

Biological invasions can begin with just 1 insect

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A new study by York University biologists Amro Zayed and Laurence Packer has shown that a lone insect can initiate a biological invasion.

Zayed, a recent graduate of Packer's lab, examined patterns of genetic diversity in both native European and invasive North American populations of a solitary bee. He concluded that the invasion was most likely founded by one mated female. The study was published today in the open access journal PLoS ONE.

"This is a shocking result, especially since bees suffer from huge genetic problems in small populations," says Zayed, now a postdoctoral fellow in the Department of Entomology at the University of Illinois.

"We're now seeing that the introduction of even one single insect can cause a potentially costly invasion, so we have to be extremely vigilant with reducing the number of animals that are unintentionally transported around the globe," he says.

The study contradicts a popular theory of invasive biology: the more individuals introduced to an area, the higher the success of the invasion. This concept is commonly referred to as the "propagule pressure hypothesis."

Zayed adds that numbers are not the only factor controlling the success of invasions. "Chance and the specific characteristics of invasive species and their introduced habitats can be more important," he says.

Packer, a professor in York's Department of Biology, notes that exotic invasive species are considered a major threat to biodiversity conservation, and can cause huge economic losses.

“Understanding how exotic species establish and spread in their new habitats is the first step to solving the invasive species problem,” Packer says.

Source: Public Library of Science

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