Polish Botanical Journal 50(1): 93–96, 2005

UROCYSTIS MUSCARIDIS (USTILAGINOMYCETES), A FUNGAL SPECIES NEW IN POLAND

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Abstract. *Urocystis muscaridis* (Niessl) Moesz is reported for the first time from Poland. The fungus is the second species of Ustilaginomycetes collected on the genus *Muscari* (Liliaceae) in Poland. Previously only *Vankya vaillantii* (Tul. & C. Tul.) Ershad was reported from two localities in Lower Silesia. The new collection of *Urocystis muscaridis* is described, illustrated and discussed. A key to the smut fungi on *Muscari* in Europe is provided.

Key words: Ustilaginomycetes, *Urocystis muscaridis*, *Vankya vaillantii*, taxonomy, Poland

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Studies of phytopathogenic fungi in Poland have yielded numerous reports of species new to the country. They belong to different taxonomic groups, including smut fungi (classes Ustilaginomycetes *p.p.* and Urediniomycetes *p.p.*) such as *Tilletia sesleriae* Juel on *Sesleria uliginosa* Opiz (Romaszewska-Sałata 1982), *Entyloma helosciadii* Magnus on *Sium latifolium* L. (Mułenko 1994) with its anamorph *Entylomella sii-latifolii* (Sacc.) U. Braun & W. Mułenko (Braun 1995), *Microbotryum cichorii* (Syd.) Vánky on *Cichorium intybus* L. (Adamska 2001) and *Ustilago trichophora* (Link) Körn. on *Echinochloa crus-galli* (L.) P. Beauv. (Madej *et al.* 2001; Pusz & Kita 2001).

The present paper adds another smut fungus new to Poland: *Urocystis muscaridis* (Niessl) Moesz collected on *Muscari comosum* (L.) Mill. The host plant is a steppe element of the Polish flora, and its main areas of occurrence are Southern and Central Europe, North Africa and Asia Minor. In Poland it reaches the northern distribution limit, known from scattered localities in the southern part of the lowlands (Silesia, Wyżyna Lubelska upland, Roztocze, Wyżyna Małopolska upland), with the largest populations in the Lublin region (Piękoś-Mirkowa & Mirek 2003). Due to the scarcity of present-day localities, *Muscari comosum* is a critically endangered (CR) and protected species in Poland (Kaźmierczakowa & Zarzycki 2001).

Urocystis muscaridis was found for the first time in 2003 in the Machnowska Góra Reserve in the Roztocze region, close to the eastern border of Poland (Fig. 1). Although the population of *Muscari comosum* was very large (the largest population in Poland; Kaźmierczakowa & Zarzycki 2001), only a few plants were infected by the fungus. Attempts to find *Urocystis muscaridis* in 2004 were without success.

Urocystis muscaridis (Niessl) Moesz
(Figs 1 & 2)

Sori in leaves as ellipsoidal pustules measuring 2–10 × 1–3 mm, visible on the outer leaf surface along the veins. Spore balls globose, ovoid to irregular, 20.0–35.0(–46.2) × 22.5–57.5(–60.0) μm, composed of 1–4(–8) spores. Spores globose, ovoid to irregular, dark brown, 10.0–17.5 × 10.0–21.2 μm. Sterile cells globose, ovoid to irregular, yellowish-brown, 3.7–10.0 × 5.0–15.0 μm.

