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**General biology and reproductive fitness of
Tasmanian lacewing, *Micromus tasmaniae* Walker**

Anand Yadav

2009

To my parents

**General biology and reproductive fitness of
Tasmanian lacewing, *Micromus tasmaniae* Walker**

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the requirements for the degree of

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in

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ABSTRACT

Tasmanian lacewing, *Micromus tasmaniae* Walker, is an important predator of a number of economically important pests such as aphids. This study was conducted to investigate some aspects of general biology and factors affecting the reproductive fitness of this species. Emergence of *M. tasmaniae* peaked 3 h before light off and there was no significant difference in emergence patterns between males and females. Males became sexually mature earlier than females. Mating success significantly increased from the first to the eleventh hour after lights on. Predation, development and oviposition of *M. tasmaniae* were affected when reared under different photoperiods [i.e. 24:0, 16:8, 12:12, 0:24 h (light:dark)]. Results indicate that no individuals entered diapause at either an immature or adult stage. *M. tasmaniae* larvae could feed in both the photophase and scotophase and late instar larvae consumed significantly more aphids than early instar larvae. *M. tasmaniae* reared at 16:8 h developed faster and had lower mortality, heavier adult body weight and higher reproductive output in terms of fecundity and fertility rate. Therefore, mass-rearing programmes are recommended to be carried out at 16:8 h to obtain the higher quality of individuals and faster increase of populations. The larger-the better theory predicts that the reproductive fitness is positively linearly associated with body size or weight. However, the body weight of female *M. tasmaniae* had no effect on the reproductive fitness in terms of fecundity, fertility, fertility rate, oviposition period and longevity. The male body weight may contribute to the population growth of *M. tasmaniae* as the average females that mated with average or heavy males had significantly higher fecundity, fertility and fertility rate and longer reproductive period. These results suggest that development of any control method that should selectively mass-produce heavy and average individuals in the laboratory would help increasing *M. tasmaniae* quality and populations. *M. tasmaniae* is a polygamous species. Results indicate that female remating either with the same or different males was crucial for maximizing their reproductive success. Males could inseminate up to eight females and father about one thousand offspring during their life span.

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APPENDIX I Published Paper From MSc Study

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