

A NEW NONCOPROPHILOUS SPECIES OF *THECOTHEUS*, *T. PHYCOPHILUS*

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The genus *Thecotheus* has been considered to be primarily coprophilous. In Kimbrough's (1969) monograph of the North American species, four coprophilous species were included. A fifth species, *T. pallens* (Boud.) Kimbr., was mentioned. Though Kimbrough stated that this species had not been found in North America, it had been reported by Seaver (1928) from American material under the name *Humarina pallens* (Boud.) Seaver. This species was described as growing on soil which was sparingly overrun with algae. I have examined the specimen (NY) and find that in anatomy and in the reaction of the asci in Melzers reagent, the species agrees completely with species of *Thecotheus*. No material exists at PC in the Boudier Herbarium.

While collecting near Lake Itasca, Minnesota, in the summer of 1980, I found another *Thecotheus* which was also associated with algae growing on dead herbaceous debris on sandy soil. This species, described below, differs in several critical ways from the descriptions of *T. pallens* and is described as new. It was found in an open low area which was sometimes inundated. Sedges, *Equisetum*, and a species of *Pilea* form the herbaceous ground cover in these open areas which are surrounded by stands of birch, fir, and ash.

Thecotheus phycophilus Pfister, sp. nov.

FIG. 1

Apothecia usque ad 0.5 cm lata, initia turbinata tum repanda, cremicolores. Excupulum externum compositum textura globosa et hyphae radicales cum cellulis plurimis infra innacentibus et bulbosis. Medullis cum texturis intricatis. Asci J+, 30-35 μm lati, plus quam 250-300 μm longi, cum sporiis 4 vel aliquando cum sporiis 8. Ascosporae lenia, 30-36 \times 15-16 μm cum parietibus incrassatis ubi juvenibus. Paraphyses cum parietibus tenuibus, rectis et apicibus ramosis, 3-4 μm latibus et crassis, supra tumidis, brunneolis, 5-8 μm latibus.

In arenosis tectis a algis.

Typus: On dead herbaceous plants overrun by algae near University of Minnesota Field Station, Lake Itasca, Minnesota, D. H. Pfister (Mn 96) and Mary Palm, August 1, 1980 (FH).

Apothecia up to 0.5 cm in diam, broadly attached, psilopezoid, margin even to somewhat wavy, at first turbinate. Disc flat to slightly

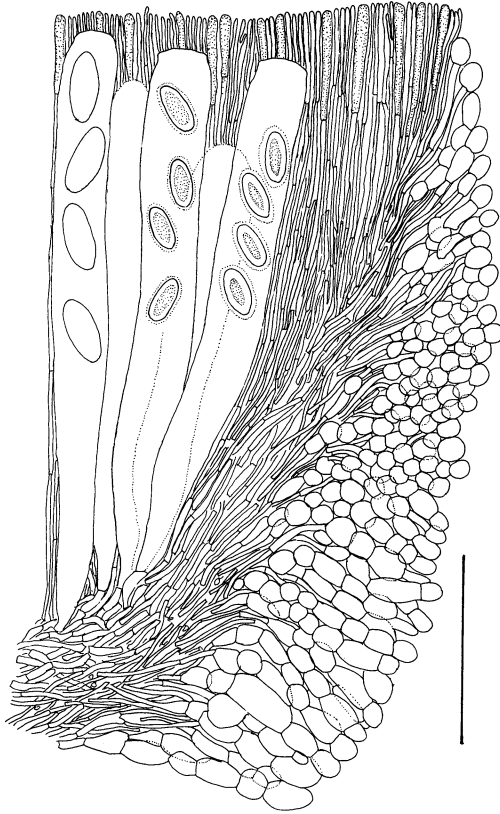


FIG. 1. Cross section of an apothecium of *Thecotheus phycophilus*.
Scale = 100 μm .

convex, often undulate in larger specimens, light tan. Protruding asci can be seen in mature specimens.

