

## Notes on Larvaevorid Flies Reared from *Prodenia litura* Fab. and *Othreis fullonia* (Clerck) Larvae in American Samoa

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On the second of February, 1954, a small taro patch located in the Tafuna district of Tutuila, American Samoa, was found to be severely damaged by the larvae of the agrotid moth *Prodenia litura* Fabricius. The fourth instar larvae of this moth were found to be parasitized by some larvaevorid fly. Counts of the fully grown larvae in this taro patch indicated a parasitism of 90%. It was decided to investigate the prevalence of the parasite on other plantations of the island and to attempt to determine the reason for the inadequate control of the taro army worm by the parasite or parasites in question.

A larger, heavily infested taro patch of approximately one acre in extent was found on February 5, 1954, between the villages of Faleniu and Futiga. Sixty-one third and fourth instar larvae were collected at random from this area. Of these twenty-six were found to be parasitized. The remaining thirty-five, of which fourteen were third instar larvae, were mass reared to provide moth specimens and mortality data. Of these only two died. Sixteen of the parasitized larvae were preserved at intervals in alcohol for further study. The remaining ten parasitized larvae were segregated into separate rearing jars. The results of this rearing are shown in the accompanying table.

At the time of collection of the larvae a large number of larvaevorid flies were observed in the field. One fly was seen to oviposit on the prothorax of a *Prodenia* larva. The manner in which this was done is rather surprising. The fly made an initial contact with the larva, causing it to abruptly curl its head and fore body upward. The fly then backed away and waited until the larva again resumed its normal feeding position. Next, the fly moved forward until it was about an eighth of an inch from the larva and still facing the host, curved its abdomen beneath its legs and by exerting the terminal segments of the abdomen projected it under and in front of its head. The tip of the extended abdomen was just able to touch the prothorax of the host larva. Two eggs were deposited by the fly in rapid succession, each egg sticking firmly to the body wall of the caterpillar.

Most of the parasitized larvae examined had more than one egg attached to the body wall. One was found with eighteen eggs though this high a number was not common. Three to five eggs per larva seemed to be about average. No parasitized third instar larvae were found February 5. Later, on February 17 and 18, several parasitized third instar larvae were collected. These were, however, in the minority.

A count was made on February 17 of the fourth instar larvae in the field and from this it was found that parasitism had fallen to 6%.

During the month of February the caterpillars destroyed nearly three-fourths of the taro. On February 17, two sections of the patch which had been little damaged were found infested and were dusted, one with a 5% DDT dust, the other with 5% Methoxychlor dust. Both treatments stopped the infestation of these areas. After the first of March no larvae were found in this field.

Specimens reared from parasitized larvae were sent to Mr. C. W. Sabrosky at the U. S. National Museum, who kindly determined the material. He reported that two species were involved, one being *Sturmia aequalis* Malloch, described from Samoa, the other, *Winthemia* sp. (*dispar* Macquart of Malloch's 1935 paper on the family in "INSECTS OF SAMOA"). Sabrosky writes in correspondence that there is some question as to whether this is the true *dispar*.

Included for comparison with the results of rearings of *Prodenia* larvae are those obtained from rearings of the larvae of *Othreis fullonia* which were collected from *Erythrina* sp.

All of the larvae of *Sturmia aequalis* emerged from the host larvae before pupation. All of the larvae of *Winthemia* sp. emerged after the host larva had formed some sort of a cocoon. In the case where the host was *Othreis fullonia*, the fly larvae emerged two to three days after the pupation of the host larva.

From the results obtained it is apparent that while both species of flies readily parasitize *Prodenia* larvae, the host is evidently not an adequate one. The normal fly of *Winthemia* sp. was slightly smaller than any of the normal flies of this species which were reared from the larvae of *Othreis fullonia*. Additional host records of *Sturmia aequalis* are yet to be discovered.

#### Reared from larvae of *Prodenia litura* Fab.

##### *Sturmia aequalis* Malloch

Days from oviposition to emergence from host.....	approx. 8
Days in puparium.....	8-9

##### *Winthemia dispar* ? Macquart

Days from oviposition to emergence from host.....	approx. 12
Days in puparium.....	12

##### No. of flies produced per host larva. *Sturmia aequalis*.

1. (13-egg larva).....	6 flies (4 aborted, 2 normal)
2. (12-egg larva).....	1 fly, normal
3. (3-egg larva).....	1 fly, normal
4. (3-egg larva).....	0 adult, 1 small fly pupa formed
5. (3-egg larva).....	1 fly normal

##### No. of flies produced per host larva. *Winthemia dispar* ?

1. 5-egg larva).....	1 fly, aborted (2 pupae which did not hatch)
2. (3-egg larva).....	1 fly, normal

##### Parasitized larva which produced adult *Prodenia litura*.

1. 2 (3-egg larvae).....	normal <i>Prodenia</i> adult
2. (2-egg larva).....	normal <i>Prodenia</i> adult

Summary: 10 larvae of *Prodenia litura* produced 14 flies or fly pupae, of these 6 were normal, 5 were aborted (being wingless and undersize) and 3 did not hatch. 3 parasitized larvae produced normal pupae and adult moths.

Reared from larvae of *Othreis fullonia* (Clerck)

*Winthemia dispar* ? Macquart

Days from oviposition to emergence from host.....approx. 10

Days in puparium..... 9

No. of flies produced per host larva.

1. (6-egg larva) .....2 normal flies

2. (6-egg larva) .....2 normal flies

3. (8-egg larva) .....4 normal flies

4. (4-egg larva) .....normal moth

5. (4-egg larva) .....normal moth

6. (5-egg larva) .....4 normal flies

Summary: 4 larvae of *Othreis fullonia* produced 12 normal flies; 2 parasitized larvae produced normal pupae and adult moths.