

# Haileybury MUN

## Research report



### Environmental Commission 1

### The question of the protection of bee populations

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#### Introduction:

- Honey bees — wild and domestic — perform about 80 percent of all pollination worldwide. A single bee colony can pollinate 300 million flowers each day. Grains are primarily pollinated by the wind, but fruits, nuts and vegetables are pollinated by bees. Seventy out of the top 100 human food crops — which supply about 90 percent of the world's nutrition — are pollinated by bees.
- Worker bees (females) live about six weeks in summer and several months in the winter. Colonies produce new worker bees continuously during the spring and summer, and then reproduction slows during the winter. Typically, a bee hive or colony will decline by 5-10 percent over the winter, and replace those lost bees in the spring. In a bad year, a bee colony might lose 15-20 percent of its bees.

#### Key Statistics:

- Despite a world population of between 80 million and 100 million domesticated hives, each containing 10,000 to 60,000 bees, numbers are dwindling dramatically: one-third of the UK's bee population has disappeared over the past decade and 24 per cent of Europe's bumblebees are now threatened with extinction.
- In their tenth annual survey, the Bee Informed Partnership found that beekeepers across the United States lost 44 percent of their honeybee colonies during the year from April 2015 to April 2016.

#### Problems:

- Scientists know that bees are dying from a variety of factors—pesticides, drought, habitat destruction, nutrition deficit, air pollution, global warming and more. Many of these causes are interrelated. The bottom line is that we know the two main contributors to the decline in population: mites and pesticides.
- The honey bee's single biggest enemy in the U.S. and Europe is a parasitic mite aptly named *Varroa destructor*, first introduced to the United States 30 years ago, when it most likely hitched a ride from its native habitat in Southeast Asia on the back of an infected queen.
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- Because their life cycles are short, varroa mites adapt quickly to chemical treatments such as pesticides, which means scientists have had to get creative. Marla Spivak at the University of Minnesota, one of the foremost experts on bee health, has been breeding super-punctilious queen bees that keep their hives mite-free. At Purdue University in Indiana, Greg Hunt breeds aggressive 'ankle-biting' worker bees that snip the legs off the mites, bleeding them dry before they establish themselves in the hive.
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- Honey bee poisonings due to pest control chemicals do occur in most countries, including New Zealand and Australia.
- Pest control has changed over time. Historically most pest control chemicals were 'broad spectrum' so that they would kill a wide range of invertebrates. However, with advances in chemistry, there has been a move to pesticides that are increasingly species specific. Although this has resulted in

many chemicals being safer for honey bees, it has made the issue more complicated, as some pest control chemicals can safely be applied to flowers without killing bees while others cannot. Even with these safer chemicals being available, many of the older broad-spectrum chemicals are still being used.

- Poisoning of hives introduced to a crop can occur because the grower has inappropriately applied a bee-toxic chemical to flowers in the crop. However, even if growers are very careful about the pest control chemicals they use, poisoning can still occur.

### **What is being done already?**

- The Keystone Policy Centre convenes and facilitates the Honeybee Health Coalition, which brings together myriad organizations from across the spectrum – behemoths of agribusiness such as Monsanto and Syngenta, non-profits like the Foundation for the Preservation of Honey Bees, universities, and state departments of agriculture.
- Together, these institutions are working on four main areas: forage and nutrition, hive management, crop pest management, and public outreach.
- They seek to build understanding of one another's viewpoints and priorities through such programs as the Bee Understanding Project