

## A REVISION OF THE HORSE FLY GENUS *AGKISTROCERUS* PHILIP (DIPTERA: TABANIDAE)

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*Abstract.* — The horse fly genus *Agkistrocerus* Philip is revised. *Tabanus aurantiacus* Bellardi from Mexico is transferred to *Agkistrocerus*, based on features of the head, body and wings. The female of *aurantiacus* is redescribed, the male is described for the first time, and the immature stages are described and figured, the first for the genus. The male of *A. finitimus* (Stone) is described for the first time. Notes on the species included are provided, as are illustrations of principal taxonomic features. A revised key to the genera of Nearctic Tabanini also is presented.

*Key Words.* — Insecta, Diptera, Tabanidae, *Agkistrocerus*

We recently discovered that *Tabanus aurantiacus* Bellardi, a horse fly from Mexico, is properly placed in *Agkistrocerus* Philip. This discovery necessitates a revision of species now placed in *Agkistrocerus*, and a redefinition of characters used to define the genus. Wiedemann (1828) described *Tabanus megerlei* Wiedemann from an unspecified locality in North America. Stone (1938) transferred *megerlei* to the Neotropical genus *Dicladocera* Lutz, and described another species, *D. finitima* Stone, from Florida. He also included in *Dicladocera* three species now placed in *Hamatabanus* Philip: *scita* (Walker) (= *carolinensis* (Macquart)), *annularis* (Hine), and *sexfasciata* (Stone). Stone's criteria for placement of these species in *Dicladocera* were pilose eyes and the dorsal portion of the basal flagellomere (basal plate) being strongly produced forward into a dorsobasal projection.

Fairchild (1940) questioned whether the North American species placed in *Dicladocera*, characterized by their relatively broad frons and inflated palpi, were closely related to Neotropical species of *Dicladocera*. Philip (1941) proposed placing *megerlei* and *finitima* in a new subgenus, *Agkistrocerus*, of *Dicladocera*. He believed that while the subcallus had tufts of setae laterally, as in Neotropical species of *Dicladocera*, the fully setose basicosta and patterned eyes of *megerlei* and *finitima* warranted subgeneric differentiation. He also placed *scita*, *annularis*, and *sexfasciata* in *Hamatabanus* because they lacked the lateral tufts of setae on the subcallus. Philip (1942) elevated *Agkistrocerus* to full generic status in the Tabanini, based on the setose basicosta and fleshy, unsclerotized labella.

Until now, *Agkistrocerus* and *Hamatabanus* could be separated from other Tabanini in North America by the combination of sparsely pilose eyes and antennal flagellum with a short or long dorsobasal projection. However, the discovery that "*Tabanus*" *aurantiacus* Bellardi from Mexico belongs in *Agkistrocerus*, but does not have a dorsobasal projection on the basal flagellomere, prompts a re-

definition of *Agkistrocerus*. Presented here is a new generic description for *Agkistrocerus* that differentiates it from other genera to which its species have been assigned in the past, a revised key to the genera of Tabanini in North America, and a key to, and notes on, species of *Agkistrocerus*.

The female of *A. aurantiacus* has not been described in English, except for a brief differential diagnosis by Williston (1901), and the males of *A. aurantiacus* and *A. finitimus* have not been previously described. The immature stages of *A. aurantiacus* are described, the first known for any species of the genus.

#### TAXONOMY

##### *Agkistrocerus* Philip

(Fig. 1)

*Dicladocera*, subgenus *Agkistrocerus* Philip 1941. Can. Entomol., 73: 13.

*Agkistrocerus* Philip 1942. Proc. New England Zool. Club, 21: 57.

*Type-Species.*—*Tabanus megerlei* Wiedemann (orig. des.)

*Adult.*—Large, stout-bodied species, frons relatively broad, index (height of frons divided by width at base) 2.0–3.0, slightly narrowed below vertex; eyes sparsely to densely pilose, in life purple with two broad green bands; vestiges of ocelli present; subcallus densely setose laterally; antennal scape moderately inflated dorsally, basal flagellomere with or without a dorsobasal projection; basicosta densely and evenly setose, Sc bare above, wing heavily infuscated on basal half with pale areas in the centers of the R, M and discal cells, or at least with distinct spots on crossveins, cell  $M_1$  distinctly narrowed at wing margin. Males similar in form to females, with eyes rather narrowly contiguous medially (for about one-fourth to one-third distance from top of frontal triangle to vertex), area between eyes bearing distinct black setae; postocular fringe of hairs long and conspicuous dorsally.

*Mature Larva.*—Pale yellow to creamy white, 37–43 mm long, body robust, pubescent markings dark on all body segments, cuticular striations present dorsally and laterally on all body segments, anal segment stout, nearly as long as broad, respiratory siphon  $3.0\text{--}3.5 \times$  longer than its basal diameter.

*Diagnosis and Discussion.*—*Agkistrocerus* superficially resembles certain other genera in the Diachlorini and Tabanini, including those with representatives that also have a conspicuous dorsobasal projection on the basal flagellomere. Although originally described as a subgenus of *Dicladocera*, it differs in having the basicosta completely and evenly setose and the labella entirely membranous, and thus is placed in the Tabanini, while *Dicladocera* is placed in the Diachlorini. *Dicladocera* species share with some *Agkistrocerus* species the feature of the dorsobasal projection on the basal flagellomere, but the eyes usually have no color pattern in life, and cell  $M_1$  of the wing is not narrowed at the posterior margin. Males of *Dicladocera* differ from *Agkistrocerus* in having the upper and lower facets of the eyes dissimilar in size and thus sharply divided, and the eyes are fully contiguous medially. There also is no overlap in the distribution of these genera. Only *Di-cladocera nigrocoerulea* (Rondani) extends as far north as Panama. *Agkistrocerus aurantiacus* (Bellardi) extends as far south as Mexico City and Veracruz in Mexico.

