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Dedicated to Professor Alina Skirgiełło on the occasion of her ninety fifth birthday

A contribution to the morphology and ecology of *Mycenastrum corium* (Agaricales)

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An interesting collection of *Mycenastrum corium* from Suwałki Region (NE Poland) close to the Russian and Lithuenian frontiers is presented in this paper. Two specimens were found ca. 20 cm under the soil surface. Macro and micromorphological features are compared with those of *Mycenastrum corium* growing at the surface.

Key words: macrofungi, gastromycetoid fungi, ecology of fungi, distribution, hypogeous form

INTRODUCTION

Mycenastrum corium (Guers.) Desvaux has been observed in Poland since 1889 (Błoński 1890). Recently, Kujawa, Bujakiewicz and Karg (2004) have given a review of 14 localities with a map showing an accumulation of points in the central part of the country. Now we report a new and rather unusual site of *M. corium* discovered in the corner forming the Russian, Lithuanian and Polish borders (Fig. 1). Basidiocarps were situated below the soil surface (Fig. 2).

During field work in Suwałki Region, one of us (A.R.) discovered two basidiocarps determined as *Mycenastrum corium* by the first author. More detailed examination of this collection has showed that fruitbodies growing underground are slightly different in comparison with specimens preserved in Herbarium Universitatis Lodziensis (LOD 825) found as occurring on the soil surface at Wierzbice on pastures surrounding artificial lake, Zalew Zegrzyński, 19.06.1972, leg. Maria Ławrynowicz (Calonge, Ławrynowicz 1986).

The aim of the present paper was to describe and illustrate by scanning electron micrographs morphological characters of recently found specimens of *Mycenastrum*, to show briefly the differences between them and surface growing specimens and to provide an illustrated commentary on the site where the specimens were found.

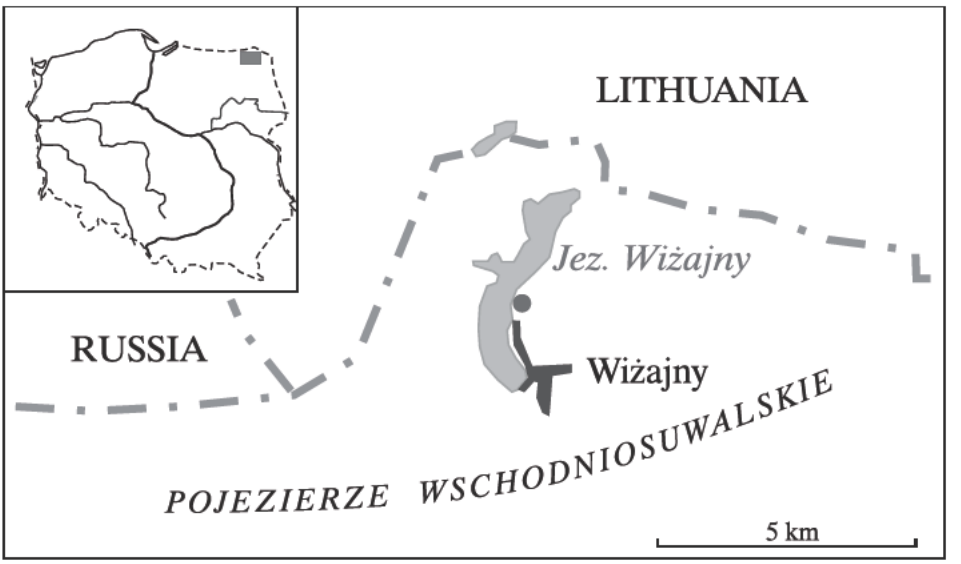

Fig. 1. Locality of collected specimens.

DESCRIPTION OF SPECIMEN

Descriptions of *M. corium* are given in several papers (Desvaux 1842; Hansen 1962; Homrich, Wright 1973; Kreisel 1973; Perreau, Heim 1971; Rudnicka-Jezierska 1991; Šebek 1958).

Fruitbody 8 x 7.5 x 6 (high) cm, irregularly globose, chocolate brown, sessile with two nodules at the base, without rhizomorphs. Peridium consists of two layers: exo- and endoperidium. Exoperidium brown, papyraceous, homogenous made up of filamentous hyphae, smooth, without scales on the surface. Endoperidium pale brown, much thicker (ca 3 mm) and of slightly suberous character. Endoperidium of two layers: the external having hyphae with septa and clamp-connections; the internal with hyphae without septa and clamp-connections. Dehiscence with three irregular lobes. Gleba shows brown colour; spore deposit chocolate brown, darker than endoperidium when dry. Spores spherical, 8-12 μm in diameter with reticulated ornamentation on the surface (Fig. 3). Capillitium 8-10 μm in diameter.

