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New Records of Tabanidae (Diptera) in the Antilles

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Bequaert (1940) has provided a comprehensive review of the horse-fly and deerfly fauna for the islands in the West Indies. Any additional information is therefore of interest, such as that provided by collections in the American Museum of Natural History from South Bimini Island in the Bahamas and from Jamaica (the latter courtesy of Mr. C. B. Lewis).² These collections included three new species and a new subspecies described below.

Tabanus (Bellardia) *bimini*, new species

Figure 1

A medium-sized brownish species belonging to the group with "ocular spots" on the scutellum, formerly placed in the subgenus *Lophotabanus*. Abdomen with three rows of rather indefinite yellowish spots, legs unicolorous reddish, cell R_5 widely open.

HOLOTYPE FEMALE: Length, 15.5 mm. Eyes bare, when relaxed with suggestions of a single, narrow purple band on a greenish ground; front narrow, very slightly divergent above, index 1/6, no ocelligerous tubercle, grayish pollinose in the upper third, darker below, with sparse short black hairs. Basal callosity small, ovoid, dull yellow, taller than broad, and widely separated from the ocular margins, a narrow

¹ From the United States Department of Health, Education, and Welfare, Public Health Service, National Institutes of Health, National Institute of Allergy and Infectious Diseases, Rocky Mountain Laboratory, Hamilton, Montana.

² A few specimens were also taken by the present writer in Jamaica incidental to endemic typhus studies during World War II (see Plotz *et al.*, 1943).

extension to the upper third which is flanked by two evanescent, narrow, black, upwardly converging lines best viewed from below. Subcallus pale buff. Face, cheeks, and vestiture white. Scape, pedicel, and extreme base of the antennal plate red, the remainder black; the first black haired above and rather long pale hairs apically below, annular divisions prominent, the comparative lengths of plate and annuli subequal; basal prominence low, blunt, obtusely angled, the plate gently excavated. Palpi creamy, two-thirds of the length of the proboscis, pointed and basally inflated, white haired. Thorax dull reddish brown, no distinct lines, adorned with short black and appressed brassy hairs intermixed. Prescutellum black haired, flanked by two prominent tufts of white hairs. Black discal spot covering two-thirds of scutellum, black haired, the posterior and lateral margins of scutellum flesh colored and pale haired. Pleura, chest, entire venter, coxae, and two pairs of hind femora with white vestiture underlain by pinkish to red integument. Fore femora pale brown, white haired below and basally, densely black haired on the upper distal two-thirds. Tibiae with black and white hairs intermixed, including the hind-tibial fringe; basal third of fore tibiae predominantly white haired, but not basally bi-colored. Wings slightly tinted, the costal cells no darker. No spur veins, the subepaulets with macrotrichea.

Abdomen predominantly pale brownish red above and entirely so

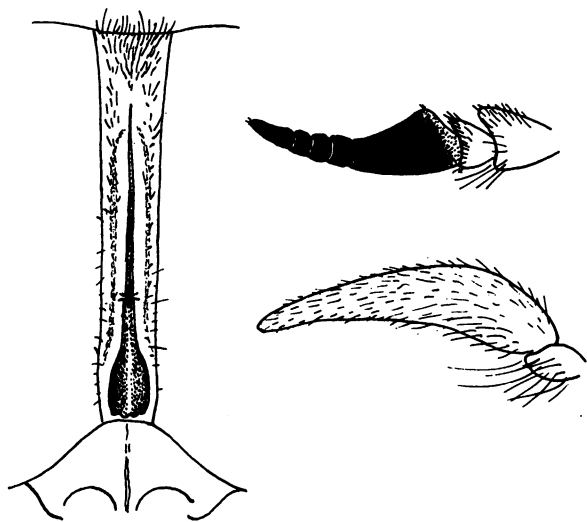


FIG. 1. Front, antenna, and palp of *Tabanus (Bellardia) bimini*, new species, female.

below. Median, dorsal, pale triangles indistinct, but not crossing respective tergites, the sublateral oblique spots isolated, pale hairs accentuating these pale markings and the lateral incisures, black hairs on remaining parts.

