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DIFFERENTIATION OF ADULTS

translated from French by
George C. Steyskal, Dec., 1985.

The epidemiological importance of Aedes of the subgenus Diceromyia was demonstrated by Lewis et al., who in 1942 succeeded in experimental transmission of yellow fever virus by A. (D.) taylori Edwards, 1936. Since 1943, Lewis does not seem to be certain that he used A. taylori in his experiments. After that work, the relative difficulty of observing the characters used by Edwards (1941) in his key to the species of the subgenus has induced entomologists to consider the ♀s of A. (D.) furcifer (Edwards, 1913) and A. taylori as inseparable (Muspratt, 1955; Van Someren et al., 1955; Hamon, 1963; Cornet et al., 1978; Port & Wilkes, 1979; Germain et al., 1980).

The designation "furcifer-taylori group" has been used. The primary role played by these two species in the sylvatic transmission of certain arbovirus, chiefly that of yellow fever (Cornet et al., 1979), has led us to search for other differentiating characters, realizing that differentiation of the species by examination of the male genitalia is done without difficulty.

1. MATERIAL AND METHODS. This study was conducted on mosquitoes captured in the Kédougou area in eastern Senegal (12°-12° 30' N, 12° - 12° 30' W), where the 2 species coexist in abundance, as evinced by numerous preparations of ♂ genitalia.

We first of all made 2 lots of these Diceromyia by using Edwards' key (1941) and a complementary examination called our attention toward the ornamentation of the sternites and the scutum.

Then we examined all adults reared from separate ovipositions of wild ♀s. Finally, we verified by more than 10 generations the stability of the characters that we considered to be diagnostic.

2. NOTES AND DISCUSSION.

2.1. ABDOMINAL ORNAMENTATION.

2.1.1. Observations by the original describers.

0.178
0.180

The first description of A. furcifer, as Mansonia (?) nigra by Theobald in 1906, mentions "abdomen ... with irregular apical, very narrow bands of white scales ... and a few scattered pale scales over all the segments."

The original description of A. taylori (1936) is clear in this regard: "... differs from furcifer in having no scattered pale scales on the dark parts of the abdomen."

Edwards in his monograph of the mosquitoes of the Ethiopian Region (1941: 214-216) introduces an ambiguity: "there are no (or at most extremely few) scattered yellowish scales on the abdominal tergites" (of A. taylori); then in his key he implicitly restricts the diagnostic value of the abdominal ornamentation to that of the tergites only, in saying "4 - abdomen speckled dorsally ... furcifer" and, making no mention of his statement that A. taylori has extremely few scattered yellowish scales, says "abdomen not speckled ... taylori".

2.1.2. Our viewpoint.

Examination of the Diceromyia captured at Kédougou allows us to separate them into 2 groups:

One with pale scales scattered on the dark parts of the tergites, sometimes very few, sometimes very abundant; this is the groups with speckled tergites; and

One without any pale scales on the dark parts of the tergites; the group with non-speckled tergites.

In the group with speckled tergites we have noted that the sternites are also speckled in the same way; their number is often greater than on the tergites. The number of them reaches such a large amount that the sternites are whitish and the tergites are largely covered with them. All ♂ with this appearance have the apex of the coxites with a tuft of golden hairs visible under little magnification and characteristic of A. furcifer.

In the 2nd group, with ~~non-speckled tergites~~ tergites, the sternites are, like the tergites, uniformly black except for the basal bands and lateral white spots. All ♂ of

this group lack the tuft of hairs on the tips of the coxites and are typical A. taylori.

And we have observed in nature a very distinct difference in the abdominal ornamentation⁽¹⁾.

(1) ~~M. (?)~~ Cornet (personal communication) has observed an exceptional A. furcifer without pale scales on the tergites, but with a single pale scale on a sternite.

Examination of the series of adults[♂] reared from individual batches of eggs laid by wild ♀s leads to the same universal observations: the ♂s and ♀s of the same series are similar; A. furcifer is very variable in the number of scattered pale scales, while A. taylori never has scattered or isolated pale scales on the dark parts of the abdomen (fig. 1).

2.2 Scutal ornamentation.

2.2.1. Observations by the original describers.

1.180
1.181
The original description of A. furcifer (M. (?) nigra Theobald, 1906) cites a scutum "... very dark brown, with dark brown and yellowish scales forming an irregular ornamentation." According to Edwards (1941), the scutum is covered with "coarse dark brown and light yellowish scales irregularly mixed."

In describing A. taylori, Edwards (;946, 1941) did not mention any difference between the 2 species.

2.2.2. Our viewpoint.

The Kédougou specimens with the abdomen speckled have the scutum like that of M. (?) nigra and are certainly A. furcifer. The scutum is speckled and mottled with an irregular mixture of various colors; coalescence of areas of pale scales sometimes forms poorly defined patterns of various kinds.

