

# The structure of dominance hierarchies in the primitively eusocial wasp *Ropalidia marginata*

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Received 19 September 2000, accepted 13 March 2001

In queenright colonies of the old world tropical primitively eusocial polistine wasp, *Ropalidia marginata*, queens are behaviourally docile and subordinate individuals. Yet, they are completely successful in suppressing reproduction by all nestmates. Here we show that dominance hierarchies in queenright colonies are never significantly linear but, in the queen determination stage, when new queens use overt physical aggression to establish their status, dominance hierarchies among the same individuals are significantly linear. This striking difference in the structure of dominance hierarchies in queenright colonies as compared to the queen determination stage, is consistent with the previously postulated hypothesis that, while dominance behaviour functions to regulate worker reproduction in the queen determination stage, the same behaviours are used by the workers to regulate each others' foraging in queenright colonies.

KEY WORDS: *Ropalidia marginata*, social wasp, dominance hierarchy, linearity of dominance hierarchy, reproductive conflicts, regulation of foraging.

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## INTRODUCTION

*Ropalidia marginata* is an old world, tropical, primitively eusocial, polistine wasp abundantly distributed in peninsular India. New nests may be initiated by one or by several female wasps. In single foundress nests, the lone foundress lays eggs

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