# OBSERVATIONS ON THE HABITS OF TABANIDAE

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The following are observations made during the summers of 1952 and 1953 in the towns of Durham, Lee, Belmont, New Durham, and Gilmanton, New Hampshire. The observations are on hovering, flight activity, species frequenting flowers, and on species visiting moist areas on dirt roads. A method of moistening areas on dirt roads by artificial means and collecting flies visiting these areas is described.

## HOVERING

*Tabanus aurilimbus* Stone; males were observed along dirt roads and woodland paths from July 6 to July 30. The insects hovered from 1 to 3 ft. above the ground surface and in each instance they were facing into the wind. The distance between individual flies varied from 6 ft. to over 150 ft. When another insect flew near the fly would make a "pass" at the intruder, return to the same location, and continue to hover. Flies otherwise disturbed would fly up or down the road for 50 to 100 ft. and return, in most instances, to the identical area. Undisturbed flies would hover in the same spot for several minutes.

The earliest observation was made at 9:00 A. M., the latest at 5:00 P. M., the hovering activity apparently being governed by light intensity and temperature.

Males of *T. aurilimbus* were very numerous in southeastern New Hampshire during the observation period. As many as 90 were noted on one day, July 13, 1952, in Durham, N. H.

There were no female horseflies taken or observed in conjunction with hovering males.

*Tabanus trispilus* Wiedemann; males of this species were seen to hover, momentarily, over pools or damp areas in dirt roads. These flies would dip once, or in some cases repeatedly, into the mud or water and dart away.

*Tabanus actaeon* Osten Sacken; this species was observed in the town of Durham, N. H., on August 31, 1951. The observers were Mr. W. J. Morse and Dr. O. T. Zimmerman. The insects were flying over and around houses and other buildings, there being no apparent pattern to the flight. The activity of these flies lasted one entire afternoon and has not been seen to occur since the above date. The observers estimated several hundred flies to be engaged in this activity. Of the dozen specimens taken, all were females.

## ON FLOWERS

The following species were taken from various species of flowers. *Spireae latifolia*, meadow sweet, *Tabanus aurilimbus*, females; *T. superjumentarius*, female; *T. trispilus*, males and females; *T. typhus*, males and females; *Stonemyia rasa*, males and females; *S. tranquilla*, males and females; *Chrysops vittata*, female. From *Sium suave*, waterparsnip, males of *T. actaeon*, *T. quinquevittatus*, *T. trispilus*, *T. typhus*, males and females *S. rasa* and *S. tranquilla*. One male of *C. vittata* was taken from a corn tassel.

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### AT LIGHTS

*T. catenatus*, females; *T. pumilus*, males; *S. rasa*, males; *C. geminata*, females; and *C. moecha*, females were taken at lights or in light traps.

### MOIST AREAS ON DIRT ROADS

Twenty-four species, totaling 138 males and 114 females were taken from around puddles or moist areas in dirt roads in the towns of Durham, Gilmanton, and Lee, N. H.

The summer of 1952 was quite deficient in rainfall. After a rain shower on July 14 several tabanids were collected at a mud puddle. Whenever puddles were formed it was possible to collect tabanids from those areas. As the natural

TABLE 1

*Tabanidae collected from dirt roads*—1952–1953

| Species | Dates | Male | Female |
|---|---|---|---|
| Tabanus actaeon | 8/20 to 28 | 4 | 4 |
| T. aurilimbus | 7/14 to 25 | 6 | 1 |
| T. catenatus | 7/18 to 25 | 6 | 4 |
| T. lasiopthalmus | 7/14 | .. | 1 |
| T. lineola | 6/29 to 7/21 | 13 | 16 |
| T. nigrovittatus | 7/25 | 5 | 1 |
| T. nivosus | 7/23 | .. | 1 |
| T. pumilus | 6/26 to 7/27 | 9 | 8 |
| T. quinquevittatus | 7/18 to 25 | 1 | 2 |
| T. sparus | 7/26 | .. | 1 |
| T. sulcifrons | 7/14 to 25 | 6 | 5 |
| T. superjumentarius | 6/26 to 7/27 | 20 | 20 |
| T. trispilus | 6/26 to 7/25 | 29 | 7 |
| T. typhus | 7/14 | .. | 1 |
| T. vivax | 7/18 to 25 | 2 | 5 |
| Stonemyia rasa | 7/18 to 8/26 | 2 | 7 |
| S. tranquilla | 7/18 to 27 | 4 | 4 |
| Chrysops aberrans | 7/23 | 5 | ... |
| C. geminata | 6/20 to 7/25 | 13 | 7 |
| C. lateralis | 7/10 to 25 | 10 | 6 |
| C. montana | 7/27 | .. | 1 |
| C. sackeni | 7/9 | .. | 1 |
| C. striata | 7/23 to 25 | 1 | 2 |
| C. vittata | 6/20 to 7/27 | 2 | 9 |
| | Total..... | 138 | 114 |

puddles were formed only at rare intervals, the following method was used with some success. Water was poured into depressions on dirt roads, especially in those depressions where natural puddles would form. A two gallon watering can of water was sufficient to treat an area. It was found that by keeping the moistened area small, about 3 ft. in diameter, it was easier to collect the flies. The location of the moistened area determined, to a great extent, the success of the method. Best results were obtained in partial shade adjacent to a bright open area. In one instance the use of an area in the open proved satisfactory; this occurred on a cool day when there was little air movement. Deep shade proved to be unsatisfactory.

The best collecting was done on days with bright sunshine, high temperature, and low humidity. Twelve species, 40 males and 21 females, were taken on

July 18, 1952. On this date the temperature was approximately 97° F, the humidity low, and the sky cloudless.

The flies, "cruising" along the road alight near the water or dip into the water. The larger tabanids usually drop to the muddy edges of the puddle and remain there for several minutes. The *Chrysops*, in almost every instance, will fly in, touch the mud or water, and fly off immediately. For this reason it was found that the *Chrysops* were more difficult to capture. Only one tabanid, *T. trispilus*, would hover over the water or mud and dip into the moistened area repeatedly. The other tabanids would halt momentarily over the area, dip once, and fly off immediately, or alight as mentioned above.

In capturing the flies the following method worked quite well. After the fly had alighted on the road the net was slowly placed over it, care being taken not to startle the insect. The closed end of the net was held extended, above the insect.The open end of the net was then placed quickly onto the ground, the fly being near the center of the open end. In nearly every case the tabanid would then fly up into the closed end of the the net. By a rapid sweeping motion the insect was entrapped. In rare instances the fly would attempt to crawl out from under the net rather than fly upward. If the ground was not too muddy, the closed end of the net was, in some cases, dropped onto the fly and the specimen picked up after it had become enmeshed. The method used is a matter of preference to the collector. Those insects which hovered over the moistened areas, and also in the case of the active *Chrysops*, were collected by rapid sweeping.

The use of the "watering can" method may work in periods of wet weather. In one area tabanids were taken from artifically made puddles, even though there was an abundance of water in a swamp on either side of the road. However, this method should prove more satisfactory in dry areas or in years of low rainfall.

Table I shows the number of specimens taken at various locations by the "watering can" method. Collecting was done for 3 days in June, 14 days in July, and for 3 days in August. Three species, *Tabanus sparus*, *Chrysops montana* and *C. sackeni* taken in 1953 were not taken in 1952. The earliest and latest dates of capture are given.