Development of quantitative monitoring for an endangered endemic grasshopper, *Brachaspis robustus*.

Jennifer Schori [*1], Tara Murray [1], Tammy Steeves [1]

[1] University of Canterbury

Eligible for student prize

Methods which efficiently and quantitatively monitor population trends for threatened insect species are essential for interpreting the value of conservation management actions. However, when the species is small, rare and highly cryptic, it can be difficult to achieve. This is the case for *Brachaspis robustus*, a nationally endangered braided river grasshopper endemic to New Zealand. Since the 1990s, populations have declined and become increasingly patchy. However, monitoring methods used over this time have been varied, and at times limited in the quality of data produced. With new management actions planned for *B. robustus*, this study investigates how to optimise monitoring effort to collect more biologically informative, quantitative data. Specifically, the study assesses 1) changes in visual detectability across the active season (November – March), 2) the advantages and challenges of using mark-recapture, and 3) the possibility of optimising visual searches by limiting them to a specific group (e.g. adult females) or search area. Quantitative monitoring of nymphs was found to be compromised by low visual detectability and frequent moulting. It was found that adult females had highest visual detectability and their abundance was greatest in November and December. We conclude that the current monitoring method (a twin transect walk through one population on a single day in February) is insufficient for generating a quantitative account of true population change over time for this species. We suggest monitoring could be improved by being a) conducted earlier in the season to maximise visual detectability and coincide with when counts of reproductive adults are at a maximum, b) conducted over more than a single day to counter daily variability in visual detectability and, c) limited to adult females which are both the most biologically informative and visually detectable group.