

Sustainable Apiculture: the impact of hive density on honeybee productivity and native biodiversity

Supervisory team:

Main supervisor: Prof Jane Memmott (University of Bristol)

Second supervisor: Dr Ian Vaughan (Cardiff University)

Non-academic (CASE) supervisor: Dr Paula Strauss (Grootbos Foundation)

Host institution: University of Bristol

CASE partner: Grootbos Foundation

Project description:

The honeybee has been introduced to ecosystems on every continent except Antarctica for pollination and honey production. It's well known however that honeybees have the potential to compete with native wild pollinators for food. For example, it has been calculated that the nectar and pollen used by a single apiary could support 38,400 bumblebees. Given that wild pollinators carry out the bulk of crop pollination, managing apiculture in a manner compatible with the conservation and utilization of wild pollinators is of considerable importance if agriculture is to be sustainable.

Farmland and natural habitats on acid soils (e.g. moorlands and heathland, used for sheep and beef production) provide important honeybee forage for beekeepers in the UK where Heather Honey is a premium product. They also support a large abundance and a high diversity of wild pollinators. However, the carrying capacity of these habitats for beekeeping remains largely unknown. There is therefore an urgent need to better understand the interactions between honeybees and the native pollinators to inform sustainable beekeeping practices and to minimise any adverse impacts on local biodiversity.

This studentship will start by focusing on UK apiculture, but it will generate knowledge and innovation in sustainable apiculture which will then be applied in South Africa. The data and conclusions of this project will feed directly into apiary management recommendations provided to landowners by a local partner organisation in South Africa. This studentship has four objectives: 1) to evaluate the carrying capacity of UK moorland for honeybee production over the whole foraging season; 2) to test whether honeybees and native pollinators are competing for resources; 3) to apply the knowledge generated in the UK to provide the evidence base for sustainable honey production in South Africa; and 4) to construct socio-ecological networks to determine the impact of beekeepers on biodiversity.

The successful applicant will benefit from a diverse training through working with a multi-disciplinary team based at the University of Bristol and at Cardiff University, and working with collaborators in South Africa. The candidate will carry out fieldwork in both countries working closely with local beekeepers using stakeholder interviews, collecting field data on pollination networks, flowering phenology and socio-ecological networks, and running field experiment.