
DESCRIPTIONS OF NEW NORTH AMERICAN TABANIDAE.

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Many of the species described in this paper come from the southern parts of North America where least collecting has been done. After having taken a trip to Guatemala I am satisfied that careful work in that country throughout the season will bring to light many unknown species. The collecting that has been done there has been the result of short trips to various localities, usually by collectors who have been interested in making general collections, so it seems that we have not had the opportunity to get a comprehensive notion of the fauna, at least this is true in reference to the Tabanidae. Among the permanent inhabitants of the country, the study of entomology has not advanced to the stage where it is the practice to preserve specimens in collections, to any marked degree, for the use of students; at least in the museums that I visited only a few of the commoner Tabanids were to be seen. What is true of Guatemala is true, no doubt for other Central American states. It is to be hoped,

therefore, that these more remote localities may be investigated in the near future, and that the collections made be studied with a view to making our knowledge of North American Tabanidae as complete as it appears desirable to make it.

The generic characters in the Tabanidae are not abundant, so the family cannot be divided up as many other families are. For example, the genus *Tabanus*, as at present restricted, is very large, containing not less than 1,500 species from all parts of the world. Even the large number of species indigenous to the Nearctic region makes it difficult to recognize all of them, especially if the descriptions are poor. There are a number of names placed under the genus that have never been used except on type specimens, but future collecting will make it possible, no doubt, to more fully establish many of these. I have studied all the descriptions known to me, and now and then have found specimens that do not appear to fit any of them. During several years of collecting and study, therefore, a number of specimens have been set aside as undescribed. Some of these are named at this time in order that it be possible to refer to them definitely in the future.

***Tabanus muscoideus* n. sp.** Length 9 millimeters. A species nearly the size of our common *Sarcophagids* and on account of the plainly striped thorax and black and white abdomen resembles these flies very closely.

Female. Front wide and clothed with gray dust but with a black area at the vertex; frontal callosity half as wide as the front, gradually narrowed above and coming to a point half way to vertex. Antenna black, short, first segment small, third wide at base and rapidly narrowed toward the annulate portion which is of nearly the same length as the basal portion. Palpi reddish brown, less than half as long as the proboscis. Thorax black, with very prominent gray stripes, legs black, front coxae very long, nearly two-thirds the length of the femora; wings hyaline, only the anal cell closed. Abdomen black in ground color, first segment with a small white spot behind the scutellum, second segment with a middorsal gray stripe and narrow posterior gray margin, other segments each with a posterior gray margin which is slightly widened at each end and at the middle. The abdomen is distinctly pointed posteriorly, a character which appears to be characteristic of the species.

Females taken at Panzos, Guatemala, March 18, 1905, from the back of a mule which was staked out to pasture.

This is a most peculiar species but, although it has a peculiar appearance, there appear to be no characters which would warrant erecting a genus for it.

***Tabanus maculifrons* n. sp.** Length 8 millimeters. A dark colored species with hyaline wings and a narrow gray posterior

margin to each abdominal segment. A conspicuous undenuded dark patch or spot on the middle of the front.

Female. Front rather wide, distinctly narrowed below, ground color gray but with a dark colored undenuded patch or spot on the middle of the front and another at vertex; frontal callosity as wide as the front, shining black and connected with an almost obsolete line above. Antennae brownish red, first segment small, third widest at the base and gradually narrowed to the annulate portion, thus there is no distinct tooth above, basal portion longer than the annulate portion; palpi thick at base, pointed below, rather dark colored. Thorax from above with a gray margin which includes most of the scutellum, and a dark colored disk which is furnished with green-reflecting scales or hairs; wings hyaline, stigma yellowish, furcation of the third vein with a short appendage; legs black, bases of the front tibiae and half or more of the basal parts of the middle and hind tibiae yellowish. Abdomen black, each segment with a narrow posterior gray border which expands into a small triangle on the middorsal line.

Females taken near Puerto Barrios, Guatemala, March 4, 1905. They were flying actively and now and then came to rest on weeds and bushes. Fully distinct from all species known to me.

