

Nesting habits and colony composition of the hypogaeic army ant *Dorylus (Dichthadia) laevigatus* Fr. Smith

Abstract

Epigaeicly active species have set the standards for our understanding of army ant behavior. However, the majority of species leads a cryptic hypogaeic life. Being the first of the hypogaeicly foraging and nesting army ant species investigated in more detail, we studied the nesting habits and colony structure of *Dorylus (Dichthadia) laevigatus* in Malaysia. By monitoring the species' hypogaeic movements via oil baits we were able to locate and - for one colony - to excavate a nest. The location of the nest was not revealed by epigaeic excavation signs. Within the soil high densities of large and intermediate sized trails indicated the presence of nest cavities. Nest form and number of cavities varied with local conditions.

With an estimated colony size of 325,000 workers, the excavated colony was rather small for an army ant. Colony fragments were kept and observed in the laboratory, where emigrations and bivouac formation were documented. Worker morphological traits were measured, showing *D. laevigatus* to lack the large workers of some epigaeic species. In comparison, small workers were more common and conducted more tasks in *D. laevigatus* colonies than in epigaeicly foraging species. A description of the queen is provided. The simultaneous occurrence of brood of different developmental stages indicated a non-phasic brood production. Overall, the data obtained for the hypogaeic *D. laevigatus* were compared to known epigaeicly foraging *Dorylus* species.