Individuals with non-speckled abdomen have a very different ornamentation. The anterior part of the scutum is more or less largely covered with pale scales, golden, sometimes yellowish, whitish, or gray, but always of the same tinge and not mixed. This ornamentation contrasts strongly with that of the posterior part^r, which recalls that of A. furcifer. At the level of the scutal angles, from one to the other of

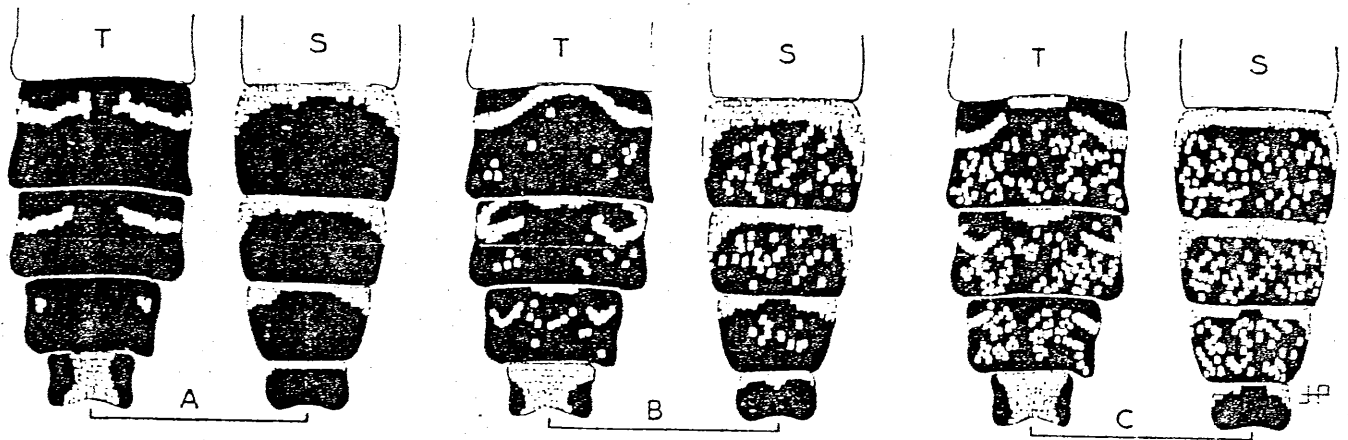


FIG. 1. — Ornementation de l'abdomen d'*Ae. (D.) taylori* (A) et deux des aspects de celle d'*Ae. (D.) furcifer* (B et C).
 Pour chaque paire de dessins sont figurés : à gauche les tergites et à droite les sternites.

Ornamentation of abdomen of *A. (D.) taylori* (A) and 2 examples of *A. (D.) furcifer* (B, C). T = tergites, S = sternites.

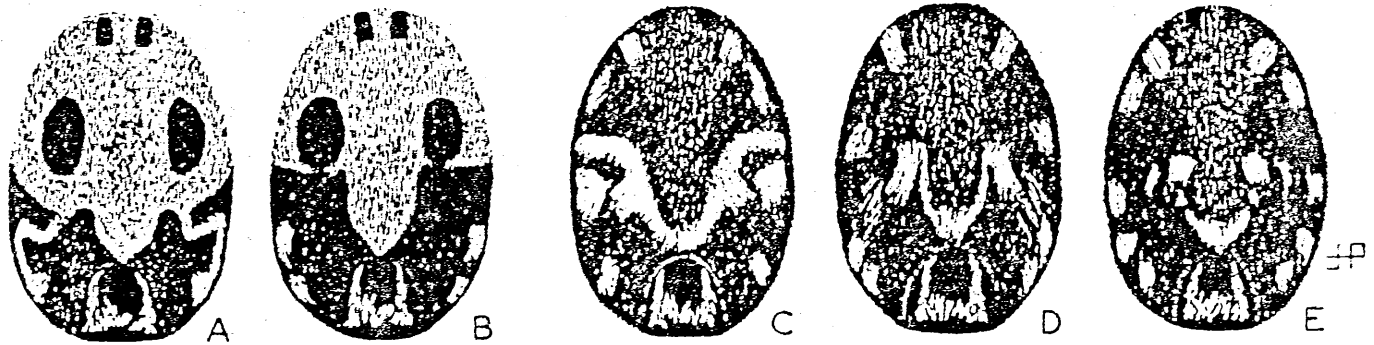


FIG. 2. — Quelques aspects de l'ornementation scutale d'*Ae. (D.) taylori* (A et B) et d'*Ae. (D.) furcifer* (C, D, E).

Scutal ornamentation of *A. (D.) taylori* (A, B) and *A. (D.) furcifer* (C, D, E).

the dorsocentral setae, 2 well set-off dark spots (fig. 2) form a masklike pattern, one very similar to that of A. tiptoni Grjebine, 1953 (Ravaonjanhary, 1978). The genitalia are those of A. taylori.

These 2 dark patches are also found in A. furcifer, although they are not very distinct and are strongly toned down by scattered light and dark scales around them.

As with the abdomen, the difference in the ornamentation of the scutum in the 2 species has been verified by the series of adults emerging from individual egg batches of wild ♀s.

In spite of the extensive variation, these characters are specific and persist in a colony established in the laboratory in 1982.

3. CONCLUSION.

The agreement of our observations with those of the original descriptions (Theobald, 1906; Edwards, 1936) confirm the diagnostic value of the ornamentation of the abdominal sternites, inasmuch as it as well as that of the tergites is usable for distinguishing between A. furcifer and A. taylori.

Furthermore, the scutal ornamentation is an excellent determining character; it offers the valuable advantage of being easy to use, even with moving specimens in a collecting vial; the abdomen needs then be used only in case of doubt.

Modified as follows, Edwards' key (1941), becomes operational:

— tergites and sternites more or less speckled with pale scales; anterior part of scutum dark and mottled. — furcifer.

— tergites and sternites not speckled; anterior part of scutum uniformly pale, generally golden except for 2 dark spots at the level of the scutal angles. — taylori.

A lot of 21 ♂s and 923 ♀s of the A. furcifer-taylori group from southeastern Haute Volta (V. Robert) was recently examined. All of them show the combination of speckled tergites and sternites and mottled scutum characteristic of A. furcifer, and the ♂ genitalia confirm this determination (det. M. Cornet).

Our observations deal with only a restricted geographical area. It is to be

hoped that other workers in other areas may verify the value of the characters used in this study.

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