



Research Experiences for Undergraduates (REU) 2012

Abstract

COLLIER, S., LIU, Y., LASEBIKAN, O., FINOTTI, H. and R. GILMAN. Evolution of male sexual imprinting. National Institute for Mathematical and Biological Synthesis, Knoxville, TN, University of Dayton, Dayton, OH, University of Tennessee, Knoxville, TN, Fisk University, Nashville, TN.

Sexual imprinting occurs when individuals learn mate preferences by interacting with other members of their population. So far, there have been experiments and models for the evolution of female sexual imprinting, but none that explicitly do so for males. This research focuses on finding the conditions where sexual imprinting in males can evolve and predicting which mode of imprinting can be expected under those conditions. We ran genetically explicit simulations on a haploid population. We varied female imprinting strength and the cost of male courting for each different mode of imprinting investigated, maternal, paternal, and oblique. We ran simulations to see what imprinting strength each mode evolves to. The evolutionary stable strengths of each mode were compared pairwise. We found that male imprinting can evolve, but only when the cost of courtship is sufficiently high. Maternal imprinting by males is favored across much of parameter space; however, males switch to paternal imprinting when female choosiness is as high as the male imprinting strength.