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BEES

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Few insects capture the imagination like bees do. Honeybees (*Apis mellifera*) in particular, with their social hierarchy and sweet product, have long been part of our literary and agricultural heritage (see page S50).

Honeybees are the workhorses of modern farms, which rely on the insects to pollinate crops. That dependence has made reports of declining bee populations and colony collapse disorder all the more alarming. Although bees are known to be affected by environmental shifts, including habitat loss and climate change, public attention has been focused on a class of pesticide called neonicotinoids, or neonics. But the link between these pesticides and colony collapse remains murky (S52).

Daunting as the prospect is of losing our main pollinators, the furore has masked wider issues. There are many species of bee (S48), but it is not only honeybees that are at risk — solitary bees face even greater threats (S62). We have gathered opinions on what are considered the major challenges for bees, agriculture and bee researchers (S57) and hear from Charles Michener, who has studied the insects for more than 80 years (S66).

Like humans, bees have microbes in their guts that provide a host of benefits (S56). Honeybees' complex social structure gives insight into how other biological and synthetic systems function (S60). And examining bee flight could help engineers to improve the performance of aircraft, and also lead to the development of autonomous microdrones (S64).

We are pleased to acknowledge the financial support of Bayer CropScience in producing this Outlook. As always this supplement was produced independently by *Nature* editors, who have sole responsibility for all editorial content. Beyond the choice to sponsor this topic, Bayer CropScience has had no input into the Outlook.

Michelle Grayson

Senior editor, supplements

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