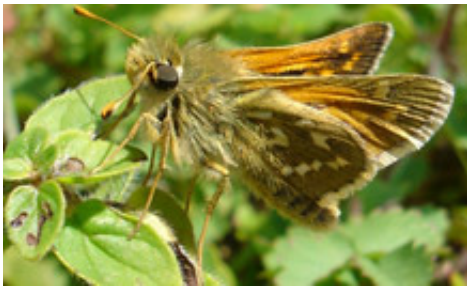


British butterfly desperate for warm weather this summer

June 10 2013



The silver-spotted skipper, needs temperatures of 25°C to become fully active.
Credit: Zoe Davies

(Phys.org) —Butterflies are extremely sensitive to changes in temperature and new research has revealed that when summer weather turns bad the silver-spotted skipper battles for survival.

The butterfly, which previously faced [extinction](#) from [habitat loss](#), is recovering following [conservation efforts](#) but the recent cool wet summers in [England](#) have almost stalled its progress.

A 27 year study by researchers at the University of Exeter in [collaboration](#) with the University of York, the University of Liverpool, Sussex Wildlife Trust, the Centre for Ecology & Hydrology and the charity Butterfly Conservation has been published in the journal *Ecology Letters*. The study estimated changes in temperature across a range of

silver-spotted skipper habitats and found that localised fluctuations in temperature lead to extreme fluctuations in the butterfly population size and in the probability of the [butterflies](#) colonising new sites.

Lead author Dr Jonathan Bennie from Biosciences at the University of Exeter said: "Although we know that the climate overall is warming there is still much variability in the weather from one year to the next. This variability presents a threat to southern British butterflies that we might expect to take advantage of warmer conditions to colonise further north. In warmer years the silver-spotted skipper, which needs a balmy 25°C to become fully active, has expanded its range. However during the recent cold wet summers we have found the skipper clinging to the warmest south-facing hillsides waiting for better weather."

The study used records of weather and butterflies since 1982, combined with computer modelling, to reconstruct how microclimates, created by different slopes and aspects, affect how many butterflies there were, where they were, and how quickly the [species](#) has been able to colonise new locations as the climate has warmed.

Co-author Dr Jenny Hodgson from the University of Liverpool said "We were able to produce quite an accurate reconstruction of this butterfly's expansion across the landscape, and this makes us hopeful that we can provide useful predictions of which sites will be most important for conservation in the future."

The research indicates that conservation efforts could benefit from saving habitats with a range of different microclimates. Many species of butterfly are declining in Britain because of habitat loss, but the silver-spotted skipper has taken advantage of south facing slopes with warm microclimates. These provide vital refuges for the species during cooler summers; whereas in hotter summers north, east and west facing hillsides provide stepping stones of habitat that allow the species to spread

through the landscape.

Understanding how different species depend on different features of the landscape because of their microclimates would enable more effective conservation of species under a changing and variable climate.

Provided by University of Exeter

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