

1067-92-142

**Patrick Thomas Davis\*** (pdavis16@emich.edu), 2363 Geoffry, Warren, MI 48092, and **May Boggess** (may.boggess@gmail.com) and **Jay Walton** (jayrwalton@gmail.com). *Modeling the Effects of Cannibalistic Behavior in Zebra Mussel (*Dreissena polymorpha*) Populations.*

The threat of invasive species has increased with the expansion of global transportation. In the United States, zebra mussels became a problem by the early 1990's when they were introduced by ballast water into Lake St. Clair in 1988. In 2007, a new deterministic discrete-time model for zebra mussel populations was proposed by Casagrandi. We show how this model produces periodic, stable, and chaotic population patterns. In addition, a parametric analysis corrects some results of Casagrandi concerning the effect of changes in the adult cannibalistic behavior through filter-feeding. Finally, a new stochastic continuous-time model is proposed, abstracted from the Casagrandi model and implemented via the Gillespie algorithm. (Received July 27, 2010)