All known species of *Hamatabanus* also were thought to possess a dorsobasal projection on the basal flagellomere, but a study currently in progress by G. B. Fairchild indicates that additional species not having such a projection also belong in *Hamatabanus* (G. B. Fairchild, personal communication). Species of *Hama-tabanus* also differ from those of *Agkistrocerus* in being smaller and more slender-bodied, the subcallus lacks hairs or setae laterally, the eye pattern in life is one purple band on a green background, wings either hyaline or not as extensively



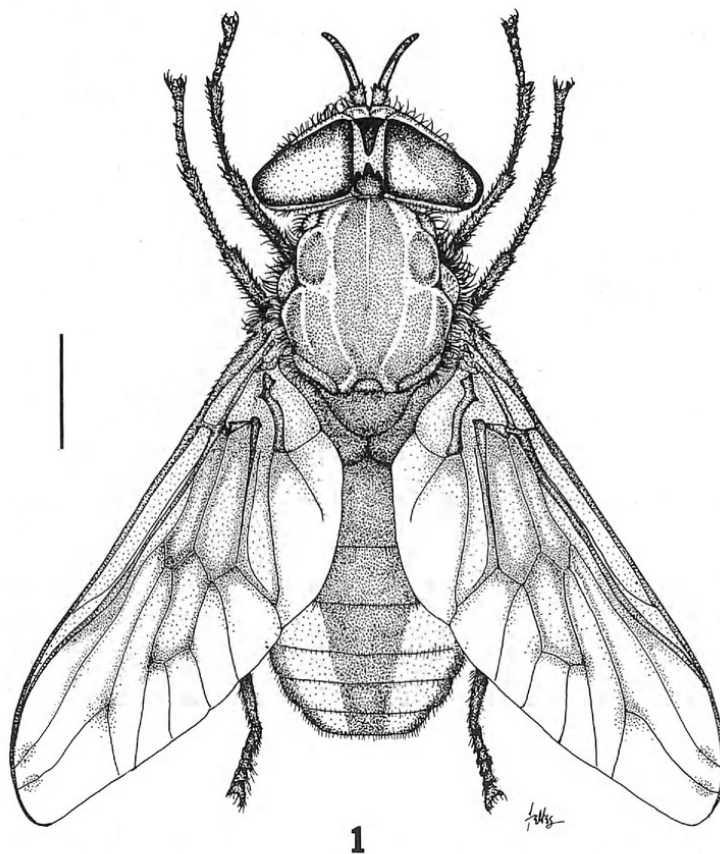


Figure 1. *Agkistrocerus megerlei*, female, dorsal view, scale bar is 3 mm.

infuscated, cell  $R_1$  not narrowed at wing margin, and the vertex strongly depressed in females.

A well developed dorsobasal projection on the basal flagellomere appears sporadically in a few species of *Tabanus* in all regions of the world. It appears to be a recurring homoplasy within highly diverse genera of Tabanidae, but has value as a species-group character. In North America, *Tabanus imitans* Walker and *Tabanus americanus* Forster have a more or less well developed dorsobasal projection on the basal flagellomere, but they are readily distinguished from *Agkistrocerus* by the narrower frons, lack of ocelli, lateral patch of setae on the subcallus absent, bare eyes without pattern, or pattern different from *Agkistrocerus* species, and lacking a long fringe of setae on the occipital region behind the eyes.

The mature larva of *Agkistrocerus* can be distinguished from those of other genera of Tabanini by the combination of stout body, dark pubescent pattern on all body segments, and the conspicuous cuticular striations dorsally on abdominal segments five through seven.

*Agkistrocerus aurantiacus* (Bellardi) NEW COMBINATION  
(Figs. 2–11)

*Tabanus aurantiacus* Bellardi 1859. Saggio di ditteologia messicana, I: 67.

*Female*.—(Fig. 2) Length 17–20 mm. Frons dark gray-brown, relatively broad, index (height of frons divided by width at the base) 3.0, slightly narrowed above near vertex, vestiges of ocelli present; basal callus dark brown to black, rounded and strongly convex, separated from eye margins, dorsal extension a narrow line slightly widened at apex; subcallus velvety brown with a prominent patch of

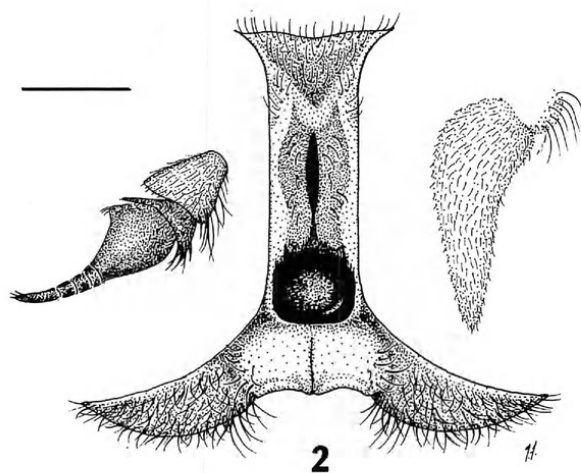


Figure 2. *Agkistrocerus aurantiacus*, female, frons, antenna, maxillary palpus, scale bar is 1 mm.

setae laterally; parafacials thickly black setose above near antennal bases, pale yellow pilose below; beard thick yellow pilose; scape and pedicel gray-black, scape inflated dorsally, bearing mixed black and yellow setae, flagellum velvety black, without dorsobasal projection; maxillary palpus dark gray, bearing yellow setae; eyes very sparsely short pilose, in life with two broad green bands on a purple background; postocular fringe of yellow setae prominent. Scutum dark brown, with narrow, indistinct paler median and sublateral longitudinal stripes, and bearing mostly yellow and a few black hairs; scutellum concolorous; notopleural lobes red-brown, densely black setose laterally; pleuron red-brown with some black tones, yellow pilose; all femora brown, fore femur darker; tibiae pale red, yellow pilose, fore tibia blackened on apical third; fore tarsus black, mid and hind tarsi brown basally, darkened apically; wing heavily infuscated on basal half, with paler centers in the radial, medial and cup cells and discal cell, crossveins and fork of  $R_4$  and  $R_5$  with prominent black clouds, Sc bare above and below, first posterior cell narrowed at wing margin. Abdomen dorsally black-brown and mostly yellow pilose, with a prominent row of low, pale gray tomentose median triangles, and tergites one through four yellow to red laterally; abdomen ventrally dark brown, slightly paler at apices of segments and mostly pale yellow pilose.

*Male*.—(Figs. 3–4) Length 16–18 mm. Body generally black-brown and vestiture of head, thorax and abdomen black except where noted below. Frontal triangle velvety black-brown, densely black setose laterally; parafacials dark brown, entirely black pilose, beard entirely black; antenna black, basal flagellomere more slender than in female; apical palpomere of maxillary palpi elongate oval, black,

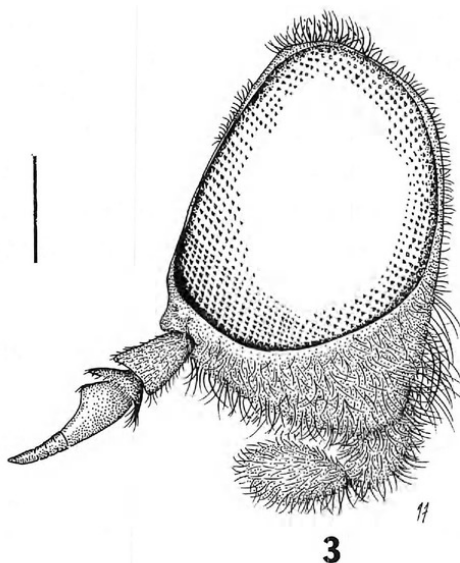


Figure 3. *Agkistrocerus aurantiacus*, male, lateral view of head, scale bar is 1 mm.



