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**REPRODUCTIVE BEHAVIOUR OF
CNEPHASIA JACTATANA WALKER
(LEPIDOPTERA: TORTRICIDAE)**

**a thesis presented in partial fulfilment of the requirements
for the degree of**

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Any good idea can be stated

in fifty words or less

Stan Ulam

(1909-1984)

Abstract

Cnephasia jactatana Walker is a pest of kiwifruit. Before this research, no information was available on its reproductive behaviour. Insects obtained from a mass-rearing system (MR) had a lower pupal weight, emergence rate and reproductive fitness than those from an individual-rearing (IR) system. Most moths emerged during the day with males emerging 1-2 d earlier than females. Females emerged with no mature eggs in their ovaries and required a 2-3 d egg maturation period before accepting mating. More than 50% of eggs were laid within 3 d after mating. Male fecundate capacity increased linearly with bodyweight whilst female fecundity had an upper bodyweight threshold. Mating delay affected females more than males in reproductive fitness. Delaying mating for 4 d reduced female reproductive fitness by > 85%. Female remating increased fecundity and fertility with MR females benefiting more than IR females from remating. Heavier females were more likely to remate than light females. Neither copula length nor spermatophore size influenced female remating behaviour. Few males mated twice within 24 h but > 50% males achieved 4 matings during their lifetime if they were allowed a recovery period of 24 h between matings. Multiple matings reduced male fertility and spermatophore size. Male mating history did not affect courtship and copula length. However, a longer activation time required by mated males reduced their chances of achieving a new mating. Males actively approached and courted females before mating occurred, while females appeared to be less active. Males used their antennae, labial palps and wings to touch females when courting. Virgin males performed more mating attempts than mated males when competing for females. Sexual selection in *C. jactatana* did not support Darwin's sexual selection theory where females are more selective and males suffer the sexual selection effects. In this species, males appeared to be more selective than females. Both sexes preferred virgin mates to mated mates for mating. Males preferred young to old females for mating while females did not discriminate the male age when choosing a mate. Male body weight did not confer any mating advantage. However, females preferred males with longer antennae for mating. Light- and average-weight males presented a size assortive-selection while heavy males did not show any preference.

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