

Three New Species and One New Subspecies of *Toxorhynchites* (Diptera: Culicidae) of the Afrotropical Region

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ABSTRACT Three new species and one new subspecies in the subgenus *Afrorhynchus* of the genus *Toxorhynchites* are described from the Afrotropical region. With the addition of these four new taxa, 14 species and two subspecies of subgenus *Afrorhynchus* are presently known in the region. Keys are provided for the identification of adult males and females of the subgenus *Afrorhynchus* in Africa.

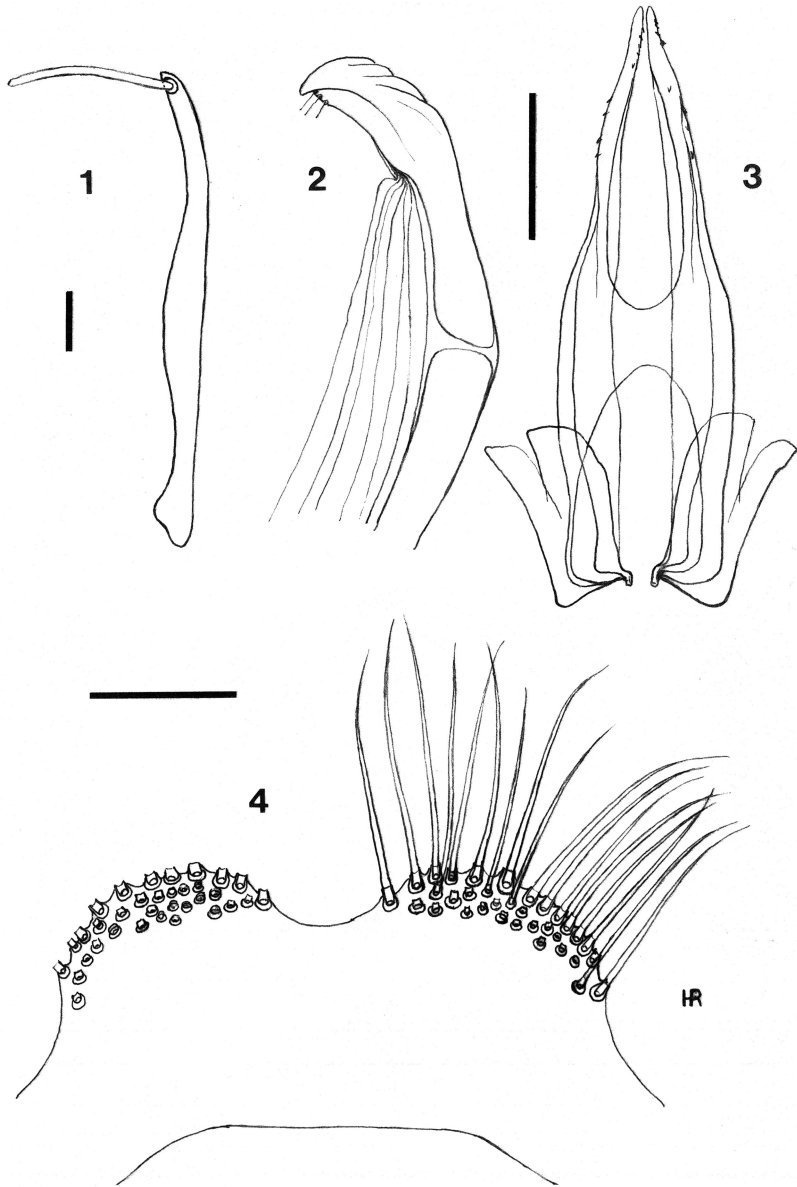
KEY WORDS *Toxorhynchites*, *Afrorhynchus*, new species, identification keys

SOME SPECIES OF THE GENUS *Toxorhynchites* Theobald 1901 (Toxorhynchitinae, Culicidae) are recognized as potential agents of biological control of other mosquitoes (Collins and Blackwell 2000). Numerous recent studies on the systematics of toxorhynchitine mosquitoes are now available (Ribeiro 1991a, b, 1992, 1993, 1997). In this article, I describe three new species, namely, *Toxorhynchites nigeriensis*, *Tx. wolfsi*, and *Tx. zairensis*, and one new subspecies, *Tx. viridibasis voltaicus*, of the Afrotropical subgenus *Afrorhynchus* Ribeiro, from specimens in the collections of the Natural History Museum (London, United Kingdom), Institut Pasteur de Paris (Paris, France), and Musée Royal de l'Afrique Centrale (Tervuren, Belgium). In addition to the four new taxa, there are 11 species previously known in this subgenus: *Tx. aeneus* (Evans 1926); *Tx. angolensis* Ribeiro, 1992; *Tx. capelai* Ribeiro, 1993; *Tx. erythrurus* Edwards 1941; *Tx. helena* Ribeiro, 1992; *Tx. kaimosi* (van Someren, 1946); *Tx. lutescens* (Theobald 1901); *Tx. nairobiensis* (van Someren, 1946); *Tx. pauliani* (Doucet 1951); *Tx. ruwenzori* (van Someren, 1948); and *Tx. viridibasis* Edwards 1935. With its 15 taxa, *Afrorhynchus* is now the largest subgenus of the subfamily Toxorhynchitinae in the Afrotropical Region; subgenus *Toxorhynchites* sensu stricto (the former *Brevipalpis* group of Edwards) is represented only by 11 species and subspecies (Ribeiro 1991a). In addition to the diagnosis of each new taxon, identification keys to the adult males and females of subgenus *Afrorhynchus* are provided.