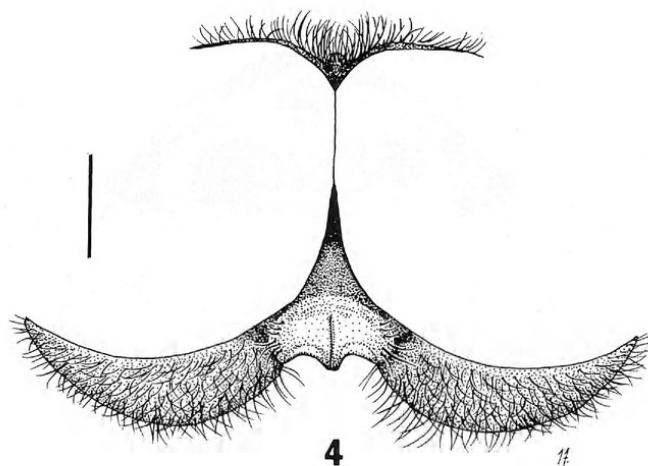


Figure 4. *Agkistrocerus aurantiacus*, male, frontal view of head, scale bar is 1 mm.

and black setose; eyes only narrowly contiguous along midline, with conspicuous black setae between them, upper and lower facets not noticeably differentiated in size; tubercle on vertex prominent and densely black setose. Scutum black-brown, black pilose and with only scattered long yellow hairs sublaterally and along posterior margin; pleuron and scutellum concolorous; all femora black-brown, fore tibia concolorous, except dark red at extreme base, mid and hind tibiae dark red-brown, darker apically; tarsi black; all legs black pilose. Abdomen brown-black, black pilose except on pale median triangles and sublateral orange-brown areas on tergites one through four; lateral margins of all tergites black, otherwise similar to female.

*Mature Larva.*—(Fig. 5) Body robust, 37–45 mm long, pale yellow to creamy white. Head capsule 5.2–6.0 mm long, greatest width 1.3–1.6 mm. Anal segment relatively stout, nearly as long as broad, varying in length from 3.5–3.6 mm, respiratory siphon 3.3–3.9 mm long, about 3.0–3.5 × longer than its basal diameter. Tracheal trunks in preanal segment 0.8 mm in diameter, coffee colored. Cuticular striations present dorsally and laterally on all body segments, absent ventrally except on anal segment, striations spaced about 0.04 mm laterally and 0.08 mm dorsally on some abdominal segments, dorsal striations somewhat irregular and incomplete on thoracic segments and abdominal segments one through four, clearly defined on segments five through seven and anal segment, lateral thoracic striations more widely spaced, about 0.07 mm. Pubescent pattern dark brown and conspicuous on all body segments. Anterior pubescence occupying anterior one-third, one-fifth and one-fourth of pro-, meso-, and metathoracic segments respectively; prothoracic annulus with a pair of dorsolateral and ventrolateral posterior pubescent projections extending three-fourths to four-fifths length of segment; meso- and metathoracic pubescent annuli with four pairs of posterior projections laterally, variably extending from one-half to entire length of respective segments. Abdominal segments with anterior pubescence present on all except anal segment, forming complete annuli on segments five through seven; pseudopodial pubescence complete on segments one through seven; posterior pubescence present on metathorax and all abdominal segments, interrupted laterally on metathorax and abdominal segments one and two, forming a complete annulus on segments three through eight; posterior pubescence on segment seven joined to pseudopodial pubescence dorsolaterally and ventrolaterally by slender pubescent bars; pubescent pattern of anal segment consisting of a pubescent ring around anal ridge and a broad extension from which arises a lateral and dorsolateral projection, lateral one reaching posterior pubescent annulus,

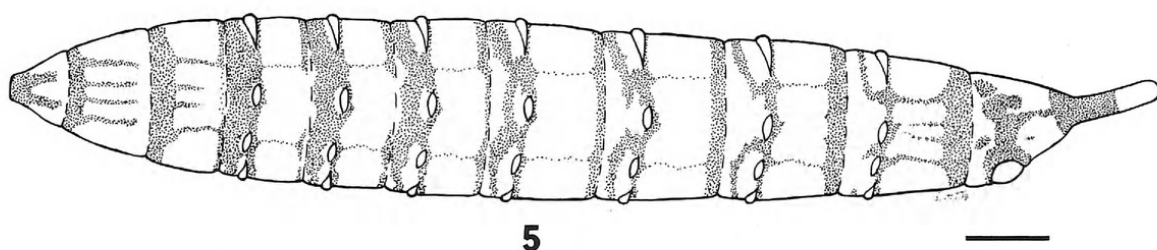


Figure 5. *Agkistrocerus aurantiacus*, mature larva, lateral view, scale bar is 3.5 mm.

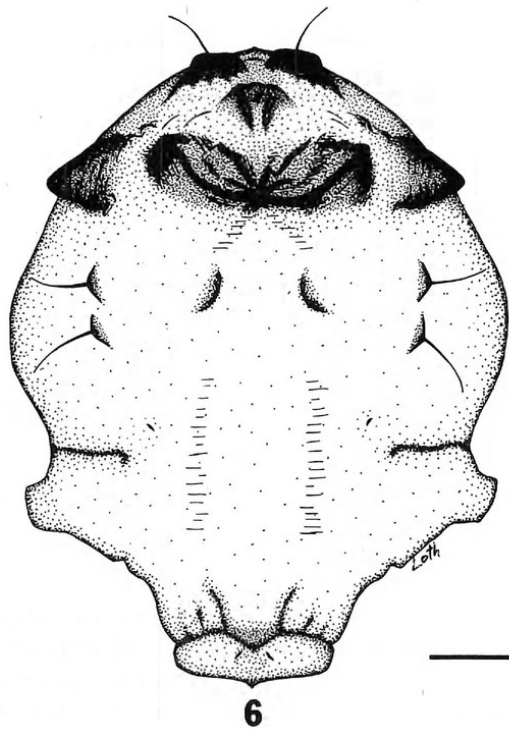


Figure 6. *Agkistrocerus aurantiacus*, pupa, frontal plate of male, scale bar is 0.6 mm.

dorsolateral extension shorter; two isolated pubescent spots usually present, one midlaterally, anterior to dorsal pubescent extension and another larger one anterodorsal to apex of dorsal extension.

