TABANIDAE OF THE TENNESSEE VALLEY WATERSHED

W. E. SNOW, EUGENE PICKARD AND J. B. MOORE
Malaria Control Branch, Division of Health and Safety, Tennessee Valley Authority,
Wilson Dam, Alabama

A survey of insects of public health significance occurring in the vicinity of TVA reservoirs was undertaken in fiscal years 1953 and 1954. Included in this survey were mosquitoes, punkies, deer flies, horse flies, blackflies, and stable flies. It is the purpose of this paper to present information on the distribution and biology of the deer flies and horse flies encountered in this survey as well as records from incidental collections prior to 1953. The first and only extensive collections in the Valley before the 1953-1954 survey were made in north Alabama by Dr. John N. Belkin in 1941 and 1942 while on the TVA staff. We are indebted to him for the use of these records in this paper.

Although the Tennessee River watershed extends into seven Southeastern States, its main reservoirs are largely confined to Alabama and Tennessee. The majority of the collections was made in forested and pastured portions of the floodplain in these states. In several instances populations of tabanids were sampled along tributary streams in mountainous areas of the watershed included in the Cherokee National Forest. At Greenbrier, Alabama, deer flies were observed in a tupelo gum swamp maintained at more or less constant pool level by beaver dams. Heavy concentrations of deer flies were also noted in sandy creek bottoms near Bruceton and Paris, Tennessee, where highway and railroad construction has caused marshy and swampy situations to develop. Records of species caught in connection with observations on biting Diptera in a cypress forest at Reelfoot Lake, Tennessee, are also included.

Since the tabanids do not generally constitute a source of annoyance to man and animals in reservoirs of the Tennessee River Valley, no extended efforts were made to determine larval breeding situations. Larvae and pupae of Leucotabanus annulatus Say were collected on several occasions from moist tree cavities in connection with studies on larval breeding sites of punkies. In one instance, a tabanid larva, presumed to be Tabanus atratus Fab., was taken while actively moving just beneath the surface of a large sulphate waste basin near Calhoun, Tennessee.

Adult populations were sampled while on animal hosts, in natural resting sites, parked and moving cars, light traps, rotary trap, on windows, and by net sweeping. Black panel trucks with fairly deep (2½"-3") side window casings were especially suited to the detection of tabanids entering through the rear door when the vehicles were parked along pastured reservoir margins. The following combinations of letters are employed in the distribution records to indicate the method or conditions pertaining to the collection: BC (biting a cow), BH (biting a horse), BM (biting a man), BP (biting a pig), BU (biting a mule), C (interior of car or truck) LT (light trap), RT (rotary trap), and S (net sweeping).

The distribution records presented in this paper include 51 species and 7 subspecies in the following genera: Chrysops (22), Hamatobanus (1), Leucotabanus (1), and Tabanus (34). The genus Chlorotabanus is very probably present in the Valley since Pechuman (1954) records a collection of C. crepuscularis (Bequa.) by

1 Acknowledgment is made to Dr. Gordon E. Smith, Chief Biologist, Division of Health and Safety, for his guidance and helpful suggestions during the course of this survey. Special thanks are due Dr. Alan Stone, Bureau of Entomology and Plant Quarantine, U. S. Department of Agriculture, for identification of specimens and checking the manuscript list of species.
Benesh at Burville, Tennessee, in the nearby Cumberland watershed. Of the 1,160 specimens collected, the majority (773) were deer flies (Chrysops spp.). This plurality of Chrysops suggests that deer flies are more anthropophilic and hence are more frequently encountered, that they are more restricted in the environment and show greater numbers in localized situations, or perhaps indicate a greater reproductive potential. The 387 horse flies were distributed as follows: Hamatobabus (2), Leucotobabus (15), and Tabanus (370).


Chrysops brimleyi Hine Tennessee: Newport, V–11–54 (BH–1).


Chrysops flavida celata Pech. ALABAMA: Decatur, VI-11-41 (3).


ALABAMA: Triana, VI-9-41 (2); Decatur, VI-11-41 (6), VI-21-41 (1); Wilson Dam, VI-15-42 (9). Along with Chrysops brunea, this species was annoying to man along the margins of Bayou du Chien at Reelfoot Lake, Tennessee. In addition to bald cypress the bayou is margined with dense stands of giant sawgrass (Zizaniopsis miliacea).

Chrysops geminata Wied. TENNESSEE: Hollow Rock, VI-22-54 (BM-1); Parksville, VI-23-54 (BM-1). NORTH CAROLINA: Andrews, VII-7-54 (C-1).

