

A REDESCRIPTION OF *Aedes (Aedimorphus) punctifemoris*  
(LUDLOW) FROM PAKISTAN

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ABSTRACT.—*Aedes (Aedimorphus) punctifemoris* Ludlow, 1921, (Diptera: Culicidae), an addition to the mosquito fauna of Pakistan, has been redescribed. The male has been reported for the first time from the Indo-Pakistan sub-continent and the drawing of its genitalia is included in the figure. Bionomics and disease relationship has been discussed.

In studying the material collected from July, 1968 to June, 1969, in connection with the investigation of possible vectors of rural bancroftian filariasis in Thakurgaon, Dinajpur District, East Pakistan (Aslamkhan and Wolfe, 1971) males and females of *Aedes (Aedimorphus) punctifemoris* (Ludlow) were collected. The species, originally described from the Philippines (Ludlow, 1921), and known from India through two females only (Edwards in Barraud, 1934), is an addition to the mosquito fauna of Pakistan. The present report includes a redescription of the adults and discusses bionomics and disease relationship. The male is described for the first time from the Indo-Pakistan sub-continent.

*Aedes (Aedimorphus) punctifemoris* (Ludlow, 1921)

*Stegomyia punctifemore* Ludlow, 1921. *Military surgeon*, 49 : 690 (1 ♀). Type locality: Fort Wm. McKinley, Rizal Prov., Luzon, Philippine. Type: Female (holotype) in U.S. Nat. Mus., Washington.

*Aedes (Finlaye) punctifemore* Ludlow, Dyar and Shannon 1925. *Insec. Insc. Mens.*, 13: 75 (♀).

*Aedes punctifemore* Ludlow. Dyar, 1925. *Insec. Insc. Mens.*, 13: 217 (♂).

*Aedes (Aedimorphus) punctifemore* (Ludlow), Edwards in Barraud, 1934. *Fauna Brit. India, Dipt.*, 5: 443 (♀).

*Aedes (Aedimorphus) punctifemore* (Ludlow), Bohart, 1945. *U.S. Navmed*, 580 : 64 (♂, ♀ illus).

*Aedes (Aedimorphus) punctifemore* (Ludlow), Knight and Hull, 1953, *Pacif. Sci.*, 7 : 459 (♂ illus., ♀).

**Female**

A very distinct dark brown mosquito, with black tipped yellow proboscis, speckled legs and brown tarsi; and marked with 3 pairs of silvery spots on the mesonotum and 3 spots in the prescutellar space. Wing: 3.25 mm. Proboscis: 2.08 mm. Forefemur: 1.55 mm. Abdomen: about 2.6 mm.

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*Head:* eyes contiguous above antennae, but forming a small triangular spot, studded with white narrow decumbent scales; frontal tuft with few hairs; scales on vertex largely broad decumbent forming a definite pattern, an antero-median circular spot of brown and bronzy scales bordered on either side by a curved strip of white scales and caudally by mixed brown and white scales, the latter largely narrow; an alternating strip of brown and white broad decumbent scales followed next on either side and lower down by similar bronzy scales; occiput with numerous forked upright scales extending forwards on to vertex; a few ocular setae along eye margin; interantennal groove, inner portion of pedicel, flagellomeres, clypeus, palpi and base and tip of proboscis rather dark, the rest yellow; clypeus bare, palpus about  $1/6$  length of proboscis, dark scaled; antenna slightly longer than proboscis; pedicel with decumbent white scales on the inner margin.

*Thorax:* integument dark brown; mesonotum with numerous narrow curved scales; mostly dark brown, few light brown, rarely white; broad silvery decumbent scales forming definite spots, 3 pairs on mesonotum and 3 spots in the prescutellar space forming a triangle consisting of 2 smaller basal and one larger apical; broad curved silvery scale patches on anterior promontory; scutellum with large median and two small lateral silvery spots of broad decumbent scales; paratergite with a patch of silvery broad scales, anterior pronotum and posterior pronotum with few silvery scales, propleural with a smaller patch of broad silvery scales; post spiracular bare except for 3 bristles; sternopleuron with a horizontal upper and a circular caudal patch of broad silvery scales; prealar bare except for large bristles; mesepimeral bristles not developed.

