

Finally, numerical taxonomic methods, particularly including cluster analysis (algorithm CAH2CO, ADDAD library), enabled us to classify the ants according to the levels of affinity between their individual behavioural profiles. This provided a sociogram for each colony, summarizing the distribution of tasks within each. Graphical representation utilized the methods of Bertin (1977). The distribution of main behavioural categories in each colony was analyzed for each of six recognized groups of ants, and related to circadian period to investigate rhythms in activity.

Colony-brood recognition

The experiment on brood recognition was performed after completion of the scanning observations.

Sets of workers from each colony were removed and established separately in glass test-tube artificial nests (diameter 16 mm), each with a water reservoir retained by cotton wool at its closed end. Two hours later, 10 large larvae from each colony were mixed and placed together near the open end of each tube. Each larva had been previously marked with a small piece of coloured plastic glued ventrally, to denote its source colony. The order was recorded in which larvae in each series were gathered by workers and carried deep into the nest (close to the water reservoir). Twenty-four hours later, four 10-minute observation sessions at 30-minute intervals were conducted (under red illumination) with each series. Larval-oriented behavioural acts by workers were scored, and later analysed to investigate differences in the relationships between the workers and nestmate *versus* non-nestmate larvae. Data were compared using Chi-square tests.

Results

Ethograms

The ethograms for both colonies constitute Table 1. Behavioural acts (including those directed towards the queen) are classified there in nine higher categories. Similar frequency scores for recorded acts are indicated for both colonies, and the behavioural profiles of the two are not significantly different (Kolmogorov-Smirnov test). The three behavioural acts of the category *Self* comprise about 80% of the totals recorded for both colonies, with *Immobility inside nest* alone covering 65% of the relevant records. The frequencies of social interactions between workers, or between workers and queen, were remarkably low. Recordings of all interactive behavioural acts between adults in fact represent less than 1% of the total in both colonies.

A queen was observed once to feed directly on haemolymph exuding from a masticated *Drosophila* corpse retrieved by her from the nest floor (Fig. 1). The fly had been previously captured and stung in the foraging arena, and transported into the nest chamber by a worker. No other form of feeding by queens was noted during this study, and none has been observed by other investigators during many accumulated hours of systematic and casual observations of *N. macrops* colonies in artificial nests