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RESEARCH ARTICLE

A comparison of the autecology of two seed-taking ant genera, *Rhytidoponera* and *Melophorus*

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Abstract Members of the genus *Rhytidoponera* and, to a lesser extent, certain *Melophorus* spp. are keystone mutualists for the dispersal of seeds in the southwest of Western Australia, with important ramifications for the ecology and speciation of plants in this biodiversity hotspot. For this reason, it is important to understand the autecology of the relevant ant species and the way in which they interact with plant seeds. This paper addresses key aspects of the ecology of three such ant species, *Rhytidoponera violacea* (Forel), *R. inornata* Crawley and *Melophorus turneri perthensis* Wheeler. Data are presented on their geographic distribution, seasonality of foraging, diurnal activity, response to fire, nest site preference, nest structure, colony size, feeding habits, foraging response to seed availability, and seedling emergence from nests. The role of all three species as seed dispersers is confirmed, and all three species have ecologies that are well-suited for dispersal and survival of native plant seeds. Preservation of this interaction is important for the conservation of plants, and it is fortuitous that all three species are able to survive disturbance and return to rehabilitated areas. However, the smaller *R. inornata*, and to a lesser extent, the larger *R. violacea,* are vulnerable to invasive ant [*Pheidole megacephala* (Fabricius)] incursions. *M. turneri perthensis* is able to coexist with the invasive ant unless this is at high densities, probably as a result of its ability to forage during high temperatures when the invasive species is inactive.

Keywords Myrmecochory · Seeds · Nests · Foraging · Fire

Introduction

Although the advent of insect pollination of flowers is known to have been a driver of angiosperm diversification, seed dispersal by organisms such as ants has also been implicated, but not proven. Seed dispersal by ants (myrmecochory) may drive diversification by reducing extinction, hence providing selective advantages to plants, and by increasing speciation as a result of geographical isolation associated with extremely limited dispersal distances (Dunn et al., 2008). Lengyel et al. (2009a, b) tested the hypothesis that myrmecochory leads to higher diversification rates in angiosperm plants by comparing richness of plants in sister groups that were ant-dispersed or dispersed by other means. They found that ant-dispersed lineages contained on average more than twice as many species as did their non-myrmecochorous sister groups, suggesting that myrmecochory is a key evolutionary innovation and a globally important driver of plant diversity.

The Australasian ant genus *Rhytidoponera* is recognised as a keystone mutualist for dispersal of myrmecochorous

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