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# Faster transport through slower runs: ant relocation dynamics in nature

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Recruitment is a fundamental feature of animal societies and its efficiency largely depends on within-group communication. Insect societies are often populous and decentralised decisions need to be made by individuals with limited local information when time is of the essence. Recruitment of colony members to food, defence or to a new nest fall under this category. Colony relocation in tandem running ants is a particularly important case where only a small number of leaders possess information about the new nest and time is crucial, as longer exposure is detrimental to the colony's survival and reproduction. We investigated the programmes and positional effects of individual members during relocation of the Indian tropical ant *Diacamma indicum* in their natural habitat. Analysis of more than 1000 transports across eight relocating colonies reveals that they have a path efficiency of 85%. We found that transporters reoriented towards the target nest within seconds of initiation and tandem running in this species is so well organised that over 97% of transports reached their target nest without facing any interruption indicating that the communication between leaders and followers was exceptional. With an average speed of 3.8 cm per second these are the fastest tandem running ants recorded. We used mixed-effects model to understand the effect of patch heterogeneity and transport type on the speed and path efficiency of these ants and found that tandem leaders reduced their speed when traversing grassy patches and relied upon the slower coupled adult-brood transport. This investigation of ants performing tandem runs through heterogeneous terrains showcases the exceptionally efficient recruitment dynamics during colony relocation. In the next step, similar studies in the context of foraging and guarding in the natural habitat will be required to fully appreciate the recruitment capabilities of these superorganisms.

KEY WORDS: *Diacamma indicum*, Hymenoptera, path tortuosity, tandem running, ant navigation, transport efficiency.

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