

Commonly used herbicides seen as threat to endangered butterflies

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A Washington State University toxicologist has found that three commonly used herbicides can dramatically reduce butterfly populations.

The research was aimed at possible effects on the Lange's metalmark, an endangered species in northern California, but it has implications for other at-risk and endangered butterflies wherever [herbicides](#) are used, says John Stark, an ecotoxicologist and director of the WSU Puyallup Research and Extension Center.

Stark and his colleagues tested triclopyr, sethoxydim and imazapyr on [butterfly larvae](#) at the request of the U.S. [Fish and Wildlife Service](#), which uses the herbicides to maintain habitat for the Lange's metalmark in its last habitat, the Antioch Dunes National Wildlife Refuge in northern California. The researchers used the Behr's metalmark as a proxy for the Lange's metalmark, whose endangered status precludes using it for tests.

The researchers found adult numbers of the Behr's metalmark butterfly dropped by one-fourth to more than one-third when their larvae were exposed to regularly applied rates of the herbicides.

In a small population of [endangered animals](#), says Stark, "any kind of reduction like that is going to be a problem."

While the dunes may have harbored 25,000 Lange's metalmarks 50 to

100 years ago, damage to the dunes reduced the population to 5,000 by 1972 and as low as 45 in 2006.

Key to the butterfly's survival is the naked stem buckwheat plant, which is easily overgrown by the non-native plants ripgut brome, vetch and yellow starthistle.

Refuge managers have tried to weed by hand but the process risks disturbing the buckwheat plants and butterfly eggs and larvae. And when the refuge managers started spraying the plants with herbicides, they noticed the butterfly populations were dropping even more, says Stark.

The study, funded by the Fish and Wildlife Service and published in the journal [Environmental Pollution](#), is one of the first to document the effects of herbicides on butterflies. Several studies have shown herbicides can adversely affect animal life, even though they are designed to kill plants.

Each of the three herbicides in the Stark study operate differently, leading the researchers to think [butterflies](#) are being affected by inert ingredients or an effect on the butterflies' food source.

Provided by Washington State University

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