*Pupa.* —(Figs. 6–10) Robust and uniformly brown, length 25–28 mm. Antennal ridges prominent, sharply crested, subdivided by a transverse median cleft, forming large upper and lower lobes directed

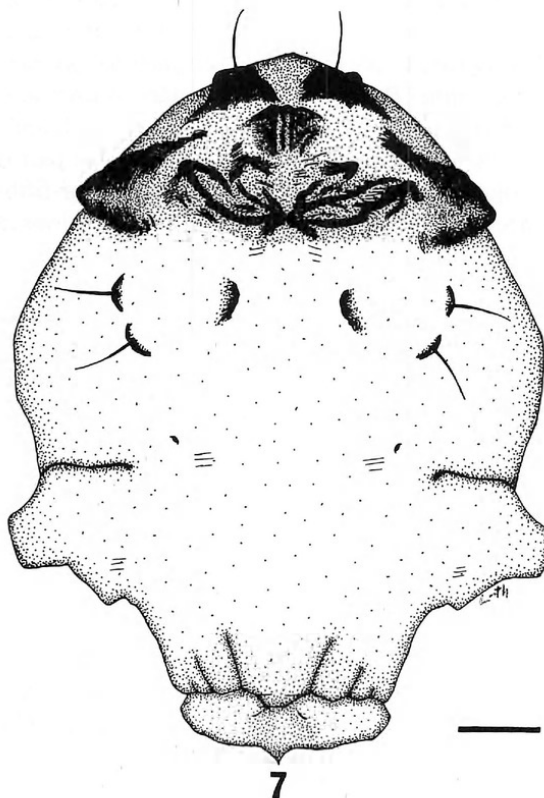


Figure 7. *Agkistrocerus aurantiacus*, pupa, frontal plate of female, scale bar is 0.6 mm.

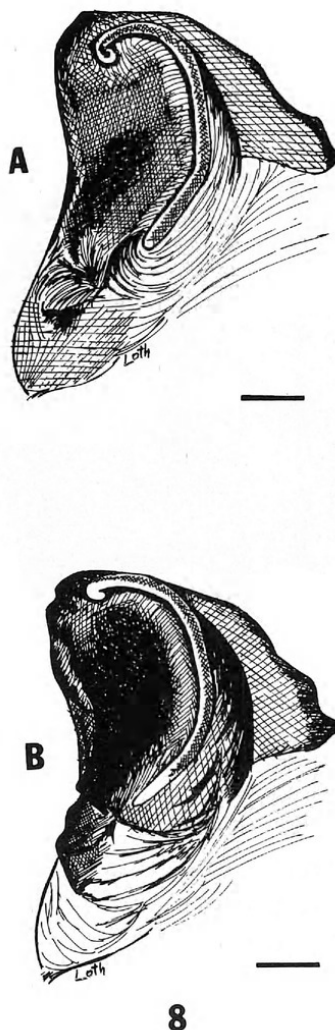
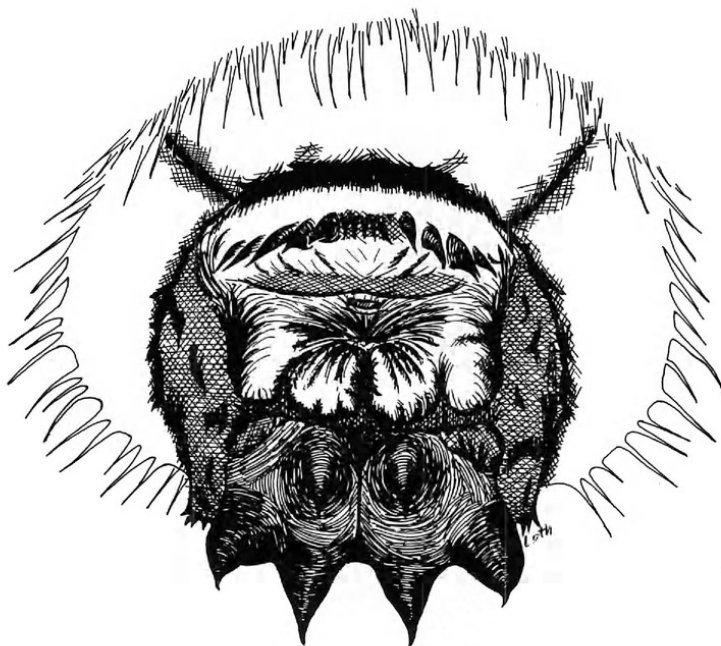


Figure 8. A. *Agkistrocerus aurantiacus*, pupa, mesothoracic spiracle of male. B. *Agkistrocerus aurantiacus*, pupa, mesothoracic spiracle of female. Scale bars are 0.2 mm

obliquely along median line, elevated 0.37–0.46 mm; median extremities narrowly separated, frontal ridges rather poorly defined, consisting of two or three indistinct longitudinal ridges on each side of median line. Callus tubercles prominent, separated by about 0.15 mm, elevated about 0.22 mm, bearing one seta arising from a central concavity. Vertical tubercle relatively large but not prominent. Anterior and posterior orbital tubercles obliquely compressed. Antennal sheaths 0.45–0.5 mm long, 0.55–0.6 mm wide at base, extending slightly beyond epicranial suture. Thoracic spiracles 1.3–1.5 mm long (Figs. 8A, 8B), comma-shaped, spiracular prominences large, exceeding anterior margin of thorax by 0.26–0.4 mm. Biseriate spinous fringes present on abdominal segments two through seven, anterior series very short, especially on anterior segments, progressively increasing in length on succeeding posterior segments, about one-third to one-half length of posterior series; anterior series on sternites two and three weakly developed, giving fringe a uniseriate appearance; spiracular plate of abdominal segment one about twice the size of those on segments two through seven; spinous fringe of tergite seven with 40–50 spines. Dorsolateral and lateral preanal combs well developed, borne on conspicuous prominences. Aster prominent (Figs. 9–10), all tubercles very broad basally, strongly tapered and sharply pointed apically; dorsal, lateral and ventral tubercles 0.4, 0.4 and 0.35 mm long, directed posterodorsally, posterolaterally and posteroventrally, respectively.