Observations. The above described specimen differ conspicuously from surface growing (Tab.1). There are no remarkable differences in spores of epigeous and hypogeous specimens of *M. corium*.

Locality. Wiżajny village, north-easternmost tip of Poland; geographical co-ordinates: 22°51'55"E, 54° 22'52 N; altitude: 248 m a.s.l.; location: hilly elevation bordering the shore of Wiżajny Lake, some 18 m above the lake level, some 100-120 m distant from the lake shoreline; two specimens found early September 2003, when digging the soil, some 8 m from the wooden farm-house. Owner of land: the Mioduszewski family, P.O. Box 66, PL-16-407 Wiżajny.

Habitat. Pleistocene glacial till; end moraine of the Würm Glaciation, Fruitbodies situated just beneath the topsoil, some 20 cm below the grass layer dominated by

Table 1

Differences in fruitbodies of *Mycenastrum*

M. corium (epigeous)		*M. corium* (hypogeous)
	basidiocarp	
white, yellowish to brown when old		chocolate brown
	exoperidium	
with patches		homogenous
	capillitium	
long, sharply pointed spines		commonly bifurcate with short stumpy spines

Agropyron repens, as a whole, evidently affected by human activities; associated fungi: *Marasmius oreades* commonly appearing from time to time; *Langermannia gigantea* and *Agaricus arvensis* occurring locally in wet periods of summer to autumn.

DISTRIBUTION AND ECOLOGY IN GENERAL

Mycenastrum corium is known as an epigeous, saprotrophic, nitrophilous, synanthropic ephemeral species (Kreisel 1982, 2001; Wojewoda 2003). It was found at a variety of sites, from xerothermic to mesophilic and even boggy habitats. Wojewoda (2003) has summarised its occurrence in Poland as follows: "On dry meadows and pastures, by roads, near houses, xerothermic places, in grass, also on soil with gypsum". It is indicated as a rare species in Poland on the Red List (Wojewoda, Ławrynowicz 2006) in the category V (vulnerable).

Mycenastrum corium is probably much more common, but it grows on sites which are rather seldom visited by mycologists (Calonge, Ławrynowicz 1986).

The species can colonise habitats over a large alltitudial range. In Germany up to 330 m a.s.l., in the Canaries up to 820 m a.s.l. The total distribution is amphizonal, mainly subcontinental and continental, with isolated localities as far north as the boreal zone, and in mountain regions of tropical East Africa (Kreisel 1982).

Some authors, for example: Benkert (2004); Dörfeldt and Bresinsky 2003; Gross, Runge and Winterhoff (1980); Kreisel (1982), write about changing distribution of *M. corium* in recent years. Kreisel (2001, 2006) drew attention to influences of global climate changes on geographical distribution of some macromycetes including *Mycenastrum corium*.

Kujawa et al. (2004) supplies a map with 14 localities known so far in Poland. It shows that only one locality: a drained and dried peat bog called Kuwasy near Grajewo on the Biebrza river had been known from north-east Poland before the site at Wiżajny Lake presented in this paper was discovered.

FINAL REMARKS

1. *Mycenastrum* has never been mentioned as hypogeous in the literature by mycologists searching for both epigeous gasteromycetes and hypogeous fungi.

2. Specimens described differ conspicuously in morphology from known *Mycenastrum* collections. They have a chocolate coloured smooth surface without patches and thicker capillitium hyphae (8-10 μm) which are commonly bifurcate, with short, uniformly distributed stumpy spines.

3. The locality is unique, the most northeastern in Poland but this region has been inadequately searched for fungi, especially in ruderal places.

4. Taking into account increasing number of localities in the last years, we hope our contribution will stimulate mycologists to pay attention also to hypogeous sites when looking for *Mycenastrum corium.*

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Przyczynek do morfologii i ekologii *Mycenastrum corium*

Streszczenie

Przedmiotem publikacji jest analiza morfologiczna i siedliskowa *Mycenastrum corium*, którego owocniki występowały na głębokości 20 cm pod powierzchnią gleby na wzniesieniu graniczącym z Jeziorem Wiżajny w pobliżu zbiegu granic Polski, Litwy i Rosji. Dwa owocniki odkrył współautor (A. R.) kopiąc ziemię w pobliżu drewnianych zabudowań.

Cechy taksonomiczne, makro i mikromorfologiczne owocnika rosnącego pod ziemią zo stały opisane oraz przedstawione na rycinach, a także zestawione w tabeli porównawczej z ce chami owocników naziemnych *Mycenastrum corium*. Autorzy zwracają uwagę na podziemne występowanie *Mycenastrum corium* na najdalej na północ wysuniętym stanowisku tego grzyba w Polsce.