

# **Impacts of climate change on butterfly populations in western North America**

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Climate affects many ecological dynamics, sometimes limiting a species' distribution, driving population fluctuations, and mediating inter-specific interactions. Changes in climate, therefore, are expected to alter many ecological patterns and processes. The implications of climate change for populations are particularly important. The persistence of healthy populations is vital for species conservation, and populations harbor genetic diversity and provide ecosystem services, values we wish to preserve. I present research that uses the butterflies of coastal western North America to explore the consequences of climate change for population dynamics and extinction. These butterflies range from Baja, California to central Vancouver Island, BC, and some are considered regionally or globally at risk. Firstly, I show how regional increases in the variability of climate can and have caused local extinction of butterfly populations. I also show that the availability of alternate food resources can help buffer populations against such changes, reducing the risk of additional population losses with proper management. Secondly, I provide a glimpse into current research focused on the northern limit of these butterfly species. These studies explore if life history characteristics can be used to predict the likelihood of decline or expansion of populations at the periphery of a geographic range.