ACTA MYCOLOGICA
Vol. 35 (1): 25–28
2000

Rare species of fungi parasiting on algae. III.

JOANNA ZOFIA KADŁUBOWSKA

Department of Algology and Mycology, University of Łódź
Banacha 12/16, PL-90-237 Łódź, Poland

K a d ł u b o w s k a J. Z.: *Rare species of fungi parasiting on algae. III.* Acta Mycol. 35 (1): 25–28, 2000.

The investigations carried out on algae revealed the following species of fungi from the order of *Chytridiales* H a w k s w o r t h et al. (1995) parasitizing on algae: *Rhizophydium subangulosum, R. ganiosporum, R. planctonicum, Entophlyctis rhizina* and *Harpochytrium hedinii*. These species are new to Poland. The figure of resting spore of *Entophlyctis rhizina* is the first graphic documentation of this species.

Key words: fungi parasites on algae, aquatic fungi, taxonomy, *Chytridiales*.

INTRODUCTION

The present work reports the fungi parasitizing on the algae from *Oscillatoriaceae, Tribonemataceae, Scenedesmaceae, Zygnemaceae* and *Vaucheriaceae*. All of them are new to Poland, so they enrich the list of fungi species of the country.

The algae were collected in various parts of Poland on purpose to gather the knowledge used later in the preparation of a textbook (K a d ł u b o w s k a 1975). During the observations of algal morphology numerous parasitic fungi were found. The paper is a further report on fungi parasitizing on algae (K a d ł u b o w s k a 1968, 1969, 1970, 1998, 1999a, 1999b). In the previous papers 14 species of fungi parasitic on *Zygnemaceae*, 5 species – on *Desmidiaceae* and 2 species – on *Bacillariophyceae* have been described and illustrated. The inspiration for the study on fungal parasites of algae was the work „Grzyby niższe" (The lower fungi) by S k i r g i e ł ł o (1954) facilitating the identification of fungi, mainly the genera.

Identifications, comparisons of dimensions and determination of morphological features are based on the works by S p a r r o w (1960) and B a t k o (1975).

DESCRIPTION OF THE SPECIMENS

Rhizophydium subangulosum (Braun) Rabenhorst

Immature sporangium spherical, sessile on the trichome of *Oscillatoria limosa* Agardh, 34 μm in diameter. The wall of sporangium smooth, colourless. Endobiotic system consists of a branched rhizoid ca. 140 μm long and extends through ca. 50 cells of the host (Fig. 1). Zoospores 2 μm in diameter. Resting spore not observed. Habitat of *Oscillatoria limosa*: Pond Rydwan (near Łowicz), 3.05.1975.

The species is often reported from several European countries and also from Africa (S p a r r o w 1960).

Rhizophydium goniosporum Scherffel

Sporangium sessile, epibiotic, ovoid, 7 μm high and 12 μm broad, its long axis is parallel with that of the host filament. The wall of sporangium thin, smooth, colourless; rhizoidal system delicate. Zoospores ca 2 μm in diameter. Resting spores endobiotic, in optical section six-cornered, the corners protruding. Seven resting spores 7 – 10 μm in breadth with globules were observed in the cell of *Tribonema* sp. (Fig. 2). Habitat of *Tribonema* Derbes et Solier: Marysin peat-bog (Łódź), 16.06.1958.

The species is cited from Hungary, Great Britain and the United States. The angular resting spores distinguish *R. goniosporum* from other species of the genus *Rhizophydium*.

