

## Drifting behaviour and colony health in social bees

### Supervisory team:

**Main supervisor:** Dr Christoph Grueter (University of Bristol)

**Second supervisor:** Dr Emily Bell (University of Bristol)

**Collaborators:** Ana de Lima (Meli-Bees)

**Host institution:** University of Bristol

### Project description:

Bees are important pollinators of wild and agricultural plants. Among the most important pollinators in temperate regions are honeybees (*Apis mellifera*) and, in the tropics, the stingless bees or Meliponini. People keep bees in apiaries to facilitate beekeeping and pollination. For traditional communities in the Amazon, beekeeping of native Brazilian stingless bees is of both economic and cultural importance as bees provide food, income and medicinal products.

Bees face a cocktail of anthropogenic stressors, including pesticides, climate change, emerging pathogens and habitat destruction. In the long term, the interactions among these stressors can lead to high annual mortality rates of bee colonies and, potentially, elevated risks to pollinator communities due to a spill-over of diseases from infected hives to other hives and wild pollinators. One behaviour that is of particular interest for colony health and disease transmission is worker “drifting”, which means that bees enter the wrong hive, either by accident or to steal food sources. The interactions between drifting and anthropogenic stressors and diseases are still poorly understood.

The aim of this PhD studentship is to study the links between drifting behaviour, the nutritional state of colonies, pesticide exposure and pathogen infection. It will do so by studying stingless bees in the deforestation arc in the Brazilian Maranhão region and honeybees in the UK. Four specific aims are addressed: 1) Understand the links between drifting behaviour and diseases, 2) understand the links between drifting behaviour and pesticides, 3) understand the links between drifting behaviour and the nutritional and foraging condition of colonies and, 4) understand the links between the spatial arrangement of apiaries and drifting behaviour. The latter will be combined with simulation modelling to assess how the spatial arrangement of colonies can reduce drifting and disease spread.

This project will allow the candidate to learn an exciting mix of methodological approaches and work in both Brazil, in collaboration with the [not-for-profit organisation Meli](#) and local communities, and in the UK.

**Our aim as the SWBio DTP is to support students from a range of backgrounds and circumstances. Where needed, we will work with you to take into consideration reasonable project adaptations (for example to support caring responsibilities, disabilities, other significant personal circumstances) as well as flexible working and part-time study requests, to enable greater access to a PhD. All our supervisors support us with this aim, so please feel comfortable in discussing further with the listed PhD project supervisor to see what is feasible.**