CIRCADIAN RHYTHMS AND EFFECTS OF DIFFERENT DIETS ON THE DEVELOPMENT AND REPRODUCTION OF *NABIS KINBERGII* (HEMIPTERA: NABIDAE)

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TABLE OF CONTENTS

SUMMARY

Nabis kinbergii is a native polyphagous predator in Australia. It has been found in all states and territories of Australia. *N. kinbergii* has been regarded as an efficient predator of many insect pests in lucerne, cotton and particularly brassica crops. The circadian rhythms, the effects of different prey on development and reproduction, and prey preferences of *N. kinbergii* have not been studied in South Australia. These are the subjects of this thesis.

N. kinbergii is more active at night than in the day. They seemed to be still more frequently at dawn and more active at dusk under natural environmental conditions. Yet, their behaviour was possibly different when they were held in a controlled environment with artificial light. Under both natural and artificial lighting conditions, they would spend more time moving on plants at night. They spent less time moving than other activities. Furthermore, they were more active during the second day of the observations, probably because of the hunger.

A mixed diet including *Plutella xylostella, Myzus persicae* and *Brevicoryne brassicae* brought the most significant positive influences to the development, survival and longevity of *N. kinbergii*. It had a shorter preoviposition period and greater egg production when fed on *P. xylostella* than when fed on *M. persicae*. Among the three prey, *B. brassica* was the poorest food because the survival rate between egg hatch and adult eclosion was only 7.5 %, compared to 85 %, 92.5 % and 97.5 % when *N. kinbergii* fed on *M. persicae, P. xylostella* and a mixed diet, respectively.

Evidence of prey preference was exhibited by *N. kinbergii*. *B. brassica* seemed to be the least preferred food. *N. kinbergii* possibly attacked less mobile prey and delayed eating prey with poor nutrition or that were toxic. In wind tunnel experiments, *N. kinbergii* may have been attracted by plant volatiles rather than prey odour.

These findings may help to refine the timing of experiments and improve the understanding of the role of this predator in integrated pest management.

DECLARATION

This work contains no material which has been accepted for the award of any other degree or diploma in any university or other tertiary institution and, to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference has been made in text.

I give consent to this copy of my thesis, when deposited in the University Library, being made available in all forms of media, now or hereafter known.

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