Relatedness Within and Between Colonies of a Queenless Ant Species of the Genus Rhytidoponera (Hymenoptera: Formicidae)*

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Received: 1985-01-02/1985-11-27 Accepted: 1985-12-25


Using genetic markers, low but statistically-significant relatednesses within and between colonies of Rhytidoponera Mayr 1862 sp. 12 (near R. mayri Emery 1883) were found. One colony examined had 23 mated individuals. Movement of ants was observed between some colonies, and hostility between others.

1 Introduction

1.1 A definition of queens

The evolution of social insects is essentially the evolution of the queen-worker dichotomy, with one of the characters defining eusociality being reproductive division of labor between females. Those species that have lost queens could therefore reasonably be said to have lost workers as well. “Queens” [♀] could thus be defined as individuals of distinctive morphology (larger body size, larger ovaries etc) conferring greater reproductive potential (not always realised) than the others (“workers” [♂]).

Reproductive function of itself does not, according to convention, suffice to have the individuals concerned called ??, given that the ð-producing ¿ of many ants, the thelytokous ¿¿ of others (including the Cataglyphis discussed by Lenoir & Cagniant [1986: 11(3/4): 153–157]), and the non-soldier aphids of Pemphigidae colonies have not yet, as far as is known, ever been called “queens”. Conventions, of course, can change – the reproductive individuals of pemphigid colonies are both morphologically and functionally distinct from the “soldiers”, and hence logically are queens. As for many other characteristics of organisms, intermediate stages occur in the evolution of ?? and ¿¿. In primitively eusocial species this reproductive division of labor involves little morphological distinction between reproductive and non-reproductive ??, which differ most in behavioral differences acquired as adults. In several lineages of social insects evolution has resulted in strong morphological differentiation of the ♂ and ♀ castes. In spite of this morphological differentiation, the ¿¿ of some of these species have retained their ability to mate and to reproduce, giving the colonies of such species the capability to persist without ?? – the production of fertilized eggs being carried out by mated ¿¿, termed gamergates by Peeters & Crewe [1984]. This has led in some instances


0171-8177/86/0011-0113 $ 1.25
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DOI:10.1127/entom.gen/11/1986/113
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