

SHORT COMMUNICATION

Adorning the dead or hiding the ration? The ant *Plagiolepis pallescens* Forel (Hymenoptera: Formicidae) constructs walls around food items

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Food hoarding is a common phenomenon in the animal world (Sherry 1985); however, concealing food items *in situ* is much less known. The small ant *Plagiolepis pallescens* Forel, 1889 (Hymenoptera: Formicidae), common to the Middle East (Martinez & Amar 2014; Pashaei Rad *et al.* 2018), was found to build walls around food items that they were not hoarding, suggesting a concealment behavior. The ants were first discovered to build relatively massive structures under a garden tree, *Triadica sebifera*, in Givat Ada, Israel, by piling flowers around dead cockroaches (Fig. 1).

An experiment with eight different colonies of the ant species found that construction materials were not limited to flowers. When the ant colonies were provided on their foraging grounds with sawdust (n=4) or perlite (n=4) (40 cm² each), they used these materials as well. The wall was built from both the inside and outside, and initially it had an opening facing the direction of the nest (Fig. 2), but with time, the wall often completely encompassed the food item (Fig. 1). The decision of whether to build a wall around the food item, hoard it, or consume it *in situ* seemed to depend on the food size and the availability of building materials. When building materials were closely (5 cm) available to the food item, the ants began building the wall within 15 min to 2 hours (n=8; Fig. 2); however, when the materials were placed 50 cm away, the activity was not initiated even after 48 hours (n=5). Based on my observations, the distance of the food item to the nest seemed to have a limited effect on this behavior, and colonies displayed it whether the food was close (10 cm, n=4) to, or far (80 cm, n=3) from the nest entrance. Small-sized and light-weighted food items (colonies were provided with flies ranging in size from 5–8 mm) were either carried to the vicinity of the nest or consumed *in situ* (n=6). Larger prey (cockroaches *Polyphaga aegyptiaca* and *Periplaneta americana*) was always walled (n=8). The size of the walls (width and height) seemed to depend on the amount of available building material and the time it took the colony to fully consume the food item. Most of the observations took place on the pavement (marble or porcelain tiles), but the same behavior was also observed on soil. On the ground, the ants lowered the food item by removing soil particles from beneath



Fig. 1: A wall made by *Plagiolepis pallelescens* ants around a corpse of *Polyphaga aegyptiaca* with flowers from the tree *Triadica sebifera*. The length of the ants is about 2 mm.

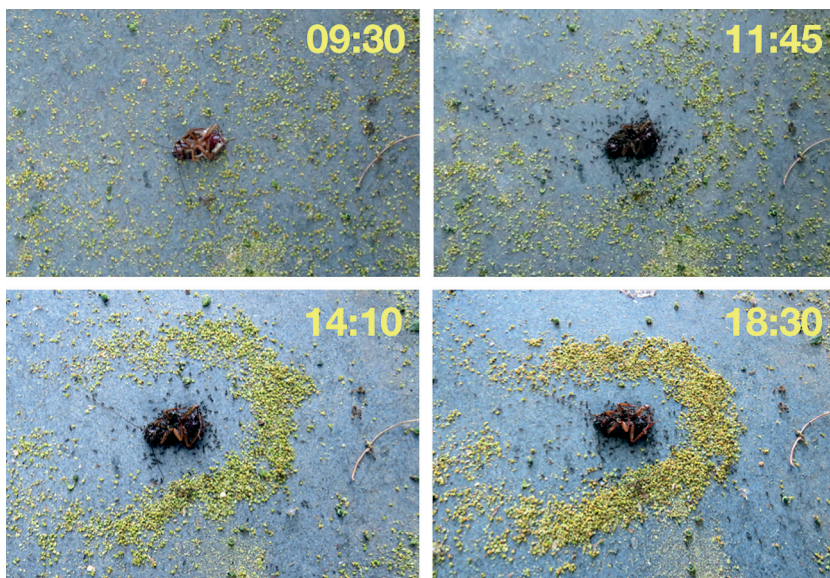


Fig. 2: Time-series pictures of *Plagiolepis pallelescens* ants building a wall around a cockroach placed at 9:30 am in their foraging ground.

and around it, away to the wall, but they also reinforced the wall from the outside ($n=4$). The building activity was usually carried by few members of the colony (see supplementary video: <https://vimeo.com/445477431>) and continued for hours and days (up to 3 days), depending on the time necessary for the ants to fully consume the food (Fig. 2).

A food burying behavior was reported in the fire ant *Solenopsis invicta* (Xu *et al.* 2007; Qin *et al.* 2019). A similar activity to the one observed in this report was apparently reported once in the green ant *Oecophylla smaragdina* in India (Rastogi 2000), and maybe also for another ant species in the USA (a video taken in Minnesota showing ants covering a dead bee with flower petals has gone viral on the Internet: <https://www.youtube.com/watch?v=IrGMD54SU9A>), suggesting that this behavior might have evolved in different species independently and fairly recently. The true reason for this behavior is unknown, although it has been suggested to be concealment (Rastogi 2000). Other species of ants that encountered the same food items did not exhibit such behavior. It is therefore assumed that these structures provide visual and olfactory concealment of the food items, but this hypothesis is yet to be verified.

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