In the descriptions that follow, the terminology of Harbach and Knight (1980, 1981) was adopted, whereas the character listing and analysis were taken from Steffan and Evenhuis (1985).

Toxorhynchites (Afrorhynchus) wolfsi sp. nov. (Figs. 1–4)

Male. Wing length 7 mm. **Head:** Vertex covered with decumbent scales having intense blue-green sheen, without erect forked scales; ocular line inapparent; with four interocular setae. Proboscis purple. Maxillary palpus mainly purple, with intense bluish and violet reflections above and golden scales on the sides of joints that are pale violet in face view; distal one-half of second palpomere largely pale, as well as distal one-third of third; fourth palpomere with a row of 14 or 15 short rigid setae above and 12 or 13 longer setae below. **Antenna:** Pedicel dark, bare; first flagellomere with semierect bluish green scales and numerous longish setae above; flagellar whorls with ≈ 40 setae. Clypeus brown, bare. All head setae brownish with coppery reflections. **Thorax:** Integument dark brown. Scutum covered with brown scales with bluish green reflections. Scutellum with bluish green spatulate scales on all lobes. Anteprenotum dark purple, scales with bluish and violet reflections. Postpronotum with golden scales below and blue-green scales above. Propisternum, mesokatepisternum, and mesanepimeron densely clothed with silvery white scales; small patches of golden coppery scales also present on prealar knob and at lower edge of mesokatepisternum; without scales below base of halter, on metepisternum; 9–11 mesokatepisternal setae each side; one lower mesepimeral seta. Thoracic setae brownish with coppery reflections. **Legs:** Forecoxa entirely coppery gold; scales on midcoxa white on upper one-half, coppery gold below; hindcoxa white on upper three-fourths, coppery golden distally; trochanters with coppery gold scales; forefemur purple on distal one-half to two-thirds, golden scaled basally; mid- and hind-



Figs. 1–4. *Tx. wolfsi* sp. nov. Genitalia of male holotype. (1) Gonostylus and gonostylar claw. (2) Paraproct. (3) Aedeagus. (4) Lobes of tergum IX. Bars, 0.1 mm.

femora purple scaled on about apical two-thirds at sides and above, golden scaled beneath and at base; midfemur slightly widened at middle; hindfemur without row of long setae. Knee spots small, pale violet. Foretibia purple; midtibia purple with a few scattered pale scales behind; hindtibia with an incomplete pale ring at approximately three-fifths. Foretarsus purple; first tarsomere of midtarsus pale at base and beneath for approximately one-third; second midtarsomere almost all white beneath, dark above; remainder midtarsus purple; first segment of hindtarsus with subbasal white ring; a few pale scales beneath at base of second

hindtarsomere; third hindtarsomere almost all white, dark at tip; fourth and fifth tarsomeres all purple. Ungues of foretarsus unequal, one of them stronger and toothed; unguis of mid and hindtarsi smaller, equal and simple. *Wing*: Veins purple scaled, with obvious blue-green reflections on costa, subcosta, and radius R1; rm index (ratio of longitudinal portion to transverse portion of rm) ≈ 3 , the transverse portion reaching $M_1 + 2$ at tip of $M_3 + 4$; wing membrane iridescent. *Halter*: pedicellum yellowish, bare; capellum dark brown, with some pale scales at apex. Mesopostnotum brown, with a small patch of green

golden scales. *Abdomen*: Laterotergite pale brown, with thin golden setae, without scales. First tergum dark, with spatulate golden green metallic scales; second tergum mainly purple scaled above, with admixture of some golden green metallic scales; third tergum purple, with only a few scattered golden green scales; fourth tergum entirely purple above; terga V-VIII with abundant coppery golden scales besides purple ones; lateral aspect of abdomen golden scaled, with variable coppery tint, and numerous thin golden setae. Caudolateral tufts very well developed, orange-red, present not only on terga VI-VIII, as usual, but also on tergum V, a unique character among all known Afrotropical *Toxorhynchites*. Second sternum and sterna V-VIII clothed with coppery golden scales; sterna III and IV with a small dark patch at middle of segment, posteriorly. *Genitalia* (Figs. 1-4): Gonocoxite length 0.775 mm; gonostylus length also 0.775 mm; gonostylar claw length 0.265 mm, approximately one-third of gonostylus; aedeagus length 0.400 mm. Tergum IX: distal margin with a pronounced sinus; interlobal space narrow; lobes round, well marked, with 33-34 strong setae each. Gonocoxite with exceptionally strong setae on inner aspect and a patch of small setae at apex. Basal mesal lobe with strong apical seta reaching to approximately three-fifths of gonocoxite. Gonostylar claw subapical, blunt tipped. Aedeagus with distinct, moderately wide dorsal bridge; apex minutely and sparsely spiculate; basal pieces as figured. Paraproct with evident unsclerotized transverse band, distal portion gently curved, with three subapical cercal setae.

