PROCEEDINGS OF THE

ENTOMOLOGICAL SOCIETY OF WASHINGTON

VOL. 40 JANUARY, 1938 No. 1

HAEMAGOGUS TROPICALIS, A NEW SPECIES FROM PARÁ, BRAZIL (DIPTERA, CULICIDAE).[1]

By N. CERQUEIRA AND P. C. A. ANTUNES.

In studying material collected in connection with the investigation of possible vectors of jungle yellow fever, a new species of the genus *Haemagogus* was found. The species is described below.

Haemagogus tropicalis, n. sp.

Male.—Proboscis dark brown with blue reflection, curved, long and slender. Palpi dark blue with violet reflection, long, about two-thirds the length of proboscis (Fig. 17). Antennae plumose, about as long as the palpi. Clypeus dark, shining, nude. Occiput clothed with metallic blue scales with green reflection; a small spot of silvery-white scales at vertex; some scales of this color along the margins of the eyes; others at the sides below, producing an inconspicuous silvery-white spot.

Prothoracic lobes clothed with metallic blue scales, darker than those of the occiput; no white scales; dark bristles along the anterior margin.

Mesonotum.—Integument black, covered with flat ovate metallic blue scales with green and coppery reflection. Scutellum clothed with broad flat metallic blue scales with green reflection. Pleurae and coxae blackish, clothed with flat silvery-white scales; the scaling on sterno-pleurae extends up to the border of mesonotum, beyond the root of wings.

Abdomen covered with metallic blue scales with violet reflection. Dorsally, from third to seventh segment, small median basal white spots, formed by broad silvery-white scales. Laterally, from first to seventh segment, conspicuous silvery-white spots; on the first and second segments these spots extend from anterior to posterior border of the tergites; on the following five segments they are basal and run to about half the length of the tergites. Venter violet-blue scaled, with narrow segmental basal silvery-white bands. Eighth sternite (Fig. 16) with stiff spine-like setae, some short, others long.

Legs violet-blue. Fore and mid femora with a small silvery-white spot on inner side; hind femur silvery-white on inner side from base to about two-thirds of its length. Fifth fore tarsal (Fig. 15) with a short spine at base, arising from conspicuous tubercle; two other tubercles, not so much developed, at the union

[1] The studies and observations on which this paper is based were conducted with the support and under the auspices of the Cooperative Yellow Fever Service maintained by the Brazilian Government and the International Health Division of The Rockefeller Foundation.

of proximal third with the distal two-thirds, bearing a short delicate spine each.

Wings dark, a little shorter than the abdomen; scales on costa, subcosta, and first vein have blue and violet reflection, chiefly on basal half.

Claw formulas.—1 /1.1 /1—1 /0.1 /0—0 /0.0 /0. On fore tarsals, both claws of both legs are toothed; mid tarsi on each leg have one claw toothed, the other simple. Hind tarsal claws simple.

Genitalia (Plate 3).—Side-piece conical, a little more than twice and a half as long as wide, with long setae all around, except at a long triangular area which occupies the whole length of internal surface. The basal half of this area has numerous short delicate bristles inserted in small tubercles. Basal lobe inconspicuous, well chitinized, bearing numerous long, narrow, flattened setae. The outer surface of side-piece, chiefly on basal half, has numerous long spatulate scales. Along the internal border, on upper two-thirds, a row of scales of different shapes and lengths; some are long, narrow, lanceolate; others, about one-half to two-thirds the length of the preceding ones, broad, abruptly reduced at distal extremity to a short point; a third type is represented by broad and very short curved scales.

Clasper slender, short, a little less than one-half the length of side-piece, with a long terminal spine about one-half as long as itself. A few very short hairs on basal third of clasper; in a stained specimen, a stiff hair arising from a small tubercle is present on distal third of one clasper's branch.

Claspette (Fig. 14) with rather slender, long, curved stem, sparsely hairy on basal two-thirds, chiefly on inner side; a single seta at the union of upper distal third with basal two-thirds; one or two setae near base. Filament of claspette conspicuous, about three-fourths the length of stem, broad, leaflike, with a notch which divides it into two leaves; one of them is in the direction of stem; the other is sharply pointed, and forms an angle with the first one. Tenth sternite long (Fig. 13), strongly chitinized, rounded at apex; inner surface shows near tip a transverse patch (rows) of denticles. Two moderate stiff hairs on ninth sternite.

Mesosome (Fig. 12) broad, rounded at distal half, narrowing toward base, balloon-shaped in outline with a small point at apex; a median longitudinal line chitinized at distal half. Ninth tergite has no lobes; in some specimens there is a single curved seta on one side.

