Some butterfly species particularly vulnerable to climate change: study

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This butterfly, whose common name is the Southern Gatekeeper, was studied by researchers to help determine how climate change may affect insect survival. (Photo courtesy of Oregon State University)

A recent study of the impact of climate change on butterflies suggests that some species might adapt much better than others, with implications for the pollination and herbivory associated with these and other insect species.

The research, published in *Ecological Entomology*, examined changes in the life cycles of butterflies at different elevations of a mountain range in central Spain. They served as a model for some of the changes expected to come with warming temperatures, particularly in mountain

landscapes.

The researchers found that butterfly species which already tend to emerge later in the year or fly higher in the mountains have evolved to deal with a shorter window of opportunity to reproduce, and as a result may fare worse in a warming climate, compared to those that emerge over a longer time period.

"Insects and plants are at the base of the food pyramid and are extremely important, but they often get less attention when we are studying the ecological impacts of climate change," said Javier G. Illan, with the Department of Forest Ecosystems and Society at Oregon State University.

"We're already expecting localized extinctions of about one third of butterfly species, so we need to understand how climate change will affect those that survive," he said. "This research makes it clear that some will do a lot better than others."

Butterflies may be particularly sensitive to a changing climate, Illan said, and make a good model to study the broader range of ecological effects linked to insects. Their flight dates are a relevant indicator of future responses to climate change.

The research was done by Illan's group in the Rey Juan Carlos University in Madrid. It examined 32 butterfly species for five years at various elevations in a Mediterranean mountain range, and the delays in flight dates that occurred as a result of elevation change.

Provided by Oregon State University