

**BIOLOGICAL NOTES ON *AGLOSSA CAPREALIS* (HÜBNER)  
(LEPIDOPTERA PYRALIDAE)\***

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Abstract

Observations on the biology and ethology of *Aglossa caprealis* (Hübner) (Lepidoptera Pyralidae) in two mills in Pianura Padana (Italy) are reported.

The results indicate the importance of the monovoltine behaviour of the insect and the essentially debris feeding and mycetophagous requirements of the larvae.

These larvae are often found with the larvae of *Pyralis farinalis* (L.) which sometimes share their silk "nests".

Introduction

Among the pyralid moth which infest stored products, those belonging to the genus *Aglossa* Latreille do not usually cause undue worry, because they are less widely encountered than the other genera.

In Italy *A. caprealis* (Hübner) and *A. pinguinalis* (Haworth) are known, while a third species, *A. dimidiata* (Haworth), of Asiatic origin - probably from Japan - can be found sporadically, limited to infestation of imported goods, since it is not able to adapt to conditions in this country.

*A. pinguinalis* occurs more frequently than the other species. Its larvae are found in the debris of different cereals, in butter, cheese, lard, and also damage book bindings. Concerning this, however, Silvestri (1943-51) stated that the larvae of *A. pinguinalis* feed on vegetable and animal debris that are more or less dry, as well as on dried dung, but not on fats, as the vulgar name in Italian 'moth of fats and lard' would indicate. *A. caprealis* while being the most widely dispersed has only on rare occasions been associated with stored products in warehouses; its biology up to now, is not well known, but is thought to be similar to closely related species. Finally, the larvae of *A. dimidiata*, have been observed on stored rice, on stored dried tea, and also on the remains of dead insects (Beirne, 1954; Issiki, 1969).

In the course of studies to clarify some aspects of the diet of the larvae of *Pyralis farinalis* (Linnaeus) (Trematerra, 1985; Trematerra and Galli, 1985) I have often found, in the environments frequented by this moth, individuals of *A. caprealis* and have noted that for some periods of their lives the larvae of these two species tend to live together, at times sharing "nests". In these nest-like formations, usually constructed in the young larval stages of *P. farinalis*, it is possible to find larvae of different colors, from dark greenish-brown to bright black, according to the age of individuals present.

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When only young larvae are found in the nest it is not possible to make any distinction between the species because they all have straw-yellow heads, while the anal and pronotal plates are honey-colored. To distinguish between them it is necessary to refer to Hinton (1946).

In the light of observations mentioned above, I thought it opportune to study more closely the biological behavior of A. caprealis.

#### Distribution of the species and damage

The presence of A. caprealis has been reported in different countries of central and southern Europe, north Africa, central Asia, in America, Australia and in New Zealand (Meyrick, 1928; Hudson, 1939; Lepigre, 1951; Carter, 1984).

In Great Britain, the insect has been found associated with corn kernels, on other cereals, which were not specified, as well as wheat stacks and clover ricks (Meyrick, 1928; Corbet and Tams, 1943).

In North America its larvae have been discovered by Livingston and Reep (1936) in badly conserved nearly rotten stored tobacco, and in stored wheat (Peterson, 1959). Pence and Hougue in 1957 observed larvae eating dried mushrooms of Poria incrassata B. in a house in California; a similar case was later reported in the same area by Ebeling (1975).

In Algeria, this species is particularly feared for the damage that the larvae are able to cause to cork used to seal wine bottles, the damage being similar to that caused by the Tineid Coenophila v-flavum Haworth and Tinea cloacella Haworth. This singular activity of A. caprealis has caused serious economic losses to the wine industry in this region by initiating deterioration of the wine (Lepigre, 1951; Balachowsky et al., 1972).

In Australia, the larvae of A. caprealis were observed by Watt (1965) on many occasions inside houses, hidden by moulding, in the cracks of floors, or under carpets, in cup-boards, in bookshelves and even at times, in attics. Different products are thus damaged among which may be mentioned: crackers, linen and even cereal baits to control mice. This Author also indicated that in the laboratory the larvae of this pyralid showed a particular predilection for an artificial pabulum used in rearing Alphitobius laevigatus (F.).

#### Biological observations

The following notes refer to observations on infestations found in two different flour mills, situated in the Pianura Padana (Italy).

In this environment, the adults of A. caprealis (Fig. 1) usually live in areas adjacent to places where cereal products are made or stored, in places characterized by low light intensity and high humidity, where cereal debris lies around for a long time. In these places, the presence of P. farinalis is also frequent (Fig. 2).