Female.—Coloration as in the male. Palpi short, about one-seventh the length of proboscis.

Claw formulas.—1 /1.1 /1—1 /1.1 /1—0 /0.0 /0. Fore and mid tarsal claws toothed; simple on hind tarsi.

Larva (Plate 1).—Head rounded. Antennae small, smooth, with shaft hair slightly beyond the middle. This hair is single in most of the specimens, but a few show a single hair in one side and a bifurcated one in the other side. Ante-antennal tuft with 4 to 6 elements. Lower head hairs double; somewhat closer than these to the median line, a pair of long delicate tufts. Upper head hairs long, single. Mental plate triangular, with a stout central tooth and 8 to 9 teeth on each side, the two basal ones remote and angular; the outer, sometimes small and very remote.

Skin glabrous. Lateral comb of eighth segment in a triangular patch of 24 to 28 scales in irregular rows. These scales are thorn-shaped, fringed at tip

and sides with short fine spinules (Fig. 5). Dorsal and ventrally to the comb, a tufted hair of 3 to 5 branches; posteriorly, a tuft of 6 to 9 elements arises from a circular chitinization; two single hairs flank this tuft, arising somewhat closer to the comb.

Air-tube a little less than twice and one half as long as wide. The pecten nearly reaches the middle, followed by a three-to-four-haired tuft; the number of teeth of pecten varies from 12 to 17, of which the 2 to 5 basals are rudimentary.

Anal segment slightly longer than wide, with rugose dorsal plate reaching well down the sides; posterior edge of the plate with very short denticulate spines (Fig. 7); dorsal tuft a long hair and a brush on each side; lateral tuft moderate, three-haired; ventral brush with one or two tufts preceding the barred area and a chitinized plate on each side.

Anal gills about the length of the segment, pointed, but not sharply, the lower pair shorter than the upper.

Discussion.

Two species of *Haemagogus* have been described, with long male palpi; *equinus* Theob., 1903, and *panarchys* Dyar, 1921; *tropicalis* is then the third.

As we have no specimens of *panarchys*, the distinction was made comparing our specimens with Dyar's descriptions and figure (1 and 2). The main difference we were able to see is in the morphology of the claspette, whose stem is notched on outer side and conspicuously hairy at tip in *panarchys;* this character cannot be seen in *tropicalis*.

We examined a male specimen of *equinus* (Miraflores, Panamá), from the collection of the Instituto Oswaldo Cruz, Rio de Janeiro, through the kindness of Dr. Costa Lima. This species was easily separated from *tropicalis* by the male genitalia. More recently we were very pleased to receive from Mr. W. H. W. Komp, Panamá, the dissected and stained male genitalia and the 8th sternite of a specimen of *equinus* from Summit, Canal Zone.

This paper is based on the examination of 41 females, 18 males, 7 larval skins, and 11 pupal cases. All collections were made from January to May, 1936, at Curralinho, Pará, Brazil, by Dr. H. W. Kumm and A. Rabello. Most of the trees where the breeding places have been found were not mentioned by the collectors; three of them were identified as *Euterpe cleracea* Mart., Palmae (Assahyseiro); *Carapa guyanensis* Aubl., Meliaceae (Andiróba); Tecoma sp., Bignoniaceae (Ipé).

The following are the places in Curralinho where the material was collected: Rio Camucú; Rio Cupijó; Rio Cupijó-mirim, Bôa Esperança; Rio Maracujá-mirim, Ponta Grande; Rio Massaranduba; Curralinho.

The chief differences between *equinus* and *tropicalis* are the following:

	equinus	*tropicalis*
Larva:		
Comb of eighth segment	A row	A patch
Lower head hairs	Single	Double
Male genitalia:		
Claspette	Stem stout, markedly swollen at apical half; filament as in fig. 14a.	Stem slender, not swollen; filament as in fig. 14.
Scaling of inner border	All scales of similar shape; narrow, lanceolate.	Scales of different shapes; some narrow, lanceolate; many are broad, pointed at apex; others are short, broad, crooked.
Abdomen:		
Vestiture of posterior border of 8th sternite in the male	A median group of strongly inserted narrow straight scales (fig. 16)	This group is formed by spinelike setae. (fig. 16).

Male holotype, female allotype, larval skin, and pupal cases to be deposited in the Instituto Oswaldo Cruz, Rio de Janeiro, Brazil.

