

Weta affairs: An investigation into the possibility of hybridisation on Banks Peninsula

Rachel van Heugten *¹, Marie Hale ¹, Roddy Hale ², Mike Bowie ²

¹ School of Biological Sciences, University of Canterbury, Private Bag 4800, Christchurch, New Zealand

² Agriculture and Life Sciences, Lincoln University, Lincoln 7647, Canterbury, New Zealand

Eligible for student prize

Recently, hybridisation has been increasingly recognised as contributing to the extinction of species; with the risk especially high for rare species hybridising with more common species. Such risks have raised concerns for the Banks Peninsula tree weta, *Hemideina ricta*, which is restricted to the eastern half of Banks Peninsula and in some areas lives in sympatry with the more widespread Canterbury species, *H. femorata*. The two species share similar morphology, mating behaviour, chromosome structure and no apparent distinguishing calls or pheromones. A previous genetics study found evidence of hybridisation between these species and a mating experiment determined that male *H. ricta* will respond to female *H. femorata* and *H. ricta* in a similar manner. However, for various reasons, both studies were limited. Therefore, in order to adequately assess the risk hybridisation poses to their continued conservation, a more detailed study was undertaken. With hybridisation between *H. ricta* and *H. femorata* previously hypothesized to be a rare event, I modelled likely sympatric zones in an attempt to optimize sampling efforts. While species distribution models have often focused on using environmental data to make predictions, it has been suggested that these models neglect important biotic interactions and the dispersal capabilities of the species under study. In the present study the resolution of much of the environmental data was deemed unsuitable for predicting the distribution of *H. ricta* and *H. femorata*. Therefore, spatial interpolation was used to model sympatric zones. Results from the subsequent sampling and genetic analysis confirm the presence of hybrids between *H. femorata* and *H. ricta*, and suggest introgression may have occurred. Despite this, hybridisation appears to be limited. In order to gain further information into what processes could be limiting hybridisation, plans are underway to observe mating behaviour between *H. femorata* and *H. ricta* as well as offspring survival.

