

SOME NOTES ON THE BIOLOGY OF THE BAGWORM MOTH

LIOTHULA OMNIVORUS (Meyr)

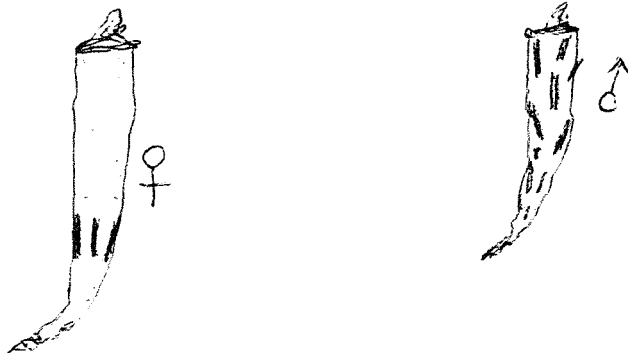
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Eight hundred and fifty nine bagworms were collected over a two year period for rearing out the adult moths. After collection they were placed in a cage containing macrocarpa as a food supply for the larvae. Any bagworms that had not moved after two days were opened and the contents examined. The results are shown in the attached table.

The tachinid fly Cerosomyia marginata (Hutton) is the major parasite of the moth and the table only shows the results of the inspection of their pupal cases. When an attempt was made to rear the larvae (129) through to the adult stage, only 5 males and 9 females were obtained with a total of 323 infested bagworms. Many bagworms were found to contain dead larvae and I suspect this was caused by birds trying to get at them. (I have watched silvereyes trying to get into the bags on a number of occasions with very little success.)

Most bagworms were collected from conifers of various types except at Haumoana where they were taken from citrus, apricot, plum, macrocarpa and grape vines. At Little Bush, the bags were taken from Manuka and Kanuka. Only two bags contained a specimen of the ichneumon wasp Echthromorpha intricatoria Fabr. and it is interesting to note that the large wasps are unable to escape from the bags whilst the much smaller flies can. In one bag collected at Haumoana I found a number of wasp pupae (Paraphylax sp.) which had not previously been recorded from New Zealand and J. Bain, who examined them thought they may be an undescribed species. One bag from Havelock North contained a dead carabid beetle and this too was unable to escape from the bag. It is probable that the beetle attacked the larva which then closed the bag. The beetle then ate it and was unable to get out!

The female moth is completely wingless and pupates at the top of the bag, surrounding herself with a mass of dark yellow silk. There is always a single fine thread to the narrow posterior part of the bag where it is anchored, the other end leading from the dead female. The narrow bottom of the bag is much softer than the rest and it is possible the single thread acts as a guide for the emerging larvae and the first one down chews a hole through the bag; the remaining larvae follow in single file. I have watched the emergence of the larvae in this fashion on three occasions. When free of the bag, they completely ignore the food plant in the cage and wander around until a hole was found and then formed a



line to escape. They all moved rapidly and eventually crawled under a door to reach the outside of the building. Although I placed many back in the cage, they would not remain there. Some of these were also placed in an escape proof box with food but all refused to eat and died. This seems to be a dispersal strategy for the moth as the female is unable to roam freely so the first instar larvae move as far and as fast as possible before making their bag which will be a handicap to wider dispersal.

The female moth dies with the fertilised eggs retained in her body and I counted c2000 of them in one female. The bags of the sexes are different and can be distinguished not only by their larger size in the female but also by the arrangement of the material on the outside of them.

Average measurements of the moths taken from bags with either live or empty pupal remains were: Females, 55 mm., males, 42 mm. These measurements were made from the widest part of the bag to the tip at the bottom, the part used by the insect to secure the bag to a twig or leaf was not included.

Locality Collected	Live Larvae	Dead Larvae	Live Pupae ♀	Live Pupae ♂	Empty Pupae ♀	Empty Pupae ♂	Dead Beetle	Wasps	Diptera Pupae	Total
Haumonga	33	27	3	3	22	11		1	33	133
Little Bush		14			16	7		2	64	103
Clifton Domain	16	2			33	12			8	71
Havelock North	27	109	10	1	49	19	1		8	224
Waipawa		10			6	3			21	40
Hastings City	40	22	4		39	16			10	131
Rissington			3						6	9
Patoka	10	3	8	6	2				4	33
Te Awanga	3	22			26	10			54	115
Totals	129	209	28	10	193	78	1	3	208	859

The males emerge from their bags very early in the morning and I found one flying against the glass front of the cage at 5.30 am and had obviously been on the wing very much earlier. Some overseas species of bagworms are parthenogenic and I kept three females isolated to see if this occurred in the New Zealand species. All three died without producing eggs or larvae. As far as I am aware the male moths have not been collected at night in this country or elsewhere.

ACKNOWLEDGEMENTS

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