

Chipping as a Phytosanitary Treatment For *Tetropium fuscum*

Eric Allen, Leland Humble, Pam Reece, and Jon Sweeney

Natural Resources Canada, Canadian Forest Service

Abstract

A series of experiments were conducted to determine the efficacy of wood chipping on survival of the brown spruce longhorned beetle, *Tetropium fuscum*. Three experiments involved inserting known numbers of surrogate larvae (PVC-plastic, live buprestid larvae, and live dipteran larvae) into logs, chipping the logs, and then assessing damage and/or insect survival. The fourth experiment involved chipping logs known to be infested with *T. fuscum*, followed by rearing to assess adult survival. In a fifth experiment, known numbers of adult Scolytidae were inserted into logs, logs were chipped, and chips were held in emergence cages to assess adult survival. PVC larvae proved to be more durable than live larvae. Damage to plastic surrogates of 5, 10, 15 and 20 mm length was 31%, 66%, 90% and 98% respectively. No survival of the 200 buprestid larvae, 800 dipteran larvae, or *T. fuscum* larvae tested was observed. 1/2300 scolytid adults survived chipping. These results strongly suggest that chipping is an effective method of killing larvae and adult woodborers in the size range of *T. fuscum*.

Microsporidia from the Asian Longhorned Beetle in China

Leah S. Bauer^{1,2}, Deborah L. Miller¹, Houping Liu², and Charles Vossbrinck³

¹USDA Forest Service, North Central Research Station,
1407 S. Harrison Rd., E. Lansing, MI 48823

²Department of Entomology and Center for Integrated Plant Systems,
Michigan State University, E. Lansing, MI 488234

³Connecticut Agricultural Experiment Station, Department of Soil and Water,
123 Huntington St., New Haven, CT 06504

Abstract

During the past two years, we isolated microsporidia from Asian longhorned beetle (ALB) larvae collected in Gansu, Hubei, Henan, Jiangxi Provinces of China. We recently completed studies on the morphology, life cycle, tissue specificity, and genetics of the microsporidian isolate from Gansu Province. This isolate infects only the epithelial cells of the ALB midgut; environmental spores are ovoid; ca. 1.8 x 3.8 µm in size; uninucleate; with 8-9 coils of the polar filament when observed in cross section. During sporogony, variable numbers of spores develop in a non-persistent sporophorous vesicle containing large crystalline inclusions; spores are excreted with the frass in host galleries. Phylogeny, based on small subunit ribosomal RNA using maximal parsimony analysis (PAUP), suggests this microsporidium is most related to the *Endoreticulatis-Eterocytozoan* taxonomic group. Spores of this microsporidium are also infective to a native cerambycid, the cottonwood borer, *Plectrodera scalator* (Fab.). Impact of these microsporidia on ALB are unknown, however, microsporidia typically increase host mortality, prolong developmental period, and reduce adult longevity and fecundity.