

**Factors Influencing Ant Assemblages and Ant Community  
Composition in a Sub-tropical Suburban Environment**

**2001**

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## Abstract

The main objective of this study was to examine the abundance and diversity of ants in suburban sites following vegetation removal or modification for development. This research examines the capacity of suburban sites to support ant diversity, which is dependent on the site characteristics and their surrounding environment. The study focused on 29 suburban garden and 3 suburban reserve sites on the Gold Coast, Queensland, Australia. This region, through continuing land development, undergoes ongoing habitat disturbance and modification.

Ground-dwelling ants were collected by pitfall trapping in study sites over three summers between 1997 and 1999. In total, 28,512 ants from 60 species in 31 genera were collected.

Garden sites that maintain vegetation structural diversity were found to be most similar to reserve sites in terms of ant community composition. These sites were highest in ant richness and diversity and contained particularly high proportions of specialized ant species. Sites in close proximity to remnants of native vegetation contained higher species diversity and a greater proportion of specialized ant species.

The introduced tramp ant, *Pheidole megacephala* was found in 28 of the 32 sites and was found to significantly reduce ant species richness and diversity and displace the dominant ant *Iridomyrmex* sp. 1 in suburban environments. This ant poses a serious threat to the recovery of a diverse ant fauna to suburban environments.

Ant community composition was shown to vary significantly among suburban sites. The ant functional groups commonly found in disturbed sites were abundant in open sites with little canopy cover in this study. Sites that provided vegetation structural diversity and areas of closed canopy supported similar

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functional groups to natural vegetation remnants. These results indicate that ant communities in suburban environments respond to disturbance in a similar manner to ant communities in tropical forests and rainforests. The dominance by functional groups and presence of specialized species may therefore be used as an indicator of disturbance and the restoration of suitable habitat in suburban sites.

The presence of specialized species of ants in suburban garden sites and their clear preference for particular site characteristics indicate that these species utilize resources available in the suburban matrix. These results indicate that residential suburban sites are of value in the enhancement of ant diversity in fragmented landscapes and that they may provide supportive habitat to, and act as corridors between, vegetation fragments.

In order to preserve biodiversity within suburban environments, landowners should be advised to retain as much existing vegetation within a site as possible. Clearing should be limited to that necessary to allow construction of dwellings and for safety. In addition, landowners should be encouraged to establish or maintain structurally diverse vegetation layers within sites in order to provide diverse microenvironments for fauna habitat.

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## **Declaration**

The work contained in this thesis has not previously been submitted for a degree or diploma in any university. To the best of my knowledge and belief, except where acknowledged, this thesis contains no material published or written by another person.

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Elizabeth Anne Clough

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