

Title: Taxon occurrence as a function of both biological traits and environmental context: the changing North American mammal species pool.

What species, ecologies, or interactions are present in a local community is dependent on many factors principally what species are “available” to populate that community. A regional species pool is the set of species from which all local communities in that region are formed. Questions remain, however, of how a regional species pool changes over time and what factors influence the demographic composition of the species pool itself and how that might change over time. For example, are there periods of time where certain trophic and habitat ecologies are especially rare while being common at others? Using a multi-level Bayesian model of species occurrence as a function of both species traits and their temporally varying environmental context, I analyze the demographic composition of the North American mammal species pool and how it has changed over the Cenozoic. The species traits analyzed here are trophic category, habitat interaction/locomotor category, and body size. This analysis of species pool demography specifically models the effects of these species traits as functions of their the environmental context, such as global temperature, regional floral assemblage.