1116-VC-2602 **Brooks K Emerick*** (brooks.emerick@trincoll.edu), Trinity College, 300 Summit Street, Hartford, CT 06106, and **A Singh**. *The effects of host-feeding on stability of discrete-time host-parasitoid population dynamic models.*

Discrete models are the traditional approach for capturing population dynamics of a host-parasitoid system. Recent work has introduced a semi-discrete framework for obtaining model update functions that connect host-parasitoid population levels from year-to-year. This framework uses differential equations to describe the host-parasitoid interaction during the time of year when they come in contact, allowing specific behaviors to be incorporated. We use the semi-discrete approach to study the effects of host-feeding, which is when a parasitoid consumes a potential larva without ovipositing. We find that host-feeding by itself cannot stabilize the system, and both populations exhibit behavior similar to the Nicholson-Bailey model. When combined with stabilizing mechanisms such as density-dependent host mortality, host-feeding contracts the region of parameter space that allows for a stable host-parasitoid equilibrium. Together with a density-dependent attack rate, host-feeding expands the non-zero equilibrium stability region. We show that host-feeding causes inefficiency in the parasitoid population, which yields a higher population of hosts per generation. This suggests that host-feeding may have limited impact in terms of suppressing host levels for biological control. (Received September 22, 2015)