No sex means longer life for female stick insects

8 May 2018, by Anne Beston

Credit: University of Auckland

Promiscuity is a bad idea for female stick insects, in fact their smartest option is to have no sex at all.

The research, by University of Auckland's Morgane Merien, sees her graduate from the School of Biological Sciences this week with a BSc (Hons) and she has already enrolled in a Ph.D. to continue studying the insects.

"I loved working with them in the lab, although it was time-consuming and busy every day, the research went really well and if I possibly can, I'd like to have a career in entomology," she says.

Like many insects, the females of the Clitarchus hookeri species are what biologists call facultative parthenogenetic – they have the ability to either mate with males or reproduce asexually.

Morgane collected 80 males and 60 females and split the females into three groups: one group was given a single mate (monogamy), another multiple mates (polyandry) and the third, no mates (parthenogenesis). The females were collected as sub-adults to ensure they had no previous sexual history.

The research showed a direct correlation between lifespan and the number of mates a female had, with multiple-partner females having the shortest lives, monogamous females living slightly longer and asexually reproductive females out-living everyone else.

"We know there are a number of biological reasons why sex may be costly for female insects including physical harm during mating, increased energy expenditure and a higher risk of predation," Morgane says. "But it's great to have some clear evidence on the link between sexual reproduction and lifespan."

The study also found that asexual reproduction, where offspring develop from unfertilised eggs, resulted in a higher number of eggs laid than either monogamous or polyandrous females.

There was however one piece of good news for promiscuous females: they were more likely to produce viable offspring than monogamous females. One factor could be the biological imperative of "trading up—females exposed to multiple partners have the opportunity to mate with a higher quality male if the first one doesn't quite make the grade.

Provided by University of Auckland