ALLOTYPE MALE: Length, 16 mm. Like the female in all respects, except for the usual sexual differences, and readily associated. Eye facets only slightly enlarged in the upper half but the head wider than thorax. Tubercle at vertex distinct, ovoid, but depressed below the upper eye level; dull gray pollinose and brown pilose. Frontal triangle buff pollinose, brown in the apex. Scares appear a little more enlarged than in the female. Terminal, palpal segments about one and one-half times longer than thick, blunt apically. Fore-tarsal claws subequal. Fore femora, all tibiae, and dorsum of abdomen with more black hairs than in the female. Margins of scutellum reddish with yellow hairs. Median triangles small, lateral oblique spots on tergites 2 and 3 resting on hind margins.

TYPE MATERIAL: Holotype female, allotype male, "South Bimini Isl., Bahamas, B.W.I., July 20-31, 1951, C. & P. Vaurie." In the American Museum of Natural History. Paratypes, 36 males, nine females, same data, in close agreement; all deposited in the collections of the American Museum of Natural History and the author. Wear tends to obliterate the already rather indistinct abdominal triangles.

The species is closest to *T. clenchi* Bequaert from Hispaniola, but is a much more reddish insect, with the under parts more predominantly white haired. In *T. bimini*, not only the antealar tubercles but the entire notum is reddish, and the pale abdominal markings are smaller and less prominent. With wider collecting, this may be found to be separable only as a subspecies of *clenchi* if intergrades are discovered.

Bellardia Rondani was originally erected without much question to contain species with a closed cell R_5 . Designation of *T. albonotatus* Macquart as the genotype, however, permitted replacement of the worthless generic character of closure of cell R_5 with the useful feature of the ocular spots on the scutellum and prescutellum to comprise a different, more natural subgeneric group. *Tabanus bimini* falls into this group.

***Tabanus nigrovittatus fulvilineis*, new subspecies**

Figure 2

Flies of the common Nearctic *T. nigrovittatus* complex with a single eye stripe, pleural hairs gray, and all three abdominal lines yellowish in color instead of the median one narrower and gray as in the

typical form. In a few specimens the callosity and femora also are yellow instead of dark.

HOLOTYPE FEMALE: Length, 10.5 mm. Eyes bare, a single eye stripe (relaxed). Front yellow pollinose, grayish around the callosity, sides nearly parallel (index $1/4.3$), sparse black hairs above, a small, ovoid, isolated, blackish median callus, the basal callosity subquadrate, dark brown, tridentate on the upper margin. Subcallus pale reddish pollinose. Face and cheeks grayish pollinose, beard short and white. Antennae red, only the apical two annuli brown, plate but little longer than broad as figured. Palpi pale yellow, somewhat swollen basally and with short black hairs anteriorly on the terminal segment.

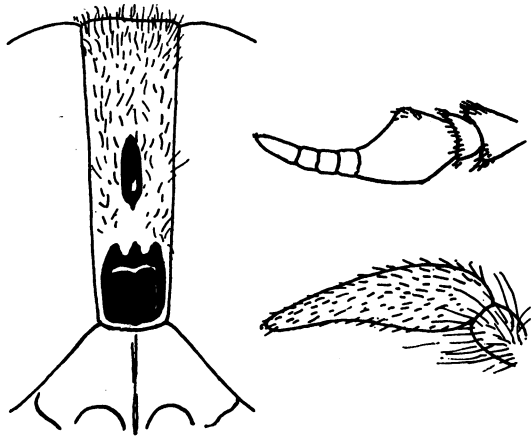


FIG. 2. Front, antenna, and palp of *Tabanus nigrovittatus fulvilineis*, new subspecies.

Thorax buff-gray pollinose, unlined, with sparse short black and appressed brassy hairs intermixed; scutellum dark, with lateral reddish margins narrowing behind and vestiture similar to the notum; antealar tubercles reddish, with black hairs. Pleura gray, with white pile. Coxae flesh colored, with white pile. Legs unicolorous pale reddish yellow, pale hairs predominating except for black hairs on the upper surface of the ocular spots on the scutellum and prescutellum to comprise a fringe, and the tarsi. Wings hyaline, veins and costal cells yellow, venation "normal." Halteres bright yellow, subepaulets hairy.

Abdomen with three stripes and the lateral margins yellowish red and yellow hairs, the four subequal intervals brown, with black hairs, the lines somewhat irregular, but the median yellow stripe as wide as the sublateral ones. No dark integumental, median spot on tergite 2

(occasional paratypes have such a spot). Venter entirely flesh red, darkening a little on the two terminal sternites, covered with straw-yellow hairs.

