

1125-VM-1810      **Kelly Rooker\*** (krooker@vols.utk.edu) and **Sergey Gavrilets** (gavrila@tiem.utk.edu).  
*Modeling the evolution of female sexual signaling.*

A long-standing evolutionary mystery surrounds female ovulation signs. Even among just primates, why do some species have substantial sexual swellings and/or bright colorations around their genital regions, while other species are like humans, in which there are no signs of ovulation visible? What is the evolutionary purpose behind not just these signs, but also this great variation seen among species? Here we examine the evolutionary trade-offs associated with ovulation signaling using evolutionary game theory and mathematical modeling. In particular, we use adaptive dynamics to construct two models, one a mean-field approximation and the other an individual-based model, in order to determine equilibria values and their stability. Our modeling results show convergence to stable equilibria (typically unique) with female sexual signaling increasing or decreasing in the population depending on parameter conditions. We find that increasing the impact of infanticide can increase ovulation signaling, but despite any benefit visible ovulation signs have in protecting a female's offspring, ecological costs (e.g. increasing group size and/or increasing physiological costs of having ovulation signs present) can still surpass any benefit, leading to a state of concealed ovulation. (Received September 19, 2016)