

## *Aedes stenei*, A NEW SPECIES OF MOSQUITO FROM JAMAICA, B.W.I., WITH REDESCRIPTION OF A CLOSELY RELATED SPECIES (DIPTERA, CULICIDAE)

GEORGE A. THOMPSON, JR.

A new species, *Aedes* (*Howardina*) *stenei* is described. *Aedes* (*Howardina*) *inaequalis* (Grabham) is proposed as the correct name for *Aedes aureostriata* (Grabham) and the species is redescribed.

### ACKNOWLEDGMENT

The author wishes to express his appreciation for the tireless efforts of Dr. H. D. Pratt, and for the assistance and encouragement of Dr. G. H. Bradley, Mr. M. H. Goodwin, Jr., Mr. W. H. W. Komp, and Dr. Alan Stone. The drawings were made by Mr. C. J. Stojanovich, scientific illustrator, at the Communicable Disease Center, Atlanta, Ga.

### *Aedes* (*Howardina*) *stenei* NEW SPECIES

*Aedes aurites* Hill and Hill, Mosq. Jam., Inst. Jam., 42, 1948 (in part) *Aedes n. sp.*, G. A. Thompson, Mosquito News, 7(2):78, 1947.

**FEMALE:** *Proboscis* moderate, slender, black. *Palpi* dark brown; extremity of terminal segment tipped with silvery to pale golden scales; about as long as the basal 3 segments of the antennae. *Antennae* dark, almost as long as the proboscis. *Clypeus* dark. *Occiput* with a median row of narrow, flattened, golden scales; the row bordered by a wider row of wide, black scales on either side; wide, light golden scales laterally except for black ones behind each eye; erect forked, black scales on the nape; mixed black and yellow, long bristles hanging between the eyes.

*Prothoracic lobes* with silver scales and black bristles. *Mesonotum* brown; a submedian pair of lines of small, golden scales extending from the anterior margin to just anterior to the antescutellar space, a mediolateral golden pair arising from

near the anterior margin and extending posteriorly along the lateral margins of the antescutellar space and terminating on the lateral lobes of the scutellum, the lateral pair, also golden, arise near the midpoint of the anterior margin and extend along the lateral margins to about the insertion of the wings, sometimes the submedian and mediolateral pairs connect at the anterior margin with the laterals; the lateral lines become indistinct at about the insertion of the wings and may or may not extend posteriorly to join the mediolaterals on the lateral lobes of the scutellum; the golden median line arises at about the anterior margin of the antescutellar space and extends posteriorly, ending on the median lobe of the scutellum. The golden lines are separated by lines of blackish scales, which are similar to the golden scales but larger. Several long, black bristles arise on the thorax, a few black bristles arise along the lateral margins and many above the insertion of the wings. The golden lines are not as wide as the dark ones. A small patch of golden scales is located on the anterior promontory, between the submedian lines. *Scutellum* brown; the center lobe with a median line of narrow, golden scales bordered by a row of wider black scales on either side; long bristles arise from the posterior margin of the lobe; the lateral lobes are golden scaled and bear long bristles. *Pleurae* with six patches of silver scales as follows: on the propleuron, just before the prealar setae on the pleura, the upper sterno-pleuron, lower sterno-pleuron, above the coxa of the mid-leg, and on the middle of the mesepimeron. The pleuron always bears black bristles. *Wings* with narrow, dark scales having violaceous reflections, the veins of the costal margin and vein  $Cu_2$  are more

densely scaled than the other veins. *Halteres* with a light stem, the lower hemisphere of the lobe with some dark scales, the upper hemisphere light.

*Abdomen* dark; scales violaceous to velvety black; segments 2, 3, 4, and 5 with basal bands of pale scales, somewhat golden in some lights; segment 6 with a pale golden, central, basal patch; the first 5 or 6 segments have triangular patches of silver scales at the anterior lateral corners. *Venter* pale scaled; scales mostly with pale golden reflections, the two or three posterior segments may have some dark scales apically. *Fore leg*: Femur dark scaled above, violaceous; light scaled below. Tibia dark, violaceous above with a few white scales toward the apex. Tarsal segments all dark; claws simple. *Mid-leg*: Femur as above. Tibia as above, Tarsal segment I with a basal white band, which is often incomplete, segment II with a small white spot which may be obsolete, the remaining segments all dark. *Hind leg*: Femur and tibia as above. Tarsal segments, I, II, and III with basal white rings, the ring on segment III distinct segments IV and V all dark.

