

The Sussex Plan for Honey Bee Health & Well Being

The honey bee is native to Europe, Africa and the Middle East, and has been introduced to America, Australia and Asia. Hives are increasing worldwide, but reducing in Britain, Europe and N. America. The British decline is c. 75% in the past 100 years. It is important to reverse this trend to maintain pollination.



- Beautiful British countryside but few flowers. Flower rich habitats have declined greatly.
- b, c. Varroa mite; Drone larvae removed from cells to show Varroa mites ready to lay eggs.
- d. Larvae infected with American foulbrood; e. Adult workers killed by deformed wing virus.

The main challenges to the honey bee in Britain and other countries are diseases and lack of forage. The honey bee has many pests and diseases. These do not affect other species. Like all animals, honey bees must eat. Their food is pollen and nectar. With agricultural intensification flower rich habitats are reducing. This affects many species including bees, butterflies and birds.

Started in 2008, the Sussex Plan combines applied research and outreach to help beekeepers, honey bees and other pollinators, and aims to help make Britain a more bee friendly country. The Sussex Plan employs many LASI researchers. It is funded by donations of all sizes from individuals, companies, and charities. Their generosity shows that the British value their bees!

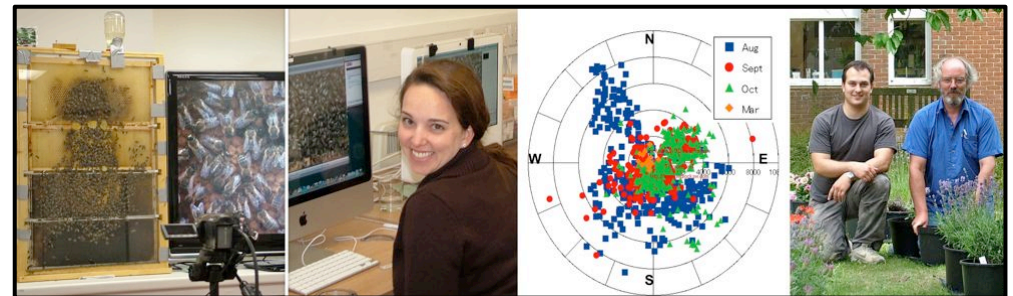
LASI is breeding hygienic bees that remove dead and infected larvae and pupae from the colony, thereby reducing brood diseases like chalkbrood and foulbrood and slowing the breeding of Varroa mites. Hygiene is a natural heritable defence mechanism of honey bees, but quite rare. Only about 10% of British hives are hygienic. Bee breeding with queen rearing can increase this.

Research on foraging takes advantage of a unique honey bee behaviour. Successful honey bee foragers make waggle dances to tell hive mates flower locations. Decoding dances from video shows how bees use the landscape to collect food. In the summer bees have to fly further, 4km on average, to find food than in spring, 1km. LASI is also finding out which summer-flowering

garden flowers are best for bees and insects so that parks and gardens can better help insect pollinators. What is good for honey bees is good for many other types of flower visiting insects, including bumble bees and butterflies.



- Screening colonies for hygiene with the freeze-killed-brood test to kill small brood patches.
- A hygienic colony has removed most of the circle of freeze-killed brood after 2 days.
- Rearing hygienic queen bees using plastic queen cells.



- Eavesdropping on bees—recording waggle dances in an observation hive with camcorder.
- Decoding dances with the aid of a computer. Decoding 1000s of dances takes a lot of time.
- Map showing foraging locations from decoding dances. The outer circle is 10km from LASI.
- PhD student & Professor with experiment comparing garden plants for bee attractiveness.

The Sussex Plan has been made possible by generous donations from many individuals, businesses and charities including beekeeper groups. The major donors are:
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