



## **A comparative approach to cooperative transport: disregarding potentially distracting information can be good**

Author(s): Helen McCreery, Helen McCreery

Institution(s): Michigan State University ; Michigan State University

When ants work together to carry large objects home – called cooperative transport – they must integrate private information, such as movement speed, with social information, such as the direction favored by group members. Information may differ in quality, and workers may receive conflicting information, for example if group members disagree about nest direction. Thus, workers should sometimes discount information, and the tendency to do so, *persistence*, may vary among species or groups, among individuals, or within an individual over time. Ants with high persistence enthusiastically try to move an object in the same direction, regardless of group members' behavior or success, while low persistence ants change direction or give up. Models indicate that high persistence promotes coordination, as insufficiently persistent workers change behavior too frequently. To test this hypothesis, I 1) compared the mean persistence of four ant species that differ in cooperative transport ability and 2) manipulated persistence in groups of a single species. I found that species with more persistent individuals form more coordinated transport groups, while species with low persistence were relatively ineffective. I also found that when I added two infinitely persistent, fake ants to groups, coordination seemed to modestly improve. These results lend support to the hypothesis that high persistence – low responsiveness to potentially distracting information – promotes coordination in cooperative transport. In some cases, rapid information sharing, and high responsiveness, may actually hinder collective action. I will discuss ongoing research that expands on this work, taking advantage of the variation in cooperative transport success among ants to examine the mechanisms and evolution of this behavior across the ant phylogeny. I will also use this work as an example to discuss the challenges and value of comparative work in collective behavior research.