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SHORT COMMUNICATION in MYCOLOGY

# First Record of Slime Molds in Biebrza National Park (NE Poland)

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## Abstract

This paper provides the first recorded data of slime molds in Biebrza National Park (NE Poland). In total, 16 species of myxomycetes belonging to nine genera were observed.

## Keywords

myxomycetes; ecology; protected area; NE Poland

## 1. Introduction

Myxomycetes are a small group of eukaryotic organisms that includes approximately 1,000 species worldwide. They are characterized by a complex life cycle that is distinguished by the presence of a plasmodium stage and the formation of sporocarps (Baba & Sevindik, 2018; Lado, 2005–2021; Stephenson & Rojas, 2017). Poland has approximately 250 species of myxomycetes (Drozdowicz et al., 2003), the information on which remains fragmented. However, slime molds have been studied in several national parks (Drozdowicz, 1997, 2004, 2009, 2014; Komorowska & Drozdowicz, 1996; Magiera & Drozdowicz, 2004; Narkiewicz et al., 2013; Panek & Romański, 2010; Salamaga et al., 2016).

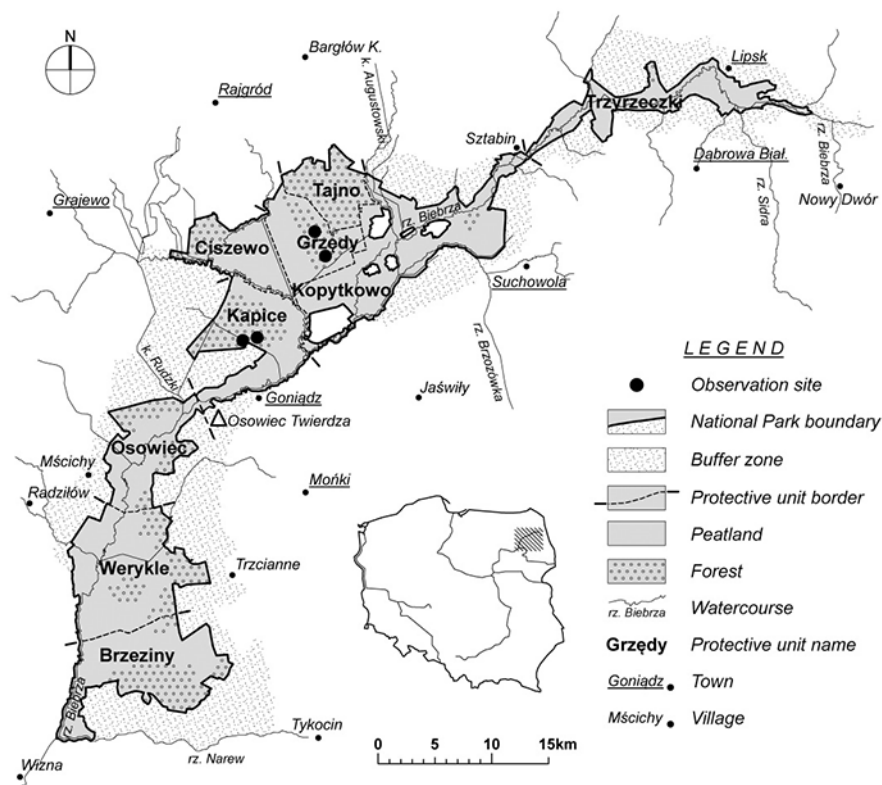
The ecology of northeast (NE) Poland is rich and varied, with many species of plants, animals, and fungi. They are protected in four national parks: Białowieża National Park, Narew National Park, Biebrza National Park (BbNP), and Wigry National Park.

BbNP was established in 1993; it is the largest national park in Poland, covering 59.223 ha with a 66.824 ha buffer zone. The park is unique within Europe in that it encompasses an entire river valley, from its sources to its mouth.

The river valley itself comprises a number of habitats preserved in an almost unchanged state, organized according to natural longitudinal and transversal zones with their corresponding plant communities as well as a large complex of fens. Some of the most predominant habitats in Biebrza Valley are peatlands with swamp forests comprised mainly of alder and birch (Dyrz & Werpachowski, 2005).

The first data on slime molds in the NE Poland region were presented by Krzemieniewska (1957, 1960). The samples were collected from the Białowieża Forest as part of a project for obtaining herbarium materials (i.e., myxomycetes) from different regions in Poland. Then, Drozdowicz (2014) conducted research there, where she assigned 103 species of slime molds. A field study by Panek and Romański (2010) in Wigry National Park (NE Poland) yielded an interesting and rich collection of slime molds, including seven species new to the country.

