

## SCIENTIFIC NOTES

NOTES ON THE MOSQUITO, *Haemagogus equinus*  
THEOBALD

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The mosquito, *Haemagogus equinus* Theobald, was first reported from the United States in 1956 (Trapido and Galindo, 1956). This species, collected from Brownsville, Texas, is considered to be of significance in the epidemiology of yellow fever. Following the publication of the above report, several investigators, over a period of about three years, collected intensively in the Brownsville area and along the Texas-Mexico border as far west as El Paso, Texas. The mosquito was recovered on several occasions, but all collections were in the vicinity of Brownsville, Texas (see Eads and Strom, 1957; Breland, 1957, 1958).

Until a short time ago, the writer made his last collection in the Brownsville area in the summer of 1959. A few *H. equinus* were collected at that time, but since then, several collections by graduate students, and by other investigators (verbal reports) have failed to recover the species. These developments have apparently caused some workers to conclude that *H. equinus* no longer occurs in the United States.

The present note is to report the recent recovery of *Haemagogus equinus* from the Brownsville, Texas area. The collection site was approximately 16 miles east of Brownsville, and in a cavity in a Texas ebony tree from which the writer collected the species several years previously.

When this tree hole was first examined on June 19, 1962, no free water was present, but there were traces of moisture. Strained pond water was added to this and several other cavities in the vicinity. Approximately 30 hours later, on June 20, the water was recovered from this and two other cavities to which water had been added. The next morning, first instar larvae were noted in the collecting jars from two of the cavities, and from one of these, three specimens of *H. equinus* were reared. Five other larvae were also present, one of *Aedes triseriatus* (Say) and four of *A. zoosophus* D. & K. Only *A. zoosophus* was recovered from the other tree hole.

This collection strengthens the suggestion that *H. equinus* is well established in the Brownsville area (Breland, 1958). It also confirms the value of the addition of water, in the absence of natural free water, for the collection of tree hole breeding species. A third point to be noted is that the absence of a given species from an area or site at a particular time, does not necessarily mean that

the species does not occur in the region. The writer, over a period of several years, has collected eleven times from the same tree hole from which *H. equinus* was recovered. *Haemagogus equinus* has been found only twice in this particular cavity.

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RECOVERY OF A CYNIPID PARASITE FROM  
*Hippelates* PUPAE

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During the course of studies on the breeding niches of *Hippelates* eye gnats (Mulla 1962) large quantities of soil were washed for the recovery of *Hippelates* pupae and puparia. A simple technique was perfected where *Hippelates* pupae or puparia were floated out of the soil by means of water. The soil washing and the work on the recovery of pupae and puparia were carried on in cooperation with the Coachella Valley Mosquito Abatement District in Riverside County, California. Recovery of pupae or puparia by flotation from the soil was initiated in 1958.

A number of pupae recovered during 1958 were placed individually in shell vials containing moist sand or a wad of cotton. The pupae were held for gnat emergence for several weeks (Mulla 1962) at room temperature.

After the emergence of most of the gnats, a

few pupae were observed to contain fully developed insects. These insects did not emerge during the normal emergence period of eye gnats. After a period of 3 to 4 weeks from time of recovery, the fully developed insects were taken out by breaking the *Hippelates* pupal skins. The insect was determined as *Hexacola* sp., belonging to the subfamily Eucolilinae and the group Cynipoidea (determined by L. H. Weld, United States Department of Agriculture, Entomology Research Division, Beltsville, Maryland). The female parasite (Figure 1) has striate scutellum

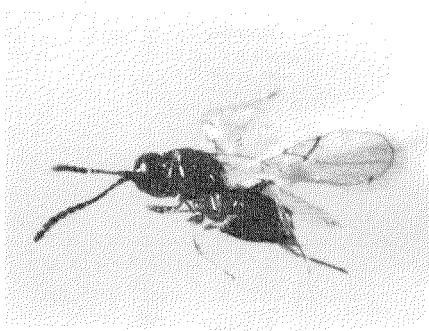


FIG. 1.—Female *Hexacola* sp. (Cynipoidea, Eucolilinae) recovered from *Hippelates* pupa

and the radial cell seems to be open. Wing characteristics, antennal form and segments and the ovipositor are readily noticeable from Figure 1.

Other Eucolilines such as *Cothonospis rapae* (Westd.) and *Kleidotoma* parasitize cabbage root maggot and carrion feeding larvae (James 1928). The former parasitizes small larvae of the root maggot and is therefore of limited benefit by being able to parasitize during a short period of development of host larvae (James 1928). Other Eucolilines such as *Psilodora* spp. parasitize maggots of blowflies. The parasites go through long hibernation even at high temperatures (Roberts 1935).

Members of the genus *Hexacola* have been reared from frit fly (*Oscinella frit*) larvae (Simmonds, 1952). No parasitism of eggs or pupae by *Hexacola* was observed. Under artificial conditions the parasites emerge 5-7 weeks after collection, and no such delay in emergence was observed in the field (Simmonds 1952).

It is possible that the *Hexacola* recovered from *Hippelates* also manifested such a delay in emergence under laboratory conditions. The degree of parasitism found in the recovered pupae was not over 5 percent. Although the parasite does not seem to be an effective control agent, the recovery of this parasite from *Hippelates* pupae may stimulate work on this as well as other

natural enemies of this group of human and animal pests. As far as is known, the recovery of this parasite constitutes the first record of a parasite from *Hippelates* eye gnats.

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#### A MICROSPORIDIAN PARASITE OF *Aedes stimulans* (WALKER)

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Parasitized *Aedes stimulans* larvae were first noticed in northern New Jersey by the junior author in the spring of 1959. In this locality this mosquito has a larval period which extends from late March to early in May. A closer examination this past spring, however, revealed the parasite to be a microsporidian of the genus *Thelohania* (Kudo, 1924). Although no specific designation can be made at this time to the best of our knowledge, *Aedes stimulans* represents a new host record for *Thelohania* and this is the first microsporidian parasite recorded from a New Jersey mosquito (Thomson, 1960).

Heavily infected larvae were quite distinctive. They appeared either to have a lumpy and whitish fat body or to be completely an opaque green except for the head capsule and breathing tube. The green condition seems to be unique and no mention is made of it in the literature dealing with mosquito microsporidian infections. Both the lumpy and the green condition result from the immense concentration of spores in the cells of the fat body. In late stages of infection, the fat body disintegrates completely and the larva becomes a veritable sac of spores. The green condition is only an apparent one since, when the larvae are removed from a dark background, the green disappears and the larvae appear normal or slightly whitish.

The difference in appearance between the green and lumpy forms may be a function of the time in the larval period when an infection is initiated. None of the green larvae were observed to live