1086-92-2887 **Easton R. White*** (easton.white@asu.edu) and **John D. Nagy**. *A Stochastic, Spatially-Structured Model for Metapopulation Dynamics with Applications to the American Pika (*Ochotona princeps*).*

Conventionally, population biologists have tended to focus on deterministic properties of population dynamics, like equilibrium population sizes, minimum viable populations and cyclic population dynamics. Recently, however, there has been a shift toward incorporating stochastic processes into population models. Stochastic phenomena are likely to drive metapopulations. Here we report on a newly developed computational model designed to evaluate the significance of random fluctuations in general metapopulations. The model is formulated as a birth-death stochastic process on a finite, spatially explicit array of patches. As a test of the model, we apply it to the best-known mammalian metapopulation in North America: the American pika (*Ochotona princeps*) population living on the ore dumps in the ghost mining town of Bodie, California. The model is able to produce the mean population size seen at Bodie but only generates 20 percent of the variance evident in the actual data. Therefore we predict that a considerable amount of the variance must be driven by environmental stochasticity. Similar patterns of demographic stochasticity, having little effect on inter-annual population fluctuations, have emerged in other terrestrial studies of vertebrates. (Received September 26, 2012)