THE ECOLOGY OF LYMNAEA TOMENTOSA PFIEFFER

by

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SUMMARY

The ecology of *Lymnaea tomentosa* was studied at the Murray Lakes and in the Mount Lofty Ranges. A feature of the habitats discussed was that water was absent from them for some parts of the year. In fact, if water was permanently present in the areas where *L. tomentosa* is found on the Murray Lakes then they became less suitable habitats.

Snails were grown successfully in the laboratory and it was found they live and reproduce at temperatures up to 30°C. Above this temperature they do not reproduce, while below 10°C there is virtual inhibition of development. *Fasciola hepatica* was found to develop in the intermediate host in temperatures up to 35°C but metacercariae that had been reared above 30°C failed to infect the final host.

The importance of aestivation in the ecology of *L. tomentosa* has been emphasised. *L. tomentosa* is stimulated to burrow and aestivate when the loss of moisture from the snail to the air exceeds the intake of moisture by the snail from the soil. Experiments have shown that aestivating *L. tomentosa* can survive over six months at high temperatures and they can survive up to two months lying shell ventral in a dry container.

Some of the factors which cause stunting and reduced egg production of snails were studied. The result of these factors is collectively called the "crowding effect".
Some evidence is presented that the most likely cause is a relative shortage of food as defined by Andrewartha and Birch (1954).

A pen recorder was used to measure fluctuations in water height at the Murray Lakes together with wind velocity and water temperature. Not only did the results from the pen recorder help classify the habitats around the lakes but they also indicated the effect of southerly and westerly winds on the height of water in the lake.

The relative density of the snail population was recorded over four years in four separate areas, three of which were at the Murray Lakes. The most important component of the environment of \textit{L. tomentosa} is water. Fluctuations in snail numbers at the Murray Lakes are primarily caused by the presence or absence of water. Since water is so important a study was made of those factors which determine if water will be present in a particular habitat.

The three most important factors emerging from this study are (i) water flow in the Murray River, (ii) level of water in the Murray Lakes in the late spring and early summer, (iii) wind.

In the Mount Lofty Ranges water is also important in the ecology of \textit{L. tomentosa} but the presence of water here is dependent only on rain. Rainfall and winter temperatures largely determine the peak of the population reached in the
spring and cessation of rains together with the larvae of the indigenous sciomyzid fly *Neosepedon punctipennis* are responsible for the sudden decline in the snail population in late spring and early summer.

The only practical method of eliminating fascioliasis at present appears to be the elimination of *Lymnaea tomentosa*. An attempt has been made to use an imported species of sciomyzid fly *Sepedon fuscipennis* as a biological control agent at the Murray Lakes but as releases were made in the last quarter of 1962, its effectiveness has yet to be evaluated.
CONTENTS

1. Introduction

2. Distribution of Lymnaea tomentosa in South Australia
   2.1 Murray Lakes
   2.2 Mount Lofty Ranges

3. Environment of Lymnaea tomentosa in South Australia
   3.1 Murray Lakes
      3.11 Physiography
      3.12 Rainfall
      3.13 Temperature
      3.14 Habitats
         3.141 Ponds behind the edge of the lake
         3.142 Indefinite banks of the lake
         3.143 Definite banks of the lake
   3.2 Mount Lofty Ranges
      3.21 Physiography
      3.22 Rainfall
      3.23 Temperature
      3.24 Habitats
         3.241 Reedy areas
         3.242 Clear areas
         3.243 Marshes
         3.244 Field depressions
4. Biology of Lymnaea tomentosa

4.1 Snail culture
   4.11 Mud slopes
   4.12 Sand slopes
   4.13 Description of procedures adopted in rearing large numbers of snails

4.2 Speed of development of Fasciola hepatica and Lymnaea tomentosa
   4.21 Experimental method
   4.22 Speed of development of snail egg masses
   4.23 Speed of development of snails to 12 weeks
   4.24 Speed of development of F. hepatica in the intermediate host
   4.25 Speed of development of F. hepatica eggs
   4.26 Length of life cycle of F. hepatica and of L. tomentosa

4.3 Burrowing and aestivation of L. tomentosa
   4.31 Observations and initial experiments on L. tomentosa
      4.311 Observations on the behaviour of L. tomentosa as water recedes
      4.312 Burrowing as an indication of aestivation
      4.313 Size range of the burrowing snail population
4.32 Preliminary experiments preparing a routine for future experiments on the stimulus to burrow
4.321 Design of apparatus
4.322 Failure of snails to burrow
4.323 Preparation of Yalkuri soil

4.33 Effect on burrowing of loss of moisture from the snail as the soil loses moisture
4.331 Possible explanation for loss of weight by snails

4.34 Techniques developed to obtain a more accurate estimate of weight of snails
4.341 Procedure developed for weighing snails before burrowing commenced
4.342 Procedure developed for weighing snails after burrowing commenced
4.343 Snail marking

4.35 Further experiments concerning the effect of loss of weight of snails as the soil loses moisture

4.36 Loss of moisture from the soil
4.361 Range of soil moisture contents over which snails burrow

4.37 Loss of water from the snail
4.371 Relation between loss of weight by snail and time in drying machine
4.38 Effect on snails of air unsaturated with water vapour

4.39 Aestivation of \textit{L. tomentosa} under field conditions

4.391 Depth of burrowing by \textit{L. tomentosa}

4.392 Effect of exposing aestivating snails to air

4.393 Effect of exposing aestivating snails to a hot dry environment

4.4 Crowding

4.41 Evidence for "crowding effect"

4.42 Test of hypotheses concerning toxins and "recognition" of one snail by another

4.43 Hypothesis concerning the relative shortage of food

4.431 Discussion of results

5. \textbf{Fluctuations in snail numbers in the field}

5.1 Evaluation of method of estimating the snail population

5.11 Sampling methods available

5.12 Areas sampled

5.13 Evaluation of sampling technique

5.14 Frequency of sampling
5.2 Meteorological and other physical measurements

5.21 Pen recorder
5.22 Transducers
5.23 Installation
5.24 Maintenance
5.25 Method of processing data
5.26 Effect of south and west winds on the lake level at Narrung
5.27 Water temperature

5.3 Factors affecting the presence of water in habitats

5.31 General observations
5.32 Yalkuri No.1 and Yalkuri No.2
5.33 Narrung
5.34 Burbrook

5.4 Observed fluctuations in snail numbers at study areas

5.5 Causes of fluctuations in snail numbers

5.51 Yalkuri No.1 and Yalkuri No.2
5.52 Narrung
5.53 Mundoo Island
5.54 Burbrook

5.541 Fluctuations in experimental areas
5.542 Fluctuations in Burbrook stream
5.6 Predators

5.61 Sciomyzid flies
   5.611 Mass rearing of *S. fuscipennis*
   5.612 Studies of some aspects of the feeding habits of the larvae
   5.613 Release of imported flies
   5.614 Native sciomyzid flies

5.62 Other predators

6. Appendix

6.1 Appendix I
   6.11 Design of pen recorder
   6.12 Specifications of pen recorder
      6.121 Introduction
      6.122 General
      6.123 Galvanometer pen unit
      6.124 Paper drive
      6.125 Paper
      6.126 Ink supply
      6.127 Switch
      6.128 Input plug

6.2 Appendix II
   6.21 Design of transducers
      6.211 Wind speed
      6.212 Wind direction
      6.213 Temperature
      6.214 Water height
   6.22 Circuit for transducers
7. Acknowledgements

8. Bibliography