*Legs:* forecoxa with a big patch of broad silvery scales at base and brown scales at apex; midcoxa with a patch of silvery scales medially; hindcoxa with a few pale scales; femora dark anteriorly, ventral and posterior surfaces pale, speckled with broad silvery scales; strong white spot at apices; tibiae dark, speckled with broad silvery scales, strong white spots at apices; tarsi almost uniformly dark; both claws of foreleg and midleg with subbasal tooth, hind claws simple.

*Wing:* dorsal scales largely dark, a smaller patch of silvery scales at base of costa; a double row of dark scales at radius from base to the point of origin of medius; squame scales large, hair like; alula with a fringe of short narrow scales; plume scales long.

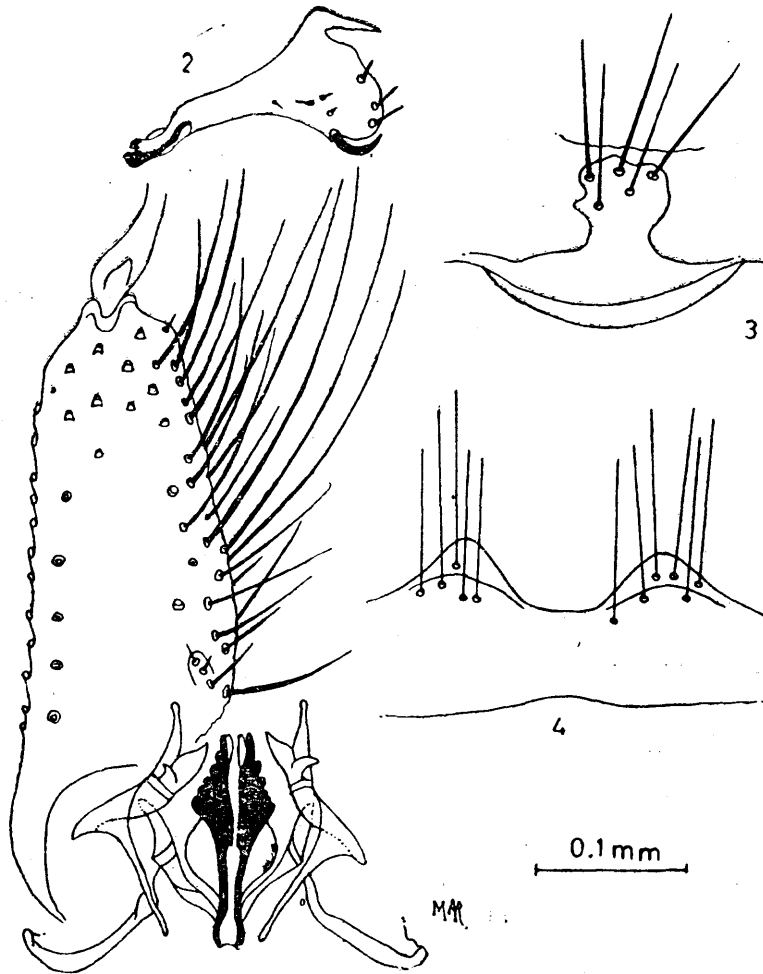
*Abdomen:* tergites uniformly bronzy or dark brown scaled; long golden hairs numerous, arising from apex, and margin of segments, shorter hairs from surfaces; laterotergite with white basal patch of silvery scales, that of VII usually hidden, sternites same colour or slightly lighter than tergites.

*Genitalia:* Segment VIII completely retractile; cercus long but rather broad.

**Male**

Essentially as in the female, differing chiefly in the following characters:—

*Head:* long forked upright scales extending right into the anteromedian circular spot; ocular setae forming a frontal tuft.