ALLOTYPE MALE: Length, 12 mm. Head wider than thorax, area of enlarged facets sharply demarcated in the upper two-thirds, reddish, the lower third green (relaxed), short hairs present on the upper area, seen only under high magnification. Frontal triangle small, gray pollinose. Face and cheeks whitish pollinose and pilose. Antennae red, the plates nearly as tall as long, the annuli brown and longer than the plates. Palpi pale yellow, not especially swollen, with downward-pointed, apical nipples and a few black hairs.

Thorax and scutellum as in the female. Coxae gray, with white hairs. Femora dark, with mostly yellow or white hairs with some black on the fore pair, the knees reddish. Fore tibiae with basal half red, grading into black distally including fore tarsi. Two hind pairs of tibiae reddish, the hind-tibial fringe black. Wings and halteres as in the female.

Abdomen reddish, the stripes indistinct, but the respective stripes indicated by black and yellow hairs (which would be mostly obliterated in worn specimens, leaving the abdomen predominantly reddish above and below).

Venter reddish yellow, but not orange, covered with straw-yellow hairs, sternite 7 gray, with black hairs.

TYPE MATERIAL: Holotype, female, from Ship Island, Mississippi, June 15, 1944, Brodkorb and Bailey (in collection of C. B. Philip). Allotype, male, from North Bimini Island, Bahamas, British West Indies, July, 1951, P. and C. Vaurie collectors. In the American Museum of Natural History. Paratypes, 47 females, same locality as the allotype but various dates in 1950 and 1951, including also Cazier and Rindge as collectors; all of these have the characteristic abdominal pattern but have predominantly dark femora as in the allotype. Florida females with red femora like those of the holotype include: four females, "Sopchoppy, Wakula Co., 5-28-50, E. L. Kessel" (two in California Academy of Sciences; two, other females, same data, are typical *nigrovittatus*, with gray median abdominal stripes and longer antennal plates); female, Yankeetown, July 31, 1930, R. H. Beamer, in University of Kansas; two females (one taken at light), "Weekewatchee Springs 163, Hernando Co., Fla., viii-20-1928, Hubbell-Friauff" (in Museum of Zoology, University of Michigan). Other paratypes with partly or mostly dark femora include: male, "Covington, La., 6-12-1951, Price, Beamers, Wood"; male, Thonotosassa, Hillsborough County, Florida, August 18, 1938, Hubbell-Friauff; two females, Key West and

Key Largo, August 9, 1930, R. H. Beamer; female, Merritt Island, Brevard County, Florida, April 22, 1947, Thurman, Braddock; female, Big Pine Key, Monroe County, Florida, April 10, 1947, D. C. Thurman, Jr.; female, Bradenton Beach, Florida, July 10, 1933, H. R. Dodge; female, Merritt Island, east of Titusville, Florida, April 20, 1946, A. B. Klots.

A female taken in Bermuda, "water's edge, Shelley Bay," August 22, 1956, by I. W. Hughes and forwarded by Dr. J. F. Simmonds, and a series of 12 females from La Pesca, Tamaulipas, Mexico, May 17, 1950, collected by Cazier, Gertsch, and Shrammel, differ in having the median abdominal stripes buff gray, while the sides of the Bermuda specimen are entirely devoid of the usual sublateral dark dashes, and the vesture of the beard and pleura is straw-yellow over yellowish tinted pollinosity, but not so deep yellow as in *T. quinquevittatus* Wiedemann. The femora in these are predominantly dark.

Numbers of specimens are at hand from Florida and other Gulf coast localities which have the typical abdominal pattern of *nigrovittatus*, with gray midstripe flanked by two usually blackish stripes, and the sides either broadly reddish, or with dark lateral dashes enclosing sublateral reddish lines on each side of the abdomen. In view of these specimens, it is now impossible to determine to which form *T. floridanus* Szilady actually belongs; this has usually been synonymized with *T. quinquevittatus* Wiedemann but appears more likely, from its type locality, Miami, to belong in the *nigrovittatus* complex. The type of *floridanus* in the Berlin-Dahlem Museum now lacks the abdomen; this was kindly checked for me by Drs. Hennig and Erich Kirchberg.

Tabanus (Taeniotabanus) vittiger, subspecies *caymanicus* Fairchild

Fairchild (1942) considered the insular form as a new subspecies, both sexes of which Bequaert (1940) had described but wrongly assigned to "*T. truquii* Bell." The present writer (1954) studied three cotype males from Mexico of the latter in the Turin Museum in 1953 and confirmed Fairchild's belief that they represent quite a different species from the insular form. Though the enlarged eye facets are densely short haired in the *truquii* types, these facets occupy less than half of the total eye area, while the scutellum, fore coxae, and most of the fore and hind femora are dark.