Chrysops moecha O. S. TENNESSEE: Paris, VII-29-53 (C-1), VII-7-54 (C-3); Camden, VI-10-54 (C-1), VI-11-54 (C-1); Gallatin, VI-11-54 (C-1). ALABAMA: Mooresville, VI-9-41 (1).


Chrysops nigra Macq. TENNESSEE: Sugar Tree, V-14-52 (BM-2), V-23-53 (BM-1), V-25-53 (BM-1); Camden, VI-21-53 (BM-1); VI-8-53 (BM-2) (C-1), VI-9-53 (BM-3), V-28-54 (C-2); VI-18-54 (C-1), VII-7-54 (C-1); Englewood, IV-36-54 (BM-2); Tellico Plains, IV-30-54 (BU-1); Big Sandy, V-11-54 (C-1); Hollow Rock, V-17-54 (C-1); Cardyew, VI-9-54 (BH-1). ALABAMA: Decatur, V-28-41 (1); Florence, V-23-54 (C-1); Fort Payne, VI-22-54 (BM-1); Town Creek, IV-29-55 (BM-2). Adults of C. nigra were especially numerous in a black willow-cattail bottom near Camden, Tenn.


Chrysops pikei Whit. TENNESSEE: Camden, VII-2-54 (C-1), VII-7-54 (C-1). ALABAMA: Mooresville, V-9-41 (1); Decatur, VI-11-41 (1); Greenbrier, VI-18-41 (1); Wilson Dam, VI-15-42 (1); Florence, V-28-53 (C-1).

Chrysops pudica O. S. TENNESSEE: Camden, VI-18-54 (C-1), VII-7-54 (C-1). ALABAMA: Somerville, VI-10-42 (1); Wilson Dam, VI-15-42 (1).

Chrysops striata O. S. TENNESSEE: Big Sandy, VII-28-54 (C-1); Paris, VIII-26-54 (S-1).

Chrysops univittata Macq. TENNESSEE: Paris, VI-12-51 (C-2), VI-17-54 (BU-1), VI-24-54 (C-1); Carderew, VI-16-53 (BM-1); Pickwick Dam Village, VI-23-53 (BM-1); Hustburg, VI-23-54 (C-1); Fason, VI-24-54 (C-1); McKinnon, VI-24-54 (C-1); Camden, VII-2-54 (C-1). ALABAMA: Somerville, VI-10-42 (1); Rogersville, VI-4-54 (BM-1). NORTH CAROLINA: Hayesville, VI-24-54 (BH-1); Andrews, VII-7-54 (S-2). Of all deer flies considered in this report, C. univittata showed the widest range of habitat conditions. In the tributaries of the storage reservoirs up to 2,000 in the Smoky Mountains, females were taken along mountain streams where mountain laurel and rhododendron were common plant species. In west Tennessee characteristic habitats appeared to be along gravel bottom streams in low hill country.


Chrysops vittata Wied. TENNESSEE: Englewood, VII-9-52 (BM-3); Chattanooga, VI-2-53 (BM-1), VI-7-54 (BM-1); Paris, VI-23-54 (S-2), VII-8-54 (S-14), VIII-26-54 (S-27); Big Sandy, VIII-5-54 (C-1). ALABAMA: Decatur, VI-9-41 (3), VI-11-41 (6), VI-21-41 (3), VI-26-41 (1). NORTH CAROLINA: Hayesville, VI-24-54 (BH-5). In the mountainous area around Hayesville, N. C., deer flies have been considered a major pest to man and livestock in June. Adults of C. vittata were especially active along the wooded hill tops rather than in
pastured valleys. Near Paris, Tenn., this species was very abundant in a sandy creek bottom which had become swampy and colonized by alder (Alnus rugosa) due to interruption of drainage by highway construction.

_Chrysops wiedemannii_ Kr. TENNESSEE: Bristol, VIII-9-51 (C-1); Camden, VI-23-53 (C-3), VIII-3-53 (BM-3), VIII-14-53 (C-1), VIII-15-53 (C-1), VII-1-54 (C-1), VII-2-54 (C-1), VII-7-54 (C-4), VII-27-54 (C-1), VIII-25-54 (C-1), VIII-26-54 (S-2) (C-1); Eva, VII-30-53 (BM-2); Hollow Rock, VIII-21-53 (C-2); Big Sandy, VII-28-54 (C-1); Paris, VIII-26-54 (S-1), IX-9-54 (S-1). ALABAMA: Decatur, VI-9-41 (4), VI-11-41 (3), VI-26-41 (1); Florence, VII-1-41 (2); Greenbrier, VI-20-55 (C-1), VII-14-55 (RT-1), VII-26-55 (C-1), VII-27-55 (C-1). MISSISSIPPI: Iuka, IX-22-52 (BM-1). This species was commonly found biting man in the major reservoir bottoms in north Alabama and west Tennessee with _C. flavida._

_Hamaabans carolinensis_ (Macq.). TENNESSEE: Camden, VI-10-54 (C-1). ALABAMA: Wilson Dam, VI-6-41 (1).

