

DISPERSAL OF GYPSY MOTH PATHOGENS TO NEWLY ESTABLISHED HOST POPULATIONS

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ABSTRACT

Gypsy moth (*Lymantria dispar*) is constantly spreading to the west and south. As gypsy moth colonizes new areas, the fungal (*Entomophaga maimaiga*) and viral (LdMNPV) pathogens infecting larvae also disperse into new gypsy moth populations. Both of these pathogens have been released to speed their dispersal in areas newly colonized by gypsy moth. Our study addresses spatial and temporal conditions associated with pathogen dispersal to answer questions about predictability of pathogen dispersal. Larval pathogens were sampled in different ways along the edge of gypsy moth spread in central to southwestern Wisconsin in 2005-2007, using 50 sites.

The most sensitive methods for detection of gypsy moth pathogens in low density populations were diagnoses of reared field-collected larvae and field-collected cadavers. For all years, *E. maimaiga* was found at more low density sites than LdMNPV, and *E. maimaiga* infections were more prevalent than viral infections. For sites where *E. maimaiga* was found, there was no association with larval density although data suggest a threshold gypsy moth density; both *E. maimaiga* and LdMNPV were not found at sites where less than 8.6 and 7.3 larvae could be collected per hour, respectively. The number of years that gypsy moth had been present at varying densities at a site was associated with *E. maimaiga* presence. With more years of greater male moth densities, the chance of *E. maimaiga* presence at a site increased.