

The flight of the bumble bee: Why are they disappearing?

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A U.S. Department of Agriculture (USDA) scientist is trying to learn what is causing the decline in bumble bee populations and also is searching for a species that can serve as the next generation of greenhouse pollinators.

Bumble bees, like honey bees, are important pollinators of [native plants](#) and are used to pollinate greenhouse crops like peppers and tomatoes. But colonies of *Bombus occidentalis* used for greenhouse pollination began to suffer from disease problems in the late 1990s and companies stopped rearing them. Populations of other bumble bee species are also believed to be in decline.

Entomologist James Strange is searching for solutions at the Agricultural Research Service (ARS) Pollinating Insects-Biology, Management and Systematics Research Unit in Logan, Utah. ARS is USDA's chief intramural scientific research agency, and this research supports the USDA priority of improving agricultural sustainability.

Many greenhouse growers now use commercially produced *Bombus impatiens*, a generalist pollinator native to the Midwest and Eastern [United States](#) and Canada. But scientists are concerned about using a bee outside its native range, and some western states restrict the import and use of non-native bees. If *B. impatiens* were to escape and form wild colonies in the western United States, they could compete with [native bees](#) for food and resources and expose native [bumble bees](#) to pathogens they are ill equipped to combat.

Strange has been studying a pretty, orange-striped generalist named *Bombus huntii*, native to the western half of the country, that could be used in greenhouses in the western United States. He is determining how to best rear *B. huntii* in a laboratory setting, a vital step in commercializing it.

To understand the decline of *B. occidentalis*, Strange and his colleagues also have been tracking its habitat range and [population trends](#). Evidence gathered so far shows that the range and populations of *B. occidentalis* have declined, that it is not as genetically diverse as it used to be, and that it has higher pathogen prevalence than other bee species with stable populations. The results were recently published in the *Proceedings of the National Academy of Sciences*.

The researchers also have assembled a large database with information on more than 80,000 *Bombus* specimens representing 10 species throughout the country, including *B. occidentalis*. With Geographic Information System (GIS) modeling technology, they were able to construct historic and current range maps of several bumble bee species. The mapping process is described in the *Uludag Bee Journal*.

More information: Read more about this research in the August 2011 issue of *Agricultural Research* magazine.

www.ars.usda.gov/is/AR/archive/aug11/bees0811.htm

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