

ECOLOGY

Pollinator Diversity Declining in Europe

Several studies have suggested that particular pollinating insects might be in trouble—the domesticated honeybee in the United States, for example—but there has been little evidence for a large-scale problem. That is about to change: On page 351, a team led by Jacobus Biesmeijer and William Kunin of the University of Leeds, U.K., report a significant decline in pollinator diversity across the U.K. and the Netherlands since 1980. “They’re going down, absolutely,” says ecologist Jane Memmott of the University of Bristol, U.K. The study found that insect-pollinated plants in the two countries have also run into trouble, but the authors and others acknowledge that it’s difficult to prove that the loss of pollinating species is to blame.

Establishing a widespread trend for pollinators was a massive task. As part of a European Union biodiversity research program called ALARM, Biesmeijer helped gather nearly 1 million records of when and where various bees and hoverflies had been collected. Many records came from amateur naturalists, including Victorian vicars, whereas others came from scientists. After applying techniques to make all the data comparable, the team divided the countries into squares 10 kilometers on a side and compared pollinator diversity before and after 1980.

Bees have been stung by the biggest losses. There were statistically significant declines in bee diversity in 52% of the U.K.’s cells and in 67% of the Netherlands’. Only a small fraction of the cells displayed increases in bee diversity. The extent of the decline is “worse than I had feared,” says entomologist Peter Kevan of the University of Guelph in Canada. Others note that experiments have shown that a diversity of pollinators can help maintain the diversity of plant communities, and vice versa.

The situation is far less grim for hoverflies. British hoverflies declined in 33% of cells but increased in 25%. In the Netherlands, hoverfly diversity has actually increased in more cells than it has decreased. It’s not entirely clear why, but hoverflies seem to do better in farm fields than bees do, and they do not depend entirely on nectar for food.

Specialist hoverflies and bees—those that live in a narrow range of habitats or pollinate

only a few species of plants—were particularly hard hit. They experienced greater declines in distribution than less choosy pollinators in both countries. “Many of the rare species are now so rare that they will probably go extinct [in these regions] in the next decades,” Biesmeijer predicts. The declines are probably due to destruction of habitat or agricultural changes; the team is analyzing the ALARM database for clues.

To see whether plants have been affected on a national scale by declines in pollinator diversity, Biesmeijer and his colleagues pored over botani-

cal atlases. In the U.K., 75 wild plants that need insects for pollination had declined in distribution, whereas 30 that are pollinated by wind or water increased overall. In the Netherlands, where just the bees have declined, only bee-pollinated plants lost ground. “It seems too cozy to be coincidence,” says Kunin.

Biesmeijer and Kunin suspect that there is a causal relationship between the pollinator and plant declines, although it’s not clear which is driving the trend. Ecologist Jaboury Ghazoul of the Swiss Federal Institute of Technology in Zurich is skeptical that recent pollinator declines have affected plant populations; he thinks it’s more likely that human disturbances, for example, favor weedy, wind-pollinated plants. Others fear that the loss of bees and other pollinators will have a clear agricultural impact. Says pollination ecologist Juliet Osborne of Rothamsted Research in Harpenden, U.K., “There is an economic reason to be worried.”

—ERIK STOKSTAD



Rarer. In Britain and the Netherlands, wild bees, such as *Andrena gravida* (above), are declining.

PARTICLE PHYSICS

Europe Draws Up Road Map, With Added CLICs

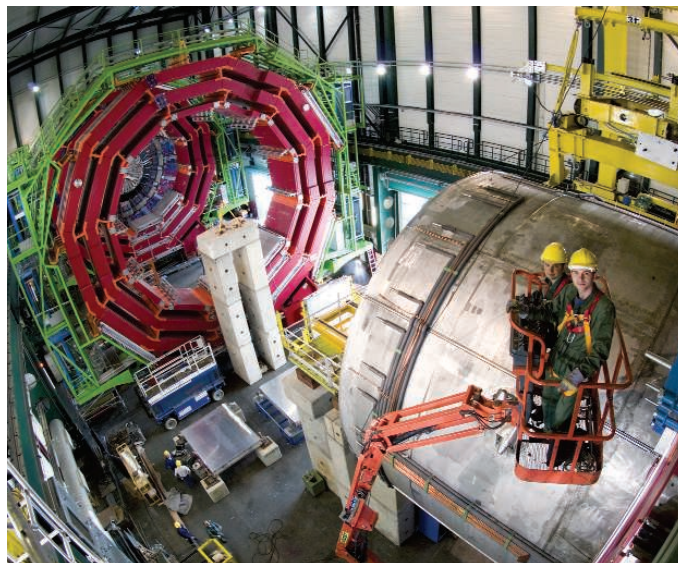
European particle physicists last week laid out their priorities for the future in a document that gives top billing to the nearly completed Large Hadron Collider (LHC) at CERN, the European particle physics lab near Geneva, Switzerland. Commissioned by the CERN Council, the adopted road map runs parallel to

a recently released U.S. strategy but differs slightly about future machines—a nuance that has raised some eyebrows.

When CERN was founded 52 years ago, it was tasked with both running its central laboratory on the French-Swiss border and coordinating European particle physics. For the first

half-century, the lab took precedence. But with the increasing cost and globalization of particle physics experiments, the CERN Council, made up of one government representative and one scientist from each of the 20 member states, last year appointed a committee to draw up an European strategy, says Council President Enzo Iarocci.

At a meeting last week in Lisbon, Portugal, the council voted unanimously to accept the committee’s recommendations. The report’s main focus is ▶



Top priority. European particle physicists’ main goal is to complete the Large Hadron Collider, whose CMS detector is shown during assembly.

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