Research Abstract
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Reproductive Division of Labor in Forced Associations of *Pogonomyrmex barbatus* Queen Ants

Division of labor is when individuals in a group specialize on certain tasks. In colonies of social insects, reproductive division of labor is a distinguishing feature of the caste system, where a few reproductive individuals produce the offspring for the entire colony and many workers support them. It has been hypothesized that reproductive division of labor is an inherent part of individual's social interactions rather than a secondarily evolved trait. The hypothesis predicts that when individuals of normally solitary species are forced to associate, certain individuals will focus on producing offspring while others will focus on other tasks, and the extent of division of labor should increase as the number of tasks increases. To test this hypothesis, I compared the degree of reproductive division of labor in forced associations of normally solitary ant queens. Solitary and paired queens were kept in either plaster or soil nests with two or three different available tasks, respectively. I recorded which queen was closer to the eggs in the plaster nests as a measure of brood care behavior, and how many times each queen carried a bolus of soil out of the tunnel for the soil nests to quantify digging behavior. By genotyping the offspring and the pairs of queens, the number of eggs each queen laid could be determined. Preliminary results suggest that the two queens showed complete reproductive division of labor, with only one queen laying all the eggs in both the two-task (plaster nests)and three-task groups(soil nests). More division of labor was observed for reproduction then for digging with the least observed for brood care. From these results it seems that reproductive division of labor can occur without evolutionary changes.