Behavior of Weaver Ants to Access Food when Encountering Barriers

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Weaver ants (Oecophylla smaragdina Fabr.) are large arboreal ants that live together as a colony on trees. Weaver ant societies have division of labor, communication between individuals, leaning behavior so the ants have great ability to solve complex problems that a single ant cannot go through. Previous research has shown that ants prefer the nearest path when they have to go through obstacles. In this study, we observed how ants access food sources (live mealworms) when encountering barriers: the hanging food and the passage blocked by water channel. We found that ants can make access to food by using different methods depending on the barriers. Weaver ants assemble as a pyramid to reach food that was hanged at different height. A direct relation between the height that food was hung from the floor and the time required for ants to reach food was observed. When food was blocked by water channel, ants could build bridges to cross over. So we set the experiment to study the relation between the width of water channel and the number of ants assembling the bridge. The results showed that the greater the distance to be covered, the more ants and time required to form the bridge. The results highlight learning behavior of weaver ants, the bridge built can be dynamically modified to different shapes in response to increasing distance. This observation improves understanding of mechanism relying on ant assembling that could be adapted to invention of self-assembling robot in the future.

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