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**Seth D. Haney\*** (shaney@sandiego.edu) and **Adam Siepielski**. *Effects of Stochastic Variation in Resource Availability in Ecological Community Structure*.

Stochastic effects can fundamentally change the outcome of systems in competition. In ecological competition systems, stochastic variability plays a critical, yet not well understood, role in structuring community dynamics. Here we analyze the boundary between niche-structured communities and neutrally-structured communities by allowing two species that are ecologically neutral to have rare access to specialized resources. We model this competition system by constructing Chemical Master Equation, that we solve numerically using the Gillespie Exact Stochastic Simulation Algorithm. We find that rare resources can provide large benefits, on average, to the stability of coexistence in these competition systems. However, we also find, surprisingly, that rare resources can act to destabilize coexistence if the rare resources appear at inopportune times. We also use our model to investigate the likelihood that an experimental ecologist would be able to resolve the difference between competition systems with rare niches and non-niche differentiated systems (neutral dynamics). We show that stochastic variability imposes decidedly larger experimental constraints than are currently commonplace in experimental methodology. (Received September 17, 2013)