Monomorium antarticum, Colony Nesting and Colony Response to Local Environment Perturbation

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Eligible for student prize

Here, we explore the nesting behaviour, internal brood transport and collective decision-making in response to an abiotic environmental disturbance in the common and endemic New Zealand ant, *Monomorium antarcticum*. Nests are located about 5-10cm below the ground surface, in a variety of multilinking tunnels, connecting brood filled cavities of various sizes. Because colonies naturally excavate in areas with damp soil, we asked under a rainfall stimulus 1) does the depth of the brood cavity affect *M. antarcticum* decision regarding which brood to move first; and 2) is this subterranean pattern repeatable over time? In the lab, we constructed three, soil filled (180g) ant-farms for each of the three colonies, and simulated regular rainfall by adding 30mL of water in 3mL increments across the surface of the ant-farm every other day. We recorded the distribution of brood throughout the colony at four different time points; before water, immediately after, 10min and 20min after, on three separate days. We observed great fluctuations in brood distributions across the four time points in most brood cavities and across all three colonies. During a rainfall event, brood-filled cavities near the soil surface quickly flooded and drained, yet we no found evidence that workers preferentially moved brood from chambers closer to the surface first, nor was there evidence of repeatable pattern. We conclude that brood transport in response to a rainfall event, in *M. antarcticum* is not necessarily a product of collective decision-making, but instead is more likely the result of individuals responding to temporary fluctuations in their immediate environment.