**Diagnosis.**—Larvae of *Agkistrocerus* can be separated from other known larvae of Tabanini in North America by the combination of stout body, conspicuous dark pubescence, and well developed cuticular striations dorsally on abdominal



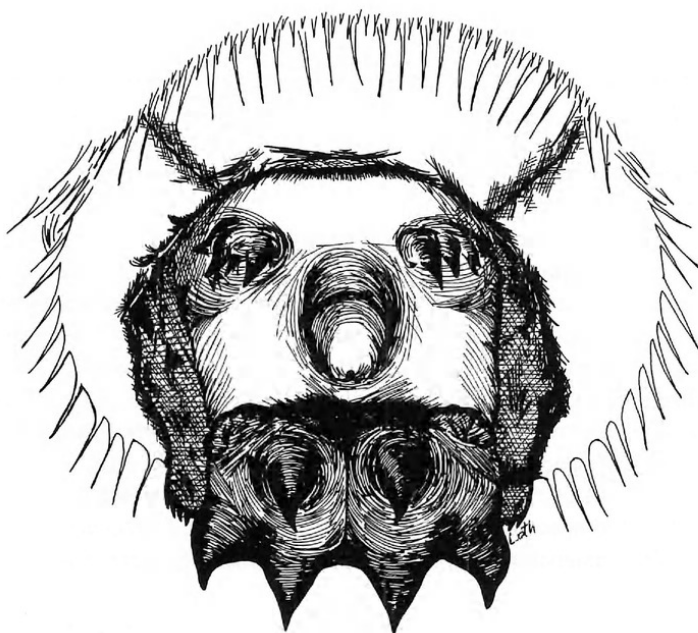


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Figure 9. *Agkistrocerus aurantiacus*, pupa, terminal aster of male, scale bar is 0.3 mm.

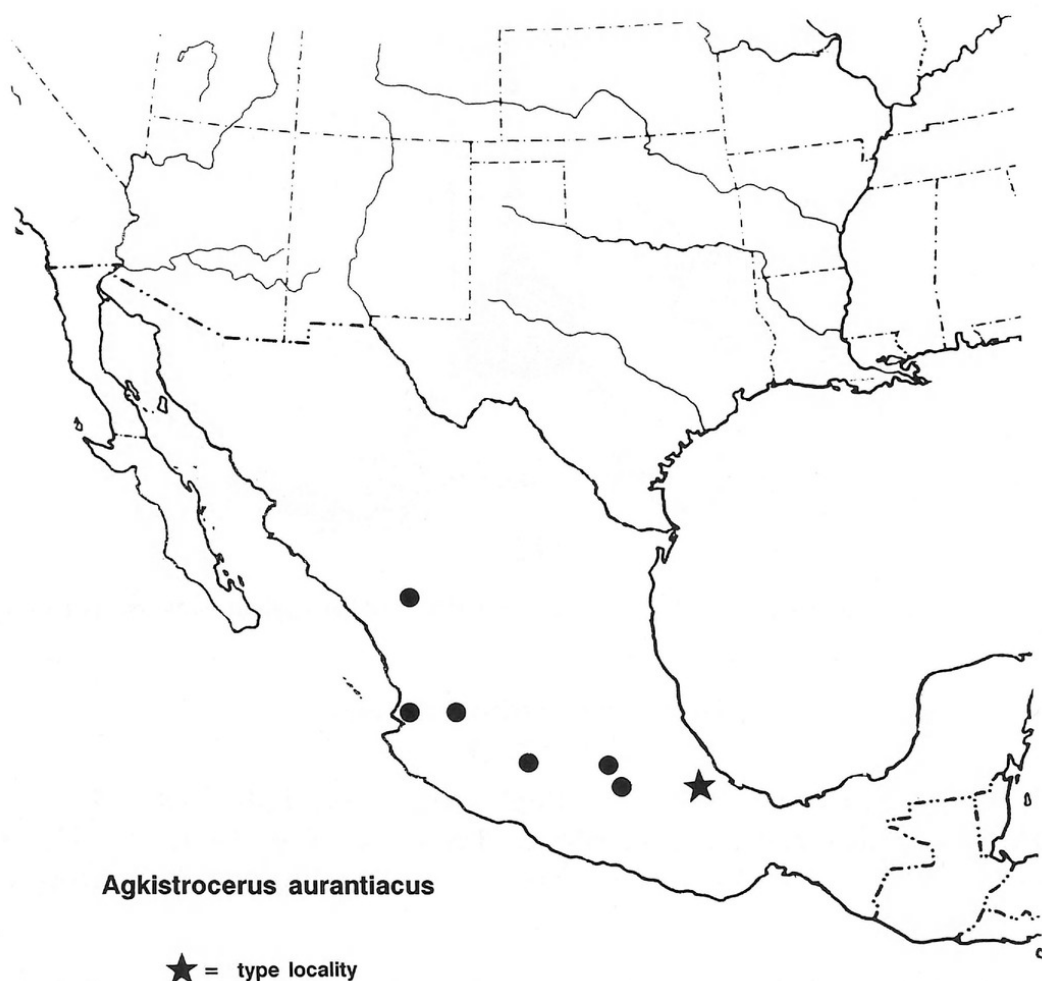
segments five through seven. No reliable differences could be found to distinguish the pupae of *Agkistrocerus* from those of other Tabanini.

*Discussion.*—*Agkistrocerus aurantiacus* has been recorded (Fig. 11) from Orizaba (Veracruz) [type locality], Mexico City, and a locality not specified in the Distrito Federal, Guadalajara (Jalisco), San Blas (Nayarit), a female collected 5 mi [8 km] S of Durango [city] in Durango (Cornell University Collection). It



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Figure 10. *Agkistrocerus aurantiacus*, pupa, terminal aster of female, scale bar is 0.3 mm.



## 11

Figure 11. *Agkistrocerus aurantiacus*, distribution.

appears to be found primarily in a transitional zone between chaparral and pine forest in montane habitats. The record from San Blas, being coastal, is unusual.

Larvae were collected approximately 1.5 km west of Morelia, Michoacán, near the López Mateos housing development, at a point where the ground becomes flooded due to infiltration of a small spring called "El Salto." The region of Morelia is considered a transitional zone between pine forest and chaparral, with a mean annual precipitation of 760.7 mm, and a mean annual temperature of 17.6° C (Garcia 1981).

The collection site is characterized by abundant grass and pools of water. Adjacent to this site are extensive cultivated fields and pastures. The soil is fine textured (44% clay, 28% lime and 30% sand), with a small amount of decomposing organic matter (approximately 3%), and little internal drainage. The depth of collection did not exceed 10 cm; the specimens were easily collected between layers of clay which cover the area where the collections were made.

*Material Examined.*—MEXICO. *DISTRITO FEDERAL*: Mexico City, Juan Muller Coll., 1 female (USNM). "Distrito Federal," L. Conradi, Coll., 1 male (USNM). *MICHOACÁN*: 1.5 km W of Morelia, 19 and 30 Mar 1985, 1941 m, (19°40' N, 101°11' W), L. A. Martinez, 9 males, 3 females, reared from larvae.

