



SPECIES & ECOSYSTEMS

Vanishing yet vital: Western U.S. butterflies in decline

Several recent studies show pollinators, including butterflies, provide \$34 billion worth of services in a year.

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(Photo credit: Chris Halsch, University of Nevada Reno)

Gently fluttering its wings, an orange, yellow, and black butterfly makes its way to an elongated stalk of pink flowers, stopping on a blossom to sip nectar, before flying away to the next flower, a few grains of pollen in tow.

When the Edith's checkerspot butterfly (*Euphydryas editha*) reaches its next flower, a few of the tiny flecks of pollen stuck to it will be left behind, pollinating the flower. However, Edith's checkerspot is one of many butterfly

species in decline, and some of its subspecies are currently listed as threatened or endangered under the Endangered Species Act.

Matt Forister, a professor of biology at the University of Nevada, Reno, is the lead author of a Science study analyzing butterfly populations. He and his co-authors found butterfly observations have declined an estimated 1.6% annually over the past four decades in the western U.S., a decline they note as being “associated in particular with warming during fall months.”

Climate among several factors having detrimental impacts

“We already know land use, habitat loss, pesticide, and contamination are all very important for butterflies and other insects,” Forister says. “We already knew that based on studies close to [agricultural] and urban centers. So our study is not saying those things aren’t important. We already know they’re important. We turned to these other places, these natural ecosystems, undeveloped areas, to ask about the influence of climate.”

The researchers used three data sets, including the “Shapiro transect” – which includes 10 sites that have been studied since the 1970s – and data from the North American Butterfly Association and the iNaturalist web platform (which vets each image with an algorithm and two human experts). Forister and his colleagues analyzed a number of factors, including temperature and precipitation, in areas ranging from major cities to national parks, analyzing “elevational and latitudinal gradients that contain great habitat and climatic diversity,” according to the paper.

Their findings were not good news for butterfly lovers, or for people who rely on pollination to fill their grocery stores and stomachs. There was a significant decline in butterfly numbers.

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