

# Birds, bugs and blanket bogs—Scientists warn an entire eco-system is under threat

July 31 2015

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Several rare upland bird species are being put at risk together with other ecosystem functions by the effects of climate change on the UK's blanket bogs, ecologists at the University of York have discovered.

Most of our drinking water comes from these upland peats and several iconic [bird species](#) such as the dunlin, golden plover and red grouse depend on these wetland habitats for nesting and feeding.

The scientists warn that [climate change](#) threatens these habitats, not only from rising temperatures increasing peat decomposition, but also via altered rainfall patterns - with summer droughts drastically affecting the

blanket bog hydrology.

The study, which involved collaboration with British Trust for Ornithology, Aberystwyth University and the University of Leeds and part-funded by the RSPB, showed that the humble crane fly, more commonly known as 'daddy longlegs', is a crucial link in determining the impact of climate change on these peatland bird species.

The birds depend on the protein rich crane flies as food for chicks, but scientists have discovered that summer droughts, which are predicted to increase, will cause significant declines in crane flies and subsequently the bird species that depend on them.

Based on a peatland model developed at the University of York and latest climate change predictions, the researchers warn that by 2051-80 the dunlin could see a 50% decline in numbers, with the golden plover down 30% and the red grouse down by 15%, all driven by declining abundance of the birds' crane fly prey.

The findings, part of a PhD by Dr Matthew Carroll supervised by Professor Chris Thomas at the Biology Department at the University of York, highlight the complex relationship between climate, bog habitats, insects, and birds.

It suggests that large-scale projects to restore degraded and eroded blanket bogs could be critical in securing the future of these internationally important bird populations, alongside both water supplies and the crucial role of blanket bogs as a carbon store.

The results have been published in *Nature Communications*.

Dr Andreas Heinemeyer from the Stockholm Environment Institute (SEI) based at the University of York, who developed the peatland

model, said: "This is one of the first studies to follow this bug-to-bird link, down the food chain, between climate change and something happening to an entire eco-system with relevance to people."

"There is a very strong relationship between the moisture of the peat and the survival of the larvae of the crane fly during summer. July and August are peak times: if it is too dry, the larvae just desiccate and die and are then not available for the bird chicks the following year. "

The crane fly link was made as part of several longer-term studies - funded by The Natural Environment Research Council and Defra - investigating blanket bog ecosystems across several UK upland sites, including the Yorkshire Dales, Peak District and North York Moors.

Dr Heinemeyer, who is currently leading a £1m Defra-funded SEI project to further study the impacts of climate change and management on blanket bogs, said it wasn't only rare birds that were at risk from climate change.

"We might be in for big change. Not just in connection with our birds, but our drinking water as well," he added "If you end up being very dry as a blanket bog you store less water and your water quality seems to deteriorate as peat erodes and decomposes. So there seems to be a link, but it's not an easy link.

"It is a very messy picture as vegetation and bugs are also involved and everything works together like a jigsaw puzzle. If you change a piece, you will change others around it."

Dr Carroll, RSPB Conservation Scientist, said: "Our work shows that climate change could harm some of our most iconic upland bird species. The birds rely on crane flies for food during the breeding season, and the crane flies rely on the cool, wet conditions in blanket bogs.

"Large-scale peatland restoration projects such as the Sustainable Catchment Management Project run by United Utilities and RSPB are crucial in helping to make our blanket bogs resilient to climate change."

Provided by University of York

Citation: Birds, bugs and blanket bogs—Scientists warn an entire eco-system is under threat (2015, July 31) retrieved 23 April 2024 from <https://phys.org/news/2015-07-birds-bugs-blanket-bogsscientists-entire.html>

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