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Abstracts

Extinction on islands through natural, non-human causes

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Only in the past quarter century has the true extent of human-caused extinction of birds on islands begun to be realised through great improvements in the fossil record. The global, human-induced catastrophic event on islands has overshadowed the fact that natural factors, such as rising sea level, climate change, volcanism, etc., have also caused extinctions of numerous populations of insular birds in the absence of human influence. Examples, with emphasis on the geological history of Bermuda, will be reviewed with a view towards understanding the effects of past natural events on historically known insular biotas and in an effort to project what the effects of combined natural and human perturbations may have on insular extinction rates in the future.

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New approaches to studying avian extinction events

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Recent developments in the study of ancient DNA have revealed how genetic traces are often preserved in sediments of sites, even in the absence of macrofossil remains. Whilst we are still unsure of the exact nature by which the DNA is deposited, the records provide a means to examine faunal diversity through time, as well as species prevalence as extinction events are approached. We will present data from studies of New Zealand cave sites, where two volcanic tephra alter the local ecology and moa species diversity in the area.

New molecular analytical methods also make it possible to estimate evolutionary rates, and population sizes of species through time, simply using DNA sequences from dated specimens. This powerful new approach is far more appropriate than the use of external fossil calibration points, which can generate very inaccurate molecular rate estimates. These methods have been used on Beringian bison to demonstrate a large climatic effect in the run-up to the megafaunal mass extinction event. Such an approach would be equally applicable to studies of avian extinctions.

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