The responses of alpine beetles to climate change

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Climate change impacts environments in a variety of different ways, including through temperature increases or altered nutrient cycles. These environmental changes could result in a wide range of biodiversity impacts. Climate change is expected to impact invertebrates due to the role that temperature plays on their development, reproduction and survival. Studies into the impact of climate change on New Zealand invertebrates have typically focused on invasive or agriculturally-important species, whilst generally ignoring impacts on the native fauna. Invertebrates in the alpine zone are considered particularly vulnerable to climate change due to their high levels of rarity and endemism. We used an experimental manipulation to determine whether altered temperature or nutrient levels will impact alpine beetle communities in Takahe Valley, Fiordland. Climate warming was simulated using Open-Top-Chambers and plot fertility was manipulated through the addition of nitrogen and sugar. Four years' of data has been collected from two sites. Pitfall traps were used to sample the beetle communities and these are being assessed using both a taxonomic and a functional trait-based approach. Results of this study will provide an understanding of how climate change may impact the alpine beetle fauna and will be used to establish a baseline to further track the responses of species and communities to climate change. This can inform future decisions concerning the management of alpine biodiversity.