Because of the hairy, much enlarged area of upper eye facets of the males of the Caribbean specimens, Fairchild correctly associated these with differing forms of *T. vittiger* found on the mainland. However, the present writer (1954) reported two specimens from Campeche,

Mexico, and Belize, British Honduras, which had similar characters to the insular form. Pechuman called the writer's attention to two others he has from Homestead, Florida, which he agrees are this form, and there are three others before him from Big Pine Key, and Key West. Dr. H. D. Pratt has taken both sexes in light traps at Tortuguero, Puerto Rico. Bequaert's material also came from this and from the Cayman Islands. A specimen was taken at Mammee Bay, St. Thomas, Jamaica, by T. H. Farr (courtesy of Mr. C. B. Lewis).

In the South Bimini Island collection at the American Museum of Natural History, three females of this form were captured between mid-June and mid-August, in both 1950 and 1951 by C. and P. Vaurie, and by Cazier and Rindge.

None of the above specimens seen by the writer had a predominance of black and white coloration with gray thorax as keyed by Fairchild. Rather, they were distinguished among other material as especially reddish in cast, and, with their red legs and scutella with wide fronts with cherry-red callosities, were first considered by the writer to be unusually red *T. lineola* subsp. *scutellaris* Walker, but the males are quite different. Wear frequently obscures the abdominal lines which may be fairly even or sometimes irregular. Pechuman (correspondence) is of the opinion that *T. bellardii* Szilady is the prior name for this form, which is probably correct in view of the wide front and yellow-brown legs, though the phrase "femora somewhat darker" does not agree with Caribbean specimens seen by me. The holotype, which, according to Bequaert (1940), was damaged, has now been destroyed as a result of the civil war in Budapest.

The various localities suggest that this is a coastal inhabitant, and may be a brackish-water breeder as is *T. nigrovittatus*.

Tabanus (Taeniotabanus) lineola Fabricius

A series of specimens was taken on Andros Island in April, 1953, by Hayden and Giovannoli from the following localities: male and six females from Fresh Creek; four females from Mangrove Cay, and three females from Driggs Hills near South Bight. Another female was taken at Marel Harbor, Great Abaco Island, May 6, 1953, by the same collectors.

As Fairchild (1942) has pointed out, Bequaert's (1940) discussion of this species in the Antilles was composite. The latter's figure of the frons was probably based on the narrow-fronted subspecies *cubanus* Szilady discussed below. The present females have fronts a little wider (index 1/4.0-4.6). The male agrees with the mainland form in having

the enlarged facets only microscopically hairy and strongly differentiated in the upper two-thirds of the eye area. The scutella, fore coxae, and all femora are dark in both sexes.

Another male from near Windsor Field, New Providence Island, April 12, 1953, collected by Hayden belongs to an unrecognized form in this complex, and no females appear assignable to it from among this material. It is not improbable that the eventual females will be very difficult to separate from those of typical *T. lineola* in consideration of variation observed on the mainland. This male will not run in keys of either Fairchild (1942) or Philip (1942) to respective Neotropical and Nearctic, related faunas, though three similar males have recently turned up from Florida and New Jersey (two in the collection of L. L. Pechuman). The Bahama specimen differs from typical *lineola* in several important features, the enlarged facets are smaller, more numerous, and confined to the upper half of the eye area, the tubercle at vertex is smaller and sunken, the frontal triangle is larger, the thoracic pollinosity and pilosity are darker, the pale lines of the abdomen are narrower and even, and the two hind pairs of femora have apical red restricted to the knees. However, the scutellum is entirely dark. *Tabanus lineola* subsp. *stenocephalus* Hine of Central America is closest but has eye facets even less differentiated, yellower over-all vestiture, broader abdominal lines, median spots on the first two sternites, and tinted wings.

More adequate information is needed before the present form is given a name.

