

Xyloidion delavignei Czern., a forgotten synonym of *Lycogala flavofuscum* (Ehrenb.) Rostaf.

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Abstract: *Xyloidion delavignei* is the name of a gasteroid fungus published by Ukrainian botanist Chernyaev in 1845. This taxon is completely forgotten and not indexed in nomenclatural databases, although other species, published in the same paper are well known. Examination of the description of *Xyloidion delavignei* led me to conclude that it corresponds to the myxomycete *Lycogala flavofuscum*. Chernyaev's name is the earliest known heterotypic synonym of this species.

Keywords: history of mycology; Kharkiv; Myxogastrea; Myxomycetes; Ukraine

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Introduction

Vasyl (Basil) Matviyevich Chernyaev, also known as Czernajew, Czerniaëw, Czerniaïev, and possibly other names (1793–1871), was a famous Ukrainian naturalist, one of the founding fathers of botanical science in the Ukraine and a professor at the Imperial University of Kharkiv, where he studied and worked from 1812 to 1859 (Prokudin 1953). Chernyaev is most notably recognized as the author of the first comprehensive checklist of vascular plants in the Ukraine (Czerniaëw 1859). This pioneering work documented a total of 1769 plant species, including 17 taxa described by the author. However, Chernyaev's scientific pursuits extended beyond botany. His teacher Delavigne instilled in him an interest in fungi (Petrenko and Leontyev 2017). In 1839, Chernyaev embarked on a visit to Uppsala, Sweden, where he met the eminent mycologist E. M. Fries (1794–1878). During this encounter, Chernyaev presented Fries with several new species of fungi he intended to describe. Encouraged by the approval of the renowned scientist, Chernyaev went on to publish his most important mycological work in 1845, titled "New cryptogams from Ukraine and a few words about the flora of this country" (Czerniaïev 1845). This publication marked the first foray into fungal taxonomy by a Ukrainian author.

In his paper Chernyaev described 11 species and five genera: *Disciseda* Czern., *Endoptychum* Czern. (= *Chlorophyllum* Masee subgen. *Endoptychorum* (Czern.) Z.W. Ge), *Trichaster* Czern. (= *Geastrum* Pers. p. p.), *Endonevrum* Czern. (= *Mycenastrum* Desv.), and *Xyloidion* Czern. The first four genera belong to the gasteroid basidiomycetes. These Chernyaev's taxa are widely known in mycological literature, although they have been partially synonymized in subsequent years (Staněk 1956; Ge et al.

2018). However, a fifth genus, *Xyloidion*, remained uncharacterized in later publications. This genus, as well as its only species *Xyloidion delavignei* Czern., is not indexed in the MycoBank, IndexFungorum, or Nomen Eumycetozoa databases. *Xyloidion* is mentioned in several taxonomic summaries (Goebel 1847; Grisebach 1849) and in the literature about Chernyaev (Lipshitz 1938; Strakhov 1955) but without any analysis. Only Pfeiffer (1887, p. 34) placed this genus among the Myxogastres. Having thoroughly examined the description of *Xyloidion delavignei*, I have reached the conclusion that it corresponds to the myxomycete *Lycogala flavofuscum* (Ehrenb.) Rostaf. Below I will endeavor to provide the rationale behind this assertion.

Materials and methods

The material of the study was Chernyaev's original work where *Xyloidion delavignei* is described (Czerniaiev 1845). The description was translated from Latin and French using Google services. The analysis of the description is based on the information about *Lycogala flavofuscum*, available in the identification handbooks, as well as on my own observations. The general conclusions of this study are mentioned in a historical essay published earlier (Petrenko and Leontiev 2017) but only in the form of statements not supported by any analysis.

Results

Descriptions of *Xyloidion delavignei* can be found on pp. 154-156 of the Chernyaev publication (Czerniaiev 1845). The genus is described in Latin, the species in French. Comments are also given in French. The locality and substrate are indicated, which is quite unusual for the 1st half of 19th century. Below, I present a translation of the descriptions for the genus *Xyloidion* and the species *Xyloidion delavignei*:

Xyloidion (from ξύλον – wood, ωόν – egg)

Capillitium of reticulate, branched filaments, partially attached to polygonal columns; spore mass powdery; peridium single-layer, corky, hard, externally and internally reticulate; no stalk.

