Apr 14th, 9:00 AM - 10:00 AM

Group Foraging with Despotic Competitors

Catherine Espel, '07
Illinois Wesleyan University

James Dougan, Faculty Advisor
Illinois Wesleyan University

Poster Presentation P27

GROUP FORAGING WITH DESPOTIC COMPETITORS

Catherine Espel and James Dougan*
Psychology Department, Illinois Wesleyan University

The generalized matching law, originally developed by behavioral psychologists, and the ideal free distribution, originally developed by ecologists, have a strong mathematical similarity. Each model predicts the relative distribution of behavior between two resource sources. The models differ because the matching law predicts the distribution of individual behavior while the ideal free distribution predicts the distribution of organisms among patches. The present experiments examined the effects of inter-organism competition when one of the competing animals is "despotic." Six rats participated in the study, which involved group foraging in a large open field apparatus. ln the baseline phase, all rats were deprived to a moderate 90 percent of body weight. Dominance and "despotism" were then established by selecting the rat with the largest sternum and tarsus and establishing prior residence in the open field. A "weighted competition" version of the ideal free distribution suggests that the presence of a despotic rat should result in an altered distribution of animals in the patch. The results have implications for both the matching law and the ideal free distribution, and suggest that models including competitive weight may better describe the data.