



School of

Biological Sciences

Spring 2017 Weekly Seminar Series



Integrating natural variation in thermal conditions and maternal steroids into temperature-dependent sex determination

Amanda Wilson Carter
Illinois State University

The oversimplification of thermal conditions in both empirical treatments and theoretical applications has hindered our ability to understand how organisms respond to natural temperature variation. This is particularly problematic given that climate change is manifesting as an increase in thermal variability. Consequently, our understanding of how thermally sensitive species, like reptiles with temperature-dependent sex determination (TSD), respond to natural thermal variation is lacking. My dissertation research has focused on identifying the parameters of thermal variation most influential to sex determination and assessing the contribution of maternally derived estrogens to this process. Embryonic sex determination is sensitive to diurnal, seasonal, and stochastic thermal variability, and maternally derived estrogens increase thermal sensitivity of embryos in a seasonal manner. By integrating empirical and modeling approaches, this research demonstrates how the use of more natural variation in incubation conditions can drastically improve predicted thermal responses in the field. These results help resolve how sex is determined in species with TSD in nature, and emphasize the importance of using relevant thermal variation when estimating how temperature affects biological processes in current and predicted climates.

Thursday, May 4, 2017 at 4:00 p.m.
Moulton Hall 210

Pre-seminar refreshments will be served from 3:30 - 3:50
Felmley Science Annex outside Room 133