Tabanus (Taeniotabanus) lineola, subspecies *cubanus* Szilady

The status of other *lineola* forms in the Caribbean area remains dubious without restudy of all the material of both sexes from various localities listed by Bequaert (1940) on the basis of revised characters employed by Fairchild (1942) and the writer (1942). Bequaert observed most specimens from the Bahamas, Cuba, and Jamaica to "belong to the typical form" (discussed above) with black scutellum, but a male and two females from Cuba he assigned to variety *scutellaris* Walker with reddish scutella. He does not describe the legs or regularity of the abdominal stripes, and refers to male eyes as "bare, with most of the upper thirds of much larger facets than the lower third" ("upper two-thirds" was an undoubted typographical omission).

This is the type of male eyes seen on typical *lineola* of the mainland, and it is unlikely that Bequaert would have overlooked a marked reduction in size of the upper facets of the male with red scutellum

from Cuba. The latter therefore is unlikely to represent the Nearctic subspecies *scutellaris*.

Three females from Jamaica are available in present material: Mam-mee Bay, St. Thomas, May 24, 1954, R. P. Bengry; Old Harbour, "The Whim," St. Catharine, April 5, 1956, B. M. Allen; and an additional one taken by the writer at Fort Simonds, July 14, 1942. The fronts are narrower (1/6.8) and other head characters are as figured by Bequaert (1940). The palpi are not so thickened basally as in *caymanicus*. The scutella are red, with brown shadows basally. The fore legs are conspicuously darker than the two hind pairs; fore coxae bluish gray, with pink tints basally, the fore femora and apical halves of fore tibiae almost black; basal halves of tibiae and mid and hind legs orange-red, with dusky shadows on basal thirds of femora; mostly white haired, the hind-tibial fringe black. Only one wing of two females bears a short spur vein, but there is a distinct angulation on the other wings.

These are in probable agreement with Bequaert's females from Cuba with red scutella. They also agree in brown antennae and reddish abdominal coloration with the meager description of *T. cubanus* Szilady, types of which are now also casualties of the Budapest uprising. Furthermore, the Fort Simonds specimen agrees with another Jamaica female (Mona, St. Andrew, December, 1945) compared by Bequaert with the type on loan of *T. cubanus*. The peculiar combination of dark fore legs, spur vein, narrow front, red scutellum, and peculiar abdominal coloring indicates that these insular specimens are different from continental forms, and revival of Szilady's name as a subspecies appears justified.

On the other hand, a female before me from Trinidad appears to be the usual subspecies *carneus* Bellardi, with plainer abdominal pattern.

Tabanus (Taeniotabanus) claripennis Bigot

Fairchild (1956) has pointed out the unfortunate synonymy of the well-known *T. hookeri* Knab with this species which was mislabeled as from Australia.

Specimens in the present material from Jamaica include: male, Rio Cobre Gorge, St. Catharine, November 14, 1954, T. H. Farr; male and female, Windsor Estate, Falmouth, August 11, 1956, T. H. Farr; and two females, Fort Simonds, July 14, 1942, C. B. Philip.

Lepiselaga crassipes (Fabricius)

Jamaica: Two females, St. Catharine, Old Harbour, "The Whim,"

April 5, 1956, B. M. Allen; two females, "road to Montego Bay," north shore, May, 1942, C. B. Philip.

Stenotabanus (Aegialomyia) caribaeorum (Bequaert)

A considerable series of both sexes of this species taken on South Bimini by Cazier and Rindge and by C. and P. Vaurie on various dates in May and June has shown considerable range in size (8 to 13 mm.) and some variation in appearance. Like others of its group, specimens are frequently subject to greasing, which brings out the yellowish gray, integumental color, but well-preserved specimens are predominantly hoary white pollinose. The dorsal abdominal hairs are easily lost by wear, which may have caused original description of the species as being without markings. A row of white-haired, almost equilateral triangles nearly crossing the tergites appears in some unworn specimens, flanked by indefinite, inverted brown- or black-haired triangles, while other unworn, ungreated flies may show no trace of such a pattern. The frontal indexes of 10 females varied between 1/2.7 to 3.4, with a mean of 1/3.1.

