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THE DETERMINANTS OF DOMINANCE IN A PRIMITIVELY EUSOCIAL WASP

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In many species of primitively eusocial wasps the position of an animal in the dominance hierarchy determines its role in the colony. *Polistes gallicus*, in which dominance hierarchies play an important role in social organisation, is the only species where an attempt has been made to study the determinants of dominance (1). Although an animal's position in the dominance hierarchy has been postulated to be less important in *Ropalidia marginata* (2), dominance hierarchies do exist and dominant-subordinate interactions are quite common (3). It may hence be of interest to study the determinants of dominance in this species. We have therefore begun to study the effects of body size, age, social experience and other factors in making an animal dominant or subordinate. We have maintained pairs of female *R. marginata* in laboratory cages and made behavioural observations to identify the dominant member and the egg-layer of each pair.

The following conclusions emerge from the first set of such experiments :

1. There is a positive correlation between behavioural dominance and egg laying ability. In 12 out of 14 experiments, the wasp which was dominant laid eggs. ($p = 0.012$, Sign test).
2. Body size is unlikely to be a determinant of dominance because in only 8 out of 17 experiments the larger animal was dominant.
3. Similarly body size is unlikely to influence an animal's ability to become an egg-layer because in only 6 out of 14 experiments the larger of the two wasps became the egg-layer.
4. The age of an animal may influence its chances of becoming dominant because in 16 out of 22 experiments the older of the two animals became dominant. ($p = 0.05$, Sign test).

1. Roseler, P.-F., Roseler, I., Strambi, A. and R. Augier. 1984. Behav. Ecol. Sociobiol., 15:133-142.
2. Chandrashekara, K. and R. Gadagkar. *this volume*.
3. Premnath, S., Chandrashekara, K., Chandran, S. and R. Gadagkar. *this volume*