A Heuristic Approach to Model Mating Encounter Rates
Katherine Snyder

Abstract:
Ideal gas models are the standard approach for studying mating encounters between individuals of different sex by way of the law of mass action. Our objective is to review the assumptions underlying the law of mass action and substantiate its use for predicting mating encounters through a derivation of the ideal gas model using dimensional analysis together with simulated data. As our interest is primarily in the application of the law of mass action to mating encounters, we also look into the variability that may occur in encounter rate of many animal species due to environmental stochasticity by exploring numerically how random fluctuation on our model affect the conditioned time to extinction of a two-sex population subject to a reproductive Allee effect.