SATELLITE COLONY FORMATION in ARGENTINE ANTS (HYMENOPTERA: FORMICIDAE)

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The Argentine ant, *Linepithema humile* (Mayr), is a worldwide agricultural and urban pest of Mediterranean and subtropical climates. They often displace native ant species when introduced into new areas. The Argentine ant is a tramp species that easily adapts to new environments and lives in close association with humans. The reason for its success is in part because *L. humile* has very large colonies, multiple queens, little intercolonial aggression, and expands their colonies through budding (sociotomy). Newly formed satellite colonies maintain contact with the original colony, workers and queens being exchanged. These colonies collectively form a supercommunity.

My research focuses on sociotomy and the factors that induce this phenomenon. Artificial colony boxes were coated with Teflon to prevent ants from escaping and furnished with food, water, and plaster nesting dishes. These boxes were connected with PVC tubing, providing ants pathways to new colony boxes. By manipulating the worker density, resource quality, and foraging distances among the boxes, the details of sociotomy were studied. Distribution and spatial analysis of workers and queens were analyzed with RxC tests of independence and the Kruskal-Wallis test.

In a foraging arena where the ants were given ample food and water in every box, the ants formed satellite colonies at the nearest potential nesting site. Once the original colony is saturated (294 ± 147) worker densities such as 1000, 3000, 5000 with five queens did not seem to be an important factor. The queens would form satellite colonies regardless of worker densities. When the foraging area contained an equal distribution of food, satellite colony formation mostly occurred at the nearest potential nesting sites (2 cases in 9 trials). In order to better simulate natural conditions, the foraging distances were increased from a maximum of 6 m to 24 and 37 m with food caches at the most distant points. A similar trend was observed with the majority of queens (80%-93%) either moving to the next nearest potential nesting site for a colony or staying in the original colony. However, queens were more willing to venture farther off to establish a colony when the only available food source was 24 or 37 m away.

In order to develop effective pest control strategies to control *L. humile*, it is important to understand the factors that initiate satellite colony formation. The data that I have gathered suggest that queens and satellite colonies will establish satellite colonies near to the original site when harborage is available nearby. Suitable harborage sites may be extremely important in the process of establishing satellite colonies. Elimination of these sites may reduce *L. humile* nests around structures.

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