Tabanus limpidipennis n. sp. Length 16 to 18 millimeters. The eyes are pilose but there is no ocelligerous tubercle. The species therefore belongs to Osten Sacken's *Atylotus* and suggests *T. rienwardtii*, but differing from that species the wings are entirely hyaline.

Female. Front about three fourths of a millimeter in width, slightly narrowed below, frontal callosity light brown, nearly square, and as wide as the front, a disconnected spot above, nearly half way to the vertex. First antennal segment somewhat produced above, brownish in color and clothed with black hairs; third segment at extreme base brown, otherwise black, cut out above so as to form a distinct but not an extended tooth at base. Palpi thickened, yellowish and clothed with white hair. Thorax in ground color dark, with nearly obsolete gray stripes and clothed with a rather dense coat of elongate white hair; legs reddish brown with the apexes of all the tibiae and entire tarsi black; wings hyaline. Abdomen dark brown above with a middorsal row of gray triangles and a row of rather small rounded gray spots on either side.

Male. Head rather large, eyes with a distinct area of enlarged facets above. Ground color of the abdomen more reddish brown than in the female. In other respects the two sexes are alike.

A male taken at Gaulan, Guatemala, January 21, 1905, and a female taken in Guatemala in 1906.

Tabanus quinquemaculatus n. sp. Length 12 millimeters. A black species with gray striped thorax and a small white triangle on the middorsal line of each of the first five abdominal segments. The general aspect is that of a small specimen of *Tabanus coffeatus*.

Female. Front of ordinary width, clothed with white dust below and dark dust and black hairs above; frontal callosity shining black; about half as wide as the front and connected with a rather short narrowed extension above; antennae entirely black, first segment enlarged and somewhat produced at the anterior upper corner, third segment cut out above so that a distinct but not an elongate tooth is formed at the base. Palpi light colored and clothed with black hairs. Thorax black above with rather narrow gray stripes; wings hyaline, although there is a brownish tinge visible over much of the basal half; legs black, basal two thirds of the middle and hind tibiae reddish brown. Abdomen black, posterior margin of each segment narrowly white expanding into a small white triangle in all but the last two. Much of the body, especially the under parts, is clothed with sparse hairs.

Female taken near Morales, Guatemala, March 3, 1905, where it was resting on a freight car.

Tabanus nefarius n. sp. Length 22 millimeters. General color brown, wings brown, margins of the transverse veins and the furcation of the third vein infuscated. Abdomen with a middorsal row of gray triangles, each of which connects with a grayish yellow posterior border of its respective segment.

Front rather narrow, sides parallel, frontal callosity light brown, a little narrower than the front, slightly elongated and connected above with a narrow line, which reaches above the middle of the front. Space just above the antennae and the cheeks clothed with yellow dust, face below the antennae clothed with lighter dust. Antenna light brown with the annulate portion of the third segment darkest; first segment rather long clothed with black hairs which are most conspicuous above, second segment with conspicuous black hairs at apex, third segment elongate with a prominent tooth above, basal portion much longer than the annulate portion; palpi concolorous with the antennae, nearly as long as the proboscis which is black. Thorax with rather indistinct gray stripes, legs of nearly the same color as the body; front femora, apices of front tibiae and all the tarsi slightly darker than the other parts; wings uniform brownish with infuscated margins to the transverse veins and the furcation of the third vein, first posterior cell closed or nearly closed. Abdomen, in well preserved specimens, brown with a middorsal row of rather small gray triangles and rather wide grayish yellow posterior margin to each segment.

This species is something like *T. abdominalis* but is larger, the antennae are different in form and there are several other differences. Three female specimens, one taken near New Orleans, July 14, and two taken at Le Compte, Louisiana, August 24, 1906.

Tabanus johnsoni n. sp. Length 20 millimeters. General color of the whole body, including the wings, yellowish brown, front moderately wide with parallel sides. Form somewhat elongate.

