OR161

Group size, division of labor and fitness in clonal ant societies

Yuko Ulrich, Jonathan Saragosti, Daniel Kronauer

Testing hypotheses on division of labor requires the ability to manipulate colony composition. In particular, the distribution of individual age and genotype across members of a social group, as well as the size of the group, are expected to affect division of labor and colony performance. However, how each of these factors affects individual and group level behavior is still poorly understood. We present the first results from a series of experiments manipulating these factors independently from one another in *Cerapachys biroi*, a queenless, parthenogenetic ant. The unconventional biology of *C. biroi* affords experimental control over 1) individual age and group demography, because of cyclic reproduction leading to discrete age cohorts; 2) individual genotype and the genetic composition of groups, because of clonal reproduction and 3) group size, because colonies of any size can be set up from totipotent workers. In a first experiment, we set up replicate colonies of various sizes, but composed of individuals of exactly the same age and genotype. Automated tracking of individual ants in 100+ experimental colonies in parallel over a month allows us to quantify the effect of group size on division of labor and group fitness. We show a positive effect of group size on different components of fitness (adult survival, reproduction, development time), and link this to differences in individual and group-level behavior.