

colony 1. This was possibly related to the fact that *Drosophila* flies released in the foraging arena sometimes penetrated the nest entrance, where guard workers caught them and carried them deeper into the nest (such behaviour would have been recorded as *Carrying prey inside nest*, not as *Foraging*).

- 2) Concerning brood-tending behaviours. *Standing upon spinning larva* was almost exclusively present in colony 1. This, we consider, relates to the greater crowding, and high worker: pupa ratio in colony 1. Behavioural acts involving the tending of pupae were almost three times as frequent in colony 2 than in colony 1, but this corresponds to the ratios of pupal numbers between the two colonies.

Finally, it is remarkable that, despite different global numbers of brood (much higher in colony 2) the time budget dedicated to brood-tending acts was nearly the same in both colonies (11,68% and 11,65% respectively). This implies that the nursing behaviour of workers in colony 2 was biased towards pupal brood.

### *Sociograms*

The sociograms for both colonies (Fig. 2, 3) confirm a high level (approximately 75%) of self-oriented behavioural acts, expressed there in whole-colony settings. Differences between the six recognized worker-groups are evidenced. Behavioural acts involving the care of larvae and guarding of the nest entrance were substantially more prominent than elsewhere in groups 1 and 4 of colony 1, and groups 1, 2 and 3 of colony 2.

The queens were assigned to group 5, which was the largest and most behaviourally inactive set in both colonies. A co-presence index was developed, based on the probability of individual workers being recorded in the same chamber as the queen. Its values range from 0 (never in the queen's chamber) to 1 (always there). This index was generally lower than 0.5 for individuals of most behavioural groups. The exceptions were members of those groups which provided all records of allogrooming directed toward the queen. Their high co-presence indices clearly proceed from their regular close proximity to the queen, and indicate that they constitute a functional 'royal retinue'. All queen allogrooming in colony 1 was provided by the 3 workers of group 6. They had a mean co-presence index of 0.71, *versus* 0.22 to 0.53 for workers of other groups. In colony 2, queen allogrooming was performed by some brood nurses of group 2 (co-presence index = 0.69). Members of other groups had a lower intra-group co-presence index (0.10 to 0.44), as in colony 1.

The nine main behavioural categories were not equally distributed among the 6 defined worker groups. Only one, *Guarding the nest entrance*, evidenced a high degree of specialization among its executors (see the colony 1 sociogram, Fig. 2). This provides evidence of a limited, weak tendency towards division of labour among *Nothomyrmecia* workers. Tending behaviours and foraging (in colony 1) were generally distributed across almost all behavioural groups. The few more-or-less specialist nest-entrance guards identified above (group 4 in colony 1 and groups 3 and 4 in colony 2) were, however, clearly exceptional, since they participated only marginally in the tending of larval or pupal brood.