*Aedes (Aedimorphus) punctifemore* (Ludlow 1921),

Fig. 1. Male genitalia

Fig. 2. Clasper of the male genitalia

Fig. 3. Ninth sternum

Fig. 4. Ninth tergum

*Palpus:* five segmented; long, exceeding proboscis slightly more than full length of segment 5; segments 4 and 5 subequal; 4 slightly larger and thinner

than 5, scantily scaled, brown, apex dark, base yellow; segment 4 dark brown with metallic scales, base yellow scaled; segment 3 with a tuft of long dark brown hairs directed ventrally from the swollen dark brown apex. *Proboscis*: browner with dark brown tip. *Antenna*: slightly shorter than proboscis.

*Thorax*: posterior pronotum scaling reduced.

*Legs*: silvery tibial apical spots larger and very prominent; claws of foreleg and midleg enlarged, with subbasal tooth.

*Abdomen*: tergites lighter in colour than female with occasional silvery scales in segments I-IV; segment V-VII with basal lateral patches of silvery scales; sternites II-VIII with basal lateral patches of silvery scales.

*Male Genitalia*: As figured. *Coxite* without basal lobe; bristles and scales restricted to lateral and ventral surfaces; dorsomesial surface with short hairs from near base to near apex (Fig. 1). *Clasper*: short, narrow at base, apical lobe slightly more than 1/2 length of clasper, slightly curved, with a strong spiniform projection on one side and a movable claw on the other; 3-6 short spines on lobe, 3-4 short hairs on shaft (Fig. 2). *Aedeagus* complex, broad at base, with 5-6 post median to apical lateral blunt spines. IX tergum deeply and widely emarginate on caudal border; lateral tergal lobe rounded and with 5-6 thin long hairs (Fig. 4); IX sternum with 3 strong and 2 weak hairs in two rows beyond middle (Fig. 3).

**Pupa and Larva** unknown.

### Systematics

*A. punctifemoris* falls in the group C (*alboscutevellatus*-group) of Edwards (1932). It resembles *Aedes* (*Aedimorphus*) *alboscutevellatus* (Theobald) in the absence of white rings on tibiae, having silvery scales on scutellum and with basal lateral spots on tergites but can readily be separated from it by the 3 pairs of silvery spots on mesonotum as in *Aedes* (*stegomyia*) *vittatus* (Bigot). Structure, colour and arrangement of scales, as also the structure of clasper make *A. (A) punctifemoris* quite distinct from *A. (A) alboscutevellatus* and also from other members of the group, like *A. (A) jamesi* (Edwards), and *A. (A) niveoscutevellum* (Theobald).

### Bionomics and Disease Relations

Immature stages of *A. punctifemoris* are unknown at present but presumably, like other members of the group, it also breeds in temporary ground pools. It was collected in abundance during June and July after monsoon rains. Of over 20,000 mosquitoes identified from the villages of Akcha and Madarganj near Thakurgaon, from July 1968 to June 1969, only 11 females were collected resting in houses while 129 females were picked biting human

bait after dusk. None was found in cattle-biting collection. 127 females dissected were found negative for *Wuchereria bancrofti*.

### Distribution

*Pakistan*: (specimens examined), 7 ♂♂, 20 ♀♀ (MA 146), taken at light, 2300 hours, 7 July, 1969 at Thakurgaon, Dinajpur District, (East Pakistan), (M. Aslamkhan). (2 ♀♀ and 1 ♂♂ each deposited with U.S. National Museum, Washington and the British Museum (Nat. Hist.) London).

*Philippines*: (As reported by Knight and Hall, 1953) Samar: Numerous ♀♀, Osmena. U.S. N.M. Luzon: 1 ♂♂ (genitalia, the only existing specimen at present known of the male of this species), 15 ♀♀, camp Nichols, Rizal Prov. (Carraway); ♀ type, Fort Wm. McKinley, Rizal Prov.

*India*: (As reported by Edwards in Barraud, 1934), Bihar: 2 ♀♀, Gaya (V. T. Korke, 1928).

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