

Rare moth in severe decline at its last English site

June 22 2016

Numbers of a rare species of moth - found only in York in England - have tumbled in recent years, a team including researchers from the University of York have discovered.

The Dark Bordered Beauty (*Epione vespertaria*) is found on Strensall Common, an area of protected lowland heath near York. This is the last known English site for the moth, although there is a handful of populations in Scotland, where the moth is also rare.

Monitoring the York [population](#) between 2007 and 2014, researchers found the numbers of adult moths reduced by an average of 30-35% annually. Prior to 2007, the estimated population of adults was thought to be between 500 and 1000 adults spread widely over the Common.

The rapid decline is attributed to a reduction in Creeping Willow (*Salix repens*) plants - which is the foodplant for the moth's caterpillars. A fire in 2009 destroyed the most important area of plants for the moth. Increased grazing pressure by sheep may have also had an impact on the breeding habitat right across the Common.

Since female Dark Bordered Beauty moths prefer to lay eggs on large, robust plants in July, removal of Creeping Willow and shortening of the plants by grazing leads to a loss of habitat and a decline in moth numbers. Sheep may also have inadvertently eaten moth eggs, which stay on the plant until late spring before hatching.

Grazing heathlands with animals like sheep is important to prevent the habitat becoming overgrown with trees and taller shrubs, but in this case appears to have unwittingly damaged the fortunes of a rare species that the management is ultimately designed to protect.

Dr Peter Mayhew, co- author of the study and Senior Lecturer in the Department of Biology, said: "Our study indicates the potential conflict between generic habitat management and bespoke management for species.

"It is vital that monitoring programmes are integrated into site management so we can increase our knowledge of [rare species](#) that rely on such habitats in a specific way. We must also not be complacent when species are restricted to a single site, even if their population at first appears healthy."

Dr Terry Crawford, Honorary Fellow at the Department of Biology, said: "The Dark Bordered Beauty is a very special and charismatic moth, which has been observed and admired at Strensall Common for well over a century. It has long been part of the natural history heritage of England and of Yorkshire. Because of the loss of populations elsewhere in England, the loss of the population at Strensall Common would mean extinction of the moth in England as a whole.

Dr Sam Ellis, Director of Conservation and Regions at the charity Butterfly Conservation said: "As a short term measure we are trying to boost the numbers and size of Creeping Willow plants on Strensall Common by planting out willows grown from local seed, and protecting them from sheep grazing. Hopefully this will help the moth population bounce back from its very low current level.

"We will continue to monitor the population with the help of volunteers, and ultimately we may need to modify the grazing regime at Strensall

Common to make it more sustainable for the Dark Bordered Beauty. Further ahead, other populations need to be established outside of Strensall to secure the [moth](#)'s long-term future in England."

More information: Decline of a rare moth at its last known English site: causes and lessons for conservation, *PLOS ONE*, 2016.

Provided by University of York

Citation: Rare moth in severe decline at its last English site (2016, June 22) retrieved 25 April 2024 from <https://phys.org/news/2016-06-rare-moth-severe-decline-english.html>

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