


Twelfth International Symposium on Pollination (ISPXII)

16 - 20 October 2023

Kirstenbosch Botanic Gardens, Cape Town, South Africa

UNDERSTANDING INSECT POLLINATOR DYNAMICS IN THE AGRICULTURAL HIGHLANDS OF GUATEMALA

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ABSTRACT

The importance and economic value of pollination for agricultural and natural systems has been emphasized by many studies in recent decades. Insects are the main pollinating animals, and bees are considered the most important group. Recent evidence points out the importance of wild bee populations in maintaining the pollinating process and the genetic diversity and productivity of natural and agricultural systems. Forest degradation, pesticide overuse, and habitat loss are factors that threaten pollinator populations. The adequate landscape management and the diversification of plant communities through changes in agricultural practices, are alternatives that can contribute to reducing the pollinator crisis. Although, the pollinator situation in tropical highlands has been scarcely studied.

During the last ten years, we have worked on understanding the relationship between land use, agricultural practices and environment on pollinator communities and pollination services in the Guatemalan highlands. We have addressed the subject from different perspectives: we evaluated the effect of landscape structure and land use on diversity and composition of bee populations, its plant-pollinator interactions, and the pollination service itself, measured as the reproductive success of the common turnip, Brassica rapa L. (Brassicaceae). We also assessed the effect of small-scale land use and practices on local pollinator communities. Overall, our results highlight the importance natural vegetation and non-intensive practices in maintaining viability of natural pollinator populations, their interactions, and the pollination service in agricultural areas of the tropical highlands.