The present data on BbNP were obtained as part of a mycological study undertaken by members of the Polish Mycological Society. The results of the mycological study were previously presented by Kujawa et al. (2012, 2015) and Ruszkiewicz-Michalska et al. (2012, 2015).



**Figure 1** Localization on observation sites in the Biebrza National Park (according to Kujawa et al., 2012, modified).

## 2. Material and Methods

The study was carried out in the central area of BbNP (Figure 1) from August 28 to September 1, 2012, and from August 24 to August 29, 2013. The collections of slime molds were primarily acquired from two protected areas: Grzędy and Kapice. *Tilio-Carpinetum* forest associations were identified within these sites.

The multispecies stand included *Carpinus betulus*, *Tilia cordata*, *Acer platanoides*, and *Betula pendula*. The field layer was composed of *Anemone nemorosa*, *Stellaria holostea*, *Galeobdolon luteum*, *Aegopodium podagraria*, *Asarum europaeum*, *Pulmonaria obscura*, and *Lilium martagon* (Dyrzc & Werpachowski, 2005).

Macromorphological and micromorphological analyses were performed.

The specimens were observed with a NIKON SMZ-10 binocular microscope and a NIKON Eclipse E-200 light microscope. The identification of species was carried out according to specialistic literature, e.g., Neubert, Nowotny, and Baumann (1993), Neubert, Nowotny, Baumann, and Marx (1995, 2000), Ing (1999), and Nannenga-Bremekamp (1991). The nomenclature followed those accepted by Lado (2005–2021). The specimens documented in the study were preserved at the Fungal Collection of the Herbarium Universitatis Lodzianensis.

## 3. List of Species

A total of 16 species belonging to nine genera were identified. This investigation broadly contributes to research in this area by providing the first recorded list of taxa in the BbNP. These results show that even short-term investigations in areas of unique natural value can contribute to the development of knowledge on the diversity and distribution of slime mold species in Poland.

*Arcyria cinerea* (Bull.) Pers., on decaying fallen twigs, Kapice district, 2012-08-28; leg. & det. DŚ

- A. denudata* (L.) Wettst., on logs, Kapice and Grzędy districts, 2012-08-28–2012-08-29, leg. & det. DŚ
- Ceratiomyxa fruticulosa* (O. F. Müll.) T. Macbr., on a strongly decayed trunk, Grzędy district, 2013-08-27, leg. M. Ruszkiewicz-Michalska, det. DŚ
- Diachea leucopodia* (Bull.) Rostaf., on fallen small twigs, Kapice district, 2012-08-28, leg. & det. DŚ
- Fuligo leviderma* H. Neubert, Nowotny & K. Baumann, on fallen branches of *Betula* sp., Kapice district, 2012-08-28, leg. & det. DŚ
- F. luteonitens* L. G. Krieglst. & Nowotny, on fallen branches of *Betula* sp., Grzędy district, 2013-08-27, leg. J. Szkodzik, det. DŚ
- Hemitrichia serpula* (Scop.) Rostaf. ex Lister, on decaying trunks, Grzędy district, 2012-08-29, leg. M. Wrzosek, det. DŚ
- Lycogala conicum* Pers., on decaying wood, Kapice district, 2012-08-28, leg. & det. DŚ
- L. epidendrum* (L.) Fr., on coniferous wood, Kapice district, 2012-08-28, leg. J. Szkodzik, det. DŚ
- Metatrichia vesparia* (Batsch) Nann.-Bremek. ex G. W. Martin & Alexop., on strongly decayed wood of deciduous tree, Kapice district, 2012-08-28, leg. & det. DŚ
- Mucilago crustacea* P. Micheli ex F. H. Wigg., stem of *Convallaria majalis*, Kapice district, 2012-08-28, leg., M. Wrzosek, det. DŚ
- Physarum bivalve* Pers., on fallen leaves, Grzędy district, 2013-08-27, leg. J. Szkodzik, det. DŚ
- Stemonitis fusca* Roth, on coniferous wood, Grzędy district, 2012-08-29, leg. & det. DŚ
- S. pallida* Wingate, on deciduous wood, Grzędy district, 2012-08-29, leg. & det. DŚ
- Trichia favoginea* (Batsch) Pers., on fallen branches, Kapice district, 2012-08-28, leg. & det. DŚ; Grzędy district, 2013-08-27, leg. J. Szkodzik, det. DŚ
- Tubifera ferruginosa* (Batsch) J. F. Gmel., on decayed wood, Grzędy district, 2013-08-27, leg. M. Ruszkiewicz-Michalska, det. DŚ

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