Female. Unknown.

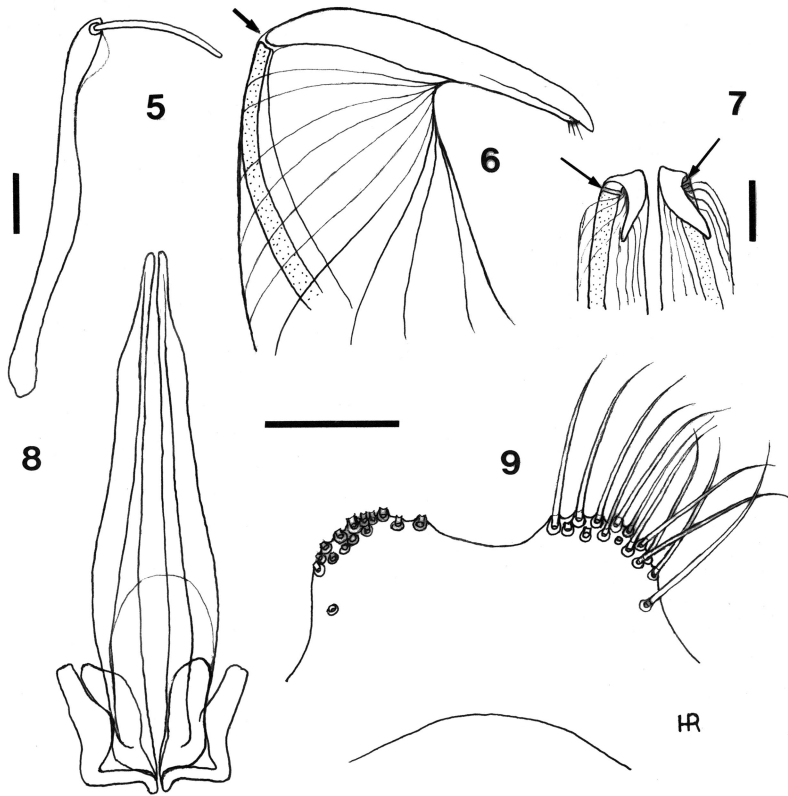
Type Material. *Holotype*: Pinned male with the following four labels: "R. DET 5165", "COLL. MUS. CONGO/Coquilhatville/2-I-1946/J. Wolfs," "*Megahrinus viridibasis*/2.I.46/liter+n," and "*Toxorhynchites viridibasis*/ Rev. Dr. White/1982." Genitalia mounted on slide by the writer, with two labels: M.R.A.C./Coquilhatville/2.I.1946/J. Wolfs and Tx. (*Afr.*) *wolfsi* sp.nov. Male/July 2003/ HOLOTYPE /Det. H. Ribeiro. Right wing and right foreleg on stage. The holotype is deposited in the Insect Collection of the Musée Royal de l'Afrique Centrale, Tervuren, Belgium.

Etymology. The new species is named in memory of Dr. J. Wolfs, entomologist and collector of the holotype.

Diagnosis. *Tx. wolfsi* sp. nov. is nearer to *Tx. viridibasis* and *Tx. capelai*; it can be distinguished from these two species and other known species by: the presence of a well developed caudolateral tuft on segment V; the number, development, and arrangement of specialized setae on Plpm4 (12-15 long setae in rows versus three or four small dispersed ones); the predominantly purple scales on Te II; the pale markings on second tarsomere of mid- and hindlegs; and the numerous setae on mesokatepisternum and lobes of tergum IX. *Tx. wolfsi* also differs from *Tx. capelai* by the dark hindtibia and small yellow caudolateral tufts VI-VIII of the latter.

