TABANIDAE ATTRACTED TO AN ULTRAVIOLET LIGHT TRAP

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The development of new types of lamps in the last few years has renewed interest in the use of light traps for insect surveys. Glick and Hollingsworth (1954, 1955, 1956) showed that lights emitting energy in the near ultraviolet and visible regions of the electro-magnetic spectrum were attractive to adults of the pink bollworm (Pectinophora gossypiella [Saund.]), and that such lights were valuable for insect surveys. Merkl and Pfriemer (1955) found that other cotton pests were also attracted to ultraviolet light.

Ultraviolet, or black, light traps have been used principally for surveys of lepidopterous pests; thus there have been few references indicating that such lights were attractive to Diptera. Pfriemer (1955) recorded rather large numbers of Diptera taken during the early months of the year, but he did not list family response within the order. In studies with different types of ultraviolet lamps and trap designs, Frost (1957) listed eight families of Diptera as well as "midge" and "miscellaneous Diptera," but made no mention of the Tabanidae. Tabanids have been reported from New Jersey light-trap collections. MacCreary (1940) reported 10 species from this type of trap in Delaware, and Frost (1953) recorded 19 species in Pennsylvania. Apparently the first indication that tabanids were attracted to ultraviolet was that given by Hetrick (1955), who reported 25 families of Diptera from collections in Florida.

The collections recorded here were made by L. A. Hetrick at his residence in Gainesville, Florida. The commercially built omnidirectional trap is similar in design to the Pennsylvania No. 1 trap described by Frost (1957). The light source was a 15-watt GE Bl fluorescent lamp that radiated energy in the near ultraviolet region (2,800-3,800 angstroms). The lamp was mounted vertically between four baffles. The light and baffle unit was constructed over an 18-inch funnel that tapered to 3 inches at the lower end and was fitted with a plastic cup. It was supported on a metal tripod.

The trap was operated primarily for the accumulation of teaching material at the University of Florida. The operation hours were from about 15 to 30 minutes before dark until 10 to 10:30 p.m., depending upon early evening temperatures and other weather conditions. As the collections were usually stored for several months before use, all the specimens were killed and preserved in 70-percent isopropanol. At first it was believed that wet preservation would interfere with their identification; however, most of the flies were easily pinned and when dry they could hardly be differentiated from dry-killed pinned specimens.

The first group of tabanids examined was an accumulation of specimens separated from trap collections made during the summer months from

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1 The research for this paper was done while the author was attending the University of Florida.
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1954 through 1958. The flies were removed from the preservatives, pinned, and allowed to dry 24-48 hours before determinations were attempted. A list of the species and the sexes represented is given below.

**Subfamily Tabaninae**

*Chlorotabanus crepuscularis* (Bequaert) .......... \( \delta \) \( \varphi \)

*Diachlorus ferrugatus* (Fabricius) ................. \( \varphi \)

*Leucotabanus annulatus* (Say) ....................... \( \delta \)

*Tabanus aar* Philip .................................. \( \varphi \)

  *americanus* Forster ................................ \( \delta \) \( \varphi \)

  *atratus* Fabricius ................................ \( \varphi \)

  *gladiator* Stone .................................. \( \delta \) \( \varphi \)

  *gracilis* Wiedemann ............................. \( \varphi \)

  *imitans* Walker .................................. \( \varphi \)

  *imitans excessus* Stone ......................... \( \delta \) \( \varphi \)

  *johnsoni* Hine .................................. \( \varphi \)

  *lineola* Fabricius ............................... \( \delta \) \( \varphi \)

  *melanocerus* Wiedemann ......................... \( \varphi \)

  *nigripes* Wiedemann ........................... \( \delta \) \( \varphi \)

  *pumilus* Macquart ............................... \( \delta \)

  *stygius* Say .................................. \( \varphi \)

  *sulcirostris* Macquart ......................... \( \varphi \)

  *zythicolor* Philip .............................. \( \delta \) \( \varphi \)

**Subfamily Panytiinae**

*Chrylops flavidus* [i.e. *flavidus*] Wiedemann .......... \( \delta \) \( \varphi \)

*flavidus reichertii* Fairchild ..................... \( \varphi \)

*montanus perplexus* Philip ......................... \( \delta \)

The second group consisted of the specimens attracted to the ultraviolet-light trap between April 23 and July 31, 1959.

**Subfamily Tabaninae**

\[ \begin{array}{ll}
\text{Chlorotabanus crepuscularis} & 12 \ 9 \\
\text{Diachlorus ferrugatus} & 0 \ 2 \\
\text{Tabanus aar} & 0 \ 3 \\
\text{americanus} & 1 \ 0 \\
\text{fumipennis} Wiedemann & 2 \ 0 \\
\text{gladiator} & 1 \ 2 \\
\text{gracilis} & 0 \ 1 \\
\text{imitans} & 0 \ 2 \\
\text{lineola} & 43 \ 9 \\
\text{melanocerus} & 1 \ 1 \\
\text{nigripes} & 2 \ 3 \\
\text{zythicolor} & 0 \ 1 \\
\end{array} \]

\(^{2}\) Alan Stone, Entomology Research Division, U.S.D.A., assisted in the identification of some specimens.
Tabanus lineola was the predominant species in both these collections, the males outnumbering the females by nearly 5 to 1 in the latter group. Chlorotabanus crepuscularis was next in abundance in 1959, but this species was represented by only a single specimen from 1954 through 1958. Of the 14 species and subspecies and 98 specimens collected in 1959, only 37 percent were females. This figure is obviously influenced by the high ratio of lineola males. As the males of some species are difficult to collect, it may be significant that of the total of 23 species and subspecies taken from the trap, males of 14 species were present. In 1959 the individual species appeared in the traps at about the same time as the expected period of adult activity.

The number of tabanids attracted to the trap was small, probably no more than 0.001 percent of the total insect catch. In the period 1954 through 1958, only 133 specimens were taken but they were separated from the collections by students and it is possible that many specimens were overlooked or purposely discarded. This assumption is further supported by the collection of 98 horse flies and deer flies from the trap between April 23 and July 31, 1959. It is believed that only a small percentage of the tabanids attracted to the light become trapped in the plastic cup. Some of the specimens reported here were taken from the baffles, fluorescent tube, or the funnel of the trap. The yield of tabanids could probably be considerably increased by careful observation of the trap during operation.

Summary

Twenty-three species and subspecies of tabanids divided among five genera and two subfamilies were recorded from two groups of ultraviolet-light trap collections in Gainesville, Florida, one in 1954 through 1958 and the other in 1959. Males of 14 species and subspecies were present in the collections. Tabanus lineola was the predominant species, followed by Chlorotabanus crepuscularis. In the 1959 collections, the males of lineola outnumbered the females by nearly 5 to 1. Of a total of 98 specimens attracted to the ultraviolet light trap during 1959, only 37 percent were females.

Literature Cited