_Lecrotias annulatus_ Say. TENNESSEE: Hustburg, VII-2-53 (LT-1); Parksville, VIII-27-53 (C-1); Tallassee, VI-6-54 (C-1); Tazewell, VII-6-54 (C-1); Camden, VII-7-54 (C-2); Knoxville, VII-15-55 (C-1). ALABAMA: Riverton, XII-1-54 (Larva-tree cavity-1), V-24-55 (Larva-tree cavity-1); Waterloo, IV-7-55 (Larva-tree cavity-1), IX-5-55 (Larva-stump-1); Town Creek, VI-1-55 (Larva-stump-3), VII-8-55 (pupastump-1). Adults of this species are active during the day and at night. Larvae and pupae were collected in the field from tree cavities and stump holes. Only one or two individuals were found in the cavity at one time. The larvae appeared more frequently in the moist wall of the cavity than in open water.

_Tabanus americanus_ Forst. TENNESSEE: Camden, VII-29-54 (C-1). ALABAMA: Waterloo, VII-19-54 (C-1).

_Tabanus atratus_ Fab. TENNESSEE: Dentville, VII-7-52 (BC-1); Camden, VII-7-53 (BM-1); Newport, IX-2-54 (BC-1); Lake City, VIII-8-55 (Barn-1); Hustburg, IX-15-55 (C-1). ALABAMA: Athens, VII-6-41 (1), VII-9-41 (2); Wilson Dam, VIII-2-41 (1); Sheffield, VII-11-53 (window-1); Rogersville, VIII-10-55 (C-1).


_Tabanus cinctus_ Fab. TENNESSEE: Tellico Plains, VI-25-52 (BC-1); Parksville, VI-24-54 (BU-3).

_Tabanus cymatophorus_ O. S. TENNESSEE: Sugar Tree, VII-30-53 (C-1).

_Tabanus difficultis_ Wied. TENNESSEE: Oak Ridge, VII-23-49 (S-1); Cardenview, VI-9-54 (BH-3); Tazewell, V-31-55 (C-2).

_Tabanus equalis_ Hine. TENNESSEE: Samburg, VI-18-52 (C-1); Hustburg, VIII-2-53 (LT-1); Camden, VII-7-54 (C-1).

_Tabanus fulvulus_ Wied. TENNESSEE: Camden, VI-10-51 (C-2), VI-11-51 (C-1), V-10-54 (C-1); Samburg, VI-18-52 (C-1); Athens, VI-24-52 (C-1); McKinnon, VI-24-54 (C-1); Parksville, VI-24-54 (BU-1). ALABAMA: Wilson Dam, V-28-41 (2); Somerville, VI-10-41 (1). NORTH CAROLINA: Hayesville, VI-24-54 (BH-1). Not observed feeding on man in the original studies, but one of the authors later (June 12, 1956) captured a specimen at Florence, Alabama, while it was attempting to feed on his arm.