***Toxorhynchites (Afrorhynchus) zairensis* sp. nov.**
(Figs. 5-9)

Male. A relatively small, purplish mosquito, with golden reflections under incident light. Wing length near 5.5 mm. *Head*: Vertex covered with coppery golden decumbent scales, with green reflections; ocular line ill-defined, golden, with pale violet sheen; with four interocular setae. Proboscis purple, with coppery golden reflections. Maxillary palpus mainly golden; purple scales with violet reflections above and at joints; fourth palpomere with very few short decumbent setae amid the golden scales; fifth palpomere entirely purple scaled. *Antenna*: Pedicel dark brown, bare; first flagelomere with a patch of semi erect iridescent scales; flagellar whorls with ≈ 30 setae. Clypeus brown, bare. *Thorax*: Integument dark brown. Scutum and scutellum clothed with brown scales with strong green golden metallic reflections. Antepronotum purple, scales purplish with strong metallic blue golden reflections. Postpronotum mainly with coppery golden iridescent scales below and blue-green scales above. Pleurae somewhat rubbed. Proepisternum, mesokatepisternum, and mesanepimeron with silvery white scales; patches of golden scales also present at base of prealar knob and lower one-third of mesokatepisternum, above the midcoxa; without scales below base of halter, on metepisternum; with two mesokatepisternal setae in one side; no lower mesepimeral setae. Thoracic setae mainly brownish golden. *Legs*: Forecoxa entirely golden scaled; scales on midcoxa white on upper one-third to one-half, golden below; hindcoxa white on upper one-half, golden distally; setae on coxae yellow. Trochanters with golden scales. Femora purple distally on one-half to two-thirds, golden scaled basally and below; midfemur very slightly widened at middle; hindfemur without row of long setae; knee spots very small, indistinct. Remainder of foreleg all purple; midleg also purple, except for the first tarsomere, only indefinitely paler at base. Hindtibia with incomplete pale ring at approximately three-fifths; first segment of hindtarsus with subbasal white ring extending to approximately one-half; no pale scales on remainder hindtarsomeres. Ungues of foretarsus unequal, one of them stronger and toothed; unguis of midtarsus smaller, equal and simple; unguis of hindtarsus missing. *Wing*: Veins purple, with strong golden green reflections; rm index ≈ 2.5 , the transverse portion reaching $M_1 + 2$ well beyond tip of $M_3 + 4$; wing membrane iridescent. *Halter*: pedicellum yellow, bare; capitellum brown, with pale scales at apex. Mesopostnotum bare, shining golden under intense light. *Abdomen*: Laterotergite pale brown, with thin golden setae and without scales. All terga covered with purplish scales with golden sheen, more intense on TeI; sides of abdomen purplish golden scaled, with thin purplish golden setae. Caudolateral tufts of terga VI-VIII small, inconspicuous, golden. Sterna II-IV coppery golden scaled, with purplish sheen, sterna V-VIII with a small median triangle of purple scales, posteriorly. *Genitalia* (Figs. 5-9): Gonocoxite length 0.760 mm; gonostylus length 0.640



Figs. 5–9. *Tx. zairensis* sp. nov. Genitalia of male holotype. (5) Gonostylus and gonostylar claw. (6) Paraproct, side view, showing bend at the unsclerotized transverse band (arrow). (7) Paraprocts, showing bends in face view (arrows). (8) Aedeagus. (9) Lobes of tergum IX. Bars, 0.1 mm.

mm; gonostylar claw length 0.220 mm, 0.35 length of gonostylus; aedeagus length 0.400 mm. Tergum IX: distal margin with a moderately marked sinus; interlobal space about as wide as lobes; lobes round, well marked, with 15 strong setae each. Gonocoxite without exceptionally strong setae on inner aspect. Basal mesal lobe with apical seta reaching to approximately one-half of gonocoxite. Gonostylar claw subapical, blunt-tipped. Aedeagus apparently with very wide dorsal bridge, the distal limit of which is not distinct; apex smooth; basal pieces as figured. Paraproct unique among all *Afrorhynchus*, bent at about right angle at the unsclerotized transverse band, the distal portion straight in side view, with three small subapical cercal sensilla trichoidea.

Female. Unknown.

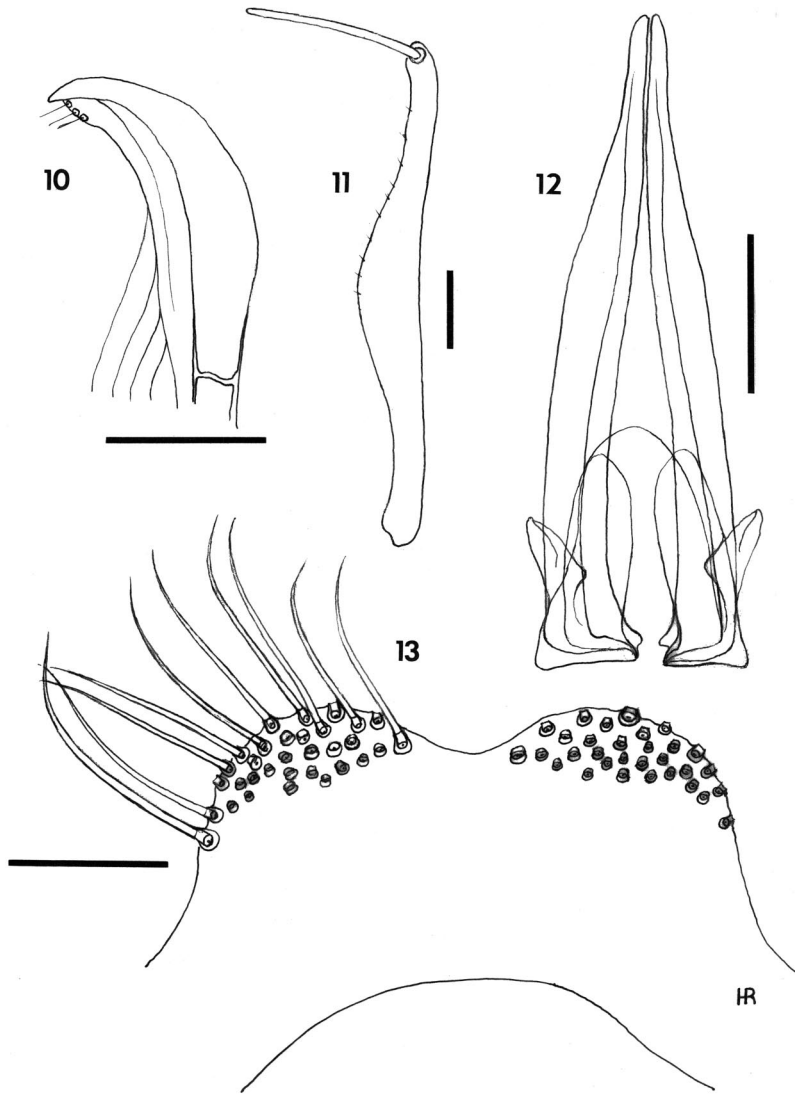
Type Material. *Holotype:* Pinned male with the following two labels: “COLL.MUS.CONGO; Kwanga: Bakali-Inzia; Mapanda Fuma, 26-III-1939; Dr. Sottiaux” and “*Toxorhynchites aeneus* Evans; Rev. Dr. White 1982.” Genitalia mounted on slide, labeled M.R.A.C.; Kwango Bakali-Inzia; Mapanda Fuma 26.III.39; Dr. Sottiaux; PCFF. Dez.86; H. Ribeiro, and *Tx. zairensis* sp.n., genit.; *Holotype.* The holotype is deposited in the Insect Collection of the Musée Royal de l’Afrique Centrale, Tervuren, Belgium.

