

ARMIGERES (*ARMIGERES*) MAHANTAI, A NEW MOSQUITO SPECIES FROM INDIA

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ABSTRACT. Female and male adults of *Armigeres* (*Armigeres*) *mahantai*, a new mosquito species, are described from Meghalaya state of northeastern India.

KEY WORDS Culicidae, new species, *Armigeres*, northeastern India

INTRODUCTION

The genus *Armigeres*, divided into 2 subgenera, *Armigeres* and *Leicesteria*, is mostly confined to Oriental and Indomalayan areas with extension into the Papuan subregion and Palearctic region (Steffan 1968). The subgenus *Armigeres* includes 40 species (WRBU 2001). The species belonging to this subgenus are mostly well defined and can be easily identified (Ramalingam 1987). We describe here a new species in the subgenus *Armigeres*, found breeding profusely in a pitcher plant, *Nepenthes khasiana*, from Meghalaya state in India. The morphological terminology of Harbach and Knight (1980) is followed in this paper.

ARMIGERES (*ARMIGERES*) MAHANTAI SP. NOV.

Females. Description based on 10 specimens (Fig. 1). Wing ~3 mm. Proboscis ~1.8 mm. Forefemur ~2.2 mm. Abdomen about 3.2 mm. Medium in size (Fig. 1b). **Head:** Eyes separated by 2 rows of broad white scales; vertex mainly covered with broad dark scales except for a distinct central patch of white scales (Fig. 1c); ocular margin with a band of white scales broadening ventrally in postgenal area; presence of dark erect forked scales restricted to occiput region; antenna dark, about same length of proboscis; pedicel dark, inner side and upper border covered with white scales; antennal flagellomeres pilose; flagellomere 1 pale color; length of maxillary palpus >1/3 to almost half the length of proboscis; palpus dark scaled and last apical segment curved typically; proboscis dark scaled, medium in length, ~0.8 length of forefemur; not characteristically curved and laterally compressed like other *Armigeres* species (Fig. 1b). **Thorax:** Scutal integument dark; scutum covered with narrow white curved scales producing very light yellowish luster; acrostichal setae absent; few numbers of anterior dorsocentral, prescutel-

lar, and anterior scutal fossal setae present; median scutal fossal setae absent; many dark setae present on antealar and supraalar area; scutellum trilobed covered with broad white scales, each lobe with 5–9 dark brown setae; anteprenotal lobes covered with both narrow and broad white scales and 10–11 long dark brown setae; postpronotum with narrow white scales in upper and lower halves covered with broad white scales; row of 5–6 setae along posterior border of postpronotum; prespiracular setae absent; postspiracular area with patch of white scales and 3–4 setae; paratergite integument dark with white scales in the margin; proepisternum covered with white scales and many setae; mesokatepisternum with broad patch of white scales in upper and lower areas with several setae; prealar area with several setae; mesoepimeron with large patch of broad white scales with many upper mesoepimeral and 1 lower mesoepimeral setae; mesoepimeron and metapisternum bare. **Legs:** All coxae with white scales and several setae mainly on anterior side; forecoxa covered with white scales except a patch of dark scales in the center; mid- and hind coxa with a patch of white scales anteriorly and very few pale scales posteriorly; hindfemur extensively pale, narrow dorsal side and apical 0.2–0.3 area dark scaled (Fig. 1k); white scaling narrows toward knee on lateral side; fore- and midfemora dark dorsally and pale ventrally; pale scaling more on basal half narrowing on apical half (Figs. 1i, 1j); tibia and tarsi entirely dark scaled; unguis simple on forelegs and unidentate on mid- and hindlegs. **Wings:** Dark scaled; costa with basal white spot; allula with row of small scales and upper calypter with fine hair-like setae; cell R₂ about 1.2 length of R₂₊₃; anal vein ending beyond the fork of Cubitus. **Halter:** Pedicel pale, capitulum dark. **Abdomen:** Tergum I mainly dark scaled with many lateral setae; a patch of white scales in the midbasal area with several marginal setae; terga II–VII mainly dark scaled, dark bronze in appearance (Fig. 1e); white scales forming narrow basal bands (Fig. 1f) or small pale patches on

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Fig. 1. *Armigeres (Armigeres) mahantai* sp. nov. (a) Larval collection from *Nepenthes khasiana*. (b) Adult female. (c) Vertex and scutum of adult female. (d) Adult female lateral view. (e–h) Abdomen of female: (e–f) dorsal aspect, (g) ventral aspect, (h) lateral aspect. (i) Forefemur. (j) Midfemur. (k) Hindfemur.

tergal segments II–VII can be seen in some specimens; tergum VIII mainly white scaled (Fig. 1e); sternum I–VIII mainly white scaled (Fig. 1g); white scales extended basolaterally on these segments and can be visible dorsally mainly on IV–VII tergal segments (Figs. 1e, 1h); apical corner of some segments (mainly II–IV) dark scaled; presence of narrow apical dark bands in segments V–VII (Fig. 1g).