_Tabanus lasiophthalmus_ Macq. TENNESSEE: Samburg, VI-18-52 (C-1); Bristol, VI-10-54 (C-1). ALABAMA: Wilson Dam, V-22-41 (2), VI-11-41 (1); Decatur, V-27-41 (1).
Tabanus lineola Fab. TENNESSEE: Oak Ridge, VII–29–49 (S–1); Camden, VI–
10–51 (C–1), VI–14–51 (C–11), VI–15–
51 (C–2), VI–16–51 (Tent–10), V–21–53
(C–1), VI–9–53 (C–2), VII–6–53 (C–6),
VIII–3–53 (C–1), VIII–14–53 (C–2),
VIII–22–53 (C–1), IX–3–53 (C–1), VI–
22–54 (C–1), VII–7–54 (C–1), VII–29–
54 (C–1), VIII–26–54 (C–3), IX–10–54
(C–1); Sugar Tree, V–29–53 (C–1), VI–
17–54 (C–1), VII–8–54 (C–1), VI–24–55
(C–1); Hustburg, VII–7–53 (LT–2),
VII–14–53 (LT–1), VII–16–53 (LT–2),
VII–30–53 (LT–1), VIII–1–53 (LT–1),
VIII–6–53 (LT–5), VIII–11–53 (LT–1),
VIII–19–54 (C–1), VIII–27–54 (C–1);
Newport, VIII–14–53 (LT–1); Linden,
V–20–54 (BU–1); McKinnon, VI–24–54
(C–2); Paris, VI–24–54 (C–1), VII–20–54
(C–1); Samburg, VII–22–54 (C–2), VII–
23–54 (LT–1). ALABAMA: Decatur, V–
27–41 (1); Wilson Dam, VI–9–41 (2); Somerville, VI–10–41 (1); Greenbrier,
VI–18–41 (1); Florence, VII–15–53
(C–5); Rogersville, VII–2–54 (C–1); Madison, VIII–25–54 (C–1). This was
the most common horse fly attacking live-
stock in the main reservoir bottoms of
the Tennessee Valley.

Tabanus lineola scutellaris Walk. TENNESSEE: Oak Ridge, VII–23–49 (S–1).

Tabanus longisculus Hine. TENNESSEE: Hollow Rock, VIII–21–53 (C–1); Cam-
den, VIII–23–53 (C–1).

Tabanus melanocerus Wied. TENNESSEE: Camden, VII–
65 (C–1), VII–6–53 (C–3), VI–14–54 (C–1), VII–7–54
(C–1); Parksville, VI–24–54 (BU–1); Paris, VII–20–54 (C–1); Sugar Tree, VI–
19–54 (C–1). GEORGIA: Blairsville, VI–
17–55 (C–1).

Tabanus molestus Say. TENNESSEE: Samburg, VI–15–51 (C–1), VI–18–52
(C–1); Tellico Plains, VI–25–52 (BC–1);
Paris, VI–24–54 (C–1). ALABAMA: Wilson
Dam, VI–16–41 (1), VII–12–42 (1).

Tabanus molestus mixtus Philip. TENNESSEE: Camden, VI–15–51 (C–1), VI–
19–51 (C–2); Paris, VI–3–54 (C–1), VI–
24–54 (C–1); Parksville, VI–24–54
(BU–1). ALABAMA: Wilson Dam, V–24–
53 (window–1). NORTH CAROLINA: Che-
rokee, V–25–54 (BU–1).

Tabanus mularis Stone. TENNESSEE: Paris, VI–12–51 (C–1); Chattanooga, VI–
2–53 (C–1); Camden, VI–9–53 (C–1),
VII–14–53 (C–4), VIII–15–53 (C–1),
VIII–22–53 (C–1); Sugar Tree, VII–3–53
(C–1); Big Sandy, V–8–54 (window–1).

ALABAMA: Decatur, VII–30–41 (1); Flo-
rence, VI–12–53 (C–4), VI–29–54 (C–1);
Rogersville, VI–18–54 (C–1); Town
Creek, VII–9–55 (C–1).

Tabanus nigrescens P. de B. ALABAMA: Scottsboro, VII–20–54 (C–1).

Tabanus nigripes Wied. TENNESSEE: Erwin, VII–7–54 (BH–1).

Tabanus petiolatus Hine. TENNESSEE: Camden, VI–22–54 (C–1), VIII–26–54
(C–1). ALABAMA: Decatur, VII–11–41
(1).

Tabanus proximus Walk. TENNESSEE: Sugar Tree, VIII–15–53 (C–1). ALABAMA:

Tabanus pumilus Macq. TENNESSEE: Oak Ridge, VII–23–49 (S–1); Sugar Tree,
V–29–53 (C–1); Springville, V–25–55
(Helicopter–1).

Tabanus quinquevittatus Wied. TENNESSEE: Camden, VI–14–51 (C–1), VI–
3–53 (BM–1), VIII–6–53 (C–3), VIII–14–
53 (C–11), VIII–15–53 (C–1), VIII–22–
53 (C–3), VII–29–54 (C–1), VIII–4–54
(C–1); Sugar Tree, VI–14–53 (C–1), VI–
24–53 (C–1); McKinnon, VII–30–53
(C–1), VIII–4–53 (BM–1); Big Sandy,
VIII–5–54 (C–1); Hustburg, VII–19–54
(C–1). Of the 36 species of horse flies
taken in the field, only T. quinquevittatus
was found actually feeding on man (but
see note on T. fulvulus). They appeared
in west Tennessee along flat reservoir margins where buttonball was the domi-
nant plant species.

