

Phenotypic variation in ladybirds (Coleoptera: Coccinellidae)

Heshani Edirisinghe ^{*1}, Richard Leschen ², James Dale ¹, Anne Wignall ¹

¹ Institute of Natural and Mathematical Sciences, College of Science, Massey University, Auckland New Zealand

² Landcare Research, New Zealand Arthropod Collection, Private Bag 92170, Auckland, New Zealand

Eligible for student prize

Understanding how exotic species establish in novel environments and determining their ecological and socio-economic effects are a major focus of ecologists and conservation biologists. Species with greater phenotypic variation are predicted to be more likely to successfully establish in novel environments. However, there are very limited studies that have investigated phenotypic variation across populations and its effect on introduction/establishment success.

Understanding how phenotypic variation contributes to the establishment of an exotic species may provide insights useful for developing more effective mitigation programmes against invasive species. Ladybird beetles (Coleoptera: Coccinellidae) are being introduced around the world for their outstanding use as biological control agents against pest insects in many agricultural crops. Some of these introduced species have become invasive, leading to adverse ecological and evolutionary impacts. Therefore, lady beetles are an excellent model to investigate the relationship between phenotypic variation and establishment success. We compared levels of phenotypic variation within introduced (n = 11 species) ladybird beetle populations in Auckland, New Zealand, focussing on size (including wing length), and colour. Initial results indicate high levels of size variation among introduced ladybirds (*Halmus chalybeus*, *Serangium maculigerum*, *Rhyzobius ventralis*). The sample size of native ladybirds is very low compared to introduced species therefore future work will focus on expanding data on native species.