Front about three fourths of a millimeter in width, frontal callosity chestnut colored, nearly as wide as the front, upper corners rounded, a narrow line above reaching half way to the vertex, antennae concolorous with the body, first segment clothed with black hairs, second segment with a few black hairs at the apex, third wide at the base, cut out above, thus a distinct tooth is formed, basal portion a little longer than the annulate. Palpi lighter in color than the antennae, proboscis brown, slightly longer than the palpi. Thorax very faintly striped above, legs colored like the body with the tarsi slightly darker; wings yellowish brown with small clouds on the margins of the cross veins and the furcation of the third vein, first posterior cell closed or strongly narrowed. Abdomen yellowish brown with a series of lighter colored middorsal triangles which are so long that each reaches both borders of its respective segment, thus a longitudinal dorsal stripe composed of contiguous triangles is formed.

Females taken at St. Augustine, Florida, by Charles W. Johnson, for whom it is a pleasure to name the species.

Tabanus plenus n. sp. Length 11 to 13 millimeters. A thick-set dark colored species with nearly hyaline wings and a distinctly striped thorax.

Front rather narrow and clothed with gold colored dust, frontal callosity brownish, a little more than half as wide as the front below, gradually narrowed above and ending at half the distance to the vertex; antennae very light brown with the exception of the annulate portion of the third segment which is distinctly darker, third antennal segment wide at base with a prominent blunt tooth above, basal portion only slightly longer than the annulate portion; palpi and proboscis brown, the former somewhat lighter in color than the latter. Thorax dark, nearly black in ground color, above with four very prominent gray stripes, the middle two of which reach the scutellum; legs black, stigma of the wings clear brown, wings slightly tinged with brownish which color is very slightly more intense behind the stigma; abdomen dark, nearly black, two basal segments thinly clothed with gray dust, remaining segments each with a fringe of white hairs at the posterior border.

Female specimens taken near Izabal, Guatemala, March 7, 1907, by D. D. Condit.

Tabanus longiusculus n. sp. Length 11 to 13 millimeters. General aspect of *T. longus* but smaller and darker.

Front or normal width, clothed with gray dust, frontal callosity shining black, nearly square, a separated shining black area above it on the middle of the front; antennae yellowish brown with the annulate portion of the third segment black; third segment not especially wide at base, upper side with an angle near the middle of the length of the basal portion, but there is no process which rightly could be called a tooth; palpi white, thickened; proboscis a little longer than the palpi. Thorax dark with five gray stripes, not very plainly shown; wing hyaline with costal cell dilute yellowish; anterior legs, with the exception of the bases of the tibiae, and bases of middle and posterior femora dark, almost black, remaining parts of legs reddish brown, although the tips of all the tarsi are more or less infuscated. Abdomen with a rather narrow middorsal stripe and a row of rounded spots on either side; therefore each segment is dark in ground color with posterior border, a middle stripe and a spot on either side gray. Venter of the abdomen reddish brown at base and infuscated at the tip.

Female specimens from Southern Pines, N. C., collected by A. H. Manee. Several females from Mimmsville, Georgia, received from C. S. Brimley, agree in detail with North Carolina specimens.

Tabanus minusculus n. sp. Length 10 to 12 millimeters. A rather small dark colored species with the sides of the abdomen reddish brown and the eyes pilose. The wings have a slight brownish tinge, which is caused by a coloring of the margins of the veins.

Female. Front normal in width, frontal callosity as wide as the front, black or dark brown in color, gradually narrowed above and reaching more than half way to the vertex, ocelligerous tubercle present; first and second segments of the antennae brown, third segment brown at the base and black otherwise, distinctly wider than the second at the base and gradually narrowed to the annulate portion so that no tooth is formed on the upper side although there is a slight prominence in place of a tooth. Palpi long and slender, brown in color. Thorax dark and striped above with narrow gray lines; wings hyaline, veins brown and narrowly margined with a brownish tinge, legs brown, varying toward black in a series of specimens, tarsi more or less infuscated. The abdomen above with a wide black stripe in the middle, interrupted by the narrow posterior margins of the segments, each of which expands into a small triangle on the middorsal line; sides brown, but in a series of specimens there is

variation so that the brown of each side may be reduced to a row of rounded spots. Venter of the abdomen reddish brown at the base and infuscated toward the apex.