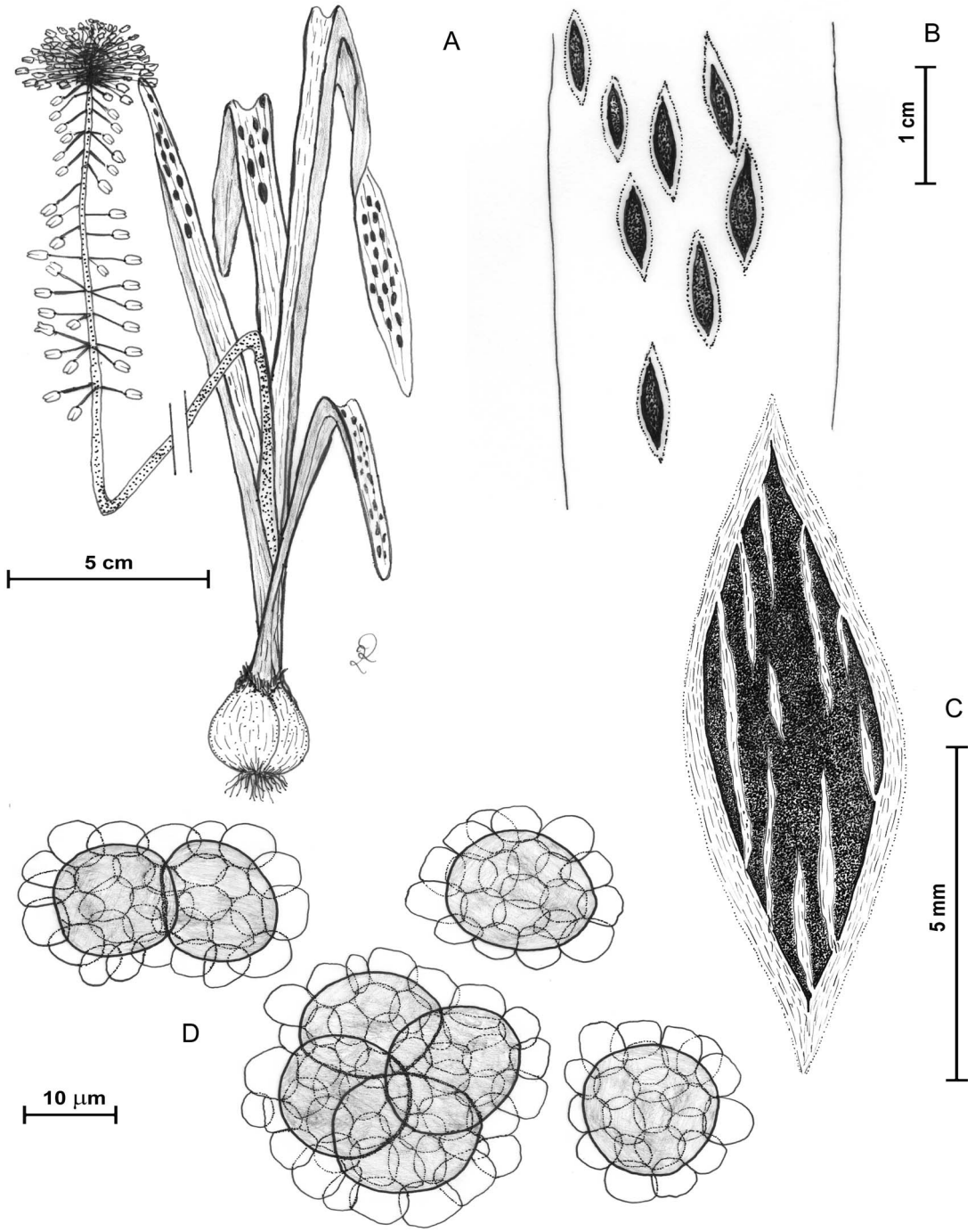

Fig. 1. *Urocystis muscaridis* (Niessl) Moesz on *Muscari comosum* (L.) Mill. A – infected host; B – sori in leaf, C – sorus, D – spore balls.

Table 1. Comparison of the most important features of *Urocystis muscaridis* (Niessl) Moesz.

Urocystis muscaridis	Polish specimens	Kochman and Majewski (1973)	Vánky (1994)
Sori	2–10 × 1–3 mm	5–12 × 2–5 mm	2–10 mm
Number of spores in spore ball	1–4(–8)	1–3(–10)	1–5(–9)
Spore balls	20.0–35.0(–46.2) × 22.5–57.5(–60.0) μm	22–35 × 28–50 μm	20–40 × 20–48 μm
Spores	10.0–17.5 × 10.0–21.2 μm	10.0–17.5 × 12.5–25.0 μm	10.5–16.0 × 14.0–22.5(–24.0) μm
Sterile cells	3.7–10.0 × 5.0–15.0 μm	6–10 × 7–14 μm	4–12 × 6–20 μm

SPECIMENS EXAMINED. On *Muscari comosum* (L.) Mill.: POLAND. ROZTOCZE: Machnowska Góra Reserve near Machnów, xerothermic grassland (*Brachypodio-Teucrietum*), 23 May 2003, *leg. R. Rozwałka* (LBLM 8469).

The measurements of the spore balls, spores and sterile cells in Polish specimens of *Urocystis muscaridis* agreed well with those given by Kochman and Majewski (1973) and Vánky (1994). There were only slight differences in the sizes of spore balls and sterile cells (Table 1).

Urocystis muscaridis occurs on different species of the genus *Muscari* in Europe and Asia (Vánky 1994). The localities of this smut fungus nearest Poland are in Ukraine, where it was found in Krivchitsy (Krzywczyce) near Lviv and in Skoromokhy (Skoromochy) near Sokal (Kochman & Majewski 1973). In Ukraine it is also known from Crimea (near Novopalivivka village), where it was collected together with *Vankya vaillantii* (Tul. & C. Tul.) Ershad (Minter *et al.* 2004).

Representatives of the genus *Muscari* in Poland were previously known as hosts for another remarkable smut fungus, *Vankya vaillantii*. This species has been found on *Muscari comosum* in Lubiąż and on *M. tenuiflorum* Tausch in the Botanical Garden in Wrocław (Kochman & Majewski 1973). This fungus forms sori in anthers, with single spores without sterile cells, so it is easy to distinguish from *Urocystis muscaridis*.

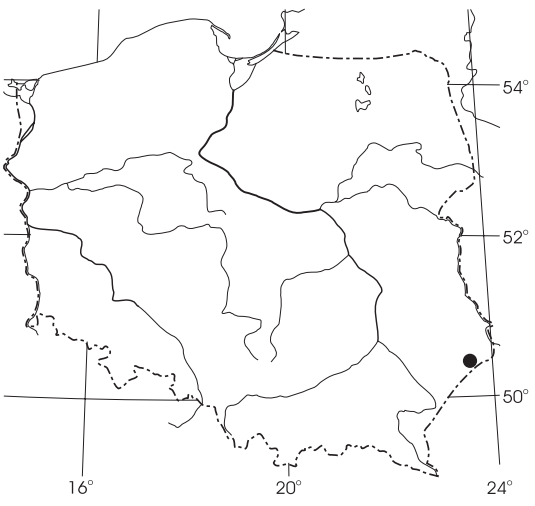

Fig. 2. Distribution of *Urocystis muscaridis* (Niessl) Moesz in Poland.

KEY TO THE SMUT FUNGI ON *MUSCARI* IN EUROPE

1. Sori in leaves 2
1*. Sori in anthers, spores 1-celled . . . *Vankya vaillantii*
2. Spores 1-celled, in the host tissue . . . . . *Entyloma muscari*
2*. Spore balls composed of 1–4(–8) spores and sterile cells . . . . . *Urocystis muscaridis*

ACKNOWLEDGEMENTS. We are grateful to Dr. Marcin Piątek (Kraków) for valuable comments on the manuscript.

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Received 12 November 2004