During the daylight hours the moths spend most of their time on walls or on equipment in the upper region of the rooms. The brownish color of their wings and their immobility make them difficult to spot; only if disturbed do they fly a little looking for another shelter. They are active and mate at night.

Between the end of June and early July, the female of A. caprealis usually lays 50-90 yellow or brownish eggs which fall from the walls to the edges of the floor below, where refuse and debris of food are usually

more abundant. The egg, examined by Arbogast and Van Byrd (1981) by scanning electron microscopy revealed a fine polygonal network.

Larvae appear 14 to 21 days after the eggs were laid. Straw-yellow with honey-brown heads, the larvae start their trophic activity on the surfaces of food particles present in the rooms.

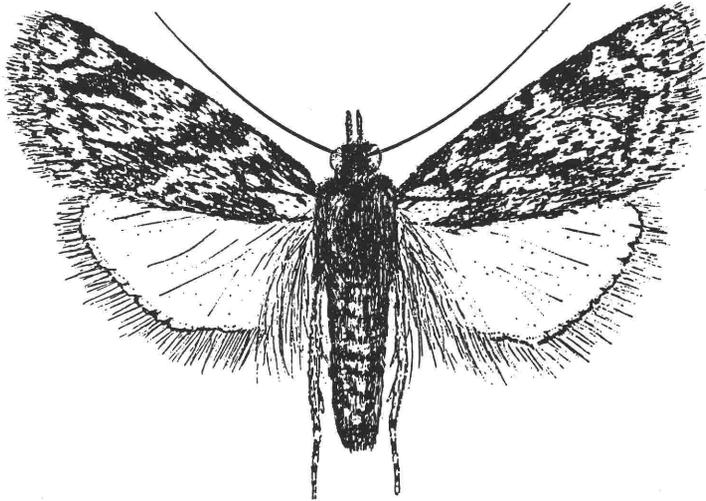


Fig. 1 - Aglossa caprealis (Hübner). Male.

After the second stage body color gradually changes and becomes brownish after a few days; after this, pigmentation increases until the body is black with light metallic touches. The head is bronze-colored (Fig. 3).

During August and September larval activity becomes more intense; individuals burrow long silk tunnels in the food which they cover with debris and excrement. Only occasionally or when disturbed do they leave.

During this period, it is possible to observe some individuals that move sporadically into areas adjacent to sources of infestations in order to live directly on stored food. This happens only when the products present are inadequately conserved and are seriously contaminated by microflora. In this respect they resemble the meal moth.

The similarity in activity of A. caprealis and P. farinalis is confirmed by the discovery, at various times, of A. caprealis larvae inside nests built by young stages of P. farinalis; again they are probably attracted by the abundant presence of microflora, larval exuvia and dead small Arthropods on which larvae of A. caprealis also feed. Larvae of A. caprealis differ in behavior from larvae of the meal moth in that they are not usually gregarious.

With the coming of cold weather, the galleries made by Aglossa are lengthened, thickening towards sheltered places such as corners of the floor, cracks, etc. where the insect spends the winter season in diapause.

The larvae become mature from about the second week of May to the end of June; they remain inside the gallery where they weave a whitish silk cocoon. The abdominal segments of the reddish-brown pupa are finely sculpted; at the end of the abdomen the cremaster bears six typical robust bristles in the shape of hooks. The duration of this stage is varia-

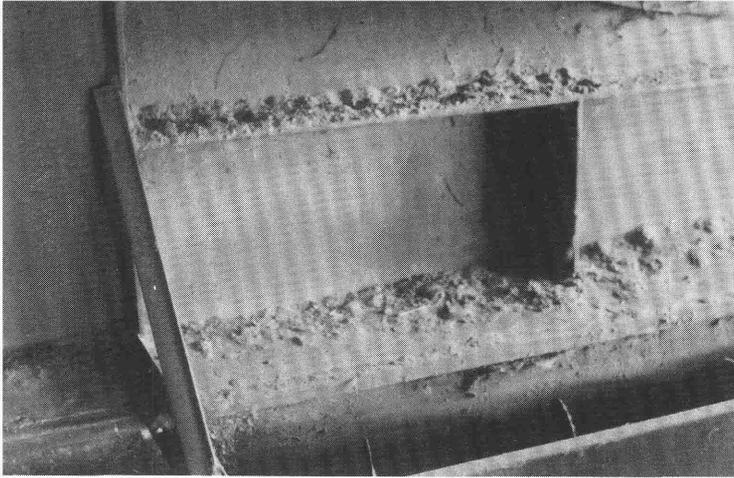


Fig. 2 - Detail of machinery with cereal debris at the focal point of infestation by Aglossa caprealis (Hübner).