Males. Description based on 7 specimens. Proboscis ~1.9 mm. Wing ~3 mm. Forefemur 2.4 mm. Resembles female except in the following

characters. **Head:** First 12 flagellomeres of antennae strongly plumose, remaining 2 elongated and pilose; palpus longer than proboscis; proboscis slightly curved, laterally compressed and tip swollen. **Legs:** Claws of forelegs much larger than those of female; unequal in size; the larger claw about double the size of the other and with a blunt tooth at its base (Fig. 2f); presence of 3 pairs of stout setae basoventrally on 5th tarsal segment of forelegs; midclaws unequal in size and toothed (Fig. 2g); hindclaws mainly equal in size and simple (Fig. 2h). **Abdomen:** Tergum VIII

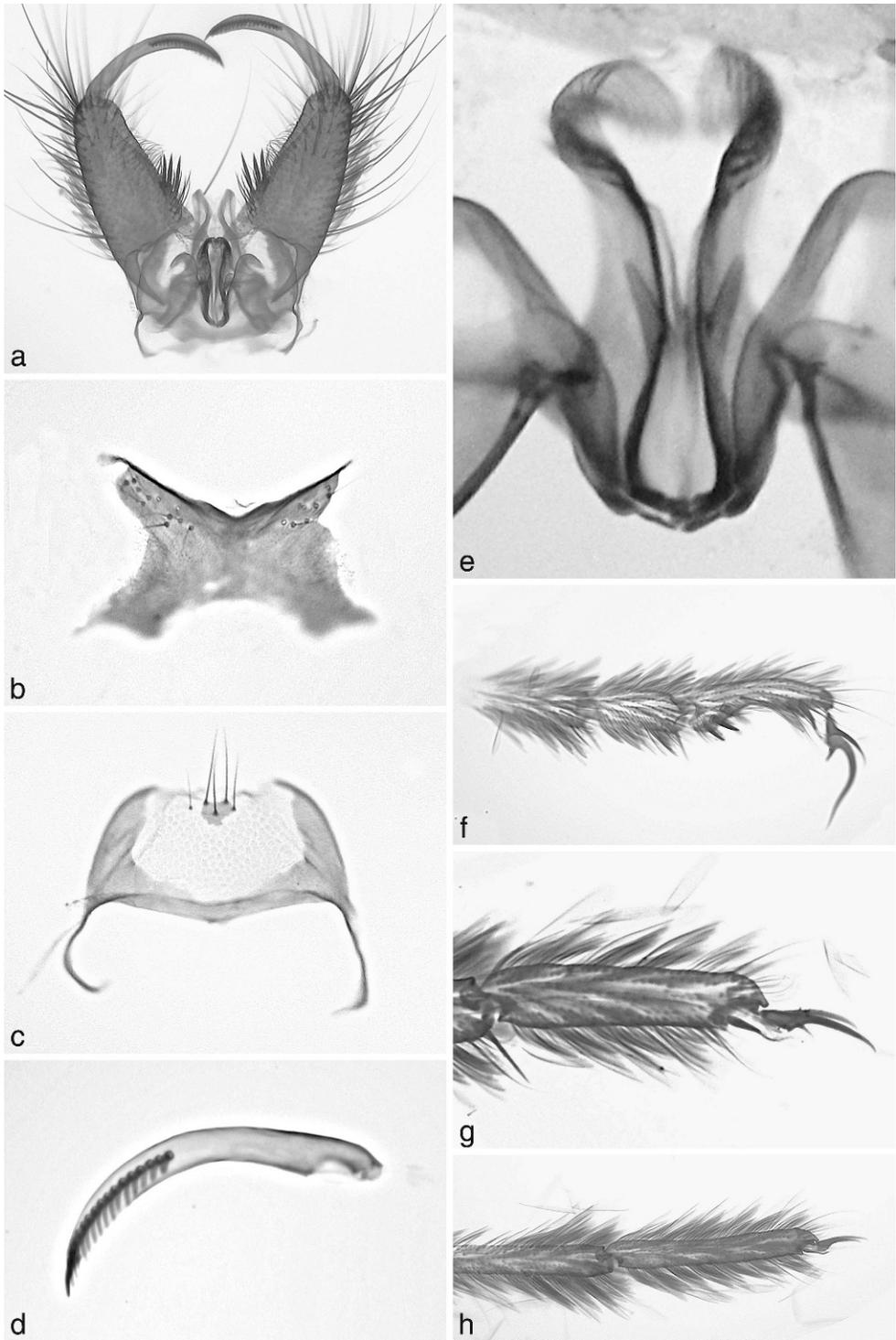


Fig. 2. *Armigeres (Armigeres) mahantai* sp. nov. (a) Male genitalia. (b) Tergum VIII. (c) Sternum IX. (d) Gonostylus. (e) Phallosome. (f) Foreungues. (g) Midungues. (h) Hindungues.

