An overlooked syndrome of deceptive pollination: Mimicry of food sources for attracting females of anautogenous flies

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An overlooked syndrome of deceptive pollination: Mimicry of food sources for attracting females of anautogenous flies

Valentin Vrecko[1], Magali Proffit[1], Aroonrat Kidyoo[2], Doyle McKey[1], Rumsais Blatrix[1]
[1]CEFE, University of Montpellier, CNRS, EPHE, IRD, CEDEX 5, 34293 Montpellier, France
[2]Plants of Thailand Research Unit, Department of Botany, Faculty of Science, Chulalongkorn University, Pathumwan, Bangkok 10330, Thailand

Traditionally recognized pollination syndromes are often too broadly defined to represent the diversity of plant-pollinator interactions, particularly in plants that deceptively attract insects by mimicking resources they seek. Within such interactions, we document a distinct but previously ill-defined deceptive pollination strategy in which plants exploit the protein-seeking behavior of females of anautogenous Diptera by olfactorily mimicking their insect prey. We show that this strategy characterizes at least 97 plant species from seven families, pollinated by females of three dipteran families, Ceratopogonidae, Chloropidae and Milichiidae. Comparison of floral odours based on compound identity and structural similarity revealed floral traits that characterize a hitherto undescribed pollination syndrome. Interestingly, related plants of three of these families emit a different set of floral volatiles to attract flies of other families in brood-site mimicry pollination systems. Our findings open new avenues, from both methodological and conceptual perspectives, for understanding the evolution of specialized pollination systems.

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