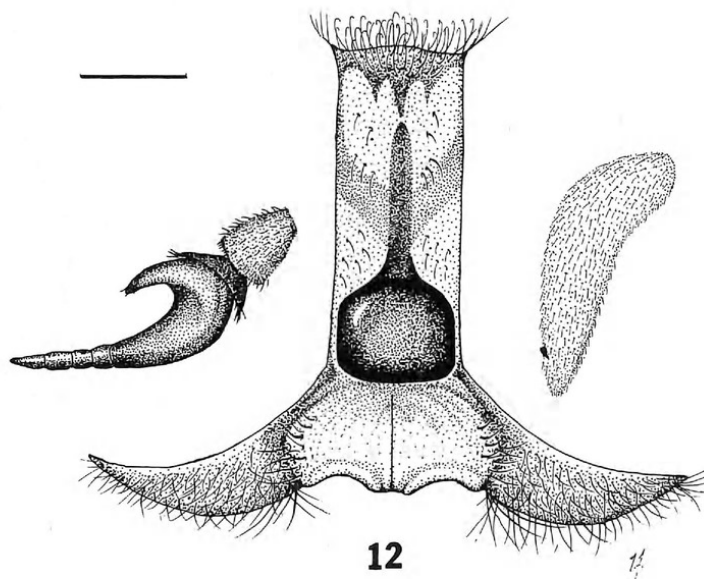


Figure 12. *Agkistrocerus finitimus*, female, frons, antenna, maxillary palpus, scale bar is 1 mm.

*Agkistrocerus finitimus* (Stone)  
(Figs. 12–14)

*Di cladocera finitima* Stone 1938. U.S. Dept. Agric. Misc. Publ., 305: 15.

*Di cladocera (Agkistrocerus) finitima* Stone. Philip 1941. Can. Entomol., 73: 13.

*Agkistrocerus finitimus* (Stone). Philip 1942. Proc. New England Zool. Club, 21: 57.

*Male*. — Eyes densely pilose, barely meeting on midline; occipital rim with long black setae, somewhat recurved. Scape black, pedicel dark brown, flagellum dark brown with a trace of orange at base; dorsobasal projection of basal flagellomere not reaching base of first annulus; palpus dark brown; a tuft of black hairs laterally on subcallus. Dorsum of thorax black and black haired, including scutellum; a vague orange band laterally from notopleural lobe to, but not including, scutellum; pleuron black and black haired. All coxae and femora black; fore tibia dark brown with basal one-third orange; middle and hind tibiae dark orange, slightly darker at apex; hind tibial fringe black, conspicuous; tarsi dark brown. Wings as in female, radial and medial cells hyaline. Dorsum of abdomen black and black haired with vague orange spots laterally on tergites one through three, black and black haired ventrally.

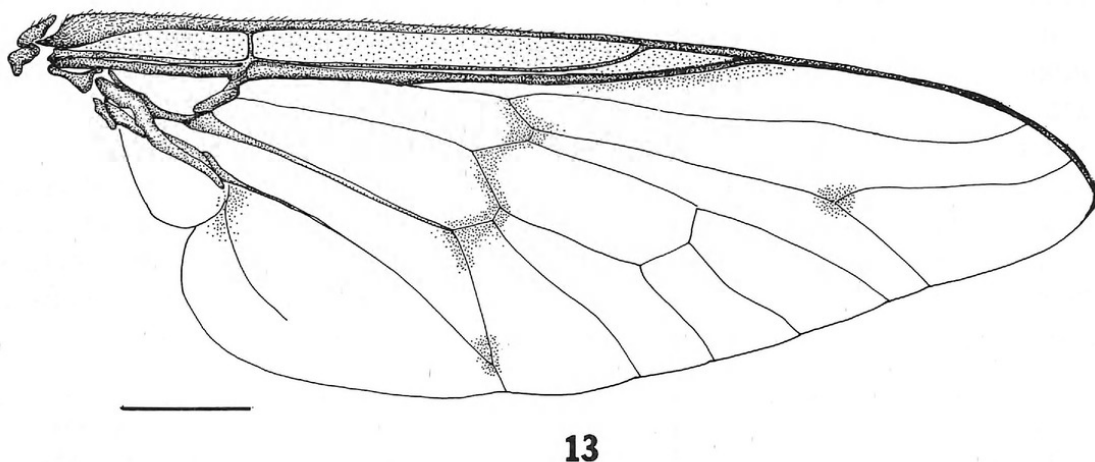


Figure 13. *Agkistrocerus finitimus*, female, wing, scale bar is 2 mm.



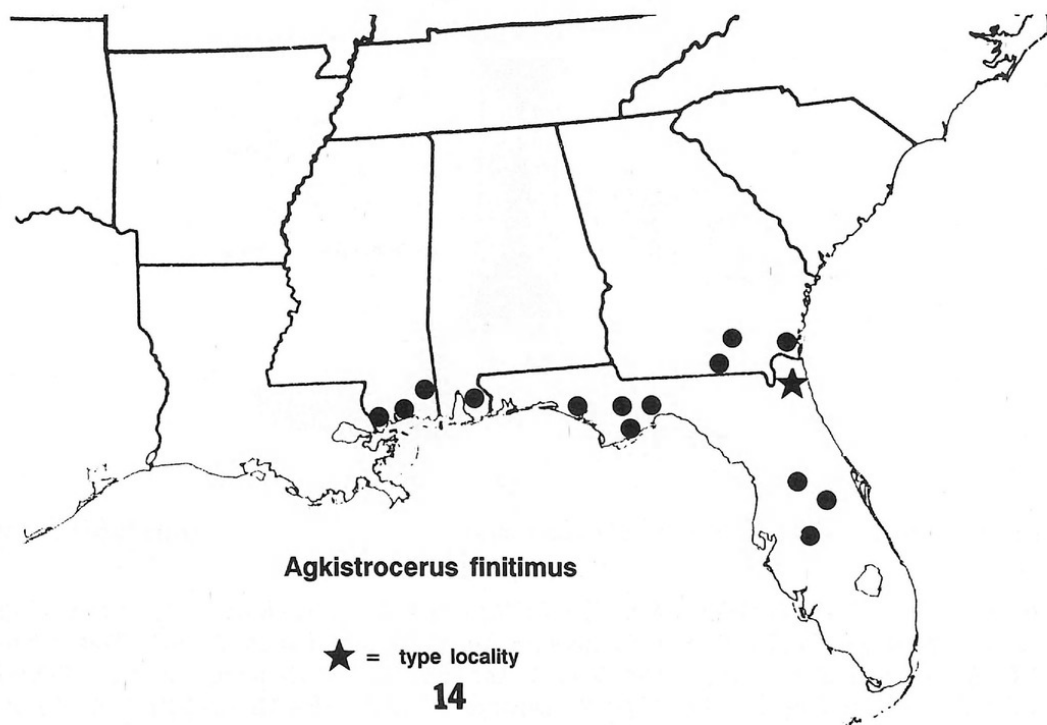


Figure 14. *Agkistrocerus finitimus*, distribution.

