Does it compensate to show off?

Pollinator selection on floral traits in a natural hybrid zone of two generalist plant species

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Introduction

Hybrid zones often present a striking profusion of flower morphologies. Floral traits may profoundly influence the formation and fitness of hybrids through the effect on pollinator behaviour. However, the role of pollinator preferences in hybrid zones between highly generalist species remains unknown.

Objectives

To explore the role of pollinator preferences on floral traits in a natural contact zone. For that we investigated floral trait variation on a natural hybrid zone of *A. clavatus* and *A. valentinus* and assessed the number and type of pollinator visits on each phenotype. Furthermore, we performed phenotypic manipulations of floral morphologies for a better understanding of pollinator preferences.

Study system

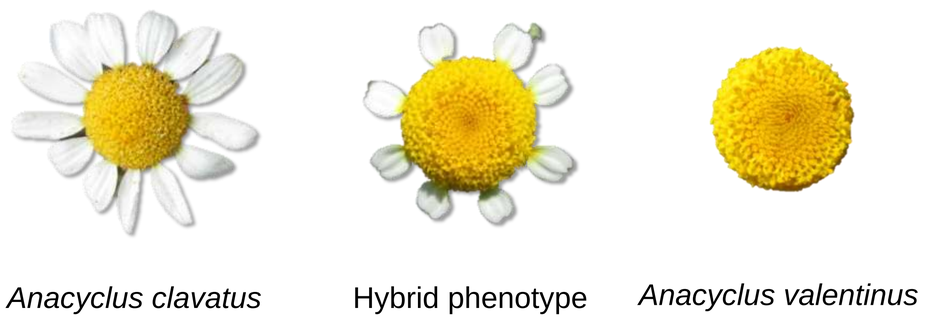
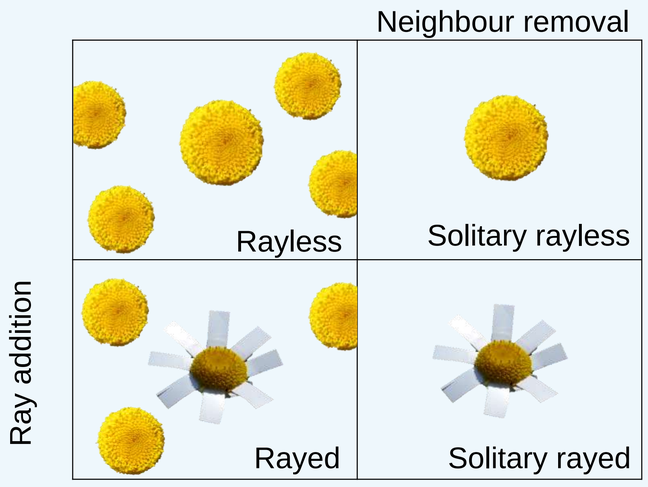


Figure 1. **Natural hybrid zone** of two **generalist species** with contrasting phenotypes: rayed (*A. clavatus*) and rayless (*A. valentinus*), an ideal microevolutive framework to explore how generalist pollinators are driving the evolution of floral phenotypes.

Experimental design

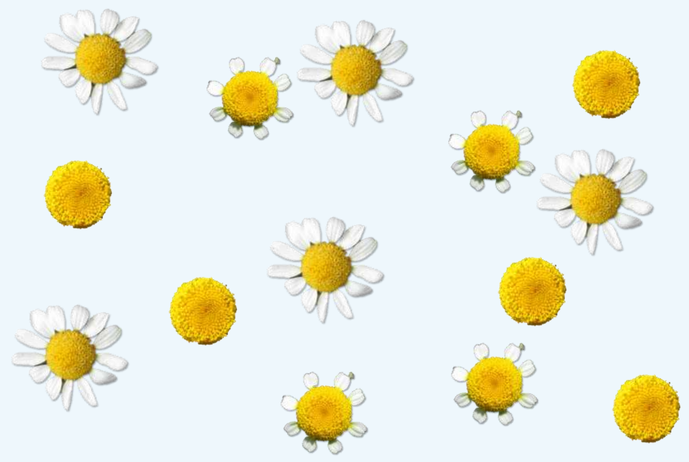
***Anacyclus valentinus* pure population**