Etymology. The new species is named after the country of origin of the holotype.

Diagnosis. *Tx. zairensis* can be distinguished from other species of the subgenus *Afrorhynchus* by the paraproct bent at a right angle. It is nearer to *Tx. lutescens* and *Tx. ruwenzori* and is distinguished by the absence of white scales on the postpronotum and of blue scales on the mesokatepisternum. The purple markings on sterna VIII and white patches on coxae II and III of *Tx. zairensis* separate it from *Tx. lutescens*. The male holotype of *Tx. zairensis* can be distinguished from the female holotype of *Tx. aeneus*, the male of which is unknown, mainly by the patches of white scales on coxae I and II and the darker tarsi of the latter.

Toxorhynchites (Afrorhynchus) nigeriensis sp. nov.
(Figs. 10–13)

Male. Wing length ≈ 7 mm. *Head:* Vertex covered with decumbent flat brassy scales, behind, and metallic blue-green scales in front; forked scales dark; ocular line blue-green above, becoming pale yellow to the sides; with four brown ocular setae, the submedian pair noticeably longer. Proboscis mainly brownish, with violet reflections. Maxillary palpus mainly purple



Figs. 10–13. *Tx. nigriensis* sp. nov. Genitalia of male holotype. (10) Paraproct. (11) Gonostylus and gonostylar claw. (12) Aedeagus. (13) Lobes of tergum IX. Bars, 0.1 mm.

with violet reflections; second palpomere extensively pale scaled on distal one-half; fourth palpomere with row of eight short stout setae above and seven longer setae below; fifth palpomere entirely purple scaled. *Antenna*: Pedicel brown, pubescent; first flagelomere with a patch of flat scales with blue violet reflections; flagellar whorls with ≈ 40 setae. Clypeus brown, bare. Head setae brownish. *Thorax*: Integument dark brown. Scutum and scutellum clothed with brownish spatulate scales looking metallic golden green under incident light; supra-alar area with flat scales with violet sheen. Antepronotum with brown spatulate scales with metallic bluish green reflections. Postpronotum mainly with brownish spatulate scales with golden reflections. Proepisternum, mesokatepisternum, and

mesanepimeron densely clothed with silvery white flat scales; anteroventral portion of mesokatepisternum, meron and lower one-fifth of mesepimeron bare, as usual; patches of golden scales also present at base of prealar knob and lower one-third of mesokatepisternum, above midcoxa; with five to seven thin mesokatepisternal setae; one lower mesepimeral seta each side; without scales below base of halter, on metepisternum. Thoracic setae mainly brownish golden. *Legs*: Forecoxa entirely golden scaled; scales on mid- and hindcoxa white at base, golden distally; setae on coxae yellow. Trochanters with golden scales. Forefemur purple distally on one-half to two-thirds, golden scaled at about basal one-third and behind; remainder foreleg all purple; mid- and hindfemora

yellow at base and for a line beneath, purplish distally; midfemur slightly widened at middle; hindfemur without row of long setae. Midtibia dark purple; first tarsomere of midtarsus only indefinitely paler below, at base; second midtarsomere with a stripe of pale scales below. Remainder of midtarsus dark. Hindtibia with incomplete pale ring at approximately three-fifths; first segment of hindtarsus with small, incomplete subbasal white ring; second hindtarsomere with well developed white patch on basal three-fifths making almost a complete ring on proximal two-fifths; remainder hindtarsomeres purple scaled. Ungues of foretarsus unequal, one of them stronger and toothed; unguis of mid- and hindtarsus smaller, equal and simple. *Wing*: Veins brownish golden, with green reflections; stem vein R with many spatulate, flat scales with coppery golden and violet reflections; rm index ≈ 3 ; $M_3 + 4$ oblique, joining $M_1 + 2$ well beyond tip of the transverse portion of rm ; wing membrane iridescent. *Halter*: pedicellum yellowish, bare; capitellum pale, with brown scales at apex. Mesopostnotum brown, bare. *Abdomen*: Laterotergite pale brown, with thin golden setae, without scales. Dorsum of first tergum mainly with metallic golden green scales with blue-green sheen dorsally, becoming blue violet at sides; tergum II as tergum I anteriorly but densely clothed with purple scales on posterior half; remainder terga purple scaled dorsally; sides of abdomen bluish scaled, with yellow setae more numerous at the posterior corners. Caudolateral tufts of terga VI-VIII from yellow orange to orange red. Sterna II-V golden scaled, with purplish distal median triangle; sterna VI and VII all golden; sternum VIII purple. *Genitalia* (Figs. 10-13): Gonocoxite length ≈ 0.760 mm; gonostylus length 0.630 mm; gonostylar claw length 0.225 mm, 0.36 length of gonostylus; aedeagus length 0.410 mm. Tergum IX: distal margin with a marked sinus; interlobal space very narrow; lobes distinct, round, with 31-32 strong setae each. Without exceptionally strong setae on inner aspect of gonocoxite. Gonostylar claw long, blunt tipped. Aedeagus with very wide dorsal bridge, the distal limit of which is not distinct; apex apparently smooth; basal pieces as figured. Paraproct: portion distal to the unsclerotized transverse band gently curved, as usual; with three small subapical cercal sensilla trichoidea.

