1011-92-70 **Meng Fan**, **Irakli Loladze** and **Yang Kuang*** (kuang@asu.edu), Department of Mathematics and Statistics, Arizona State University, Tempe, AZ 85287, and **James J Elser**. *A Stoichiometric Discrete Predator-Prey Model: Chaos and Its Implications.*

Theoretical models based on stoichiometric principles and experiments have shown that nutritional quality of the prey can have dramatic and counterintuitive impact. The predator can become extinct while having plentiful prey in a completely deterministic system. This is because the prey's inferior nutritional quality precludes the predator from efficiently converting the consumed food into its own biomass. Another effect is the halt of oscillations that are ubiquitous to predator-prey systems, which happens when bad prey quality drives the system through a saddle-node bifurcation. Existing models exhibiting these effects are all continuous in time. However, in experiments, data are collected on discrete time intervals and disturbances are introduced. Such scenarios call for discrete equation models. Hence we ask: (1) to what degree stoichiometric effects are just artifacts of continuous time models? (2) Can novel stoichiometric effects arise in discrete systems? Here, by comparing a continuous stoichiometric model to its discrete analog, we show that stoichiometric impacts of prey quality persist in discrete system. Moreover, not only bad prey quality can pull the system out of oscillations but also it can halt chaotic dynamics that surfaces in the discrete system. (Received August 11, 2005)