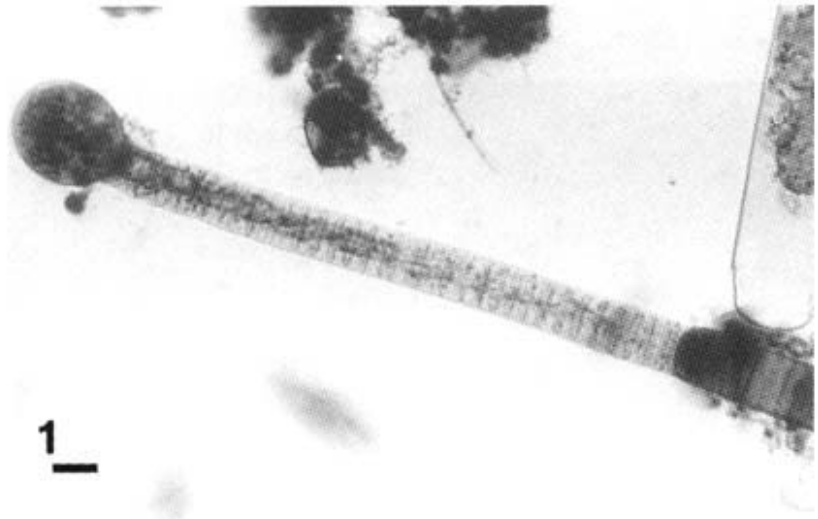
Rhizophydium planctonicum Canter

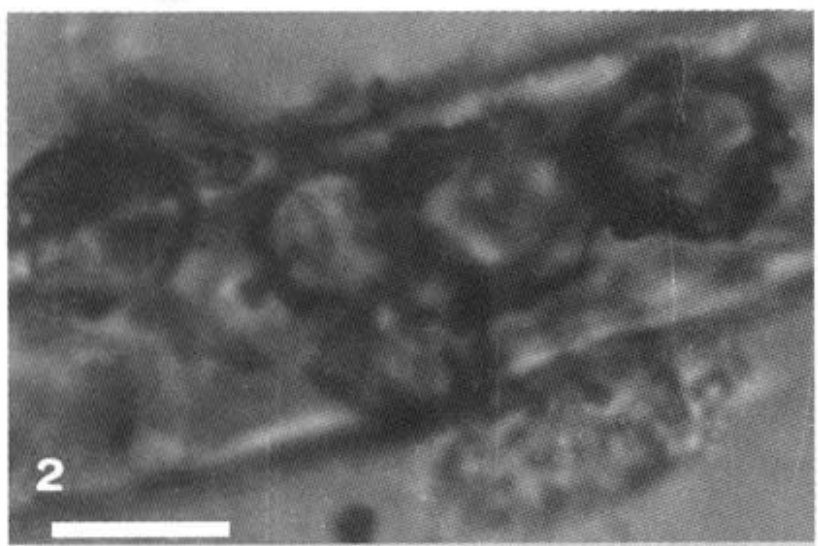
Sporangia epibiotic, spherical, 8 – 10 μm in diameter, with a single apical discharge papilla. Zoospores spherical, ca. 3 μm in diameter. Sporangia collapse after releasing zoospores. The fungus was observed in mass on the surface of *Eremosphaera viridis* De Bary. Resting spores spherical 6 – 8 μm in diameter with numerous oil globules (Fig. 3). Immatrical rhizoides not observed. Habitat of *Eremosphaera viridis*: Pond Toporowy Stawek in the Tatra Mts., 22.09.1963.

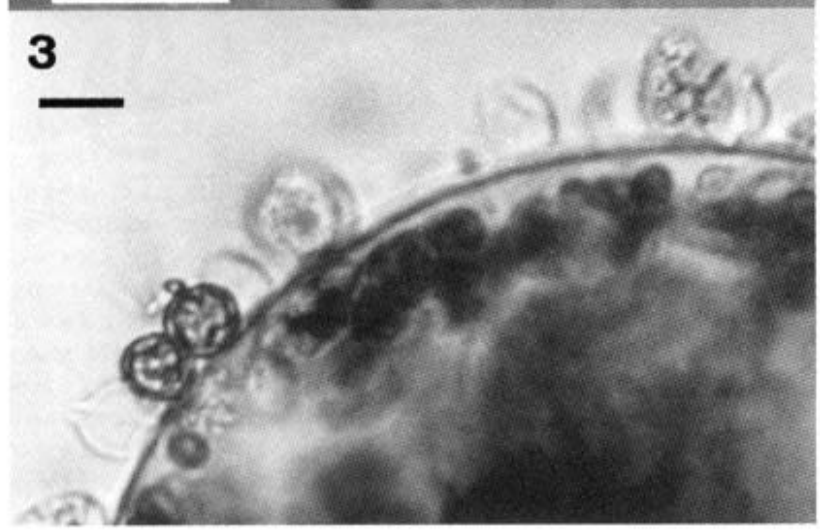
It is the first information about this species as a parasite on the algae from the genus *Eremosphaera*. It is known from Great Britain as a parasite on the planctonic diatom *Asterionella formosa* (S p a r r o w 1960).

