

Studies on Trichomycetes Inhabiting the Guts of Diptera Larvae

Robert W. Lichtwardt and Marvin C. Williams

Department of Botany

University of Kansas

Project Number 104

The Trichomycetes are fungi that live obligately as commensals in the guts of arthropods. Our studies dealt principally, but not exclusively, with the order Harpellales that inhabit the midgut and hindgut of aquatic larvae of Diptera. Jackson Hole was selected for these studies because of its wealth of Trichomycete material. These fungi were known to be present through work in the area during previous years by one of us. Though we worked together on some of the same collections of larvae, our objectives were somewhat different:

Robert W. Lichtwardt (July 1-July 10).--The primary purpose was to obtain living Harpella melusinae so that suitable fresh sporulating material could be fixed for subsequent electron microscopic observations. This fungus, like other Harpellales, produces spores with appendages. Preliminary studies of this species obtained in Jackson Hole in 1965 showed that these appendages have an unusual ultrastructure. It was possible, during the brief period at the Station, to find and fix Harpella as well as several other genera of Trichomycetes.

Marvin C. Williams (July 1-July 24).--Attempts were made to culture several genera of Harpellales. Species of only one genus of endocommensal Trichomycetes (Smittium) have been cultured to date. It was not possible to axenically culture any of the other genera, but in the process it was possible to study the morphology and ecology of a variety of Trichomycetes, this being another objective of the investigation in Jackson Hole. A new species, to be called Pennella simulii, was discovered in black fly larvae from the headwaters of Third Creek, and a paper is being submitted to MYCOLOGIA for publication: Williams, M. C., and R. W. Lichtwardt, "A new Pennella (Trichomycetes) from Simulium larvae."

Financial support for M. C. Williams came from the Committee on Systematics and Evolutionary Biology, The University of Kansas (NSF GB-8785), and for R. W. Lichtwardt from NSF grant GB-7072X.