
Intriguing chemical mediation between the European palm and its specialized pollinator

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Abstract

Whereas floral scents are acknowledged to be important for communication between plants and pollinators, relatively little is known on intraspecific variation in scent composition and quantity, in particular in plants with specific pollination, for which one often implicitly considers the signal to be fixed within species. In this study, we focused on dioecious *Chamaerops humilis*, the European palm, which pollination system shows several interesting features. The plant is pollinated by only one insect species, *Dereolumus chamaeropsis*. Insects visit both female and male palms, finding food and egg-laying site in inflorescences but only eggs laid within male inflorescences can develop, female palms thus being pollinated by deceit. Finally, previous studies showed that pollinators were attracted by scents released by leaves, and not flowers. We studied the characteristics of these "floral" scents in 8 populations in three different regions, investigating possible variation among regions, populations and between males and females. We found that males tended to release higher quantities of scents than females. Such sexual dimorphism is consistent with sexual selection acting on attractive signals, as it has been suggested in several dioecious species. However, scent composition was similar between sexes, which should prevent pollinators to avoid visiting females that do not offer rewards in terms of site for larval development. We also found important variation in scent composition among individuals both among and within natural populations, which clearly questions which part of the signal is used by specialized pollinators to locate their host plants.

Keywords: floral scents, dioecy, sexual dimorphism, pollination

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