



Biological Sciences



BIOLOGY OF CHRYSOBOTHRIS FEMORATA

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Since the drought has swept over Oklahoma in recent years, weakening trees of different kinds, especially apple and elm, conditions have become extremely favorable for the development of the flat-headed apple tree borer (*Chrysobothris femorata*). The damage resulting from the larval feeding of this insect is of great importance, especially to newly transplanted trees which are killed in from one to two years. Even larger shade trees are not exempt from the attack of this pest. During the spring and summer of 1936, therefore, the study of the life history and habits of this insect under Oklahoma conditions was undertaken in the hope of getting leads for control.

In starting the work all infested trees that could be found were collected and the infested parts placed in screen cages during the winter and early spring of 1936. The emergence of the beetles from these trees started on May 4, and continued until June 29, with the peak of emergence occurring from May 15 to June 1. A total of over 700 beetles were taken from the emergence cages during that period.

As soon as the beetles emerged they were placed in feeding cages. Each cage consisted of a lantern chimney placed on a 6-inch flower pot which contained a 4 ounce bottle filled with water. Twigs of apple and elm were cut and placed in the bottle so as to keep them fresh and were arranged so as to prevent the beetles from falling into the water.

The beetles were found to feed very readily on bark of one-year-old apple and elm, especially in crotches and around bud scars. On about the second or third day after emergence we observed the male beetles drumming their abdomens against the twigs and sides of the cages. This seemed

to be a mating call, as the female would be attracted by the drumming sound and the two would finally mate.

The preoviposition period was found to be from 4-8 days, with an average of 5.8 days. A shortage of food during the first few days after emergence caused a longer preoviposition period. Beetles that were not fed would live only a few days after emergence.

The females seemed very selective when choosing a place to deposit their eggs. They were observed running up and down on the sunny side of the limbs, working their short ovipositors in and out over the surface of the bark, and would stop only when the ovipositor would strike an uneven surface. Cracks and sun scald checks seemed very suitable and the first eggs would be placed in such places. It would take about 10 to 30 seconds for the female to deposit the egg after a desirable place was found.

The total number of eggs obtained from individual females varied from 21 to 166 with an average of 65.7 from a series of females. The average number of eggs laid each day by the entire series of beetles varied from 0-69 with a close correlation to temperatures, the warmer the day the more eggs would be laid.

The longevity of the beetles was rather difficult to determine as there were several factors that might influence this. No actual field checks were made to verify the results obtained. It was necessary to transfer the beetles from one cage to another every day, so the handling was probably the most influencing factor. Also the temperature inside the glass cages might have become too high. However, we were able to keep several individuals alive for approximately 40 days with a maximum of 44 days.

Assuming that the beetles would live 40 days or more under natural conditions it would be necessary to protect the trees from early May to August 10 to prevent flat-headed borer damage.

In addition to the flat-headed borers four other species of beetles were reared from the cage material. They were *Anthaxia viridifrons* which is a very small buprestid; *Neoclytus acuminatus*, a small cerambycid (long horned wood borer); and two species of clerid, *Chariessa pilosa* and *Chariessa pilosa onusta* which were predaceous on the flat-headed borers in both larval and adult stages. Also about 6.9 per cent of the flat-heads collected in the larval stage in the winter and spring of 1936 were parasitized by species of Ichneumon wasps.