Entophlyctis rhizina (Schenk) Minden

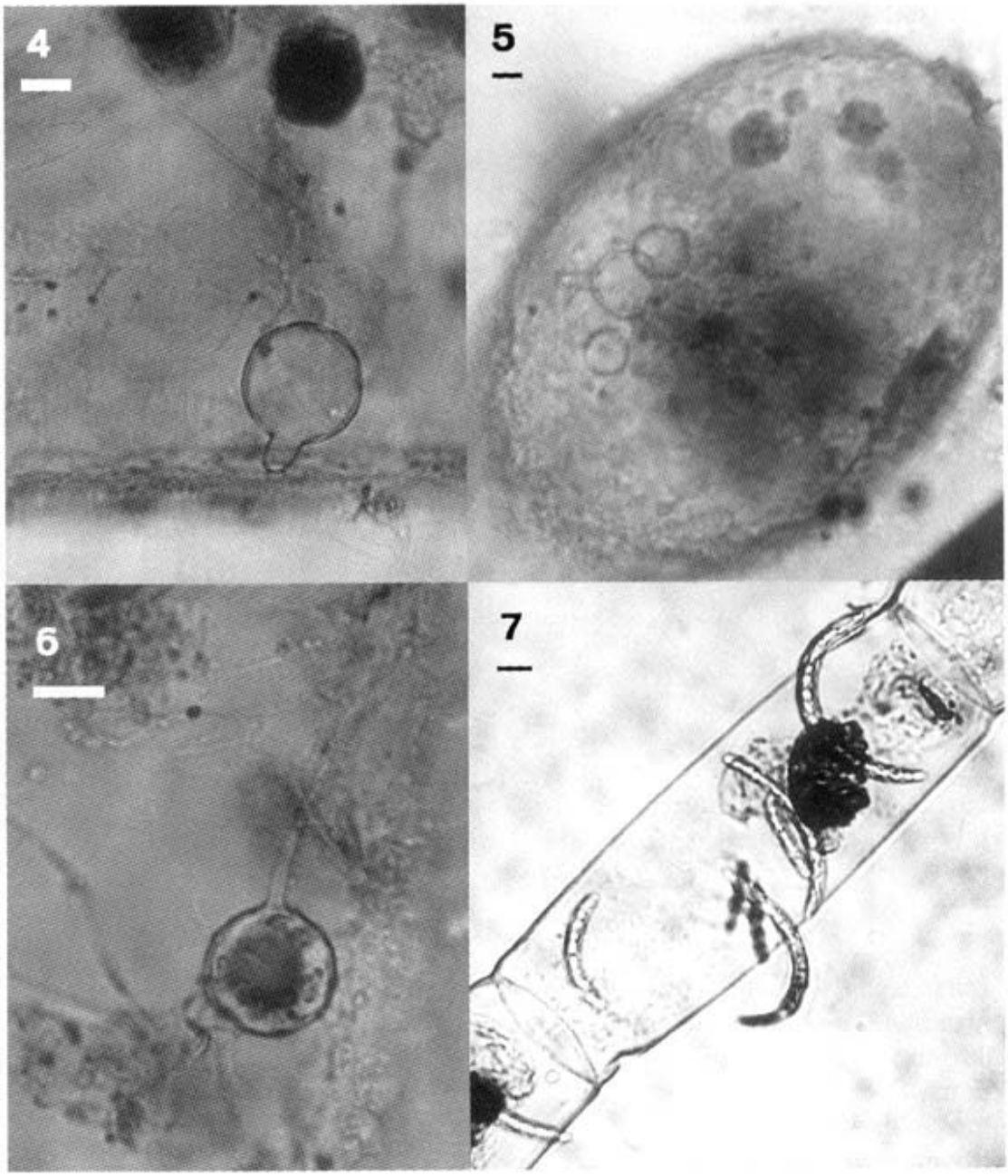
Sporangium spherical, 25 μm in diameter, with thick, double contoured wall. Sporangium forming extramatrical discharge tube up to 15 μm long. Initially, the discharge tube is knoblike and in this stage can be mistaken







Figs 1–3. *Rhizophydium*. Fig. 1. *R. subangulosum*. Immature sporangium and branched rhizoid on *Oscillatoria limosa*. Fig. 2. *R. goniosporum*. Epibiotic sporangium and endobiotic resting spores in the cell of *Tribonema* sp. Fig. 3. *R. planctonicum*. Two sporangia with zoospores, two resting spores and empty sporangia on *Eremosphaera viridis*



