

# **The advantages of mating once, many times or not at all: A study of facultative parthenogenesis in female *Clitarchus hookeri* (Phasmatodea)**

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Eligible for student prize

Facultative parthenogenesis is a mode of reproduction whereby females can reproduce either sexually or asexually through parthenogenesis. Species that are known facultative parthenogens represent important models to explore the costs and benefits of different reproductive modes. Sexual and asexual reproduction can incur both relative costs and benefits. Moreover, the number of mates or of copulations can have direct and indirect effects on female fitness. This study investigates the relative costs and benefits of parthenogenesis, monoandry and polyandry in a New Zealand facultative parthenogenetic species, the common stick insect *Clitarchus hookeri*. The specific aims were to assess whether mating had an effect on survival and reproductive output. I compared female *C. hookeri* who mated once, three times or not at all. Overall, mating treatment had an effect on the lifespan of females and the average number of eggs laid. Furthermore, sex is costly for females. I found that parthenogenesis is a better mode of reproduction for female *C. hookeri*, in terms of survival and reproductive output. Parthenogenetic females lived longer and laid more eggs than females in other reproductive mode treatments. Out of the sexual treatments, polyandrous had a higher egg-laying rate and offspring viability. However, monoandrous females had a higher survival than polyandrous females. This study demonstrates that the advantages and costs of various reproductive modes greatly depends on the species, its ecological context and its life history strategy.

