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Seth D. Haney* (shaney@sandiego.edu), shaney@sandiego.edu, and **Matthew Cattivera** and **Adam Siepielski**. *Mean Exit Time as a Metric of Ecological Stability in Stochastic Lotka-Volterra Models*. Preliminary report.

Stochastic effects can fundamentally change the outcome of systems in competition. Here we use a discrete and probabilistic model for two competing species to numerically calculate mean exit time, which is analogous to the length of time until one species becomes extinct. Using extinction time as a metric, we evaluate the effectiveness of a spectrum of well-known mechanisms of coexistence, which rely on strict ecological distinctiveness (niche theory) and strict ecological equivalence (neutral theory). We also propose a novel method for potential coexistence of equivalent competitor species. We compare the results of our probabilistic discrete model to a probabilistic continuous Fokker-Planck Equation (FPE). We show that, in certain situations, extinction is a fundamentally discrete phenomenon. In particular we look at systems with absorbing boundaries that are deterministically unstable, and eventually the discrete probabilistic models invariably reside at the absorbing boundary (with probability 1). In contrast, we show that the FPE models invariably avoid these deterministically unstable absorbing boundaries. (Received September 24, 2012)