Figs 4–7. *Entophlyctis rhizina* in *Vaucheria dichotoma*. Fig. 4. Thallus fragments containing a sporangium with young knoblike discharge tube and with rhizoides. Fig. 5. Sporangium inside antheridium with long discharge tube. Fig. 6. Resting spore with oil globule and rhizoidal system. Fig. 7. *Harpochytrium hedinii*. Mature sporangia with zoospores in rows and young sporangia proliferating from the surface of the *Spirogyra* cell
Scale bars: 1–7 — 10 μm

for *Entophlyctis bulligera* (Zopf) Fischer (Fig. 4). Rhizoides arising from a single point on the underside of the sporangium, branched (Figs 4, 5). Resting spore endobiotic, spherical, 22 μm in diameter, contains an oil globule filling the lumen of the spore. Rhizoidal system of resting spore extensive branched, arising from numerous places. Rhizoids up to 100 μm long (Fig. 6). Habitat of thallus and antheridium of *Vaucheria dichotoma* Agardh: salt spring in Pełczyska (near Ozorków), 10.10.1966.

The species is often cited from Europe (S p a r r o w 1960). The figure of resting spore presented in this report is the first graphic documentation of this species. According to S p a r r o w (1960) "resting spore not observed".

Harpochytrium hedinii Wille

Sporangia fusiform, semicircular, narrowed at both ends up to 80 μm long, 4–5 μm broad in the middle, setting on the surface of *Spirogyra*. Zoospores elliptical, 2–3 μm in diameter, arranged in rows. New sporangia grow between the walls of old ones i.e. by proliferation (Fig. 7). Habitat of *Spirogyra* Link: a stream in Obidowa (Gorce Mts.), 09.1969.

The species is known from Czechoslovakia, France and Germany (C e j p 1933). Morphological features and dimensions are in accordance with the description by B a t k o (1975).

The fungi from the genus *Rhizophidium* and *Entophlyctis* listed above belong to *Chytridiaceae*, *Harpochytrium* – to *Harpochytriaceae*.

Acknowledgments. This study was supported by the University of Łódź, grant no. 736.

REFERENCES

B a t k o A. 1975. Zarys hydromikologii. PWN. Warszawa. 478 pp.

C e j p K. 1933. Further studies on the parasites of *Conjugales* in Bohemia. Bull. Inter Acad. Sc. Boheme. 1–11.

H a w k s w o r t h D. L., K i r k P. M., S u t t o n B. C., P e g l e r D. N. 1995. Ainsworth et Bisby's Dictionary of the Fungi. 8 ed. IMI, Univ. Press. Cambridge 404 pp.

K a d ł u b o w s k a J. Z. 1968. Fungi parasites on the genus *Spirogyra* Link rare or new for the Polish flora. Acta Mycol. 4 (2): 363–367.

K a d ł u b o w s k a J. Z. 1969. Development and morphology of *Micromycopsis mirabilis* Canter. Acta Mycol. 5: 5–8.

K a d ł u b o w s k a J. Z. 1970. *Podochytrium clavatum* Pfitzer and *Aphanomycopsis bacillariacearum* Scherffel new species in the Polish flora. Acta Mycol. 6 (1): 55–57.

K a d ł u b o w s k a J. Z. 1975. Zarys algologii. PWN. Warszawa. 504 pp.

K a d ł u b o w s k a J. Z. 1998. Rare species of fungi parasiting on algae. I. Parasites of *Spirogyra* and *Mougeotia*. Acta Mycol. 33 (2): 247–254.

K a d ł u b o w s k a J. Z. 1999a. Rare species of fungi parasiting on algae. II. Parasites of *Desmidiaceae*. Acta Mycol. 34 (1): 51–54.

K a d ł u b o w s k a J. Z. 1999b. *Micromyces bulbosus* sp. nov. Acta Mycol. 34 (2): 177–180.

S k i r g i e ł ł o A. 1954. Grzyby niższe. PWN. Warszawa. 247 pp.

S p a r r o w Fr. K. 1960. Aquatic *Phycomycetes* 2 ed. Michigan Press. Ann. Arbor. Mich. 1187 pp.

Rzadkie gatunki grzybów pasożytujących na glonach. III.

Streszczenie

Podano opisy następujących grzybów z rzędów *Chytridiales* i *Harpochytriales* pasożytujących na glonach: *Rhizophydium subangulosum*, *R. goniosporum*, *R. planctanicum*, *Entophlyctis rhtizina* i *Harpochytrium hedinii*. Gatunki te są nowe dla Polski. Rycina zarodni spoczynkowej *Entophlyctis rhtizina* stanowi pierwszą dokumentację graficzną tego gatunku.