Female. Unknown.

Type Material. *Holotype*: Pinned male with the following four labels: "Megarhinus aeneus Evans; Det. C.B. Philip"; "Nigeria; Coll. C.B. Philip"; "C.B. Philip; 9 June 1939"; "Shaki; Nigeria." Genitalia mounted by the writer on slide, labeled accordingly. The holotype is deposited in the Diptera Collection of the Natural History Museum, London, United Kingdom.

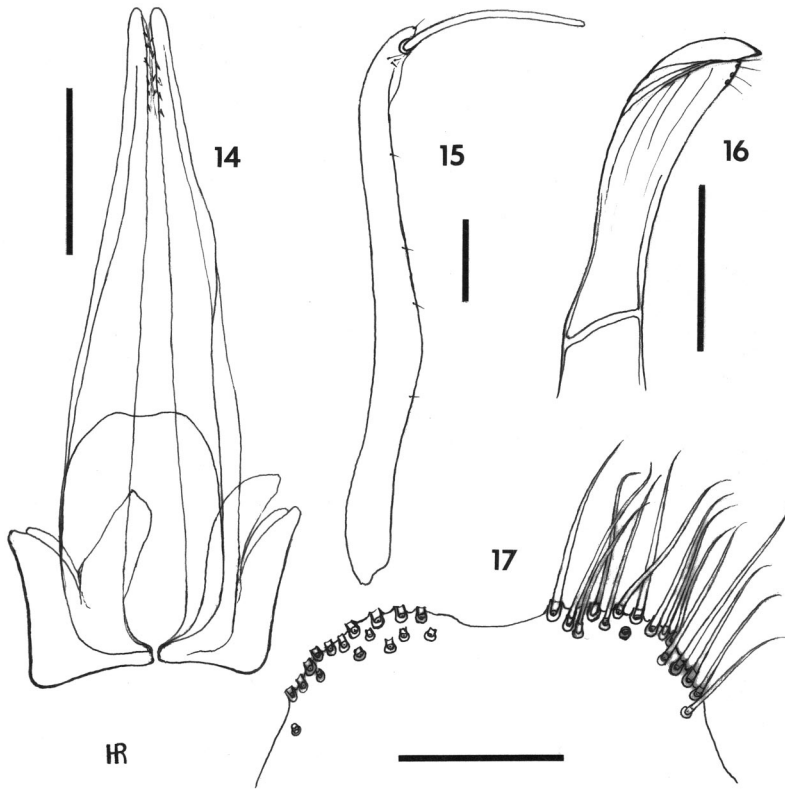
Etymology. The new species is named after the country of origin of the holotype.

Diagnosis. *Tx. nigeriensis* is nearer to *Tx. angolensis*; it can be distinguished from other species by the paler maxillary palpus, darker sterna II-IV, and fewer lower mesepimeral setae of the latter, and by the apparently smooth apex of aedeagus, the fewer number of setae

on lobes of tergum IX, the wider gonostylus, and the larger gonostylar claw in the new species. The male holotype of *Tx. nigeriensis* can be distinguished from the female holotype of *Tx. aeneus* mainly by the numerous mesokatepisternal setae, the patches of white scales on coxae I and II, and the darker tarsi and sterna of the latter.

Toxorhynchites (Afrorhynchus) viridibasis voltaicus
 ssp. nov.
 (Figs. 14-17)

