one of which, *M. dissimulans* (Berk. & Broome) Vizzini, occurs in Europe (Smith & Hesler 1968; Vizzini 2008; Noordeloos 2011). Berkeley and Broome described the species in 1882 and gave it the scientific name *Agaricus dissimulans* Berk. & Broome; since then this fungus has been placed in various genera, including *Dryophila* (Kühner & Romagnesi 1953), *Pholiota* (e.g., Smith & Hesler 1968; Ludwig 2001; Gminder 2003), *Phaeogalera* (Ro-

magnesi 1980; Holec 2003; Vizzini *et al.* 2006) and *Hemipholiota* (Bon 1986). The taxonomic position of *Agaricus dissimulans* was a matter of much controversy in the past, until modern molecular studies suggested its placement within a separate genus (e.g., Moncalvo *et al.* 2002; Garnica *et al.* 2007) and Vizzini (2008) placed the species in a newly described genus, *Meottomyces*. The erection of the new genus was also supported by recent phylogenetic analyses by Petersen *et al.* (2010).

In Europe, *Meottomyces dissimulans* is noted from various hardwood forests and woodlands. It is often reported from riparian plant communities of the *Alno-Padion*, *Alnion incanae* and *Salicion albae* associations with humus-rich soil, along streams and rivers. It usually grows on fallen or decayed (mushy) leaves, but it is also noted from soil, branches, twigs, strongly decayed stumps or wood chips (Legon 2013 and references therein). Rare records of the species from ‘burnt ground’ and an ‘old railway sleeper’ are also known (Vizzini *et al.* 2006; Legon 2013). A rather broad spectrum of plants have been signalled as possible hosts for *M. dissimulans*. It is on record from a long list of deciduous trees: *Acer campestre* L., *A. negundo* L., *A. pseudoplatanus* L., *Aesculus* sp., *Alnus*

¹ Corresponding author

glutinosa (L.) Gaertn., *A. incana* (L.) Moench, *Betula pendula* Roth, *Carpinus betulus* L., *Cornus* sp., *Corylus* sp., *Crataegus* sp., *Fagus sylvatica* L., *Fraxinus excelsior* L., *Malus sylvestris* (L.) Mill., *Populus × canadensis* Moench, *Populus* sp., *Populus tremula* L., *Quercus* sp., *Salix caprea* L., *S. fragilis* L., *Salix* sp., *Sorbus aria* (L.) Crantz, *Tilia* sp., *Ulmus minor* Mill. and *Ulmus* sp. (e.g., Kalamees 1985; Vizzini et al. 2006; Legon 2013). *M. dissimulans* is exceptionally reported as growing on coniferous [*Cedrus* sp., *Larix* sp., *Picea abies* (L.) H. Karst., *Pinus sylvestris* L.] or herbaceous debris (e.g., *Carex pendula* Huds., *Phyllitis scolopendrium* (L.) Newman and indet. Poaceae) (Marchand 1980; Vizzini et al. 2006; Legon 2013). In Africa, *M. dissimulans* was reported on indeterminate moist plant debris and soil under *Pinus maritima* Mill. (Malençon & Bertault 1970; Moreau 2009).

In Europe, *M. dissimulans* is distributed over most of the continent. It has been recorded from a number of European countries, including Austria, Belgium, the Czech Republic, Denmark, England, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Liechtenstein, Luxembourg, Montenegro, the Netherlands, Norway, Portugal, Romania, Scotland, Slovakia, Spain, Sweden and Switzerland (e.g., Kalamees 1985; Hausknecht 1992; Rald 1992; Ortega & Esteve-Raventós 1998; Holec 2003; Nagy 2004; Onofri 2005; Vizzini et al. 2006; Walley et al. 2006; Courtecuisse & Duhem 2007; Tholl 2010; Vestersholt 2012; Legon 2013; Hagara 2014). Noordeloos (2011) stated that *M. dissimulans* is a common species, but it appears not to be really frequent anywhere, except for the Netherlands where in general it is moderately common (Noordeloos 1999) and Great Britain where it is known from over 120 records (Legon 2013). *Meotomyces dissimulans* is on red lists of fungi of the Czech Republic, Denmark, the Netherlands and Switzerland (Antonín et al. 2006; Senn-Irlet et al. 2007; Arnolds & Veerkamp 2008; Anonymous 2012). Although fructifications of *M. dissimulans* are spread in the period from January to December, the available data indicate that the great majority of finds are made in winter and early spring (December to April) (Legon 2013).