*Male*: *Coloration* as in the female. *Palpi* black, violaceous; slightly longer than the proboscis. *Antennae* dark; between  $\frac{1}{2}$  and  $\frac{2}{3}$  the length of the proboscis.

*Genitalia*: The terminalia of the holotype are mounted and slide 450902/1 is deposited with the U. S. National Museum. Paratype 460101/26 is also with the U. S. N. M. Paratypes 451002/8 and 460101/23 are deposited with the Communicable Disease Center, U. S. Public Health Service, Atlanta, Ga.

*Side piece* about  $2\frac{1}{2}$  times as long as basal width, sides subparallel; basal lobe small, conical, about  $\frac{1}{4}$  up the side piece, and bearing a strong spine at the tip which reaches almost  $\frac{3}{4}$  the length of the side piece. *Clasper* slender, swollen at base, about  $\frac{2}{3}$  the length of the side piece, terminal spine stout, about  $\frac{1}{4}$  the length of the clasper. *10th Sternites* large; slightly thickened at the tips. *9th Tergite* lobes moderate, usually with 2 stout spines.

*LARVA, 4TH INSTAR*: (Fig. 1 and 2) *Head* wider than long. Antennae transparent; very slightly curved inward; slightly tapering to a blunt apex; the apex with 4 spines of unequal length and a flat process; antennal hair single, moderately stout, not  $\frac{1}{2}$  as long as the shaft, arising about midway of the shaft; surface of the shaft with spicules. *Preclypeus* with a pair of stout, single, curved spines. *Mentum* a wide angle with 8 to 11 blunt teeth on either side of the central tooth. *Head Hairs*: Upper head hair several-branched, longer than the lowers, 3-4- or 5-branched is common for the species. Lower hairs multiple branched, of moderate length, 10-15-branched tufts are common. Antennal tuft 4-5- or 6-branched, as long as the lower head hairs. Sutural hair single, long. Trans-sutural hair 3-branched. Supraorbital hair single, long. Postclypeal hair 3- or 4-branched, very long, visible at 100X. *Thorax* and *Abdomen* with large stellate hair tufts; lateral abdominal hairs of segments I and II triple, the remainder single; integument smooth; anterior thoracic hair tufts as follows: tuft I, 9-branched; II, 1-branch; III, 12-branched; IV, 1-branch; V, 2-branched; VI, 1-branch; VII, 2-branched. Tufts V, VI, and VII arise from a common plate: hairs of tufts I, II, and III have split tips and also small spinules along the shaft. Comb usually of 18 straight, stout spines in a curved row; each spine is fringed toward the tip; each spine is about the same width from the base to the blunt, tapering tip. *Airtube* about 5-6-times the length of the basal width; not swollen; tapering gradually. *Pecten* of simple, elongate spines; 15 to 23 in each row, extending to almost midway of the tube; a pair of tufts, double and finely feathered, are located beyond the middle of the tube. *Chitinous plate* of anal segment saddle-shaped, widely open below. *Anal segment* with two full and a partial third row of spines on the posterior margin; spines of the first row (apical) widening to about the middle and then tapering to a point, feathered

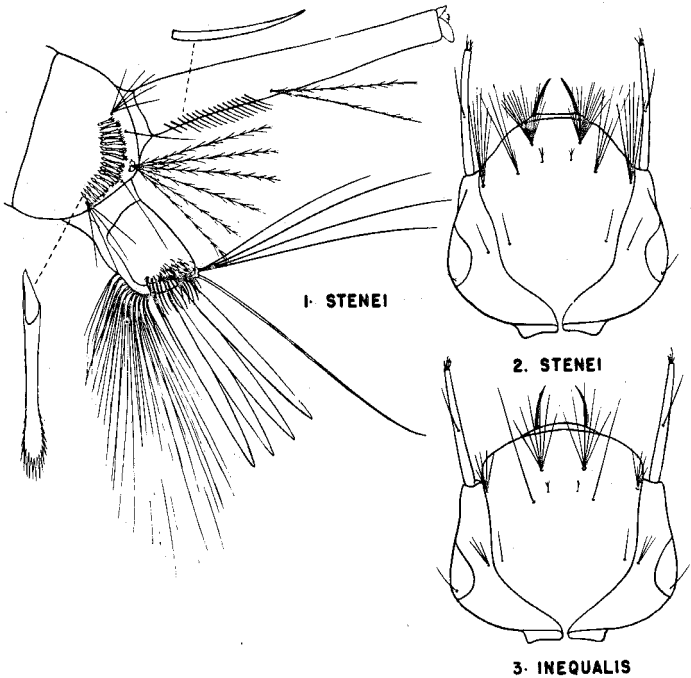


FIG. 1. Caudal segments of 4th instar larva of *Aedes (Howardina) stenei*.

