

SUMMARY OF EXPERIMENTAL RELEASES OF EXOTIC MICROSPORIDIA: CONCLUSIONS AND RECOMMENDATIONS

J. V. Maddox¹, M. R. Jeffords¹, M. L. McManus², and R. E. Webb³

¹Illinois Natural History Survey, Champaign, Illinois 61820

²USDA Forest Service, Northeastern Forest Experiment Station, Hamden, Connecticut 06514

³Insect Chemical Ecology Laboratory, Agricultural Research Service, USDA, Beltsville, MD

ABSTRACT

During a 1985 European expedition, 5 species of microsporidia were obtained from gypsy moth collected in Portugal, Czechoslovakia, and Bulgaria. From 1986-1989, we released all 5 species of these microsporidia into gypsy moth populations in isolated woodlots in Maryland. This presentation is a summary of the conclusions and recommendations based on the results of our experimental releases.

Nosema sp persisted in gypsy moth populations in the same woodlot for 3 years. *Vavraia* sp spread horizontally through the gypsy moth populations but did not persist from one season to the next. All three *Vairimorpha* species were slow to spread horizontally through gypsy moth populations and only persisted at very low levels from one season to the next.

Based on our experimental releases we have concluded that: 1) the egg mass method is suitable for introducing most species of gypsy moth microsporidia, 2) synchronizing the batch of contaminated and feral egg masses is critical, 3) the number of spores per egg mass is critical and is different for each species, and 4) *Nosema* sp from Portugal appears to be the most suitable biological control candidate.

Our research recommendations are: 1) conduct detailed taxonomic studies on all species of gypsy moth microsporidia, 2) obtain additional gypsy moth microsporidian isolates from Eurasia, 3) clarify the regulatory requirements for permanent establishment of exotic microsporidia, and 4) experimentally introduce gypsy moth microsporidia into high-density gypsy moth populations.

REGULATION OF DISPARLURE TITER IN GYPSY MOTH FEMALES: EFFECTS OF MATING AND SENESCENCE

J. M. Giebultowicz¹, A. K. Raina² and K. W. Thorpe²

¹Department of Zoology, University of Maryland, College Park, MD 20742

²Insect Chemical Ecology Laboratory, Agricultural Research Service, USDA, Beltsville, MD

ABSTRACT

In the gypsy moth (*Lymantria dispar* L.), mating causes a decrease in the titer of the sex pheromone. This process appears to be regulated by a two step mechanism. A rapid, but transient, initial decrease is mediated by a mechanical signal associated with mating. A long term decrease in pheromone production is mediated by the presence of viable sperm in the spermatheca. Despite a prompt decrease in pheromone titer, mated females remain receptive and remate readily when courted by males. This receptivity is terminated when oviposition begins. Interestingly, all three aspects of mated behavior (i.e. decline in pheromone titer, oviposition and loss of sexual receptivity) were also observed to occur in senescing virgin females.