COLLECTIVE EXPLORATION IN THE ANT *PHEIDOLE PALLIDULA*

Detrain Cl.

Senior Research Assistant at the National Fund for Scientific Research,
Laboratoire de biologie animale et cellulaire CP 160, Université Libre de Bruxelles, 50
Av. F. D. Roosevelt, 1050 Bruxelles (Belgium)

Collective patterns of exploration to new, unmarked terrains near the nest have been described in *Pheidologeton diversus* (1), *Iridomyrmex humilis* (2) and for the foraging swarms of army ants (3). In the laboratory, we have studied these exploratory collective behaviour in societies of the European polymorphic ant, *Pheidole pallidula*. Their nest is connected by a bridge to a chemically unmarked sand-filled arena (80X80 cm). During 90 min, photographs of this arena are taken every 3 min monitoring the time evolution of exploratory patterns. Experiments are repeated 5 times by changing the sand to re-induce exploration. The first minor workers explore randomly the new area, mainly the part closest to the nest. Recruitment is indicated by the logistical growth of minor explorers on the area. As the exploration increases, a well-paved trail takes shape linking the exploratory front to the nest. As a clearly defined way to the frontier of the unknown area, the exploratory trail allows a very efficient and fast territorial expansion of the *Ph. pallidula* colony. This collective exploration could also be involved in its food searching strategy. During one intense food recruitment to dead mealworms, a short exploratory trail has originated at the food source further away from the nest. In nature, such an exploratory activity in the vicinity of a food source could lead to the discovery of additional prey. Chemical similarities/differences between exploratory and food trails remain to be investigated.