mainly dark scaled. *Genitalia* (Fig. 2): As figured (Fig. 2a); tergum IX butterfly shaped (Fig. 2b), apical margin slightly sclerotized; apical area divided into 2 lobes by a shallow V-shaped depression; 6–12 fine setae in each lobe; sternum IX, broad and highly membranous (Fig. 2c), small lateral portion slightly sclerotized, which is broad basally and narrowing toward apical region; presence of 6–7 setae in a small sclerotized area situated on the apical half of the membranous area; gonocoxites ~3–4 times as long as its width at center, well separated basally; presence of many long setae and scales ventrally and dorsal side covered with many short fine setae; basal mesal lobe with 3 stout sharp setae of different sizes in one line, end pointing toward gonocoxite and another group of setae of different sizes following behind; gonostylus reaching the base of stout setae in the basal mesal lobe; outer margin of gonostylus slightly convex bearing a comb of ~20 teeth (Fig. 2d); each tooth except the apical 1 or 2 flat with rounded apices; phallosome, sclerites ventrally with a prominent tooth in the basal portion (Fig. 2e); apical portion swollen with 10–12 teeth; paraproct well developed.

DISCUSSION

Adults of this species can be easily separated from other species of subgenus *Armigeres* because of the presence of narrow white curved scales on the scutum giving a pale yellowish luster to the naked eye and at certain angles under a microscope. No other species under this subgenus is known to have the scutum entirely covered with narrow white curved scales. The length of the female maxillary palpus of species under subgenus *Armigeres* usually is not $>1/3$ the length of proboscis (Barraud 1934, Thurman 1959). However, the length of the maxillary palpus of females of this new species is $>1/3$, nearly half the length of the proboscis and curved apically, which is a distinctive character to separate this species from other species of this subgenus. Length of the maxillary palpus of adult females and white scaled mesonotum are distinctive characters to separate *Armigeres mahantai* from other known species. The male genitalia, especially the phallosome, which has one prominent tooth in the basal portion ventrally, can also be a diagnostic character.

Bionomics

This species, collected in September 2007, was found to breed profusely in the pitcher plant, *N. khasiana* (Fig. 1a). This insectivorous plant species is endemic to the northeastern Indian state of Meghalaya, growing naturally in the Baghmara area (25°11'59"N, 90°37'47"E), the headquarters of the South Garohills district bordering Bangla-

desh. During our search no other mosquito species was found to breed in association with this species. The feeding habits and medical importance of this species are not known. Mosquito species belonging to genus *Armigeres* are known to bite humans viciously during crepuscular periods, and many species are potential vector of human filariasis. Considering this, it is important to study the bionomics of this new species in this area.

Type series

The holotype male (ML04A1) with associated larval (ML04ℓ1) and pupal (ML04p1) exuviae on 1 slide and dissected genitalia (ML04G♂1) on 1 slide and the allotype female (ML04A2) with associated larval (ML04ℓ2) and pupal (ML04p2) exuviae mounted on the same slide are deposited in the Natural History Museum, London, United Kingdom. They bear the following collection data: India, Northeastern India, Meghalaya, South Garohills, Baghmara, collected as larvae and pupa from pitcher plant *Nepenthes khasiana*. Coll. Ripunjoy Sonowal.

One paratype male (ML04A3) with associated larval (ML04ℓ3) and pupal (ML04p3) skin and 2 females (ML04A4; ML04A5) with associated larval (ML04ℓ4; ML04ℓ5) and pupal (ML04p4; ML04p5) skins are also deposited in the Natural History Museum, London. Two males (ML04A6; ML04A7) with associated larval (ML04ℓ6; ML04ℓ7) and pupal skins and 1 with dissected genitalia mounted on 1 slide (ML04G♂7) and 2 females (ML04A8; ML04A9) with associated larval (ML04ℓ8; ML04ℓ9) and pupal (ML04p8; ML04p9) skins are kept in the museum of the Regional Medical Research Centre, Dibrugarh, India.

Etymology

This species is dedicated to J. Mahanta, Regional Medical Research Center, Dibrugarh, Assam, India, for his keen interest and support for the mosquito taxonomic studies in northeastern India.

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