

Anatomical considerations (especially the single waist node and non-tubulate abdominal segment IV, with stridulatory organ located ventrally) have supported taxonomic separation of *Nothomyrmecia* from the significantly primitive Australian subfamily Myrmeciinae (currently with the single extant genus *Myrmecia*). This led to reinstatement in 1978 of Clark's originally proposed, but subsequently subsumed, subfamily Nothomyrmecinae, despite the recognition of substantial affinity between *Myrmecia* and *Nothomyrmecia* (Taylor, 1978; Bolton, 1990; Hölldobler and Wilson, 1990).

The cuticular hydrocarbons of *Nothomyrmecia* contain internally branched, internal alkenes, a remarkable feature unique not only among ants (including *Myrmecia*), but insects in general (Brown et al., 1990). The sting apparatus of *Nothomyrmecia* appears to possess more derived characters than in *Myrmecia* (Kugler, 1980).

Conversely, the structures and secretions of several pheromonal glands in *Myrmecia* are similar to those of *Nothomyrmecia*, and have been held to support the classification of both genera in subfamily Myrmeciinae (with the synonymy of subfamily Nothomyrmecinae) as in W. L. Brown's (1954) classification (Billen, 1988, 1990; Billen et al., 1988). A further similarity between these ants is the presence of a true spermatheca in all workers of both genera (Hölldobler and Taylor, 1983; Crosland et al., 1988).

Nothomyrmecia has the highest chromosome number known for the Hymenoptera ($2n = 94$), and one of the highest of phylum Arthropoda. *Myrmecia* has species with numbers almost as high (known maximum $2n = 84$ in *M. brevinoda* Forel). It also has the greatest interspecific range of chromosome numbers known for any relevantly studied animal genus, including the exceptional $2n = 2$ of *M. croslandi* Taylor, the lowest number possible in a eucaryote (Imai et al., 1991; Taylor, 1991). The significance of chromosome numbers in assessing the relationship between *Myrmecia* and *Nothomyrmecia* is thus not clear.

N. macrops has been referred to as a 'living fossil' (Taylor, 1978), and called 'the dinosaur ant' (Bartell, 1985). The implications of these epithets are supported by its cryptic habits, for example a preference to forage individually after dusk and in relatively low temperature conditions (Taylor, 1978; Hölldobler and Taylor, 1983), or the long periods (sometimes exceeding half an hour) spent in a cataleptic position by foraging workers when released in the field after being held with forceps for only a few minutes (Jaisson, *pers. obs.*).

Inter-nest tolerance in *N. macrops* seems much more pronounced than in other ant species, whether 'primitive' or 'advanced'. In the field, workers from different colonies may forage on the same small tree trunk without antagonism, and individuals from distant nests quickly settle when artificially mixed, even when the queen of one group is present (Taylor, 1978; Hölldobler and Taylor, 1983). Enzymatic electrophoresis has demonstrated that intra-colony relatedness is rather low (Ward and Taylor, 1981), perhaps supporting the possibility that workers might at times join nests other than their own, as implied by the experiments of Hölldobler and Taylor (1983). The blends of cuticular hydrocarbons analysed for three *Nothomyrmecia* colonies were very similar (W. V. Brown et al., 1990), and this might be a factor related to between-nest toleration.