Fig. 1. Known distribution of *Meotomyces dissimulans* (Berk. & Broome) Vizzini in Poland.

New localities of *M. dissimulans* were discovered during our recent field studies in southwestern Poland. These records are the first ones for *M. dissimulans* in Poland; they extend the distribution range of the species to this country, where *M. dissimulans* probably is under-recorded rather than rare. The presented description of basidiocarp morphology and ecological notes are based on original material.

MATERIAL AND METHODS

The specimens were collected occasionally during several field trips in different parts of southwestern Poland in 2012. The macroscopic features were studied from fresh material of two collections comprising 10 basidiomata in different stages of development. Microcharacters were observed with a Nikon Eclipse E-400 light microscope fitted with a Nikon digital camera (DS-Fi1). All microscopic structures were observed in dried material. Freehand sections of rehydrated pieces of basidiomata were examined in 5% $\text{NH}_3 \cdot \text{H}_2\text{O}$ and Congo red reagent. Image-grabbing and biometric analyses were done with NIS-Elements D 3.1 imaging software. The dimensions of microcharacters are given as (minimum) average \pm standard deviation (maximum), and additionally as main data range (10–90 percentile values). The Q value is the length/width ratio of basidiospores. For basidiospore size measurements, randomly selected mature spores from the lamella surface were measured without the hilar appendix. The length of basidia was



Fig. 2. *Meotomycetes dissimulans* (Berk. & Broome) Vizzini. A – cheilocystidia, B – basidiospores, C & D – top, side and bottom views of basidiomata (all photographed from WRSL RyR-2012-0001).

measured excluding sterigmata. Micrographs were taken using a Nikon digital camera (DS-Fi1). Statistical computations employed Statistica (StatSoft). Morphological terminology follows Vellinga (1988) and Vellinga and Noordeloos (1999). Fungus nomenclature and synonyms follow Holec (2003), Moreau (2009) and Noordeloos (2011). The studied collections are deposited in the Museum of Natural History, Wrocław University, Wrocław, Poland (WRSL).

RESULTS

Meotomycetes dissimulans (Berk. & Broome) Vizzini Figs 1 & 2

Riv. Micol. **51**(1): 63. 2008. – *Agaricus dissimulans* Berk. & Br., Ann. Mag. Nat. Hist., Ser. **5**(9): 178. 1882 (for complete synonymy see Holec 2003).

ILLUSTRATIONS: Rald (1992: 5, fig. 2), Breitenbach and Kränzlin (1995: 341, fig. 436), Noordeloos (1999:

102, fig. 80), Ludwig (2000: 147, plate 145, fig. 30A, 2001: 552), Gminder (2003: 388, upper photo), Cetto (2006: 255, no. 1856, left photos), Roux (2006: 716, photo & fig.), Vizzini *et al.* (2006: 69, fig. 2–3; 75, fig. 1), Noordeloos (2011: 409, plate 43, fig. 112), Læssøe and Petersen (2012: photo of *Phaeogalera dissimulans*), Legon (2013: 3, fig. 1; 4, fig. 2).