Stenotabanus (Aegialomyia) jamaicensis (Newstead)

Study of four males and 10 females from Moranti Cays, Mammee Bay, Wreck Point, Lime Cay, Drunkman's Cay, and Palisades (all Jamaica) by different collectors between March 2 and July 29 except for one, December 2, plus a female taken while biting the author at Montego Bay, July 25, 1942 (all Jamaica), when compared to a male and female captured in a light trap by Dr. J. M. Brennan, on a beach near Monte Christi, Dominican Republic, March 9 and 18, 1949, appears to warrant Bequaert's (1940) doubt about the distinctness of *S. laevicallus* (Szilady) from Cuba. The front is slightly convergent above in all females, and the indexes vary in the Jamaican series from 1/3.0 to 1/3.9, while that of the Dominican specimen is 1/3.3. While the wing spots at the outer corners of the discal cell are accentuated in the upper corner, those at the lower corner are present. Wing spots are a little more intense in the Dominican pair. It appears that the two species cannot be maintained separately though the cotype of *S. jamaicensis* studied by Bequaert had a slightly wider frontal index of about 1/2.5.

As the male has not been reported, the March 9 specimen is described herewith.

ALLOTYPE MALE: Length, 10 mm. Eyes bare, lower facets dark, the contrasting red-brown, enlarged upper facets occupying almost three-

quarters of the total eye area, making the head much wider than the thorax. These facets are rolled over the upper rim, so that the usual hind margin of small facets tapers out at about half of the distance towards the vertex, and a narrow postocular rim is visible from above only for a short distance on either side of the vertical notch, in which the tubercle is reduced to a barely visible, compressed and depressed structure. Frontal triangle pale creamy, remainder of head below white pollinose and pilose, the frontoclypeus depressed and cheeks swollen in lateral view. Antennae red, the annuli chunky and contrasting black, a little more slender than in the female but the same shape as figured by Bequaert. Palpi pale creamy-white haired, a few black hairs on the terminal segment which is swollen, about one and one-half times longer than thick, and produced apically into a downward-directed point.

Body coloration and appendages agree closely with those of the female. Thorax dull ash gray, the abdomen dull, pale red, with no discernible pattern. Wings with bare subepaulets and prominent spur veins. Clouds small but dark and occurring on both the upper and lower corners of the outer margin of the discal cell. Halteres pale brown, creamy on the knob. Outer fore-tarsal claw a little longer than the inner.

If the female frontal characters are excluded, the species runs readily to couplet 22 in Bequaert's key. When adequate material accumulates, it is also possible that *S. caribaeorum* will be found to be but a race of this species.

Because *S. jamaicensis* is known only from the two cotypes from Jamaica, and synonym *S. laevicallus* is represented by the type and another female from Cuba, the present collection adds materially and extends the range northward to Hispaniola.

Stenotabanus (Aegialomyia) atlanticus (Johnson)

This rare species is precinctive for Bermuda, which has generally been included in the Nearctic region and is well isolated from the Caribbean area, but discussion here is pertinent because of obvious relationships of *S. atlanticus* to the Antillean fauna. The types (two females, one male) and an additional male were seen by Bequaert (1940). An additional nice series of five males and 12 females has since been taken by F. D. Bennett (two in May, 1950, one seen through the courtesy of Mr. H. Oldroyd of the British Museum) and I. W. Hughes (15 in June, July, and August, 1956, on various beaches on "soft sand" or at "water's edge," forwarded through the courtesy of Dr. F. J. Sim-

monds). A teneral male with wing spots still undeveloped taken at "water's edge" suggests that the fly had emerged not far from the point of capture. Though these specimens show variation that relates them closely to the *S. jamaicensis* group in the Antilles, especially in the color patterns, the frontal characters of the females appear to confirm their distinctness. Only two of this series have the callosities as tall as figured by Bequaert (1940), but only one has a callosity that is a little broader than tall in contrast to *jamaicensis*; the remainder are quadrate or with the upper margin moderately bowed. Indexes vary from 1/2.8 to 1/4.0, with a mean of 1/3.36. All have a large, smoky, pollinose spot across the middle of the front which disappears when viewed from above. The dark patches at the vertex figured by Bequaert are present in most, but the vertex is also usually more depressed. While the annuli are not black, they are nevertheless darker brown than the antennal plates which are light brown rather than yellow or red. The tips of the femora and tibiae are darkened in both sexes. Several show indefinite pale median triangles on the abdomen, also noted in some *carri-baeorum*. The halteres are mostly brown on the knobs, with pale seams. There are also distinct though small clouds at the tips of veins R_{2+3} and R_4 in addition to the more prominent ones on the internal cross veins.

***Tabanus aurantium*,¹ new species**

Figure 3

A bright, unicolorous orange, medium-sized species with concolorous appendages (except third segments of antennae black), narrow, parallel-sided front, yellow-tinted wings with no spur veins.

