

## Clasper function and morphology across a hybrid zone of stick insects.

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Eligible for student prize

Male genitalia are unarguably one of the most morphologically diverse traits in the insect class. The function of fertilising female eggs and the genitalia's shape play an important role influencing whether a female will engage in copulation, or use his sperm to fertilise her offspring. A hybrid zone is the geographic area in which two species meet to form hybrid offspring. It is common for the offspring of hybridising species to have reduced fitness. Reinforcement theory predicts that prezygotic barriers will evolve to between hybridising groups so that there will be selection against hybridisation. In the far north of New Zealand the widely distributed stick insect species *C.hookeri* is replaced by an ecologically similar and undescribed species of *Clitarchus*. These species are differentiated on the basis of male and female genitalia. Male stick insects have a complex external genitalia system comprising of a clasper structure which holds onto the female during copulation. The aim of this research project is to utilise this natural hybrid zone of varying genitalia to uncover the importance of the male clasper. Across the *Clitarchus* hybrid zone, not only do male genitalia become more complex, female *Clitarchus* have a corresponding varying structure. The new species have a keel like structure where the male's clasper attaches to the female's subgenital plate. The apparent co-evolutionary correspondence in male and female genitalia provides an ideal system for looking at the functionality of the clasper. This has been achieved using a multidisciplinary approach involving behaviour, 2D and 3D morphometrics and genetics.

