

# Southern butterflies move north

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Native butterflies are vanishing from parts of the Northeast, a Harvard University study finds, while warmer-natured southerners are increasingly invading their turf. This coincides with a half-century warming trend in the region, raising concerns that these rapid ecological shifts are a symptom of climate change.

The study, published in the journal *Nature Climate Change*, was based on two decades of research by amateurs - "[citizen scientists](#)" - who logged species counts during 19,000 expeditions with the Massachusetts Butterfly Club. Not only did these data fill a critical gap in the scientific record, Harvard researchers say, but they also revealed a troubling trend among New England's native butterflies.

"Over the past 19 years, a warming climate has been reshaping Massachusetts butterfly communities," lead author Greg Breed says in a written statement. More than three-quarters of the state's northernmost butterfly species are now in decline, he notes, despite a population boom among subtropical and warm-climate species that were virtually nonexistent there as recently as the late 1980s.

The giant swallowtail and zebulon skipper, for example, were rare or absent in Massachusetts 25 years ago, but they're now undergoing a "highly significant" pattern of increase, according to the study. Meanwhile, 17 of 21 cold-climate butterfly species across the state are in steep decline, especially those that spend winter as eggs or small larvae - suggesting these developmental stages could be much more vulnerable to drought or reduced snow cover, the researchers report.

The results seem to fit with previous research into how climate change affects butterfly distribution. For example, the giant swallowtail was also found in Montreal this year, even farther from its traditional range of Central and South America. In Colorado's [Rocky Mountains](#), researchers have found that warmer weather in late winter can cause flowers to bloom too early, throwing off the [life cycles](#) of native butterflies. And since yearly average temperatures have risen by 2 degrees in the Northeast since 1970 - with winter temperatures rising at double that rate - the Harvard study hints at similar phenomena in New England.

The study was limited to Massachusetts, so it doesn't address whether the state's dwindling cold-climate butterflies might also be moving north into New Hampshire or upstate New York. But as Breed points out, it does raise the possibility that simply protecting a species' habitat might not be enough to save it as the planet heats up.

"For most butterfly species, [climate change](#) seems to be a stronger change agent than habitat loss," Breed says. "Protecting habitat remains a key management strategy, and that may help some butterfly species. However, for many others, habitat protection will not mitigate the impacts of warming."

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