

## NOTES

THE FUNGUS ASSOCIATED WITH WOODWASPS OCCURRING  
IN BEECH IN NEW BRUNSWICK<sup>1</sup>

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The fungi associated with woodwasps (Hymenoptera: Siricidae) that attack balsam fir (*Abies balsamea* (L.) Mill.) have been under investigation by the writer for some time (Stillwell 1960). During this work, other tree species were examined for the presence of woodwasps and it was found that the dead portions of the crowns of many beech trees (*Fagus grandifolia* Ehrh.) affected by the beech bark disease were infested by a variety of insects and fungi. The wood was badly decayed and woodwasps made up a large proportion of the borer population (Fig. 1). Studies were undertaken to determine the species of woodwasps occurring in beech in New Brunswick and the identity of any associated fungi.

During August and September, 1961 and 1962, 572 adult woodwasps were reared from infested portions of beech wood. All were tentatively identified as *Tremex columba* (L.). This identification was confirmed by H. E. Milliron, Canada Department of Agriculture, Research Branch, Entomology Research Institute, Ottawa.

To determine the occurrence and nature of fungi in the intersegmental sacs located at the base of the ovipositor, 212 female woodwasps were examined. A cut was made around the ventral sclerites anterior to the base of the ovipositor. The sclerites were lifted away to expose the sacs; these were then ruptured and some of the enclosed material transferred aseptically to glass slides for microscopic examination. In each insect the material consisted of fungal oidia, frequently swollen and often in chains of two or more cells with prominent clamp connections (Fig. 2). The occurrence of clamp connections indicated the association of a basidiomycete with *T. columba*.

Six malt-agar tubes were inoculated with the fungal material from the sacs of each of the 212 insects. Examination of the resulting cultures indicated that any one or all of the following three species were involved: *Daedalea unicolor* Bull. ex Fries, *Polyporus pubescens* Schum. ex Fr., and *P. versicolor* L. ex Fries (Nobles 1948). All three fruited commonly on the killed beech tops.

Several cultures were sent to the Canada Department of Agriculture, Research Branch, Plant Research Institute, Central Experimental Farm, Ottawa, for further identification. Dikaryotization of monospore cultures from herbarium specimen DAOM 72523 (*D. unicolor*) occurred with each of the cultures sent (Buller 1931). The remaining 836 cultures were also identified as *D. unicolor* at the Forest Entomology and Pathology Laboratory, Fredericton, New Brunswick, by the dikaryotization technique.

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These results indicate that only one fungus, *D. unicolor*, is associated with the woodwasp, *T. columba*, found in beech in New Brunswick.

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FIG. 1. Woodwasp larval galleries and woodwasp larvae in decayed beech wood ( $\times 1/2$ ). Inset shows the characteristic anal spine ( $\times 3$ ). FIG. 2. Fungal oidia (*Dactylea unicolor*) from the sacs of the woodwasp, *Tremex columba* ( $\times 400$ ).