

Discussion

The very high level of inactivity (termed *Immobility* in Tab. 1) in both of our *Nothomyrmecia* colonies is striking. It provided 2/3 of all our recorded behavioural acts. Table 3 compares with those of other studies involving ponerine and myrmecine ants (of the genera *Amblyopone*, *Diacamma*, *Dinoponera*, *Ectatomma*, *Pachycondyla*, *Neoponera* and *Myrmecia*) in which techniques identical to ours were used. Interestingly, *Amblyopone pallipes*, which may be considered the most socially primitive of this set, is also closest to *N. macrops* in its level of observed inactivity.

The extremely low level of social interactions in *Nothomyrmecia*, when compared to *Pachycondyla* and *Ectatomma* (Tab. 3), is also of special interest. We believe that it relates partly to the large distances of separation reported elsewhere between individual ants stationed in *N. macrops* nests (Jaisson et al., 1991). *Nothomyrmecia* adults stand separated to a degree remarkable when compared with other ants, including those of several observed *Myrmecia* species (Fresneau et al., unpublished data). This lack of sociability might be a correlate of the generally hypothecated primitive eusocial status of *N. macrops*.

The apparent absence of any systematic mechanism for transfer of food from workers to queens further exemplifies the general tendency towards individuality in *Nothomyrmecia*. It can also be considered a significantly primitive attribute of this remarkable ant. In effect, evolution of eusociality to the level represented by *Nothomyrmecia* seems not to have incorporated special measures for sustenance of the permanently nest-enclosed queen, a matter which might otherwise have been considered a major adaptive problem for the earliest eusocial formicids. Queen sustenance could hardly be more simply effected than in the manner observed here, and no special adaptations seem to have been involved in its evolution to this stage.

This contrasts with observations on several *Myrmecia* species, where the consumption by queens of worker-laid trophic eggs is well documented, along with the transfer of trophic eggs between workers, and from workers to larvae (Freeland, 1958). Trophallaxis has been reported in *Myrmecia regularis* Crawley, *M. vindex*

Table 3. Review of available data on immobility, recorded by similar techniques on various ant species belonging to three primitive subfamilies

Species	Immobility level	Reference
<i>Amblyopone pallipes</i>	0.418	Lachaud et al. (1988)
<i>Diacamma</i> sp.	0.279	Dhabi and Jaisson (unpub.)
<i>Dinoponera quadricaps</i>	0.152	Dantas et al. (1988)
<i>Ectatomma quadridens</i>	0.299	Rubin et al. (1989)
<i>E. ruidum</i>	0.206	Corbara et al. (1986)
<i>Pachycondyla apicalis</i>	0.325	Fresneau and Dupuy (1988)
<i>P. obscuricornis</i>	0.288	Fresneau (1984)
<i>P. villosa</i>	0.287	Perez et al. (1985)
<i>Myrmecia croslandi</i>	0.277	Fresneau et al. (unpub.)
<i>M. fuscipes</i>	0.283	Fresneau et al. (unpub.)
<i>Nothomyrmecia macrops</i>	0.656	this paper