*Discussion.*—*Agkistrocerus finitimus* was described by Stone (1938) from a single female collected in Jacksonville, Florida. Its known distribution (Fig. 14) is the southeastern United States from Mississippi to Florida, north to southeastern Georgia. It has not been collected north of southern Mississippi and southern Georgia. The male has not been described previously, but is readily associated with the female.

*Material Examined.*—FLORIDA. POLK CO.: Indian Lake Estates, 17 Mar 1977, Allan Hook, 1 male (Cornell University Collection). FRANKLIN CO.: Wright Lake, Hickory Lnd., 26 Mar 1975, L. L. Pechuman, 2 females; 24 Mar 1986, 1 female; 1 Apr 1976, G. B. Fairchild, Flight Trap, 1 female.

*Agkistrocerus megerlei* (Wiedemann)  
(Figs. 1, 15–16)

*Tabanus megerlei* Wiedemann 1828. Auss. Zweifl. Ins. I: 132.

*Di cladocera megerlei* (Wiedemann). Stone 1938. U.S. Dept. Agric. Misc. Pub., 305: 15.

*Di cladocera (Agkistrocerus) megerlei* (Wiedemann). Philip 1941. Can. Entomol., 73: 13.

*Agkistrocerus megerlei* (Wiedemann). Philip 1942. Proc. New England Zool. Club, 21: 57.

*Discussion.*—*Agkistrocerus megerlei* was described from an unspecified locality (?Vaterland). This species occurs only in the southeastern U.S., but has a somewhat broader distribution to the north than *A. finitimus* (Fig. 16), from eastern Texas and the central part of Louisiana and Alabama to Florida and north to southern North Carolina. It appears to be most abundant in Florida, where females can be annoying to humans and livestock.

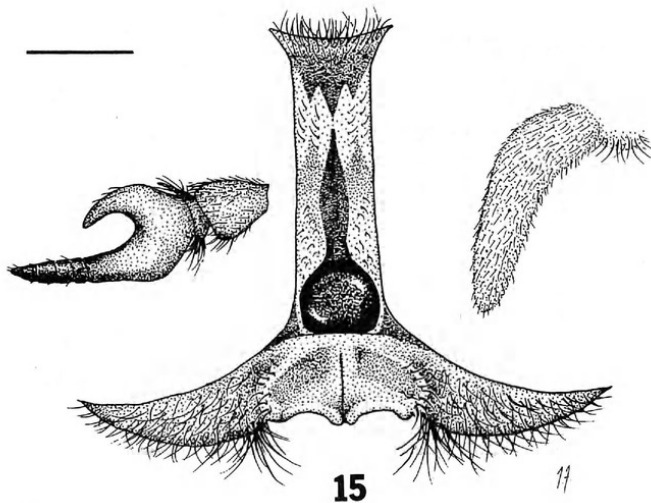


Figure 15. *Agkistrocerus megerlei*, female, frons, antenna, maxillary palpus, scale bar is 1 mm.

*Material Examined.*—FLORIDA. *FRANKLIN CO.*: Wright Lake, Hickory Lnd., 25 Mar 1975, L. L. Pechuman, 2 females. *LIBERTY CO.*: Camel L., 1 Apr 1976, G. B. Fairchild, Flight Trap, 1 female. *WAKULLA CO.*: Ochlochonee River State Park, 12 Apr 1982, L. L. Pechuman, 1 female. GEORGIA. *CLINCH CO.*: 5 mi NE Fargo, 10 Apr 1979, W. Downes, 1 female. TEXAS. *HARDIN CO.*: Saratoga, Big Thicket, Mar 1966, D. J. Lennox, 1 female.

KEY TO GENERA OF ADULT TABANINI IN NORTH AMERICA

- 1. Large, stout bodied species with subcallus densely setose laterally; pilose eye with two broad green transverse bands in life; wing with at least crossveins spotted and often heavily infuscated basally ..... *Agkistrocerus* Philip
- Not with all the above combination of characters ..... 2

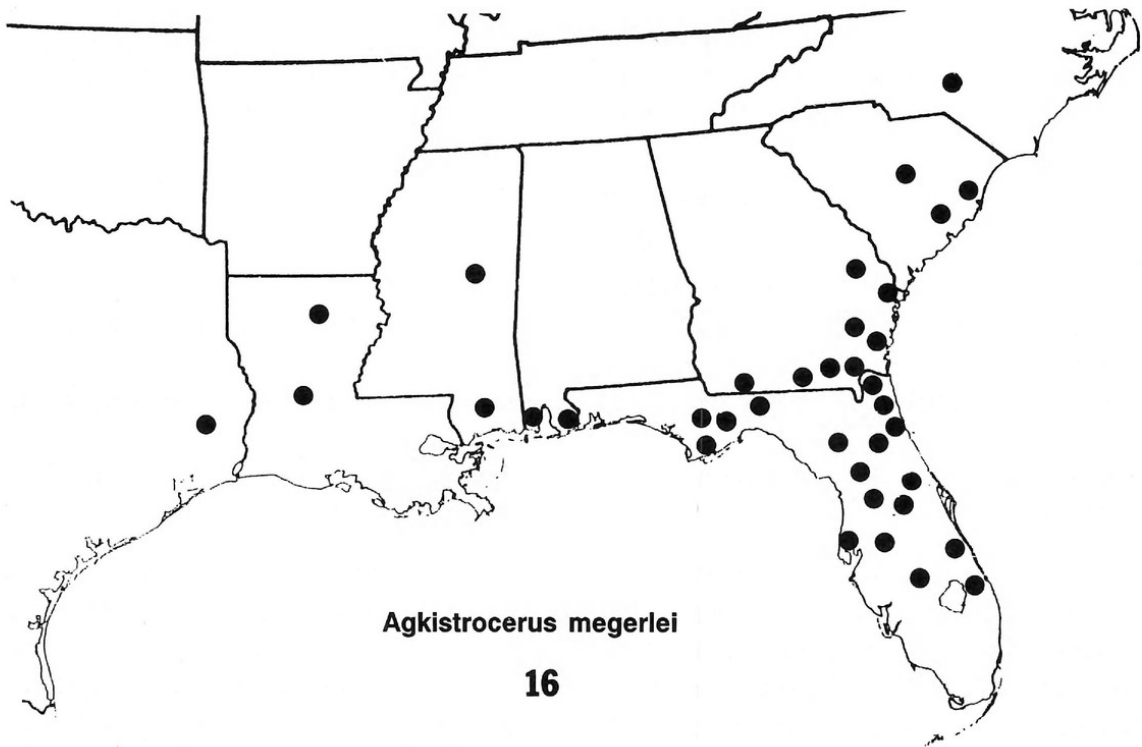


Figure 16. *Agkistrocerus megerlei*, distribution.