Male and female paratypes to be deposited in the Laboratory of the Yellow Fever Service at Rio de Janeiro, Brazil; in the Section of Parasitology of the Instituto de Hygiene, São Paulo, Brazil; in the United States National Museum, Washington, D. C.; and in the Malaria Research Laboratory, Ancon, Canal Zone, Panamá.

Acknowledgments.

We are very much indebted to Dr. H. W. Kumm, who furnished us with the precious material, including living larvae, larval skins, and male and female adults from Curralinho, Pará, Brazil.

The writers are also very grateful to Dr. A. da Costa Lima and Mr. W. H. W. Komp for their invaluable advice and for their assistance in supplying us with specimens for comparison with our material here reported.

References.

1. Dyar, H. G. 1921. The Genus Haemagogus Williston (Diptera, Culicidae). Ins. Ins. Mens., IX : 101–114.
2. Dyar H. G. 1928. The Mosquitoes of the Americas. Carnegie Inst. of Washington, Publ. No. 387, 616 pp.

3. Edwards, F. W. 1932. Diptera, Fam. Culicidae. Genera Insectorum, 258 pp.
4. Howard, L. O., H. G. Dyar, and F. Knab. 1917. The Mosquitoes of North and Central America and the West Indies, IV : 871–875.
5. Theobald, F. V. 1903. Two New Jamaican Culicidae. The Entomologist, XXXVI, p. 282.

Explanation of Plates.

Plate I—*Haemagogus tropicalis*, n. sp. Fourth stage larva.
Fig. 1: Head, ventral view; number of hairs on groups *a*, *b* and *c*, varies as follows: a)—from 2 to 4; b)—from 2 to 4; c)—2 or 3.
Fig. 2: Head, dorsal view.
Fig. 3: Mental plate.
Fig. 4: Air tube; eighth and anal segments.
Fig. 5: A scale of pecten of eighth segment.
Fig. 6: A spine of pecten of air-tube.
Fig. 7: Spines of posterior margin of the plate of anal segment.

Plate 2—*Haemagogus tropicalis*, n. sp. Pupa.
Fig. 8: Cephalothorax
Fig. 9: Abdomen, male, dorsal view.
Fig. 10: Abdomen, female, dorsal view.

Plate 3—Male genitalia.
Fig. 11: *H. tropicalis*, n. sp., male genitalia.
Fig. 12: *H. tropicalis*, n. sp., mesosome.
Fig. 13: *H. tropicalis*, n. sp., tenth sternite.
Fig. 14: *H. tropicalis*, n. sp., claspette.
Fig. 14a: *H. equinus* Theob., claspette.

Plate 4.
Fig. 15: *H. tropicalis*, n. sp., fifth tarsal segment and claws of forelegs of the male.
Fig. 16: *H. tropicalis*, n. sp., eighth sternite, male.
Fig. 16a: *H. equinus*, Theob., eighth sternite, male.
Fig. 17: *H. tropicalis*, n. sp., male proboscis and palpus.

