

Aquatic Insects Becoming Extinct on Mountain Ranges

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As snow and glaciers disappear from mountain regions and rivers become too warm or dry-up, some insects that live in water are likely to become extinct, according to research carried out at the Universities of Birmingham and Leeds.

Mountain ecosystems are already responding to changes in glacier and snow distribution due to climate change and therefore plants and animals are migrating to higher altitudes as lower regions warm up.

The researchers have discovered that if snow and glaciers disappear, remaining streams will most likely become too warm and even dry up, making them an unsuitable habitat for many aquatic insects. These insects cannot migrate to other mountain ranges as the distances between high mountain habitats are too far to cross as many aquatic insects are poor flyers.

This is the first study to concentrate on how mountain streams are responding to climate change and the main insect for concern at present is the predatory caddisfly *Rhyacophila angelieri*, a rare species from the Pyrenees. Dr Lee Brown from the School of Geography, University of Leeds, says, 'We are startled by these results. The loss of aquatic insects could have a severe knock on effect because organisms higher up the food web, such as birds, mammals and amphibians, feed on these insects. Many of these higher organisms are only found on mountain ranges and if their food resources are altered, then they could be at risk of extinction too.'

Dr David Hannah, from the University of Birmingham's School of Geography, Earth and Environmental Sciences, says, 'Our research has also revealed that aquatic insects each show subtle responses to the amount of melted snow and glacier water within mountain streams. This means that we can begin developing new methods of using these insects to monitor the rate of glacier and snow pack loss – it is the modern day equivalent of using mine canaries as barometers of environmental change.'

The researchers want special reserves to be established to protect the vulnerable insects and to develop appropriate conservation strategies to prevent extinction of threatened species.

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Notes to Editors

1. This study is published in *Global Change Biology* 13, 958-966. Vulnerability of alpine stream biodiversity to shrinking glaciers and snowpacks. Brown L.E., Hannah D.M. and Milner A.M. (2007).
2. The work was undertaken in the Cirque de Gavarnie, French Pyrénées. The French Pyrénées are at the southern most limit of the contemporary European glaciation. In this region glaciers are retreating rapidly at a rate of 5 – 10 meters per year. These glaciers are already very small and may disappear in the near future. The Parc National des Pyrénées provided permission to undertake fieldwork."
3. This research was funded by a Natural Environment Research Council (NERC) studentship (NER/S/A/2001/05984) to Lee Brown while at the University of Birmingham."

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