- 2(1). Eye bare to densely pilose, eye pattern in life a slender median transverse dark stripe on a green-bronze ground color. Female with vertex strongly depressed, paired shining black areas on upper frons, and basal callus as wide as frons and as wide as height or wider. Tibiae unicolorous, hind tibial fringe absent. Male with postocular setae long and strongly recurved ..... *Hamatabanus* Philip
- Not with all the above combination of characters ..... 3
- 3(2). Small but distinct ocelli present. Frons narrow; callus narrow and ridge-like, well separated from eyes ..... *Leucotabanus* Lutz
- Ocelli absent, but an ocellar tubercle sometimes present. Frons and calli variable ..... 4
- 4(3). Vertex with a distinct denuded ocellar tubercle and with an elevated shining tubercle anteriorly in males. Eye usually distinctly pilose, rarely with only scattered microscopic hairs, in life with three or four transverse stripes on a variably colored background. Basal section of CuA<sub>2</sub> setulose dorsally in at least females (may be bare in males) ..... *Hybomitra* Enderlein
- Vertex without an ocellar tubercle, or if present, then CuA<sub>2</sub> bare dorsally and eye pattern in life not as above. An entirely pruinose elevated tubercle sometimes present in males ..... 5
- 5(4). Frons of female with calli reduced to one or two small oval spots well separated from eye, or completely absent. Eye pilose or bare, often yellow or pale brown in dried specimens ..... 6
- Frons with at least an elongate basal callus. Eye black in dried specimens, bare or pilose ..... 7
- 6(5). Flagellum with basal flagellomere plus two or three apical flagellomeres. Eye bare ..... *Microtabanus* Fairchild
- Flagellum with four distinct apical flagellomeres. Eye pilose ..... *Atylotus* Osten Sacken
- 7(5). Apical flagellomeres setose. Apical palpomere blunt and stout, with erect setae. Proboscis small ..... *Anacimas* Enderlein
- Apical flagellomeres not conspicuously setose. Apical palpomere not blunt and short, or proboscis not small ..... 8
- 8(7). Body and wings deep brown to black. Facial and frontal calli protuberant and shining. Body length less than 15 mm ..... *Whitneyomyia* Bequaert
- Body and wings variable, but if as above, then body length more than 15 mm ..... 9
- 9(8). Almost no angle and no dorsal excision on the basal flagellomere. R<sub>4</sub> often with a spur ..... *Stenotabanus* (*Stenotabanus*) Lutz, in part<sup>4</sup>
- If R<sub>4</sub> with a spur, then dorsal angle of basal flagellomere distinct, or (and) eyes pilose ..... *Tabanus* Linnaeus ..... 10
- 10(9). Antenna with three apical flagellomeres .... *Tabanus* (*Glaucops*) Szilady
- Antenna with four terminal flagellomeres .. *Tabanus* (*Tabanus*) Linnaeus

<sup>4</sup> A few species of *Stenotabanus* have scattered setulae on the basicosta of the wing, and would key to the tribe Tabanini, although most species will key to the tribe Diachlorini because the basicosta is bare.



KEY TO SPECIES OF *AGKISTROCERUS*

1. Basal flagellomere of antenna without a dorsobasal projection. Eye of male sparsely pilose .....  
     .... *aurantiacus* (Bellardi) [México: Distrito Federal, Durango, Jalisco, México City, Michoacán, Nayarít, Veracruz]
- Basal flagellomere of antenna with a long dorsobasal projection. Eyes of male densely pilose ..... 2
- 2(1). Abdomen bicolored, orange laterally on tergites one through six, with a broad black median stripe. Basal half of wing heavily infuscated, radial and medial cells with pale centers. Male with thorax completely black ... *megerlei* (Wiedemann) [Alabama, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, Texas]
- Abdomen black or dark brown, without a clear median stripe, with silvery lateral tufts of hairs on tergites three through six. Infuscation of wings confined to spots on crossveins. Male with orange lateral band on thorax ..... *finitimus* (Stone)  
     [Florida, Georgia, Alabama, Mississippi]

## ACKNOWLEDGMENT

We thank G. B. Fairchild, Florida State Collection of Arthropods, for a critical review of the manuscript and many helpful comments, and for information about the status of the genus *Hamatabanus*; and D. S. Chandler and J. S. Weaver III, Department of Entomology, University of New Hampshire, for reviewing the manuscript. We also thank Tess Feltes, Portsmouth, New Hampshire, for executing the illustrations of adult *Agkistrocerus* species.

Scientific contribution number 1651 from the New Hampshire Agricultural Experiment Station.

## LITERATURE CITED

- Bellardi, L. 1859 [1861]. Saggio di ditterologia messicana. R. Accad. delle Sci. Torino, Mem., 19: 201-277.
- Fairchild, G. B. 1940. Notes on Tabanidae (Dipt.) from Panama II. The genus *Di cladocera* Macquart and related genera. Ann. Entomol. Soc. Am., 33: 683-700.
- García, de M. E. 1981. Modificaciones al de clasificacion climatica de koppen (para adaptarlo a los condiciones de la Republica Mexicana). (3rd ed.), U.N.A.M., Mexico.
- Philip, C. B. 1941. Comments on the supra-specific categories of Nearctic Tabanidae (Diptera). Can. Entomol., 73: 2-14.
- Philip, C. B. 1942. Further notes on Nearctic Tabanidae (Diptera). Proc. New England Zool. Club, 21: 55-68.
- Stone, A. 1938. The horseflies of the subfamily Tabaninae of the Nearctic Region. U. S. Dept. Agric. Pub. 305.
- Wiedemann, C. R. W. 1828. Aussereuropaische zweiflügelige Insekten. Vol. I, Hamm.
- Williston, S. W. 1901. Supplement [Part] (Tabanidae). In Bodman, F. D. & O. Selvin. Biologia Centrali-Americana. Zoologia—Insecta—Diptera. Vol. 1. Taylor & Francis, London.

Received 20 December 1989; accepted 15 May 1990.



Burger, John F. et al. 1990. "A revision of the horse fly genus *Agkistrocerus* Philip (Diptera: Tabanidae)." *The Pan-Pacific entomologist* 66(3), 181-194.

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