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THE LIFE HISTORY OF *AELLOPOS TANTALUS* (SPHINGIDAE)

PAUL M. TUSKES

1444 Henry St., Berkeley, California 94709

ABSTRACT. The life history and immature stages of *Aellopos tantalus* are described for the first time. The larval host plant is seven year apple, *Casasia clusifolia*, a member of the coffee family, Rubiaceae. Larvae exhibit a green or a brown color phase in the fourth or fifth instar. Pupation occurs in the leaf litter with adults emerging in the morning. In the Florida Keys, *tantalus* appears to have a minimum of 6 generations per year. Adults were usually observed shortly before and after sunrise, and again prior to dusk.

Aellopos tantalus (L.) is a small sphingid of tropical origin, which occurs with a great deal of regularity in the Florida Keys. The adults in this genus are characterized by their small size, dark coloration, and the presence of a white band on the terga of the fourth abdominal segment. Hodges (1971) pointed out that the host plant and immature stages of *tantalus* are unknown. While living in the Florida Keys, I had the opportunity to rear the larvae of this species, and make observations on the adults. This paper describes the larval stages and biology of *A. tantalus*.

First instar. **Head:** Green; diameter 0.6 mm. Clypeus green. **Body:** Length 7.5 mm, width 1.3 mm. Ground color green. True legs green. Prolegs green. Spiracles green. Anal horn black, length 2.2 mm. Anal shield with two brown lines extending from posterior area at base of horn to anal shield.

Second instar. **Head:** Green; diameter 1.5 mm. **Body:** Length 11.5 mm, width 1.9 mm. Coloration identical to first instar. Anal horn length 3.5 mm.

Third instar. **Head:** Green; diameter 2.2 mm. Clypeus green. **Body:** Length 16-18 mm, diameter 3.4 mm. Ground color green. Diagonal yellow lines on abdominal segments, extending from base of prolegs dorsally, terminating in the subdorsal intersegmental area of the adjacent posterior segment. Prominent yellow line extending from base of prolegs on abdominal segment VI, and terminating at base of anal horn. True legs, green. Prolegs, green. Spiracles, green. Anal horn length, 4.6 mm, red at base, mid portion green, tip brown.

Fourth instar. (Fig. 1). **Head:** Diameter 3.3 mm. **Body:** Length 21-23 mm, width 4.6 mm. **Coloration:** If ground color is green, the head, clypeus, prolegs, and ventral

surface are green. Anal horn blue-green. If ground color is brown, the head, clypeus, prolegs, and ventral surface are brown, and the anal horn is black. Patterns and colors common to both color forms: diagonal yellow-orange lines on lateral surface of all abdominal segments as in third instar. Diagonal cream-colored lines originating on dorsal surface of abdominal segment II, and at base of horn are very prominent, and at least twice the diameter of diagonal yellow-orange lines. Dorsal area whitish, with white paniculum. Subdorsal area between yellow-orange lines, orange with pinaculum of this area also orange. Faint subdorsal longitudinal orange line extending from first thoracic segment to prominent diagonal line on abdominal segment II. Anterior dorsal area of prothoracic segment with orange or white band next to head. Spiracles, gray or orange. Yellow lines extending from base of anal horn to anal shield. Anal shield same as ground color but with trace of violet near base. Anal horn, straight, length, 5.2–5.5 mm.

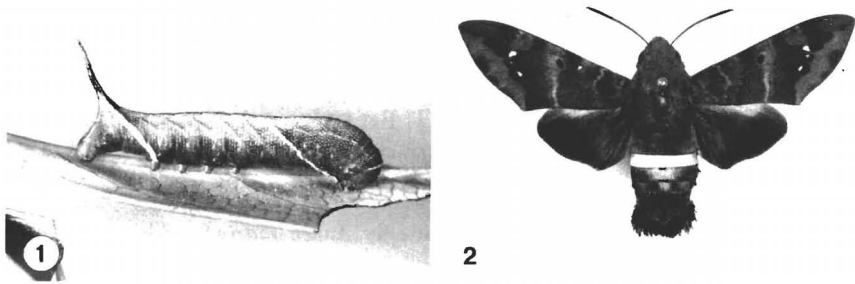
Fifth instar. Head: Diameter 5.5 mm. **Body:** Length 49–51 mm, width 9.4 mm. Anal horn 4.5 mm long, and posteriorly curved. As in the fourth instar, the larvae exhibit two color forms, one green, the other brown. There is no noticeable difference between fourth and fifth instar larvae, other than overall size and the shape and length of the anal horn.

DISCUSSION

Adult *A. tantalus* have a rapid flight, making them difficult to capture except when they nectar. Though *tantalus* is said to be a day-flier, the majority of adults were observed shortly before and after sunrise, and again prior to dusk, with few sightings during the rest of the day. On Plantation Key, most adults were observed nectaring at the blooms of white stopper, *Eugenia axillaris* (SW.), with a few individuals visiting flowers of lantana. Adults were found in clearings, or around the periphery of hardwood hammocks, but not within the hammock.

Female *tantalus* were observed ovipositing on seven year apple, *Casasia clusiifolia* Urban, in the late afternoon. In older literature this plant is referred to as *Genipa clusiaefolia* Jacq. *Casasia* is native to south Florida and a member of the coffee family, Rubiaceae. Once the host plant was known, I found that almost every plant examined supported eggs, larvae, or showed signs of feeding damage. Thus, though the adults were never overly abundant, the immature stages were exceedingly common. The eggs are light green and round, measuring 1.4 mm in diameter, and are laid singly on the new tender growth of the host plant. At ambient temperatures in July (31°C high, 28°C low) the eggs hatch in 2.5 days. During the first three instars all individuals are green, but upon molting into the fourth or fifth instar, the ground color may change from green to brown. Fig. 1 illustrates a brown phase, fourth instar larva. Similar changes occur in the larvae of *A. fadus* (Cramer) and *A. titan* (Cramer), and were illustrated by Moss (1920).

Early instar larvae were found feeding only on the new growth. While last instar larvae also preferred new growth, they were fre-



FIGS. 1-2. 1, brown color phase of fourth instar larva; 2, ♀ *A. tantalus*.

quently found on fully formed leaves that were not yet mature. Considering the distribution of this moth in Florida, other plants besides *clusiifolia* must serve as larval hosts. Empty egg shells and feeding damage similar to that of *tantalus* were found on pond apple (*Annona glabra* L.) but no larvae were observed. In captivity *tantalus* larvae consumed the tender leaves of *A. glabra* and were able to complete development.

As the mature larva prepares to pupate, its color changes from green or brown to dark red. The pupation chamber is constructed under a few inches of leaf litter and is formed by spinning just enough silk to hold the surrounding debris together. During the summer, 26 days are required for development from the egg to the emergence of the adult. As temperatures cool during January and February, the low temperatures slow the development of larvae and pupae, and adults are uncommon. Although cool temperatures greatly increase the length of time in the pupal stage, no diapause was observed. Thus, *tantalus* appears to have a minimum of 6 generations a year in the Florida Keys. Adults, which emerge in the morning, have a dark green cast to the dorsal surface, and a wide range of subtle colors which are lacking in individuals more than a day old (Fig. 2).

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