The context dependency of pollinator interference: how environmental conditions and species abundances impact floral visitation

Alba Cervantes-Loreto[1], Carolyn Ayers[2], Emily Dobbs[2], Berry Brosi[3], and Daniel Stouffer[1]

[1]University of Canterbury
[2]Emory University
[3]University of Washington

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Abstract

Pollinator foraging behavior determines floral visitation rates, an important proxy to the strength of mutual- istic interactions. Although there is evidence that pollinators modify their behavior in the presence of other foragers, there are equivocal findings regarding whether or not pollinators interfere with one another. We employ a functional-response framework to analyse experimental data of times between floral visits made by a focal pollinator and to estimate pollinator interference by conspecifics and three other species. Additionally we develop and compare models that allow different levels of resource availability and the sub-lethal exposure to a neonicotinoid pesticide to modify how pollinators forage alone and with co-foragers. We found that all co-foragers interfere with a focal pollinator under at least one set of abiotic conditions; for most species, interference was strongest at higher levels of resource availability and with pesticide exposure. Overall our results highlight that density-dependent responses are often context dependent themselves.

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