1125-92-2315 **Eli E Goldwyn*** (eli.goldwyn@trincoll.edu) and **Greg Dwyer**. *Density and Environmental-Dependent Transmission in the North American Gypsy and Its Two Pathogens.*

The North American gypsy moth is a non-native pest that undergoes episodic outbreaks. At low densities the larvae are nearly undetectable, while at high densities they cause widespread economic damage and forest defoliation. These population fluctuations are primarily driven by interactions with a viral pathogen and a fungal pathogen. The viral pathogen exhibits density-dependent transmission, while the fungal transmission is both density and weather-dependent. In order to better understand the roles of each pathogen and the effect of weather, we develop a stochastic SIR-type disease transmission model and, using maximum likelihood techniques and an MCMC routine, fit parameters to data collected from nineteen epizootic outbreaks in the upper Midwest. (Received September 20, 2016)