This monotypic genus differs from Reticularia by its egg-like shape, hard and reticulate structure of both [inner and outer] surfaces of the peridium, polygonal columns surrounded by threads, which we see internally, at the base [of the sporocarp], and to which a capillitium is attached, composed of branching and reticulate filaments.

Xyloidion delavignei*

[Sporocarps] ovoid, white, glabrous, and covered on the outside with a reticulation that can only be seen with a magnifying glass. The peridium is hard and brittle; the base is slightly narrowed and very firmly adherent to the bark-deprived wood, where we also see young abortive bodies in the form of yellowish balls. The interior is brownish in color. Like nothing else, it resembles a bird's egg. I managed to get this representative of reticularias only in a single specimen, originating from the forests of Yekaterinoslav province, on the bank of the Donets River. It was found on a dry trunk of an aspen, at a

considerable height.

* – *The late Father F. Delavigne, a former professor of botany whose herbarium, rich in mosses and lichens from Germany, is preserved in the Museum of Natural History at Kharkiv.*

Discussion

It is impossible to confirm Chernyaev's description by analyzing a herbarium specimen, since the mycological collection of this naturalist has been lost. Only eight specimens of fungi collected by Chernyaev are known, and *X. delavignei* is not among them (Akulov and Leontyev 2002). Nevertheless, the information provided by Chernyaev strongly supports the identification of *Xyloidion delavignei* as a myxomycete. Chernyaev classified the new taxon under 'Reticulaires' (Reticulariaceae), which at that time were already placed in the Myxogastres (Fries 1829). Given Chernyaev's personal acquaintance with Fries, it is reasonable to assume that he was well-versed in Fries's concept of this group (Fries 1829).

Careful examination of the morphological description allows one to identify the species hidden under the name *X. delavignei*. Large, spherical fruiting bodies of practically white color, fine-mesh pattern on the peridium, brown spore mass, and presence of a branched capillitium are characteristic of *Lycogala flavofuscum*. Among myxomycetes, a similar morphology is also possessed by *Reticularia lycoperdon*; however, Chernyaev himself points out that his new species differs from the latter by its ovoid shape and reticulate structure of the peridium. The location of fruiting bodies on a standing tree, at a high height, is rather unusual for myxomycetes but extremely characteristic for *L. flavofuscum*; in addition, such a biotope completely excludes any of the true puffballs.

Chernyaev's reference to 'columns' from which capillitium emerges raises questions, as a true columella is not found in the genus *Lycogala*. It is conceivable that the presence of sclerified bundles of capillitium filaments and/or projecting elements of the hypothallus at the base of the fruiting body may have led Chernyaev to erroneously deduce the existence of a columella.

Yekaterinoslav Province, where *X. delavignei* was found, in those years encompassed the southeastern region of Ukraine. Only a small section of its border reached the Donets River (now Siverskyi Donets). This section, now corresponding to the Luhansk region of Ukraine (approximately from 48.935 N, 38.223 E and up to 48.589 N, 39.676 E), represents the probable location where *X. delavignei* was found.

The species epithet *delavignei* represents a special interest. Gislain François Delavigne (1767–1826) was Chernyaev's teacher and the first professor of botany at the University of Kharkiv. He was working there from the foundation of the University in 1804 until his death in 1826. Delavigne was a French aristocrat who left his homeland during the French Revolution. He studied botany in Germany, where his teacher and patron was the famous cryptogamist Johann Christian von Schreber (1739–1810). Delavigne initiated the first ever studies of the flora of Ukraine and at least two taxa were named in his honor: *Vignea* P. Beauv. ex T. Lestib. (subgenus of Cyperaceae) and *Koeleria delavignei* Czern. ex Domin (Poaceae) (Petrenko and Leontyev 2017). *Xyloidion delavignei* is another validly published eponym of Delavigne.

The species *L. flavofuscum* under its original name *Diphtherium flavofuscum* Ehrenb. was described three decades earlier than *X. delavignei* (Ehrenberg 1818). Thus, Chernyaev's taxon is a junior synonym of this species and cannot compete with the currently accepted name *L. flavofuscum*. However,

the fact that *L. flavofuscum* has an unknown heterotypic synonym is of some interest for the history of myxomycete studies.

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