Male. A relatively small mosquito. Wing length ≈ 5 mm. *Head*: Vertex dark, covered with flat decumbent scales shining golden under incident light, with green reflections in front; ocular line ill-defined, golden green, with pale violet sheen at sides; with four brownish interocular setae. Proboscis purplish golden. Maxillary palpus mainly purplish golden with violet reflections; fourth palpomere with three to six short stout setae each, not in a row; fifth palpomere entirely purple scaled; tips of third and fourth palpomeres pale violet in front view. *Antenna*: Pedicel brown, first flagellomere with a patch of brown semierect scales shining blue-green and pale violet; flagellar whorls with ≈ 40 setae. Clypeus brown, bare. Head setae brownish. *Thorax*: Integument dark brown. Scutum and scutellum densely covered with apparently brown scales becoming silvery iridescent with green golden reflections on sides, supra-alar and prescutellar areas, and scutellum. Anteprepronotum scales shining blue and pale violet. Postpronotum clothed with golden scales below, golden green above. Proepisternum, mesokatepisternum and mesanepimeron with silvery white scales; patches of golden scales present at prealar knob and lower one-fourth of mesokatepisternum, above midcoxa; without scales below base of halter, on metepisternum; with one or two mesokatepisternal setae; one lower mesepimeral seta each side. Thoracic setae mainly brownish gold. *Legs*: Forecoxa entirely golden scaled; midcoxa and hindcoxae white at base, golden distally; setae on coxae yellow. Trochanters with golden scales. Midfemur noticeably widened, with a patch of bluish scales at middle in front; hindfemur without row of long setae; knee spots very small, violet blue. Remainder foreleg all purple. Midtibia purplish. First tarsomere of midleg with small ill-defined subbasal pale ring, remainder of tarsus purple. Hindtibia with small, incomplete pale ring at approximately three-fifths; first segment of hindtarsus with well-marked subbasal white ring; third hindtarsomere white scaled on basal two-thirds; remainder hindleg purple. Ungues of foretarsus unequal, one of them stronger and toothed; unguis of midtarsus and hindtarsus smaller, equal and simple. *Wing*: Veins with golden green reflections; stem vein R with bright golden scales; rm index ≈ 3 ; $M_3 + 4$ not oblique, joining $M_1 + 2$ in line with the transverse portion of rm ; wing membrane iridescent. *Halter*: pedicel yellowish, bare; capitellum brown, with pale yellow scales at apex. Mesopostnotum brown, bare. *Abdomen*: Laterotergite pale brown, with thin golden setae, without scales.



Figs. 14–17. *Tx. viridibasis voltaicus* ssp. nov. Genitalia of male holotype. (14) Aedeagus. (15) Gonostylus and gonostylar claw. (16) Paraproct. (17) Lobes of tergum IX. Bars, 0.1 mm.

Dorsum of first and second terga mainly with metallic golden green scales with blue-green sheen dorsally, becoming blue violet at sides; tergum II with also purple scales on posterior half; remainder terga purple scaled dorsally; sides of abdomen pink golden scaled, with yellow setae, more numerous at posterior corners. Caudolateral tufts of terga VI–VIII well-developed, orange red. Sterna II–VII shining golden, with violet gloss posteriorly; sternum VIII purple. **Genitalia** (Figs. 14–17): Gonocoxite length 0.500 mm; gonostylus length 0.650 mm; gonostylar claw length 0.240 mm, 0.37 length of gonostylus; aedeagus length 0.400 mm. Tergum IX: distal margin with a shallow sinus; interlobal space smaller than the moderately marked lobes, with 17 and 16 strong setae each. Gonocoxite with a few exceptionally strong setae on inner aspect. Basal mesal lobe with apical seta reaching to two-thirds of gonocoxite. Gonostylus with a minute apical sensillum trichoideum and a few others at base of claw and along mesal border of gonostylus. Gonostylar claw subapical, markedly blunt tipped. Aedeagus apparently with moderately wide dorsal bridge; apex with a few minute spicules; basal pieces as figured. Paraproct: portion distal to the unsclerotized transverse band relatively long, gently curved, as usual; with three small subapical cercal sensilla trichoidea.

Female. Unknown.

Type Material. *Holotype*: Pinned male with the following two labels: “Banankéléage 18.7.54; cercle Bobo-Dioulasso; Haute-Volta A.O.F.; J. Hamon ORSOM rec.”, and “*Toxorhynchites viridibasis* Edws.; J. Hamon ORSOM rec. & det.” Genitalia mounted on slide, with labels “Inst. Pasteur; Banankéléage; Haute Volta; 18.7.54; J. Hamon rec. & det.”, and “Genit. Male; *Tx. viridibasis voltaicus* ssp.n.; Holótipo; H. Ribeiro; Ag.2003.” The holotype is deposited in the Insect Collection of the Unité d’Ecologie Virale, Institut Pasteur de Paris, France.

Etymology. The new taxon is named after the area of origin of the holotype.

Diagnosis. *Tx. v. voltaicus* is nearer to *Tx. viridibasis viridibasis* and *Tx. capelai*. *Tx. capelai* can be distinguished from this new taxon mainly by the golden scales of the antepnotum, absence of mesokatepisternal setae, dark hindtibia, and fewer setae on the lobes of tergum IX. *Tx. v. voltaicus* has a purple third tergum that separates it from both taxa. It also can be separated from the nominal one also by the presence of a patch of golden scales at base of prealar knob and the extensively golden maxillary palpus in the former. No significant differences were found between the male genitalia of *Tx. v. voltaicus* and those of a male *Tx. v. viridibasis* from Coquilhatville, Congo, in the M.R.A.C., Tervuren, Belgium.

Keys to Afrotropical species of *Toxorhynchites*
(*Afromhynchus*)

Males

Note that the male of *Tx. aeneus* Evans is unknown. The genitalia of all male holotypes were examined, including those of *Tx. erythrurus*, *Tx. lutescens*, and *Tx. kaimosi*).

