

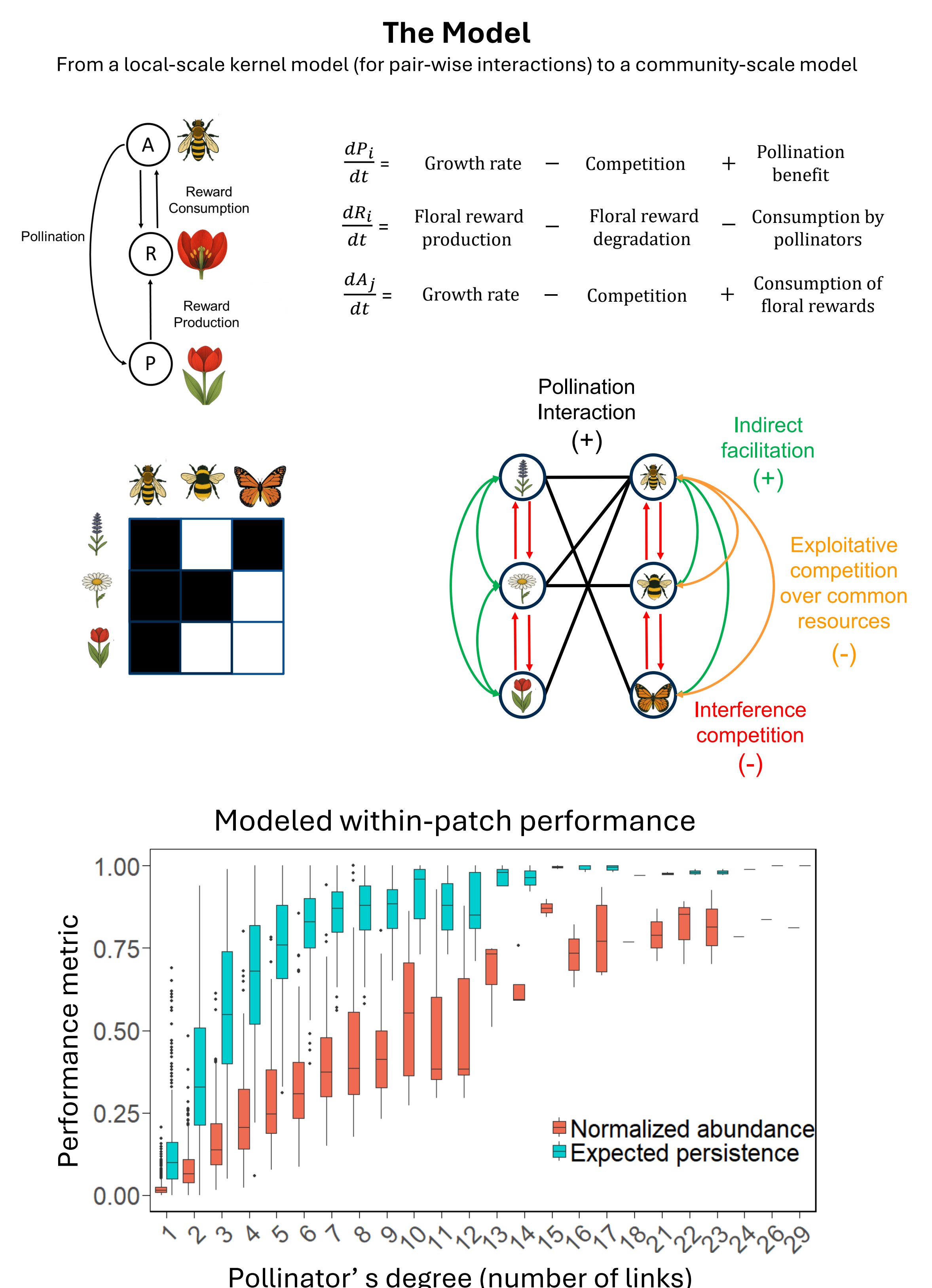
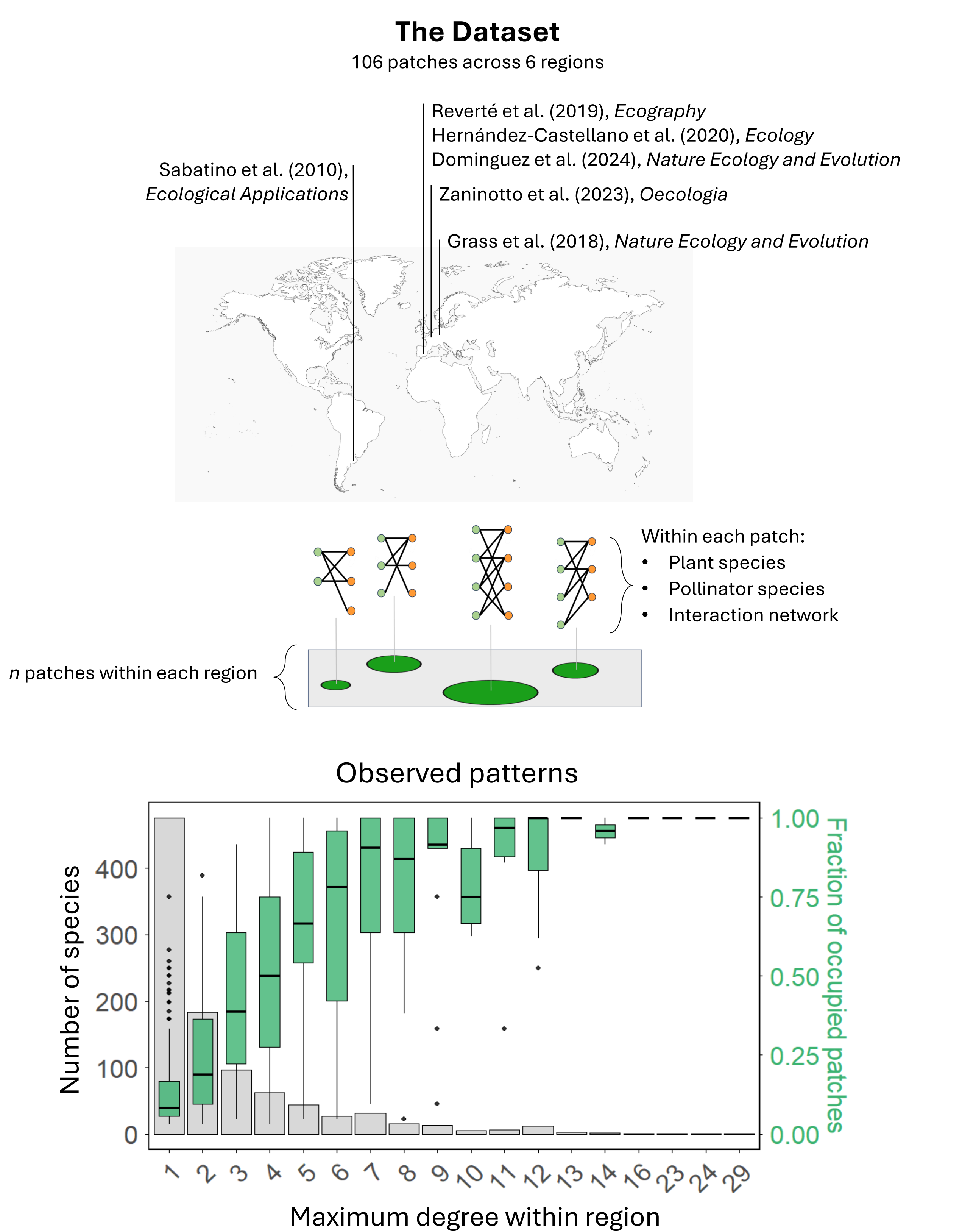
# How specialization drives pollinators' abundance, persistence and rarity: insights from an ecological model

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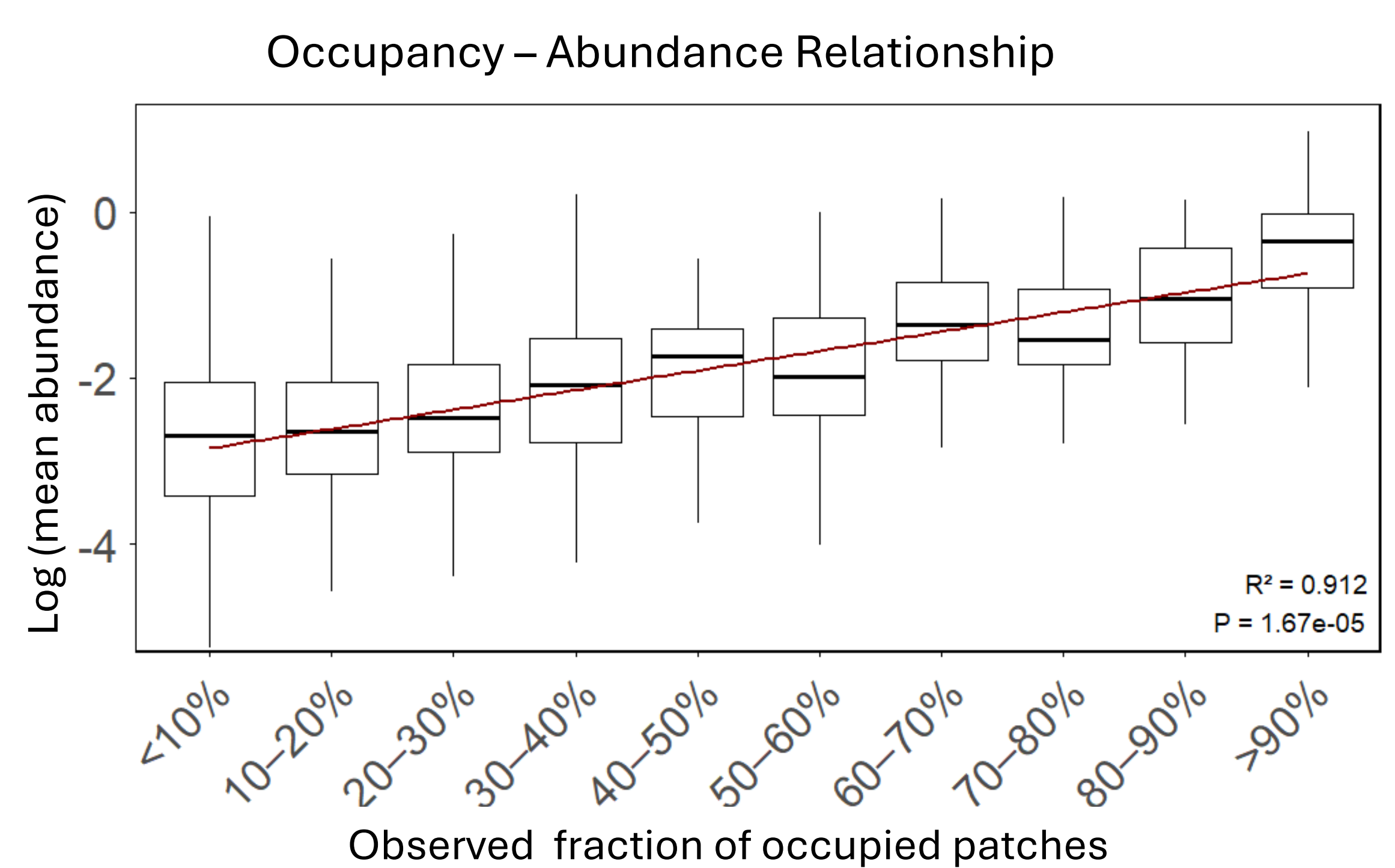
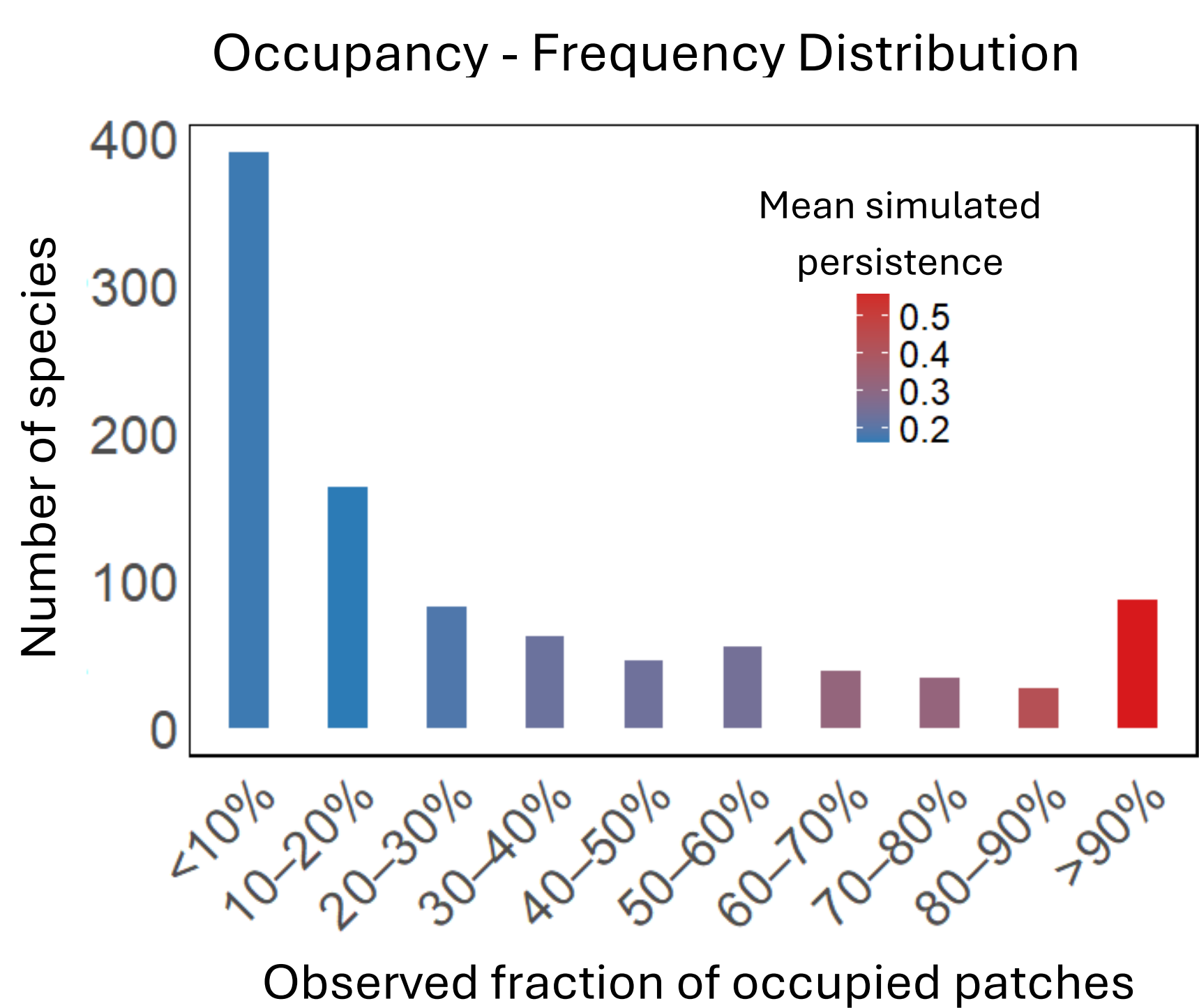
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## Introduction

The functioning of plant-pollinator mutualistic networks is crucial for ecosystem services and biodiversity maintenance. These communities are, however, heavily affected by both global and local scale environmental and human-induced changes. We propose an ecological, process-based mathematical model describing the dynamics of pollinators and plants, properly mediated by reward resources. Our model explicitly accounts for the major interactions of both facilitative and competitive nature that occur both within and between the two guilds. We apply our model to a broad set of real communities to investigate the mechanisms that link the architecture of the interaction networks, the pollinators' temporal persistence and abundance at the community level, and their rarity at the landscape level.



## Comparing observed spatial pattern with simulated abundance and persistence



## Conclusions

- The degree of specialization of wild pollinators is strongly linked to extinction probability and rarity at the landscape level.
- A few generalists form a core of species with high persistence, abundance and patch occupancy, while specialists have low abundance, low persistence and high turnover between patches.
- Specialists, however, are crucial to maintaining high levels of biodiversity within the community