1086-92-1452 **Bret D Elderd**, **Brian Rehill**, **Kyle Haynes** and **Greg Dwyer*** (gdwyer@uchicago.edu), 1101 E 57th Street, Dept of Ecology and Evolution, University of Chicago, Chicago, IL 60615.
Host-pathogen interactions, induced plant defenses, and insect outbreaks. Preliminary report.

Outbreaks of defoliating insects damage forests and exacerbate climate change, but ecologists continue to debate whether outbreaks are driven by natural enemies, such as pathogens and predators, or by plant defenses that are induced by defoliation. Outbreaks of the gypsy moth (*Lymantria dispar*) are terminated by epidemics of a fatal virus disease, whereas the direct effects of induced defenses are weak. Gypsy moth cycles are therefore widely believed to be driven by the virus, but because the virus is transmitted during larval feeding, induced tree defenses may alter virus transmission rates. We use a field experiment to show that induced hydrolyzable tannins strongly reduce variability in infection risk among gypsy-moth larvae, and by modifying a natural-enemy model to allow for induced defenses, we show that this effect makes outbreaks more likely. Only some of the tree species that gypsy moths feed on have induced defenses, however, but by extending the model to allow for spatial variability in inducibility, we show that induced defenses can explain a sub-harmonic in time series of gypsy moth outbreaks. (Received September 22, 2012)