FIG. 2. Head of 4th instar larva of *Aedes (Howardina) stenei*.

FIG. 3. Head of *Aedes (Howardina) inaequalis*.

from middle to tip; a single, long, stout hair bearing spicules terminates the row of spines on each side, ventrally; the other spines are simple and taper from base to tip. *Ventral brush* well developed. *Dorsal brush* a long, single hair and a 7-branched hair about  $\frac{1}{2}$  the length of the single one, on each side. *Anal gills* long and slender, longer than the anal segment.

**HOLOTYPE-MALE.** The larva from which the adult was reared was collected from tree-borne bromeliads. The collection was made near Hope Farm, Clarendon Parish, Jamaica, B.W.I., just above Porus, on the road to Mandeville, September, 1945, by the author. The locality is about 1,000 feet above sea level. The holotype and associated larval skin bear the collection number 450902/1 and are deposited with the U. S. National Museum.

**ALLOTYPE-FEMALE.** The collection data are the same as for the holotype. The allotype and larval skin are in the U. S. National Museum collection, numbered 450902/2.

**PARATYPE-MALE.** Collected at the type locality. Specimens numbered 451002/3, 460101/15, 460101/20, 460101/25, 460101/26 and 460101/30 are deposited with the U. S. National Museum. Specimens numbered 451002/8, 460101/23 and 460101/28 are in the collection of the Communicable Disease Center, Atlanta, Ga.

**PARATYPE-FEMALE.** Same locality as holotype. Specimens numbered 451002/2, 451002/10, 451002/13, 460101/18 and 460101/27 are deposited with the U. S. National Museum. Specimens numbered 460101/29 and 460105/4 are with the

Communicable Disease Center, Atlanta, Ga.

The larvae of the species were found only in bromeliads, more commonly above an elevation of 1,000 feet. The larvae of *stenei* and *inaequalis* occur together, often in great numbers. All collections from which these studies were conducted were made in Clarendon Parish, Jamaica, B.W.I. The majority of the specimens were taken in a heavily wooded area, near Hope Farm, just above Porus on the road to Mandeville. Both species were taken at will from September, 1945, to January, 1946.

The adults are fierce biters, readily attacking in the day, especially in the shade of the bromeliad-laden trees. Adults were also taken in light traps located several miles from the mountains. It is possible that the species may breed in the bromeliads found at low elevations, although such breeding was not observed. It is quite probable that the *Aedes aurites* of Hill and Hill represents *Aedes stenei* and *inaequalis* of this paper, hence the citation *Aedes aurites* Hill and Hill, Mosq. J., 42, 1948 (in part).

The species is named for Professor Andrew E. Stene, for many years State Entomologist of Rhode Island.

*Aedes (Howardina) inaequalis* (GRAHAM)

*Howardina aureostriata* Grabham, (not (*Culex*) *Aedes aureostriata* Doleschal, 1857, nor *aurostriata* Banks, 1906) Can. Ent. XXXVIII, 171, 1906

*Howardina inaequalis* Grabham Can. Ent. XXXIX, 25, 1907 (Mailed January 12, 1907)

*Aedes inaequalis* (Grabham) Mosq. News 7(2):78, 1947

Dr. Grabham described the species in 1906 as *Howardina aureostriata*. Later (Howard, Dyar and Knab) it was shown that *Howardina* was a synonym of *Aedes*, and with the change in generic name, the specific name, *aureostriata*, was found to be preoccupied by a species originally described in the genus *Culex* but later changed to the genus *Aedes*. In 1907,

Theobald had described material sent to him by Dr. Grabham. Hence, when *aureostriata* was shown to be preoccupied, the species was called *aurites* Theobald. However, in 1907, Dr. Grabham described *Howardina inaequalis* and publication of this work appeared 42 days prior to Theobald's description of *aurites*.

The original description of *aureostriata* by Grabham is comparatively complete for all stages. An important omission was that the larval head hairs were not enumerated. The original description of *aurites* by Theobald was based on but two females that were sent to him by Dr. Grabham. Sometime between 1910 and 1915 when, at Dyar's request, Busck examined the type material, he reported it as "in rather bad condition." The original description of *inaequalis* by Grabham is, in general, a comparison of characters with those of *aureostriata*. The larval head hairs as enumerated in the comparison of *inaequalis* and *aureostriata* fall within the range observed by the author during his rearing studies. The evidence leaves little doubt of the fact that *aureostriata*, *aurites* and *inaequalis* are synonyms.

