

# SPATIAL POPULATION DYNAMICS AND HETEROGENEITY OF AN INSECT/PATHOGEN INTERACTION

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## ABSTRACT

Dispersal and habitat heterogeneity are known to play important roles in the dynamics of interactions between natural enemies and their hosts. The fungal pathogen *Entomophaga maimaiga* was first found in North America in 1989 and subsequently spread across the gypsy moth distribution, causing epizootics in gypsy moth populations. This pathogen originally was touted as the 'silver bullet' for control of gypsy moth, but recurring episodes of spatially patchy defoliation have recently been observed in several areas. In this study, we are

investigating spatial variability in the distribution and activation of *E. maimaiga*, and how *E. maimaiga* may be influenced by environmental factors. In both 2007 and 2008, we monitored *E. maimaiga* distribution by measuring infection of caged gypsy moth larvae. We found that soil moisture significantly predicted fungal infection across differing years and densities. We also observed that early season infections, which reflect the size and fitness of the fungal population, significantly predicted late season infections.