RAY ADDITION EXPERIMENT



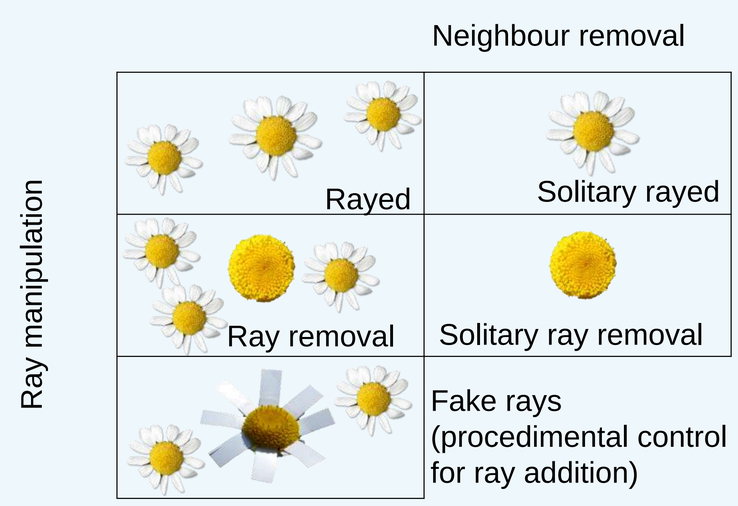
Natural hybrid site

NATURAL PHENOTIPIC VARIABILITY



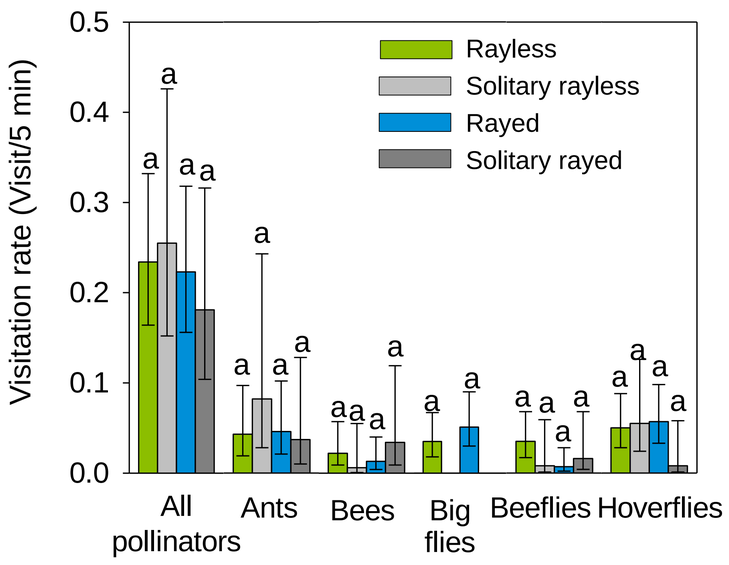
***Anacyclus clavatus* pure population**

RAY REMOVAL AND ADDITION EXPERIMENT

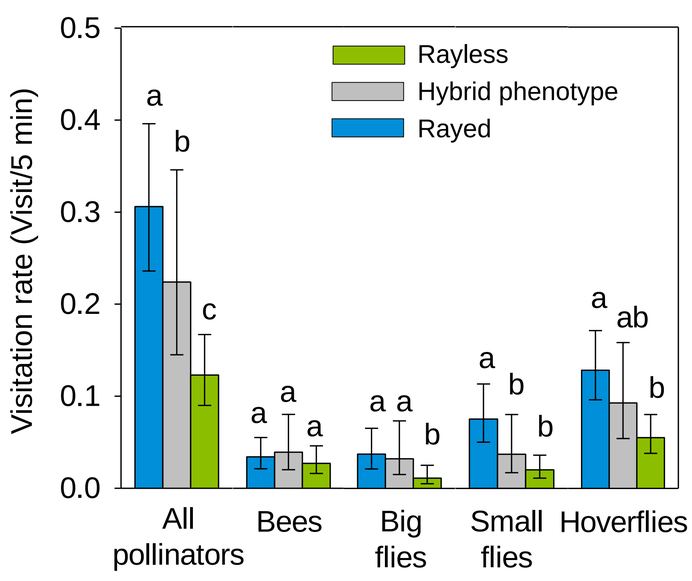


Results

No clear pollinator preference was observed, except beeflies which preferred rayed phenotype



Rayed phenotypes received more pollinator visits than rayless, mainly due to preferences by different guilds of Diptera



No pollinator preference was observed between the phenotypes

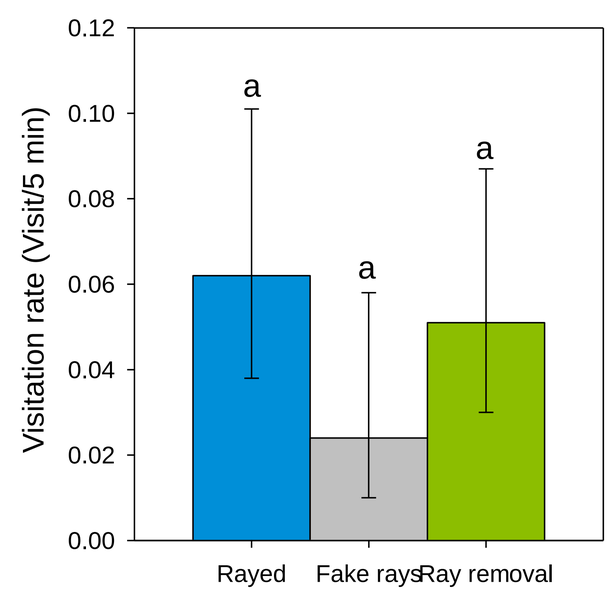


Figure 2. Least square means (± confidence interval) of pollinator visits on our pure rayless population, natural hybrid size and pure rayed population respectively. Means sharing the same letter were not significantly different at $P < 0.05$.

Conclusion

In the natural hybrid site the **presence of rays increased the visitation rate** of some pollinator guilds, in particular, different functional groups of Diptera (such as, hoverflies, beeflies, big and small flies). However, this pattern was not so clear in the manipulative experiments. This pollinator behavior might reduce the gene flow between both phenotypes influencing the dynamics of the contact zone.

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