Tabanus reinwardtii Wied. TENNESSEE: Carderville, VII–16–52 (C–1).

Tabanus sackeni Fair. TENNESSEE: Carderville, VII–16–52 (Under Bridge–
1); Camden, VIII–15–53 (C–1).

Tabanus sparsus Whit. ALABAMA: Wil-
son Dam, V–27–42 (1); Triana, V–28–
42 (1).

Tabanus sparsus milleri Whit. TEN-
nesse: Oak Ridge, VII-23-49 (S-1); Camden, VI-8-53 (C-1), VII-6-53 (C-1), VIII-3-53 (C-1), VI-22-54 (C-1), VII-7-54 (C-1), V-25-55 (C-1); Norris, VI-19-53 (C-1); Parksville, VI-19-53 (C-1); Eva, VII-30-53 (C-1); McKinnon, VI-24-54 (C-1), VI-28-54 (C-1); Sugar Tree, VII-8-54 (C-1); Springville, V-25-55 (Helicopter-3); Jasper, VI-17-55 (C-1). Alabama: Decatur, VI-11-41 (2), VI-26-41 (1), VII-20-54 (Helicopter-1); Athens, VII-6-41 (1). North Carolina: Hayesville, VI-24-54 (BH-1); Andrews, VII-7-54 (C-2).

Tabanus sulcifrons Macq. Tennessee: Oak Ridge, VII-15-49 (S-1); Camden, VI-14-51 (C-1), VII-7-53 (BM-1), VII-14-53 (C-1), VII-15-53 (C-1), VII-22-53 (C-6) (Log-1), VII-29-54 (C-2), VIII-19-54 (C-1); Bristol, VIII-9-51 (C-1); Tellico Plains, VI-25-52 (BC-1); Newport, VII-1-53 (Culvert-2), VII-14-53 (Slough Bank-1), VII-9-54 (C-3), IX-2-54 (BC-1); Sugar Tree, VII-3-53 (C-1); Paris, VIII-22-53 (C-1), IX-3-53 (BC-1), VII-10-55 (C-1); Parksville, VIII-27-53 (C-1), VI-24-54 (BU-10); Lobelville, VI-24-54 (BU-1); Erwin, VII-7-54 (BH-1); McKinnon, VII-4-54 (C-1); Big Sandy, VII-28-54 (C-1); Pickwick Dam Village, VIII-4-54 (C-1); Rogersville, IX-24-54 (BH-1); Lake City, VII-14-55 (C-1), VII-29-55 (C-1); New Tazewell, VII-25-55 (Bat-1). Alabama: Triana, VII-29-41 (2); Wilson Dam, VI-26-42 (1), VI-30-53 (Window-2), IX-10-53 (C-1), VI-25-54 (BM-1); Florence, VIII-20-53 (C-1), VII-12-54 (C-1); Waterloo, IX-18-53 (BU-1). North Carolina: Bryson City, VII-1-53 (C-1). This species is widespread in the Tennessee Valley and commonly encountered in the river bottoms.

Tabanus trimaculatus P. de B. Tennessee: Oak Ridge, VII-23-49 (S-1); Camden, VI-14-51 (C-1), VI-22-54 (C-1), VI-7-54 (C-1); Sugar Tree, V-29-53 (C-1); Paris, V-28-54 (C-1), V-26-55 (C-1); Athens, VI-16-55 (C-1). Alabama: Wilson Dam, VI-15-42 (1); Rogersville, VI-18-54 (C-1).


Tabanus turbidus Wied. Tennessee: Perryville, V-25-55 (C-1); Hustburg, VI-22-55 (C-6) (BP-4); Springville, VI-22-55 (C-2). Alabama: Wilson Dam, V-26-41 (1); Sheffield, VII-13-54 (C-1).

Tabanus venustus O. S. Tennessee: Perryville, VII-12-55 (C-1).


Reference


**PLEASE CORRECT**

On the cover of Vol. 16, No. 4 (December 1956), of *Mosquito News* in the Table of Contents, the senior authorship of the paper, "A Population Study of the Culicoides Midges of the Edwards Plateau Region of Texas," was wrongly ascribed to W. W. Smith. We regret this error and take this opportunity to call attention to the fact that the names of the authors should read "W. W. Wirth and L. J. Bottimer." The authorship is correctly stated where the paper appears in the text.