

HOST SPECIFICITY OF GYPSY MOTH MICROSPORIDIA: FIELD STUDIES IN SLOVAKIA

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Three genera of microsporidia, *Endoreticulatus* (*schubergi*), *Nosema* spp., and *Vairimorpha* sp., infect gypsy moth (*Lymantria dispar* (L.)) larval populations and have been documented to reduce the intensity and duration of gypsy moth outbreaks in Europe. In order to satisfy regulatory protocols for introducing isolates of these pathogens into North American gypsy moth populations as classical biological control agents, host specificity issues must be addressed. Previous laboratory studies indicated that native North American Lepidoptera that are forest foliage feeders have a broad range of susceptibility to gypsy moth microsporidia and that *Endoreticulatus* has the broadest host range. Neither atypical infections nor host-like infections of *Nosema* and *Vairimorpha* were horizontally or vertically transmitted between infected and uninfected conspecific nontarget individuals. Field studies in Bulgaria determined that other lepidopteran species did not serve as natural reservoirs for the gypsy moth microsporidia in the native areas.

We are currently evaluating the effects of microsporidia on field populations of nontarget Lepidoptera when introduced via ultra low volume sprays as a worst case scenario. One and two weeks after ground application

of 1 billion spores per plot (5×10^5 spores/ml), over 70 species of lepidopteran larvae were collected from the sprayed oak trees, identified to species and dissected to recover any microsporidia present. Of nine nontarget species infected with *Vairimorpha*-like microsporidia, four were infective to the gypsy moth. The other isolates did not infect gypsy moth. As predicted by laboratory studies, six species with *Vairimorpha*-like infections were noctuids (four *Orthosia* spp.), and one lymantriid, *Orgyia antiqua*, was susceptible. Although geometrid species are typically refractive, one of 16 species recovered was infected with *Vairimorpha*; however, this isolate was not infective to gypsy moth. The plots sprayed with *Vairimorpha* sp. in 2002 were monitored for the following 2 years and no new *Vairimorpha* infections were recovered. *Nosema*-like isolates were recovered from three nontarget species in two seasons of spraying/collecting. None of these isolates were infective to third instar gypsy moth larvae, nor did spore morphology suggest that they were gypsy moth isolates. Dosages of *Nosema* for the final 2005 season will be quadrupled to increase the prevalence of infection of gypsy moth larvae used as positive controls, and to increase the probability of identifying any and all susceptible nontarget hosts.