1. Fourth palpomere with at most six short stout semierect setae scattered among the scales; with, at most, two mesokatepisternal setae; lobes of tergum IX with 11–25 setae 2
 Fourth palpomere with a row of four to 15 short, stout, erect setae above and another row of five to 15 longer and thinner setae below; with four to 10 mesokatepisternal setae; lobes of the tergum IX with 18–40 setae 7
2. Golden scales on mesokatepisternum restricted to the lower portion of the sclerite 3
 A patch of golden scales present on the upper portion of mesokatepisternum, at base of prealar knob 4
3. Postpronotum golden green; tergum II metallic green; caudolateral tufts well developed, orange-red *v. viridibasis*
 Postpronotum creamy white below, golden above; tergum II coppery purple; caudolateral tufts inconspicuous *ruwenzori*
4. Tergum III with abundant metallic green scales; caudolateral tufts well developed, orange-red *v. voltaicus* sp. n.
 Tergum III purple without green scales; caudolateral tufts small, inconspicuous 5
5. Hind tibia purplish, without white ring; tergum II golden with green and purple scales
 *capelai*
 Hind tibia with postmedian white ring; tergum II coppery or purplish golden, without green scales 6
6. Mesokatepisternal setae absent; sterna II–VI with golden scales; distal portion of paraproct gently curved, as usual *lutescens*
 Mesokatepisternal setae present; sterna with glossy purple scales distally; distal portion of paraproct bent at right angle
 *zairensis* sp. n.
7. Mesopostnotum with a small patch of green golden scales in the middle; second hind tarsomere white scaled at base; with well developed caudolateral tuft on tergum V
 *wolfsi* sp. n.
 Mesopostnotum without scales; second hind tarsomere dark; without tuft on tergum V 8
8. Fourth palpomere with rows of four specialized setae above and five below; hindtibia dark; lobes of tergum IX unusually flat, with ≈20 setae each *nairobiensis*
 Fourth palpomere with rows of seven to 15 specialized setae; hindtibia with postmedian white ring; lobes of tergum IX round, with 23–40 setae each 9

9. Postpronotum with patches of golden scales in the middle and behind, blue-green scales above, and white scales below; second midtarsomere purple; ratio of gonostylar claw to gonostylus 0.370–0.375 10
 Postpronotum not as above, without white scales; second midtarsomere with pale scaling below; gonostylar claw ratio 0.33–0.35 11
10. First and third midtarsomeres pale scaled beneath; rm index 2; with two lower mesepimeral setae each side; lobes of tergum IX with 28–30 setae *kaimosi*
 First and second hindtarsomere purple, without pale scales; rm index 3; one lower mesepimeral seta each side; lobes of tergum IX with 23–24 setae each *helenae*
11. Fourth palpomere with rows of 15 specialized setae above and 14 ones beneath; postpronotum clothed with golden scales
 *erythrurus*
 Fourth palpomere with seven to nine setae on each such rows; postpronotum clothed with brown scales with intense blue-green reflections 12
12. With two lower mesepimeral setae each side; tergum II mainly purple, with a mixture of greenish and golden scales; sternum II with golden scales; each lobe of tergum IX with 38–40 setae; with two cercal setae
 *angolensis*
 With one lower mesepimeral setae each side; tergum II extensively green scaled proximally, purple distally; sternum II with purple scales in middle; each lobe of tergum IX with 31–32 setae; with three cercal setae
 *nigériensis* sp. n.

Females

- Note that the females of *Tx. angolensis*, *Tx. helenae*, *Tx. nigériensis*, *Tx. viridibasis voltaicus*, *Tx. wolfsi*, and *Tx. zairensis* are unknown. The female holotypes *Tx. aeneus* and *Tx. v. viridibasis* were examined.
1. Postpronotum with a patch of white scales 2
 Postpronotum entirely or mainly golden, with or without blue-green reflections, but without white scales 3
 2. Mesokatepisternum with patches of golden scales below the prealar knob and at lower one-third; second midtarsomere purple; tergum II mainly greenish scaled; caudolateral tuft of tergum VII orange; sterna with purple markings *kaimosi*
 Mesokatepisternum with silvery white scales below the prealar knob; second midtarsomere extensively white; tergum II coppery purplish scaled; caudolateral tuft of tergum VII golden; sterna II–VI golden *ruwenzori*
 3. Hindtibia dark purple, without white scales 4
 Hindtibia with postmedian patch or ring of white scales 5

4. Mesokatepisternal setae absent; tergum II with greenish golden and purple scales . . . *capelai*
Mesokatepisternum with a patch of setae; tergum II coppery purple, without green scales *nairobiensis*
5. Scales on prealar area silvery white; second midtarsomere dark *v. viridibasis*
Scales on prealar area golden; second midtarsomere white 6
6. Mesokatepisternal setae absent; tufts of tergum VII golden *lutescens*
Mesokatepisternum with one to three setae; tufts of tergum VII orange-red to bright red 7
7. Midcoxa all with golden scales; second tarsomere of foretarsus pale beneath *aeneus*
Midcoxa with a patch of silvery white scales at base; second tarsomere of foretarsus dark *erythrurus*

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