

# British butterfly is evolving to respond to climate change

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An image of the Brown Argus butterfly. Image by Vince Massimo

As global temperatures rise and climatic zones move polewards, species will need to find different environments to prevent extinction. New research, published today in the journal *Molecular Ecology*, has revealed that climate change is causing certain species to move and adapt to a range of new habitats.

The study, led by academics at the Universities of Bristol and Sheffield, aimed to understand the role of evolution in helping a species to successfully track ongoing [climate change](#).

With climate warming many species are moving further north in the UK, however, this may mean crossing a landscape with increasingly less of

their preferred habitat. Evolutionary change in the ability to use geographically widespread habitats or increased ability to move longer distances can help species to track the warming climate and move northwards.

The Brown Argus butterfly is successfully expanding its distribution northwards in the UK and uses a range of distinct habitats. Using [genetic techniques](#) to detect evolutionary change, the researchers were able to show that the colonisation of new sites further north by the Brown Argus has involved significant adaptation during or following colonisation.

Furthermore, the results suggest that populations of the Brown Argus are adapted to different habitats and that pre-existing variation in habitat preference between populations has been important in allowing the [colonisation](#) of new habitats.

James Buckley, one of the researchers from the University's School of Biological Sciences, said: "To our knowledge, this is one of the first studies to identify genetic evidence for evolutionary change associated with range shifts driven by recent climate change."

The Natural Environment Research Council (NERC)-funded study found that [evolutionary change](#) is likely to affect the success of species' responses to climate change and that maximising genetic variation in ecological traits (such as habitat preference) across species' distributions should help species to move northwards and track the changing climate across a fragmented landscape.

James added: "These findings are important as understanding the likelihood and speed of such adaptive change is important in determining the rate of species extinction with ongoing climate change."

**More information:** The paper, entitled Evidence for evolutionary

change associated with the recent range expansion of the British butterfly, *Aricia agestis*, in response to climate change, by BUCKLEY, J., BUTLIN, R. K. and BRIDLE, J. R. (2011) is published (online ahead of print) in *Molecular Ecology* ([doi:10.1111/j.1365-294X.2011.05388.x](https://doi.org/10.1111/j.1365-294X.2011.05388.x)).

Provided by University of Bristol

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