

1106-VG-2877

Tim Antonelli* (tdantone@ncsu.edu), **Michael A. Robert** and **Alun L. Lloyd**. *The effect of assuming a constant population size in models for the spread of Wolbachia.*

We demonstrate the impact of population dynamics on the predicted spread of *Wolbachia* using a simple continuous-time ordinary differential equation model for a well-mixed population. By incorporating density-dependent per capita growth rates, we demonstrate several scenarios in which our model produces qualitatively different predictions from frequency-only models, which assume that the population size is constant. Moreover, the “frequency threshold” required for *Wolbachia* to invade may not be constant, as is typically assumed, but rather depend on population size. This has important implications for optimizing release strategies that aim to drive *Wolbachia* into wild populations, as well as gene drive systems that exhibit frequency thresholds, such as underdominance. (Received September 16, 2014)