Male. Eyes distinctly pilose, no evident separation into different sized facets. Easily associated with the other sex.

Several specimens from Orono, Maine, collected in July, 1899, by the late Professor F. L. Harvey. Other specimens from Oswego, N. Y.; Springfield, Mass., collected by Dr. George Dimmock; and one from Canada.

Tabanus albocirculus n. sp. Length 17 millimeters. Nearly black with fumose wings, narrow front and a black spot surrounded by white on the scutellum. Furcation of the third vein with a long appendage.

Front narrow, with a raised line which reaches from the location of the frontal callosity at least two thirds of the distance to the vertex. Antenna elongate, first segment slightly enlarged, third with a prominent angle at base above, annulate portion not much more than half as long as the basal; palpi light colored and clothed with black hairs. Thorax dark brown, nearly black, scutellum with a round black spot which is margined with white; wings uniformly fumose, furcation of the third vein with a long appendage, first posterior cell slightly narrowed at the apex; legs dark brown, almost black, base of each front tibia white and the entire legs thinly clothed with white hair. Abdomen almost entirely black, but each segment with a gray posterior border which on each of the second, third, fourth and fifth is expanded into a gray triangle at the middle of the dorsum.

Female from Tukurrique, Costa Rica, collected by Schild and Burgdorf. The species suggests *Tabanus melanocerus*, but the narrow front and conspicuous black spot on the scutellum at once distinguish it.

Tabanus littoreus n. sp. Length 9 to 11 millimeters. About the size of *Tabanus pumilus* and something like that species in general appearance, front very wide, with a shining black frontal callosity which has no denuded line of spot above it. General color chocolate brown, or a little lighter, the ground color of the thorax being partially obscured by a sparse coating of gray hairs.

Female. Front wide, in the largest specimens nearly a millimeter, scarcely narrowed before, frontal callosity as wide as the front, nearly square, shining black, with no denuded line or spot above; antenna light brown, annulate portion of third segment darker, first segment short and slender, third with no well defined angle above but widest near the base and gradually narrowed, with no evident curve toward the apex; palpi pale, thick at base, pointed at the apex and all but as long as the proboscis. Thorax brown, sparsely clothed with gray hairs; wings hyaline, stigma distinct, brown, first posterior cell wide open, furcation.

of the third vein with a long appendage; legs brown, apexes of the front tibiae and the tarsi of all the legs, especially beyond the metatarsi, darker. Abdomen brown, a middorsal stripe and an irregular spot on each side of each segment gray, but these gray markings are not well defined nor conspicuous, narrow posterior border of each segment gray.

Male. Head large, line of separation between the large and small facets well defined, otherwise this sex is like the female.

Specimens of both sexes taken at Puerto Barrios, Guatemala, from twigs and branches of mangrove, growing just at the edge of the water. Nearly related to *T. cribellum* but differing from it in color and in having a wider front.

Tabanus texanus n. sp. Length 12 to 14 millimeters. A species much like *T. costalis* in appearance. Eye with a single purple band; thorax with stripes not very plainly marked; costal cell of the wing plainly infuscated; abdomen with three series of yellowish triangles.

Female. Antenna yellow with the annulate portion of the third segment black; first segment slender, third with a distinct angle near the middle of the upper side of the basal portion; palpi yellowish, thick at the base, narrowed toward the tip and nearly as long as the proboscis. Front rather wide with parallel sides; face and front clothed with yellow dust; frontal callosity nearly as wide as the front, square, shining black and with an unconnected spot above. Thorax grayish yellow above and with evident stripes. Wing hyaline, costal cell distinctly infuscated. Front coxa yellow, except at apex, other coxae and all the femora brown; basal half of the front tibiae and all the other tibiae except the apexes yellow; tarsi brownish. Abdomen with three series of yellow triangles separated by dark brown areas. The triangle at the middle of each segment has its base on the posterior margin of its segment and also reaches the anterior border where it connects with the triangle which precedes; the lateral triangular spots have an oblique appearance and plainly reach the whole length of their respective segments.

Male. Head rather large; eyes plainly divided into areas of large and small facets. Color as in the female.

