

DESCRIPTIONS OF TWO NEW SUBSPECIES OF HAEMAGOGUS  
MESODENTATUS KOMP AND KUMM 1938, FROM MIDDLE AMERICA  
(DIPTERA, CULICIDAE)

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Detailed comparative studies of the morphology, ecology, biology and zoogeography of a series of populations of *Haemagogus mesodentatus* Komp and Kumm from Middle America, have led the authors to conclude that these populations consist of a single polytypic species with three distinct biological entities or races recognizable in the complex.

The typical form, originally described from San Jose, Costa Rica, is reported by the authors (Trapido and Galindo, 1956) as extending from the mountain slopes of Bocas del Toro Province in western Panama through the Atlantic side forest of Central America and Mexico to southeastern San Luis Potosi.

Of the other two, one is described by the authors in this paper as *Haemagogus mesodentatus gorgasi*, n. ssp., and is said to extend (Trapido and Galindo, *loc. cit.*) from El Salvador through the Pacific versant of Guatemala and Mexico at least as far north as southern Sinaloa near Mazatlan.

The third member of the complex is reported by Trapido and Galindo (*loc. cit.*) from the highlands of Guatemala and southern Mexico at least as far north as Cuernavaca, Morelos. This form is described in this paper as *Haemagogus mesodentatus alticola*, n. ssp., by the authors in association with Dr. Jorge Boshell, who participated with them in the field work which first revealed the race near Tuxtla Gutierrez, Chiapas, Mexico.

A full discussion of this group is included by the authors in a forthcoming monograph on the *Haemagogus* of Middle America. However, it has been deemed advisable to describe these two forms separately, in order to make the names available for use in a series of publications which are in preparation dealing with the role of some Middle American species of mosquitoes in the transmission of yellow fever virus.

*Haemagogus mesodentatus gorgasi* Galindo and Trapido, n. ssp.

*Female*.—*Head*. Proboscis longer than fore femur, dark-blue to violet in color. Antennae almost as long as the proboscis, dark; tori nude, dark. Palpi half again as long as the clypeus, clothed with dark blue scales. Vertex with a very narrow line of silvery scales bordering the eyes. Occiput clothed with flat, broad, metallic blue scales. White scaled.

*Thorax*. Anterior pronotal lobe with five stout setae on its anterior border and entirely covered with flat metallic blue scales. Mesonotum almost completely devoid of setae except for a few on its anterior border and a cluster above the roots of the wings. Pleura largely white-scaled, except for the posterior pronotum

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which has a vestiture of blue scales; pleural chaetotaxy as follows: two propleurals, two or three posterior pronotals, one strong sternopleural inserted at a level slightly above the intersegmental suture between the meron and mesepimeron, two prealars and two or three upper mesepimerals; paratergite white-scaled; meron naked, dorsal surface almost in a line with the upper border of the coxa. Postnotum bare. Wings reaching slightly beyond the union of the seventh and eighth segments;  $R_2$  cell about as long as its petiole, scales of cell outstanding, not closely appressed to the veins. Halteres dark, base lighter, knob clothed with dark scales except at apex where they are silvery. Legs with the coxae and trochanters dark, bearing a patch of snowy white scales on the outer surfaces; fore-leg entirely clothed with blue and violet scales except for a short line of silvery scales on the undersurface of the femur; mid femur and tibia with blue and violet scales except for a short line of silvery scales on the inner surface of femur; mid tarsus with blue or violet scales on its inner surface and with abundant greyish to white scales on the outer side of the segment; hind femur with blue or violet scales, a patch of white scales on its inner surface extending over the basal half of the segment and another and longer patch of white scales on the outer surface reaching almost to the tip of the femur; hind tibia and tarsus with blue and violet scales; tarsal claw formula: 1.1—1.1—0.0.

*Abdomen.* Greenish-blue scaled. Tergites with a small basal patch of snowy white scales on segments III-VII and with large lateral basal patches of silvery scales on segments I-VII, becoming progressively smaller on the posterior segments. Sternites blue-scaled with basal bands of silvery scales on segments II to VII.