HOLOTYPE FEMALE: Length, 11 mm. Eyes bare, one purple band on greenish ground (relaxed). Entirely orange pollinose and pilose on body and appendages except as indicated below. Frontal index 1/6.1, no tubercle at vertex; basal callosity reddish, ovoid, isolated from subcallus, ocular margins and median callus, the latter a narrow reddish line in the middle third of the front. Subcallus with no bare areas. Two basal antennal segments orange, with rufous hairs, plate a little longer than wide, deeply excavated, the dorsobasal tooth blunt but nearly rectangulate. Palpi slender but little thickened basally, tapering to a blunt point, no black hairs. Theca reddish, labella dark brown.

Thorax without distinct lines, some pale olive pollinosity anteriorly. Legs orange, the tarsi reddish brown. Halteres orange. Subepaulets rufous haired in contrast to adjoining black-haired costa.

¹ *Aurantium*, in modern Latin, meaning orange.

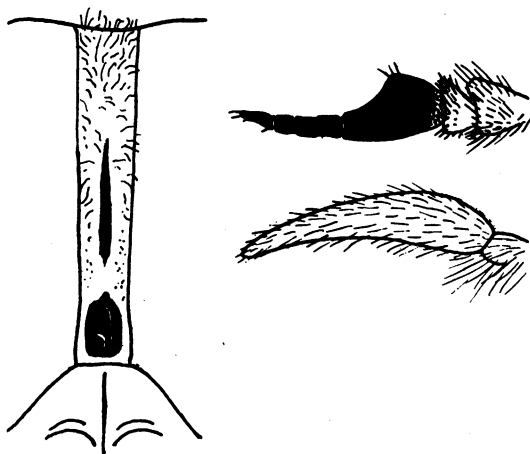


FIG. 3. Front, antenna, and palp of *Tabanus aurantium*, new species.

Some darker rufous hairs basally on tergites 2 and 3, giving impression of darker indefinite shadows on either side of a large median triangle crossing tergite 2.

TYPE MATERIAL: Holotype, female, Jamaica, British West Indies, St. Thomas, Corn Puss Gap, June 27, 1954, R. P. Bengry. In the American Museum of Natural History through the courtesy of Mr. C. B. Lewis.

This species has some resemblance to *Chlorotabanus* spp. in which no greenish blood shows in veins or other parts, and the black flagella and hairy subepaulets are distinctive here. This is a much brighter golden-orange species than its obvious relatives, *T. lucidulus* Walker, *T. townsendi* Johnson, and *T. obumbratus* Bequaert.

***Tabanus lewisi*, new species**

Figure 4

A dull, reddish brown, medium-sized species with practically concolorous appendages, including most of the antennae, the annuli darker brown, the antennal scape thicker apically than long, beard brown, wings tinted brown, with a shadow at the fork. Eyes with a single purple stripe on a green ground.

HOLOTYPE FEMALE: Length, 12.5 mm. Eyes bare. Front pale brown pollinose, with short black hairs, sides parallel, index $1/7.25$; callosity pale brown, drop-shaped, with indefinite spurs above, barely resting on pale brown pollinose subcallus, but narrowly separated from eyes and from short, dark brown, linear, median callus above. Face and cheeks pale brown pollinose, with some grayish tints around the apodemal

pits, the beard and basal hairs of the palpi brown. Antennae reddish to the middle of the plate as well as the terminal annulus, the remainder brown, scape dark brown haired, swollen and hood-like, taller than the plate, and the last subequal to the annuli but longer than tall, the tooth low but distinct and subrectangular. Palpi dirty yellowish, long and slender, but little thickened basally and blunt apically, black haired.

Thorax reddish brown, with indefinite, darker brown sublateral lines, mostly black haired, a few yellow hairs intermixed and two patches of rufous hairs above the ends of the prescutellum. Pleura with black pile above, pale yellow below and on chest and coxae. Legs unicolorous reddish brown, mostly brown haired, the tarsi but little darker. Wings strongly tinted with brown, accentuated in the costal cells, and on some cross veins; some cells with paler, apparently teneral discs. No spur veins, subepaulets hairy. Halteres with reddish stalks, dark brown knobs.