A male and female taken at Galveston, Texas, in May, by Dr. F. H. Snow.

Chrysops separatus n. sp. Length 8 millimeters. Body black, wing with costal margin, crossband and apical spot black, apical spot entirely separated from the crossband.

Female. Antenna elongate, first segment reddish brown at base, black at apex, second and third black, third longer than the other two combined. Cheeks, middle of the face, region around the antennae and the sides of the front clothed with a yellow dust. Facial and frontal callosities and vertex shining black. Thorax

black, legs black, wings with costal and first basal cells, crossband and apical spot black, otherwise hyaline. The crossband hardly reaches the posterior margin but comes nearest to it in the fourth posterior cell; the apical spot fills out nearly half of the second submarginal cell and is entirely separated from the crossband. Abdomen entirely black above and below.

Female from Raleigh, North Carolina, collected by C. S. Brimley, April 18, 1906. Entirely distinct from the species of Nearctic *Chrysops* known to me.

Chrysops dorsovittatus n. sp. Length 7 millimeters. Ground color of the face black, undenuded parts covered with yellow dust, apical spot of the wing narrowly separated from the crossband. Abdomen with a wide middorsal black stripe, and black apex.

Female. Facial and frontal callosities and vertex shining black, cheeks, middle of the face, region surrounding the antennae and middle and sides of the front covered with golden yellow dust; palpi and proboscis black; first segment of the antenna yellowish, slender and slightly longer than the second; second and third segments more or less infuscated, third as long as the other two. Thorax black, striped with bright yellow, wing with costal and first basal cells, crossband and apical spot black, apical spot very narrowly separated from the crossband which reaches the posterior border, filling out the fourth posterior cell. Legs largely black, anterior coxae, bases of anterior and middle tibiae and all the metatarsi yellow. Abdomen above with the sides of the first segment yellow; wide dorsal stripe and apex black; a narrow extension of the apical black projects forward outside of a yellow space, on each side, to the posterior margin of the second segment.

Male. Colored like the female except that the fifth vein of the wing is widely margined with black, which at the base of the second basal cell occupies the entire width of this cell.

A female from Georgia and a male from Florida. The species is entirely distinct from other Nearctic species of *Chrysops* known to me.

Chrysops shermani n. sp. Length 9 to 10 millimeters. Thorax black with bright yellow stripes. Black coloring of the wings somewhat broken up by lighter areas along the margins of the veins. Crossband not reaching the posterior margin of the wing.

Female. Facial and frontal callosities shining yellow, the latter margined with black above, region around the ocelli black; palpi yellow, half as long as the proboscis which is black. Thorax black with bright yellow stripes, wing with costal margin, crossband and apical spot black or dark brown; the coloring of the costal and first basal cells is not intense, stigma dark and a few small areas beneath it darker than the other parts. To

the unaided eye the apical spot appears to be separated from the crossband, but a lense shows that shaded bands reach across in the marginal and first submarginal cells. The crossband is much abbreviated posteriorly and is broken up into darkened patches in the region of the discal and second and third posterior cells. Throughout the crossband the vein margins are either hyaline or only shaded with brown. Front legs yellow to middle of tibiae from thence black, middle legs yellow, hind legs yellow, with the exception of the bases of the femora which are black. Middle and hind tarsal segments infuscated apically. Abdomen above largely yellow; first segment with a square black spot at middle, second at middle with a wide stripe furcate behind, and a small spot on either side near the hind margin black; third and fourth segments each with four black stripes which do not quite reach the posterior margins; remaining segments black with yellow posterior margins.

A number of females received from Franklin Sherman, Jr., and collected at Highlands, North Carolina. Also a female collected by E. B. Williamson at Hayden, Ontario, July 10, 1906. Two females taken at Highlands, North Carolina, were sent in by C. S. Brimley.

A note from Professor Sherman is of interest in this connection. He stated at the time he sent the specimens that "they appear to be different from anything we have taken in the state. I have taken the species two different years in the same general region in our mountains at an elevation of about 3,000 feet, and although both times I collected them while driving along a road, they were not to be taken, on the same road the same day, when we descended to 2,500 feet or lower."

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