



Conference Abstract

Global warNing: what we know and what we should know about carabid beetles in high altitude habitats

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Abstract

Models that relate species distributions and climate to predict the future geographical range of species in response to forecast climate change have shown that species living at high altitudes are expected to be particularly affected. Presently, the global trend towards a rapid climate warming represents a major concern for high-altitude carabid beetles, specifically for the populations living in glacialised mountain areas.

Most of the high altitude carabid species are endemic and cold-adapted, have low dispersal abilities and present small and/or isolated populations. These threats are triggering an increase of their extinction risk.

Some researchers have demonstrated both local-scale extinctions and upward shift to higher altitudes. A key point is whether the losses determined by climate change could be mitigated by species' survival in micro-refugium areas.

Traditionally, the current species distribution in climate-limited ecosystems, like those at high altitude, have been described underlining the role of cold-stage refugia during the Last Glacial Maximum (c. 22000 years BP). On the other hand, no studies addressed the question if the present-day distribution of cold-adapted mountain species is driven by climate conditions occurring during the past and/or current warm periods.

More recently, the potential role of some ice-related mountain landforms as warm-stage refugia was documented. It suggests that these landforms could be able to promote the long-term survival of cold-adapted species when the surrounding habitats become climatically unfavorable, thus more effort should be done to investigate the ecology these kind of harsh habitats.

Keywords

Carabidae; Climate Change; Glacier retreat; Permafrost; Refugia.

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