Outer excipulum of globose to angular cells up to about 25 μm , mostly, however, smaller. The layer is about 100 μm thick at the base of the apothecium; about 20 μm at the margin. Toward the margin the bulbous, deeply rooted hyphoid hairs can be seen. The outer surface is covered by scattered pustules composed of globose cells. In the lower portions of the outer excipulum, the cells on the outside give rise to narrow branched hyphae which bind the apothecium to the substrate and in which filaments of *Oscillatoria*, coccoid green algae, and desmids are tangled.

Medullary excipulum of thin-walled more or less narrow hyphae 2-3 μm broad which are often branched; prominent wider ascogenous hyphae can be easily seen. Globose cells can be found particularly toward the outer boundary of the outer excipulum.

Margin composed of hyphae running parallel to the hymenium; the terminal cells are ellipsoid or nearly globose.

Asci uniformly J+ sometimes with internal bluing, 30-35 × 250-300 μm or longer. When mature, extending above the level of the paraphyses. Bases of asci with croziers arising from deep within the medullary excipulum. Ascus apex broad with a distinct thickened ring when mounted in Congo Red in ammonia. Asci were 4-spored though some 8-spored asci were noted.

Ascospores extremely thick-walled when young, 30-36 × 15-16 μm, smooth.

Paraphyses of two types—one type thin-walled, unenlarged and somewhat bent and apically branched, 3-4 μm in diam at the apex; the second type thick, swollen, brownish, 5-8 μm in diam at the apex.

On dead grass overgrown by algae; in low moist areas.

Type: On dead herbaceous plants overrun by algae near University of Minnesota Field Station, Lake Itasca, Minnesota, D. H. Pfister (Mn 96) and Mary Palm, August 1, 1980 (FH).

One other collection was made in the same locality on August 9, 1980 by D. H. Pfister (Mn 131) (FH).

Thecotheus phycophilus and *T. pallens* are similar in several respects: they occur on the same general habitats, and each has large, smooth ascospores. The species are, however, easily distinguished. The apothecia of *T. phycophilus* are larger than those reported for *T. pallens*. *Thecotheus phycophilus* is beige rather than white and the ascospores of *T. phycophilus* are smaller than those in *T. pallens* which range up to 45 μm. In addition, *T. phycophilus* has paraphyses of two distinct types. The only other species of *Thecotheus* which has been described with such paraphyses is the coprophilous *T. himalayensis* Kaushal (1980).

Attempts were made to establish cultures. Ascospores were collected on water agar and on potato dextrose agar. On both media, about 10% of the ascospores germinated. Nearly always only one of the clump of four spores germinated. Germination was bipolar. Straight, relatively infrequently branched hyphae were formed; no conidia were observed.

Attention should be drawn to the other known noncoprophilous member of the genus *Thecotheus*, *T. rivicola* (Vaček) Kimbrough and Pfister (1973). This species inhabits rotten, water-soaked wood.

For aid in identification, a key to the three noncoprophilous members of the genus *Thecotheus* is given.

1. Ascospores smooth without apiculi, longer than 30 μm , white or pallid, on algae, on soil and vegetable debris 2
1. Ascospores apiculate and marked with irregular warts, 17-22 \times 7-8 μm , on water-soaked twigs and wood *T. rivicola* (Vaček) Kimbr. & Pfister
2. Ascospores 30-36 \times 15-16 μm , apothecia light tan reaching a diam of up to 0.5 cm, asci predominantly 4-spored, paraphyses of two types
..... *T. phycophilus* Pfister
2. Ascospores 35-45 \times 15-20 μm , apothecia white, 2-3 mm in diam, asci 8-spored, paraphyses of one type *T. pallens* (Boud.) Kimbr.

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OCCURRENCE OF TWO *FUSARIUM* SPECIES IN TWO MAIZE CULTIVARS IN WEST AFRICA

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In Nigeria and Sierra Leone maize (*Zea mays* L.) is becoming increasingly important as animal feed. Maize is also used as a supplement to the main staple foods. Various factors limit maize production in these countries, including susceptibility of some cultivars to stalk and cob rots and other diseases. *Fusarium moniliforme* Sheldon was

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