Basidiomata solitary, gregarious or subfasciculate. Pileus 5–30 mm, initially hemispherical, than convex with a slightly deflexed margin, after which plano-convex to applanate, hygrophanous, translucently striate up to 1/3–1/2 of the radius in some basidiomata, young dark brown, later becoming yellow-brown with grey tinge to pale olivaceous-brown (strongly pallescent on drying), paler at margin, initially greasy to viscid, smooth, at margin with white velar remnants. Lamellae, L = 20–35, l = 1–4, broadly adnate with decurrent tooth, segmentiform to subventricose, initially

whitish cream when very young, then pale greyish cream, pale grey-brown, and finally pale brownish, with white fimbriate or flocculose edge. Stipe 15–40 × 3.0–5.0 mm, cylindrical, generally ± swollen to bulbous towards base, white to pale ochre-yellow, with fibrillose annulus or annuliform zone, pruinose above annulus, fibrillose-striate with white fibrils below, solid when young, becoming hollow when older. Context concolorous with surface in cortex, pallid in inner part of pileus and stipe. Smell indistinct. Taste not verified. Spore print dull yellow-brown.

Basidiospores (5.4) 7.5 ± 0.7 (9.9) × (3.7) 4.8 ± 0.3 (5.8) μm , 6.6–8.6 × 4.3–5.4 μm , Q = (1.2) 1.6 ± 0.1 (2.1), Q = 1.3–1.8, n = 212, ellipsoid-oblong (infrequently with adaxial side slightly less convex than abaxial side), faintly ovoid to slightly phaseoliform in side view, likewise in frontal view, with small hilar appendix, smooth, thin- to rather thick-walled, not dextrinoid, yellowish-greyish to pale yellowish ochre in ammonia, without or with indistinct germ pore. Basidia (22.4) 27.5 ± 2.9 (35.2) × (6.3) 7.6 ± 0.7 (9.7) μm , 23.3–34.2 × 6.8–8.8 μm , n = 98, narrowly clavate, 4-spored. Cheilocystidia (28.6) 44.3 ± 9.9 (73.0) × (4.6) 6.6 ± 0.9 (9.1) μm , 29.6–61.4 × 5.3–8.2 μm , n = 110, flexuous-subcylindrical, cylindrical to narrowly clavate, frequently multiseptate, often with several constrictions and/or subcapitate apex, rarely with short obtuse protuberance at apex, thin-walled. Pleuro- and chrysocystidia absent. Pileipellis an ixocutis made up of narrow, cylindrical, 2–4 μm wide hyphae embedded in a gelatinous layer. Stipitipellis a cutis of 3.5–7.0 μm wide, cylindrical hyphae. Pigment pale yellow-brownish, parietal and slightly incrusting in upper layers of pileus and stipe. Caulocystidia present only at apex of stipe, scattered, similar to cheilocystidia, but more polymorphic (not measured). Clamp-connections abundant in all tissues.

SPECIMENS EXAMINED: POLAND. SILESIA UPLAND. Ustroń, Katowicka Street, road verge planted with poplars, rotten leaves and twigs of *Populus* × *canadensis*, alt. 348 m a.s.l., 49°43'45"N, 18°47'37"E, 18 June 2012, leg. R. Rutkowski (WRS� RyR-2012-0001); Żywiec Basin: Cisiec near Węgierska Górka, riparian forest (*Alnetum incanae*) along bank of Soła River, rotten twigs of broad-

leaved trees (*Alnus incana*, *Salix* sp.), alt. 418 m a.s.l., 49°35'37"N, 19°55'57"E, 5 Sep. 2012, leg. R. Rutkowski (WRS� RyR-2012-0002).

REMARKS. In general, the macro- and microscopic features of the examined Polish specimens of *Meotomyces dissimulans* are characteristic of the species, and their parameters (e.g., basidiocarp size and color, measurements and shape of basidiospores and cheilocystidia) are within the ranges reported by other authors (e.g., Noordeloos 1999, 2011). From the Polish records it is clear that *M. dissimulans* prefers deciduous dead twigs and rotten leaves (chiefly of *Populus* and *Alnus*) on rather rich and moist soil. This preference is frequently mentioned in the available data and coincides with remarks in the literature (e.g., Noordeloos 2011; Vesterholt 2012).

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