

Climate-change set-back for acidified rivers

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Climate change is hampering the long-term recovery of rivers from the effects of acid rain, as wet weather counteracts improvements, according to a new study by Cardiff University.

The research, by Professor Steve Ormerod and Dr Isabelle Durance of the School of Biosciences, took place over a 25 year period around Llyn Brienne in mid-Wales. Their findings are published online today in the British Ecological Society's *Journal of Applied Ecology*.

Carried out in 14 streams, the research involved assessing the number and variety of stream insects present each year. The scientists measured concentrations of acid and other aspects of stream chemistry, and documented climatic variation such as warmer, wetter winters.

With average acidity in rivers falling due to improvements in the levels of acid rain, the researchers expected that up to 29 insect species to have re-colonised the less acidic Welsh streams. These included sensitive mayflies and other groups often eaten by trout and salmon.

The findings however, showed a large short-fall in biological recovery, with just four new insect species added to the recovering rivers sampled.

Professor Steve Ormerod, who has led the project since it began in the early 1980s, said "Since the 1970s, there have been huge efforts to clean-up sources of acid rain, and our research shows that rivers are heading in the right direction. However, our results support the theory that acid conditions during rainstorms kill sensitive animals. During recent wetter

winters, upland streams have been acidified enough to cancel out up to 40 percent of the last 25 years' improvements: climatic effects have clearly worked against our best efforts."

Dr Isabelle Durance, who co-authored the paper said: "More and more evidence now shows that some of the worst effects of climate-change on natural habitats come from interactions with existing stressors - in this case acid rain. A wider suggestion from our research is that by reducing these other environmental problems, we can minimise at least some climate-change impacts."

Source: Cardiff University

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