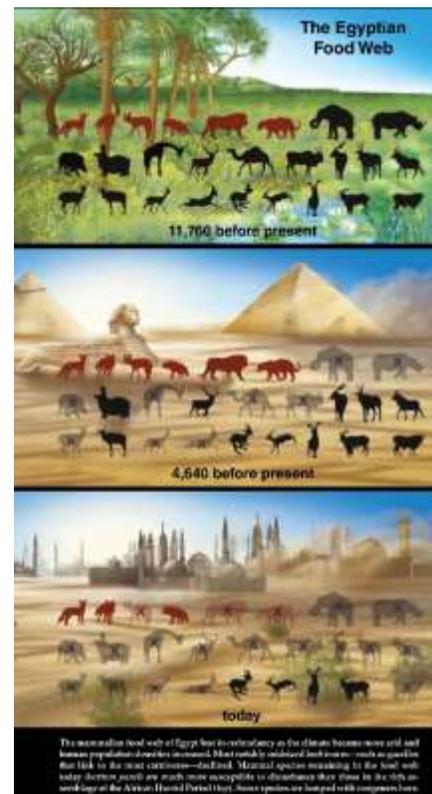


Collapse of an ecological network in Ancient Egypt

The dynamics of ecosystem collapse are fundamental to determining how and why biological communities change through time, as well as the potential effects of extinctions on ecosystems. Here, we integrate depictions of mammals from Egyptian antiquity with direct lines of paleontological and archeological evidence to infer local extinctions and community dynamics over a 6,000-y span. The unprecedented temporal resolution of this dataset enables examination of how the tandem effects of human population growth and climate change can disrupt mammalian communities. We show that the extinctions of mammals in Egypt were nonrandom and that destabilizing changes in community composition coincided with abrupt aridification events and the attendant collapses of some complex societies. We also show that the roles of species in a community can change over time and that persistence is predicted by measures of species sensitivity, a function of local dynamic stability. To our knowledge, our study is the first high-resolution analysis of the ecological impacts of environmental change on predator-prey networks over millennial timescales and sheds light on the historical events that have shaped modern animal communities.



Justin Yeakel, Ph.D.

UC Merced

Friday, March 22, 2019

3:00 – 4:00 PM

Science 2, room 109

For further information: www.csufresno.edu/biology

Bio: Dr. Yeakel is an assistant professor at UC Merced. He earned his B.S. from Kent State University and Ph.D. in Ecology and Evolutionary Biology from UC Santa Cruz. Dr. Yeakel's research generally focuses on diet and its impact on population and community dynamics over different timescales. <http://jdyeakel.github.io/research/>

If you need a disability-related accommodation or wheelchair access, please contact Lindsae Garner at the Department of Biology at 278-2001 or e-mail lgarner@csufresno.edu (at least one week prior to event).