*Male.*—As the female except for the antennae, which are densely plumose.

*Terminalia.*—Eighth tergite bearing posteriorly a large median patch of lanceolate scales flanked by several flat, broad scales truncated distally, and with six or seven setae. Basistyle conical with a dense tuft of narrowly ovate, striated, pointed scales inserted on distal third of inner margin; outer margin bearing on its proximal two-thirds several rows of striated scales truncated at tip; basal lobe small, bearing a tuft of unequalled hairs; apical lobe absent. Dististyle slightly less than one-half the length of the basistyle, somewhat constricted beyond the middle and bearing near the apex a long, curved, blunt spine about one-third as long as the dististyle. Stem of elaspette sinuate, moderately to sharply bent on outer third, densely setose for three-fourths of its length and carrying two outstanding setae, one on the inner aspect near the base and a lateral one at the angle; filament flat, striated, broad at base, sharply pointed at tip. Phallosome large, heavily sclerotized; in lateral outline it narrows and bends dorsally beyond the shoulders to end in a capitate tip bearing on its dorsal aspect a serrated carina which reaches down to a level with the shoulders. Tenth sternites broadly hood-like at tip with seven to nine short setae subapically. Ninth tergites marked by the insertions of one to three strong short setae.

*Larva.*—*Head.* Rounded, antennae cylindrical with nearly straight sides; antennal hair single, approximately one-half as long as the antenna and inserted medially on its inner aspect. Head hairs as follows: Nos. 5 and 6 single, located well forward on the head; No. 4 a small multiple tuft; No. 7 two or three-branched; Nos. 8 and 9 single and inconspicuous; No. 10 moderate, double or



triple; No. 11 a strong multiple tuft; No. 12 single, about as long as No. 10; No. 13 double, shorter; No. 14 five to six-branched; No. 15 double.

*Thorax.* Integument unpigmented, densely pilose. Prothoracic hairs as follows: No. 1 two to four-branched and very long; No. 2 single, one-half as long as No. 1; No. 3 five to six-branched; about as long as No. 2, all three inserted in a single sclerotized plate; No. 4 six or seven-branched; Nos. 5 and 6 single, strong and very long, basal tubercles broadly fused together; No. 7 long, two to four-branched; basal tubercle narrowly joined to No. 6 by a thin sclerotized bridge; No. 8 six-branched; No. 9 with three branches; No. 10 single, slightly longer than No. 9; No. 11 single, half again as long as No. 10; No. 12 two to four-branched, small. Mesothoracic hairs as follows: Nos. 1 to 4 all single, short to moderate in length, No. 5 single, long and strong; No. 6 a long multiple tuft; No. 7 single, shorter and weaker than No. 5, inserted in the same sclerotized plate as No. 6; No. 8 a long multiple tuft similar to No. 6; No. 9 a multiple tuft, long and strong; No. 10 single, as long as No. 9; No. 11 single, somewhat shorter and weaker than No. 10; No. 12 single or double, very short. Metathoracic hairs Nos. 1 to 6 moderate, single or double; No. 7 long and strong, with four branches; No. 8 a multiple tuft; No. 9 three-branched; Nos. 10 and 11 single, long; No. 12 double, about one-third the length of No. 11.

*Abdomen.* Integument densely covered with short pile. Abdominal hair No. 6 double or triple on segments I and II; double on segments III to VI, single or double on segment VII. Eight to ten comb-scales aligned in a single row; the individual scales in the form of pointed teeth. Siphon tube 2 x 1 with 13 or 14 pecten teeth extending over the basal half of the tube and followed by a two-haired tuft. Anal saddle not ringing the segment, dorso-apical border of saddle bearing a number of pronounced spines; anal gills broadly pointed, as long as the segment; hair No. 1 double, twice as long as the saddle, No. 2 triple, No. 3 single.