Since 1911 various authors have given priority to either *aurites* or *aureostriata*, but have neglected to consider *inaequalis*. However, as *aureostriata* is preoccupied, the choice lies between *inaequalis* and *aurites*. The original description of *Howardina aurites* Theobald, appears in his Mon. Culic., IV, 1907 which, the records of the British Museum (Natural History) show, was published on February 23, 1909 (correspondence N. D. Riley, Keeper, Dates April 4, 1946). The original description of *Howardina inaequalis* Grabham appears in Can. Ent. XXXIX, 1907 and the issue carries the note "Mailed January 12, 1907." In view of these facts, *inaequalis* is indicated as the correct specific name.

ADULT FEMALE: Topotypes 450708/2, 450708/9, 450708/11, 450801/8, 451001/1, 451001/6, 451001/14, 460101/4 and 460101/12 are deposited with the U. S. National Museum. Topotypes 460101/14

and 460101/16 are in the Communicable Disease Center collection, Atlanta, Ga.

Generally as in *stenei* with the following exception: *Occiput* with black and yellow scales on the nape. *Mesonotum* with golden lines at least as wide as the black ones. *Mid-Leg*: Tibia without apical white spot. Tarsal segment I with a narrow, dorsal, basal white spot, segments II, III, IV and V all dark. *Hind Leg*: Tarsal segment I and II with narrow, basal white bands, III with an indefinite white band which is something obsolete, IV and V entirely dark.

**ADULT MALE**: Topotypes 450801/5 and 451001/9 are deposited with the U. S. National Museum. Topotypes 460101/11 and 460101/17 are with the Communicable Disease Center collection.

*Coloration* as in the female. *Palpi* black; violaceous reflections, especially on the terminal segment; slightly longer than the proboscis, a very narrow white ring may appear at the apex of the first segment. *Antennae* dark; between  $\frac{1}{2}$  and  $\frac{2}{3}$  the length of the proboscis.

*Genitalia*: The mounted terminalia of topotype male 450801/5 and other terminalia 45078/7 are deposited with the U. S. National Museum. Terminalia 450708/12 and 450801/7 are with the Communicable Disease Center collection at Atlanta, Georgia.

*Side piece* about twice as long as basal width, somewhat conical; basal lobe small, conical, about  $\frac{1}{4}$  up the side piece, with a strong spine on the tip reaching almost  $\frac{3}{4}$  the length of the side piece. *Clasper* slender, about  $\frac{2}{3}$  the length of the side piece, with a stout terminal spine that is about  $\frac{1}{4}$  the length of the clasper. *10th Sternites* large, thickened at the tip. *9th Tergite* lobes moderate, usually with 2 moderate, stout spines.

**LARVA, 4TH INSTAR**: (Fig. 3) The exuvium of each of the following topotypes is deposited with the U. S. National Museum: Females 450708/2, 450708/9, 450708/11, 450801/8, 451001/1, 451001/6, 451001/14, 460101/4, 460101/12; Males 450708/7, 450801/5, 450801/6 and 451001/9. The exuvium of each of the following has been deposited with the Communicable Disease Center, Atlanta, Georgia: Females 460101/14 and 460101/16; Males 450801/7, 460101/11 and 460101/17.

Generally as in *stenei* with the following exceptions: Antennal hair tuft a single, moderate stout hair. *Mentum* a wide angle with about 10-20 blunt teeth on either side of the central tooth. *Head Hairs*: Upper head hair single, long sometimes double. Lower head hair 6-branched, of moderate length; rarely more than 6-branches. Antennal tuft small, short, fine, 3-branched. Sutural hair short, fine, single, or 2-branched. Trans-sutural hair long, triple. Post-clypeal tuft very short, 3-4-branched, not visible at 100 $\times$ . *Abdomen* and *Thorax*: The anterior thoracic hair tufts are arranged as follows: I, 5-branched; VII, 1-branch. *Comb* usually of 16 stout, straight spines in a curved row; each spine is finely fringed toward the tip; spines with sides subparallel. *Pecten* of simple, elongate spines; about 15-18 in each row on the basal  $\frac{1}{3}$  of the tube; a pair of tufts, double and finely feathered, inserted behind the middle of the tube. *Anal segment* with one row of long spines on the posterior margin preceded by 2-3 rows of strong setae; each spine widening to about the middle and then tapering to a point, feathered from middle to tip; a long stout hair bearing spicules terminates each row of spines ventrally.