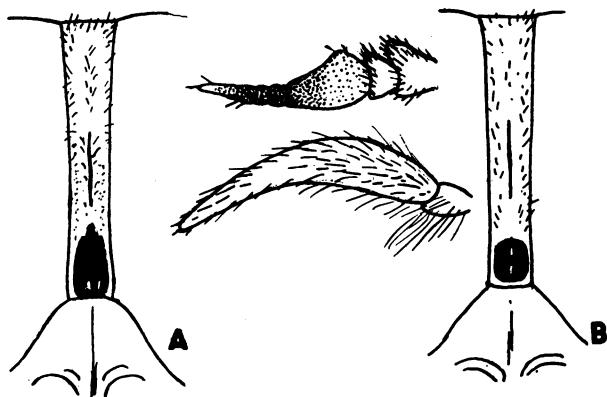


FIG. 4. *Tabanus lewisi*, new species. A. Front, antenna, and palp of holotype female. B. Front of paratype female.

Abdomen reddish brown, mostly golden yellow to rufous haired (entirely so below), patches of obscure black hairs forming basal geminate spots on tergites 3 to 6 which are obscured by wear in most specimens.

TYPE MATERIAL: Holotype, female, Jamaica, British West Indies, Portland, Corn Puss Gap to Waterfall, July 22, 1956, R. P. Bengry. In the American Museum of Natural History through the courtesy of Mr. C. B. Lewis for whom the species is named. Paratypes, two females, Portland, 1 mile east and 1/2 mile south of Caledonia Peak, July 4 and 28, 1954, and 1955, T. H. Farr; one female, St. Thomas,

Corn Puss Gap, May 8, 1955, T. H. Farr (in collection of C. B. Philip). In close agreement with the holotype, except that the annuli are entirely red in one, the two basal annuli are brown in one, and the front of one is a little wider (1/6.2). The geminate, black patches of hairs are partially or entirely obliterated by wear and none have teneral areas in the cells of the wings. The callosities vary in shape and isolation (fig. 4B).

This is obviously a close relative of *T. townsendi* Johnson and *T. lucidulus* Walker, as keyed and redescribed by Bequaert (1940), which also have single eye bands but black flagella, wider fronts, and pale-haired beards.

A female of *T. lucidulus* Walker was taken by the same collector, T. H. Farr, at Hanover, Dolphin Head, June 24, 1954, which has frontal index of 1/4.0, the scape is black haired, equal in length and thickness, and not taller than plate, and the callosity is small, rounded, not tridentate above as figured by Bequaert (1940).

Three females of *T. townsendi* Johnson from Corn Puss Gap, Jamaica, received through the courtesy of Dr. G. B. Fairchild, are all smaller (9 mm.), and also have proportionately wider fronts, distinct pale-pollinose, pale-pilose midstripes on the first two tergites, and pale-haired triangles on the following ones. The palpi are shorter and not so slender as in the preceding two species.

Two females of *T. obumbratus* Bequaert taken south of Caledonia Peak with one of the *T. lewisi* paratypes by the same collector are also available for comparison. *Tabanus obumbratus* is a larger and more blackish species, with black beards, and with contrasting patches of white hairs in the middle and on outer corners of tergites. No eye stripes could be revived on bluish green grounds.

Chrysops flavida Wiedemann

Bequaert (1940) lists a few records from the Bahamas and Cuba of this deerfly which is common in the southeastern United States. In the present collections were two females that agree with his description in having sharp wing patterns but more faded abdominal patterns than usually seen in mainland specimens.

It is apparent that this species has been more active in pushing south in the Antilles than to an equivalent extent in Mexico. *Chrysops pallida* Macquart, from unknown country, was the name assigned to two females from unknown locality in Mexico by Bellardi (1859) which the writer (1955) found to be typical *C. flavida*. These early specimens could have been taken north of the present Mexican boundary. The

only other Mexican specimen seen by me was a dark form from Veracruz. A related species in Mexico, which has possibly been confused here, was described as *C. dampfi* Philip.

SUMMARY

Described as new and figured are the following species of Tabanidae from the Caribbean area: *Tabanus* (*Bellardia*) *bimini* (male, female from the Bahamas), *T. nigrovittatus* subspecies *fulvilineis* (male, female from the Bahamas and Gulf coast of the United States), *T. aurantium* and *T. lewisi* (females from Jamaica). New synonymy includes *T. (Aegliatomyia) laevicallus* Szilady with *T. jamaicensis* Newstead, the male of which is described for the first time. Some other beach-inhabiting species in the Antilles and Bermuda and species of the subgenus *Taeniotabanus* are discussed, including *T. lineola* subspecies *cubanus* Szilady.

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