

Poster 70

## Guardians of the flora: the peril of pesticides in Caatinga to native bees behaviour

Isabel Oliveira Abreu<sup>1</sup>, Cláudia Teixeira<sup>1</sup>, Jefferson Alves dos Santos<sup>2</sup>, Jaíne Santos Rebouças<sup>2</sup>, Maiara Janine Machado Caldas<sup>2</sup>, Carlos Alfredo Lopes de Carvalho<sup>2</sup>, Laura Guimarães<sup>1</sup>, Nuno G C Ferreira<sup>1,3,\*</sup>

<sup>1</sup> CIIMAR - Interdisciplinary Centre of Marine and Environmental Research, University of Porto, Av. Norton de Matos, s/n, Matosinhos, Portugal

<sup>2</sup> UFRB – Universidade Federal do Recôncavo da Bahia, Campus Universitário, Cruz das Almas-BA, 44380-000, Brazil

<sup>3</sup> School of Biosciences, Cardiff University, Museum Avenue CF10 3AX, Cardiff (Wales- UK)

\* Correspondence: nuno.ferreira@ciimar.up.pt

### Abstract

**Background:** The impact of pesticides on bees and the devastating effects of pesticides evokes a sense of urgency and concern among scientists and environmentalists alike [1]. Once hailed as agricultural saviours, pesticides now threaten bee populations globally. Neonicotinoids and organophosphates harm bee behaviour, hindering navigation, foraging, and reproduction. Sublethal doses further weaken bees, impacting survival and pollination efficiency [2]. These disruptions not only affect plant reproduction but also threaten the bee-plant relationship [3]. The cumulative effects of pesticides, alongside other stressors, pose a significant challenge to bee populations and the vital ecosystem services they provide, but they are yet unknown to many compounds and bee species. **Objective:** This study investigates the potential sublethal effects of the acaricide fenpyroximate on the behaviour of native bees in the Caatinga biome. **Methods:** Bees of the species *Melipona quadrifasciata* were exposed to sublethal doses of fenpyroximate, a common fungicide employed in the Caatinga region, under controlled conditions for 24 hours: 0.028 µg/bee (2.5% recommended field application dose) and 0.56 µg/bee (50% recommended field application dose). Following exposure, bee behaviour was recorded for 5 minutes, and the following parameters were analysed: percentage of time moving, average speed, average speed moving, travelled distance, meander, and explored area. **Results:** Our findings demonstrate significant alterations in bee behaviour at 0.56 µg/bee (half of the recommended field application dose) but not at 0.028 µg/bee. The most pronounced effects were observed on the speed and explored area, while no significant changes were detected for parameters such as the percentage of time moving or meandering. **Conclusions:** This study highlights the importance of incorporating behavioural assays in bee toxicity testing. Although we observed no immediate mortality at the tested doses, fenpyroximate impacted bee behaviour. These findings support the use of behavioural tests as a valuable tool for assessing the sublethal effects of pesticides.

**Keywords:** biodiversity; Caatinga biome; conservation; native bees; resilience

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