*Pupa.*—Trumpets short, dark obliquely truncated; pinna almost half as long as length of trumpet, tracheoid rudimentary. Abdominal chaetotaxy reduced as usual in the genus; all abdominal hairs single (or occasionally double) and inconspicuous with the exception of the following: No. 2 on segment I the usual dendritic tuft; No. 4 single but very prominent and as long or longer than the segment on segments I, II and III; No. 5 quite prominent and long on segments IV, V, VI and VII; No. 8 strong, three-branched and with fringes and barbs on segment VII, similar but longer and multiple on segment VIII. Paddles ovoid, fringed with scattered fine spicules; midrib deeply pigmented, pronounced to apex, terminal hair single, short.

*Type Material.*—*Holotype.* Female with associated larval and pupal skins mounted on a slide. Reared from eggs laid by a female taken biting man in the vicinity of Tapachula, Chiapas, Mexico on 4 August 1953. G.M.L. collection No. 01591.

*Allotype.* Male with terminalia mounted on a slide; same data as holotype. G.M.L. collection No. 01758.

*Paratypes.* Seventeen males same data as holotype; G.M.L. collection numbers: 01590, 01592, 01742-49, 01940-42. One male and three females from Tuxtla Chico, Chiapas, Mexico, bred from larvae

taken in bamboo-stumps on 4 August 1953; G.M.L. collection numbers: 01644, 01646-48.

*Haemagogus mesodentatus alticola* Galindo, Trapido and Boshell, n. ssp.

As in *H. mesodentatus gorgasi* Galindo and Trapido, except for the following differences:

*Female*.—Anterior pronotal lobe almost entirely silvery-scaled; scales of mesonotum metallic greenish in color instead of blue; posterior pronotal lobe with white scales on its posterior border, mid and hind legs with pronounced white knee-spots.

*Type Material*.—*Holotype*. Female, bred from eggs laid by a female taken biting man on 29 June 1953 at the summit of Sumidero, Canyon of the Rio Grijalva, elevation 4,000 feet, 24 kms. north of Tuxtla Gutierrez, Chiapas, Mexico; larval and pupal skins mounted on a slide. G.M.L. collection No. 01920.

*Allotype*. Male, same data as holotype; G.M.L. collection No. 01923.

*Paratypes*. Thirteen males same data as holotype; G.M.L. collection Nos. 01711-12, 01714, 01716, 01719, 01720, 01722-23, 01916-19. Three males from the type locality, 26 June 1953; G.M.L. collection Nos. 01527-28, 01573-74, 01631. One male from the type locality, 28 June 1953; G.M.L. collection No. 01715.

Fifteen females, same data as the holotype; G.M.L. collection Nos. 01567, 01695-98, 01708-13, 01724, 01921-23. Two females from the type locality, 26 June 1953; G.M.L. collection Nos. 01770-71. Eight females from the type locality, 27 June 1953; G.M.L. collection Nos. 01568-70, 01572, 01630, 01632-34. Three females from Cañon de Lobos, 5 miles east of Cuernavaca, Morelos, Mexico, elevation 4,400 feet, 30 September 1954; G.M.L. collection Nos. 01911-12, 01990.

#### TAXONOMIC DISCUSSION

Female *gorgasi* may be separated from typical *mesodentatus* by the color of the scales on the apices of the mid and hind femora. These scales are dark in *gorgasi* and white in *mesodentatus*, forming conspicuous white 'knee-spots.' Female *alticola* differ from *mesodentatus* in two main characters: in *alticola* the anterior pronotal lobes are almost entirely white-scaled and the posterior pronotal lobes show abundant white scales on the posterior border, while in *mesodentatus* both the anterior and posterior pronotal lobes are entirely clothed with blue or greenish scales. Female *gorgasi* differ from *alticola* in the absence of white scales on the knees and on the anterior and posterior pronotal lobes.

Insofar as we are able to determine the males and larvae of these three races are indistinguishable.

#### REFERENCES

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