Fig. 3 - Aglossa caprealis (Hübner). Larva.

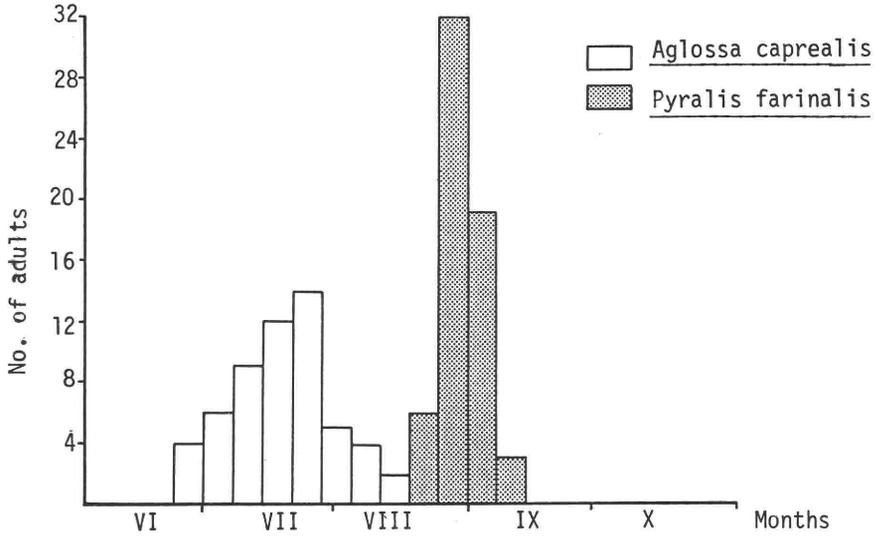


Fig. 4 - Flight period of *Aglossa caprealis* (Hübner) and *Pyralis farinalis* (L.).

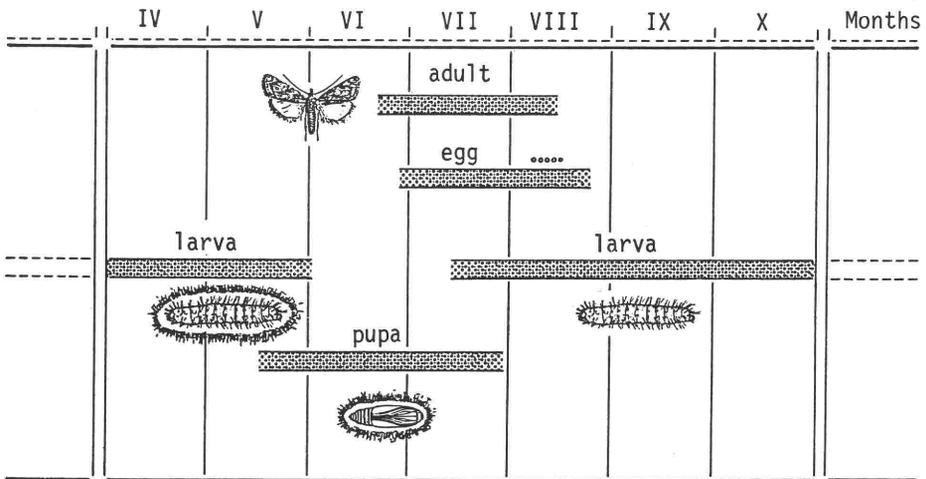


Fig. 5 - Development of *Aglossa caprealis* (Hübner) observed in two different flour mills situated in the Pianura Padana (Italy).

ble, depending on environmental conditions; at 25°C and 75-80% relative humidity (r.h.) it lasts 10-15 days and at 22°C and 65% r.h. it lasts for about 30 days.

In the mills where I observed the development of an infestation of A. caprealis, the first adults appeared between the end of June and the first of July; they remained at the mill site until mid August, with a staggered flight period, and were never abundant. As for P. farinalis, adults were observed between the end of August and early September. Population of flying adults of this species were greater (Fig. 4 and 5).

The larvae of A. caprealis were reared in the laboratory on different food stuffs: wheat and corn (as grain and as flour), biscuits, butter and cheese, at 25°C ±1°C with a r.h. of 75-80%. However they did not complete their development and died during the last stage.

These observations regarding the biology of A. caprealis, together with the references on the subject, indicate the essentially mycetophagous requirements of the species, which is usually confined to humid environments and in mouldy food stuffs.

Therefore, although this species is encountered relatively infrequently and is of limited distribution, A. caprealis should give cause for concern as a symptom of deterioration.

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