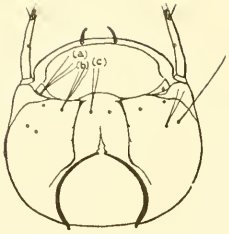

Fig. 1

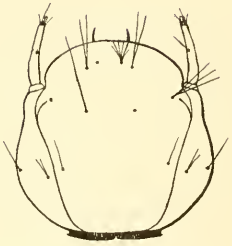

Fig. 2

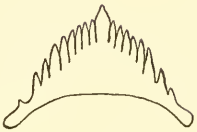

Fig. 3

Fig. 5

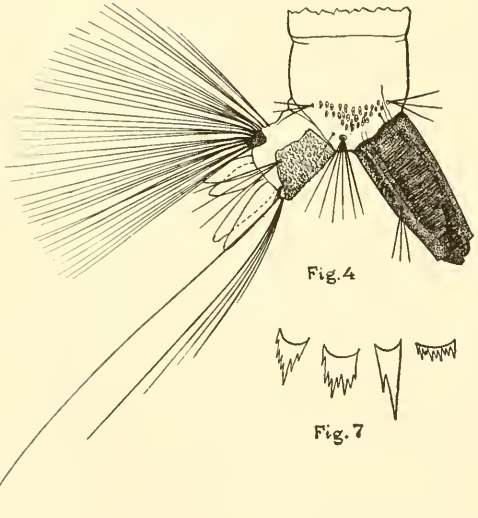

Fig. 4

Fig. 7

Fig. 6

N. Cerqueira, del.

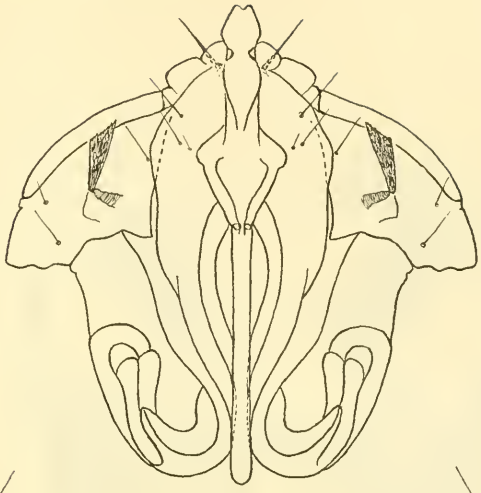

Fig. 8

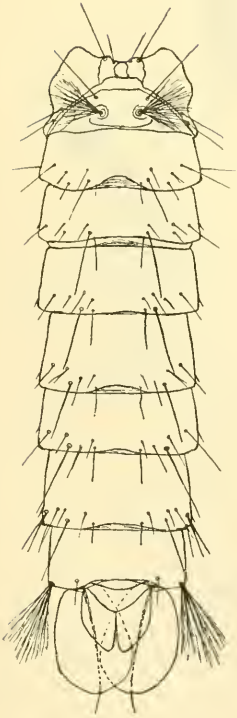

Fig. 9

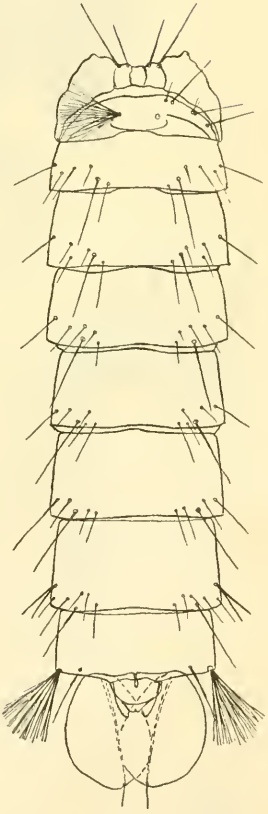

Fig. 10

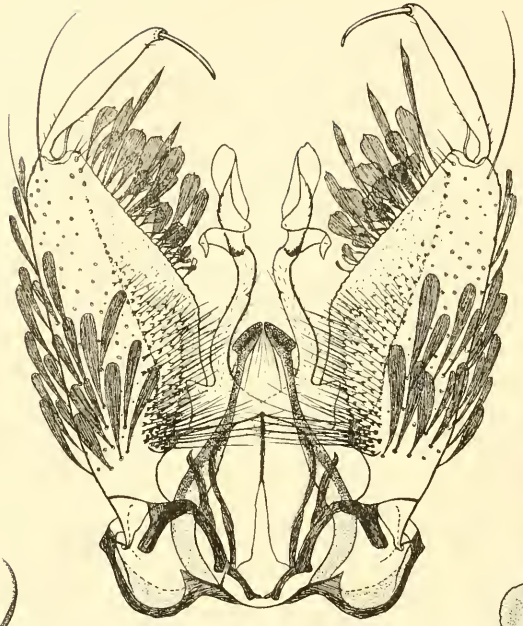

Fig. 11

Fig. 12

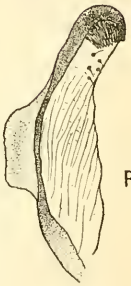

Fig. 13

Fig. 14

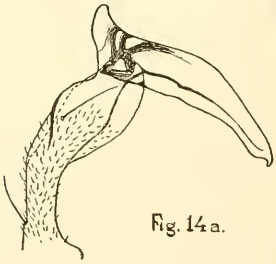

Fig. 14a.

Fig. 15

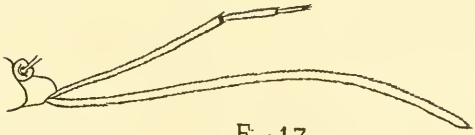

Fig. 17

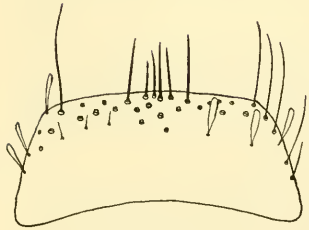

Fig. 16

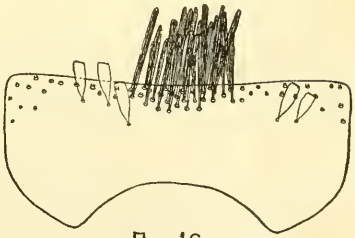

Fig. 16 a.