

Temporal responses of spider communities to mammal pest control

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Eligible for student prize

Introduced mammals are known to have extensive impacts on New Zealand invertebrates, but community-level responses to mammal control remain largely unknown. It is unclear whether the levels of pest control applied within sanctuaries on the New Zealand mainland are sufficient to allow recovery of these communities. Those sites where invertebrates have been sampled following pest mammal control are frequently unanalysed or unreported. This study aims to investigate the response of spider communities to sustained pest control by examining 15 years of pitfall trap samples collected each summer at Boundary Stream Mainland Island (BSMI), Hawke's Bay, New Zealand. This will be compared to nearby communities where no pest control has been undertaken. Spiders will be extracted from these samples and will initially be sorted using observation of external morphology into recognisable taxonomic units. From here, genera or species identifications will be determined with the assistance of taxonomic experts. Changes in spider species composition and abundance over time and variation between sites will be analysed using multivariate methods. We predict that mammal pest control at BSMI has resulted in an increase in spider abundance and diversity over time relative to sites with no pest control. We also expect that the specific responses of spider species will vary, and that these data will suggest which spider species suffer most from the impacts of invasive mammals. This will be the first known study to examine the temporal dynamics in spider communities in New Zealand over an extensive time period. It will provide important insight into the way mammal pest control affects these communities and whether control regimes are sufficient to increase spider abundance and species richness. This has important implications for conservation management of invertebrates and the restoration of ecological communities in New Zealand.

