One of the objectives of empirical ecology as a mode of scientific inuiry is to develop a body of experimental results that yield reliable principles that allow us to understand how systems work and predict how they will respond to perturbations. This endeavor is greatly complicated by the immense complexity and context-dependence of ecological interactions, and by the significant logistical and cultural barriers to widespread repetition or replication of empirical studies. Repetition and replication – the gold standard means of establishing generality in scientific findings – are rare. Efforts at replication often find that experiments have different outcomes when repeated, rending it very difficult to assess the reliability or generality of our results.

Long-term experimental studies play a special role in illustrating and disentangling context-dependence in the outcomes of species interactions. These studies develop a deep understanding of the natural history of a system and the opportunity to see and explain how consistent experimental methodologies have different results over time. Developing an understanding of *why* outcomes shift over time yields a more nuanced understanding of context dependence.

Repetitions of long-term experiments offer a rare and uniue contribution to empirical ecology: the opportunity to simultaneously test which empirical results are consistent over time and which shift, and to test our ability to use accumulated knowledge about the mechanisms at play in a system to *predict* how shifting context will alter experimental outcomes. This helps us test the generality of empirical findings and strengthen our understanding of how the system works.

The Portal Project, established in 1977, has yielded decades of classic results in experimental ecology. The original experiment was some of the first empirical evidence of resource competition among coexisting species, and results from the 1990s were one of the first and only case studies in energetic compensation in animals. Simultaneously, over the decades both the environmental conditions and species pool at Portal have shifted, with detectable impacts on the network of species interactions and conseuences for community-level properties (energy use, biomass). While many of the species present, the site itself, and the experimental methodology have remained the same, conditions have changed in ways that may have had predictable impacts on the role of kangaroo rats in the system. In 2015, several plots that had historically been control plots were subjected to the same experimental treatments as the original experiment, in a repetition of the original experiment after 38 years of abiotic and biotic change. We use this repetition to test which results have endured the test of time, and to test whether our accumulated knowledge about the system enables us to predict how kangaroo rat removal will affect both the species and community-level properties of the system. Specifically, we define four scenarios for how the role of kangaroo rats may have shifted at Portal and the expected effects of kangaroo rat removal on the other species present and on system-level abundance.