

Aedes (Stegomyia) platylepidus, First Description
of the Pupa and Larva (Diptera: Culicidae)¹

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ABSTRACT. Pupa and fourth stage larva of *Aedes (Stegomyia) platylepidus* Knight and Hull are described, illustrated and are compared with other species in the *Albolineatus* Group. Bionomics and distribution of the species are presented. Malaysia and Brunei are reported as new country records.

INTRODUCTION

The original description of *Aedes platylepidus* by Knight and Hull (1951:201) was based on a series of 3 females since the associated immature exuviae had not been retained. They (1951:201, 1953:480) did not designate a subgenus for this species. Three larvae were described by Knight and Hull (1953:480) as *Aedes* species unknown, however, they stated that it was possible that these larvae belonged to either *Ae. platylepidus* or *Heizmannia scintillans* Ludlow. The females of *Ae. platylepidus* were assigned to the subgenus *Diceromyia* Theobald by Mattingly (1959:43) who also indicated that the larvae described by Knight and Hull (1953:480) did not fit the genus *Heizmannia* Ludlow very well but probably belonged in the genus *Aedes* Meigen. Reinert (1970:12) followed Mattingly in the inclusion of the females of *Ae. platylepidus* in *Diceromyia* but also listed a number of features of this species that differed from the other members of the subgenus, he described the male for the first time, and he stated that the larval description of Knight and Hull (1953:480) did not compare favorably with those of other species of *Diceromyia* from Southeast Asia. Peyton (1973:161), located and examined for the first time since the original description one of the 3 larvae (#46) described above as "*Aedes*

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species unknown," and determined it as *Uranotaenia obscura* Edwards. He did not find the other 2 larval specimens. While outlining the characters of *Stegomyia* Theobald and the 5 species groups of the subgenus in the Oriental region, Huang (1979:2) transferred *Ae. platylepidus* to the Albolineatus Group of *Stegomyia*. She based this transfer on a comparison of the male genitalia of species in the group.

Pupae and larvae of *Ae. platylepidus* have become available and are described and illustrated. This treatment is based on whole larvae and associated pupal and larval exuviae from individually reared males and females. Examination of these specimens prove beyond a doubt that the description of the 3 larvae by Knight and Hull (1953:480) does not belong to *Ae. platylepidus*.

Nomenclature and chaetotaxy used follow Harbach and Knight [1980, 1981 (1982)]. In the pupal and larval descriptions the range of setal branching is followed by the modal value in parenthesis.

AEDES (STEGOMYIA) PLATYLEPIDUS KNIGHT AND HULL

PUPA (Fig. 1). Chaetotaxy and measurements based on detailed study of 15 pupal exuviae with associated adult specimens. *Cephalothorax* (CT). Lightly pigmented, median portion of cephalothorax and metameron with moderately pigmented areas; lateralialia without cuticular ocular facets; setae 1, 2-CT single; 3, 4-CT single or 2(2) branched; 5-CT single to 4(2) branched; 6, 7, 9-CT single or 2(1) branched, 7-CT long; 8-CT single to 3(1) branched. *Metanotum* (Mtn). Setae 10, 11-CT single; 12-CT single or 2(1) branched. *Trumpet* (T). Heavily pigmented; index 2.67-3.40, mean 2.91. *Abdomen* (I-VIII). Median portion of terga I-IV moderately pigmented; seta 1-I with 10-18(13) branches on basal 0.33; 2, 3, 5, 9, 10-I single; 4-I with 3-6(4) branches; 6-I single or 2(1) branched; 7-I single to 3(2) branched; 11-I with 3-6(4) branches, well developed; 0, 2, 3, 9-II single, 2-II long, stout and laterad of 3-II; 1-II with 2, 3(2) branches; 4-II with 2-6(3) branches; 5, 6-II single or 2(1) branched; 7-II single to 3(2) branched; 0, 2, 3, 9, 11, 14-III single; 1-III single to 4(2) branched; 4-III with 2-4(3) branches; 5, 6-III single or 2(1) branched; 7-III single to 5(2) branched; 8-III with 2-5(2) branches; 10-III single to 3(2) branched; 0, 2, 11, 14-IV single; 1, 4, 10-IV single to 4(2) branched; 3-IV with 2-5(3) branches; 5-IV single to 3(2) branched; 6, 9-IV single or 2(1) branched; 7-IV single to 5(2) branched; 8-IV single to 5(3) branched; 0, 2, 6, 9, 11, 14-V single; 1, 3-V single to 3(1) branched; 4-V with 2-6(4) branches; 5, 10-V single or 2(1) branched; 7-V with 2-7(3) branches; 8-V with 2-5(3) branches; 0, 2, 5, 6, 9-11, 14-VI single; 1-VI single to 3(2) branched; 3-VI single or 2(2) branched; 4-VI with 2-4(2) branches; 7-VI single or 2(1) branched; 8-VI with 2-6(3) branches; 0, 2, 5, 7, 10, 11, 14-VII single; 1-VII single or 2(1) branched; 3, 4-VII single to 3(2) branched; 6-VII single to 5(1) branched; 8-VII with 2-5(3) branches; 9-VII with 3-5(5) branches, long, stout and aciculate; 0, 14-VIII single; 4-VIII single or 2(1) branched; 9-VIII with 5-10(7) branches, long, stout and aciculate. *Paddle* (Pa). Ovoid; very minute serrations on most of basal 0.30-0.55 of outer margin; very few minute spicules on apical 0.16-0.20 of outer and apical 0.04-0.06 of inner margins; midrib extends to apex; seta 1-P with 3-6(5) branches, long, stout and aciculate; index 1.48-1.79, mean 1.65.

LARVA (Fig. 2). Chaetotaxy and measurements based on detailed study of 12 larval exuviae which have associated adults and 3 whole larvae. *Head* (C). Moderately pigmented; some lateral palatal brush setae comb-tipped; seta 1-C single, long, stout; 3, 8-10, 13, 18-C single; 4-C with 8-21(10) branches, moderately long; 5-C with 5-12(7) branches, long, far caudad and slightly laterad of 4-C; 6-C single, long, stout, laterad and slightly caudad of 4-C; 7-C with 6-14(8) branches, caudomesad of antennal base; 7, 11, 14, 15-C and 6-Mx long, stout, lightly aciculate; 11-C with 4-15(5) branches; 12-C with 3-5(4) branches; 14-C single to 4(3) branched; 15-C with 2-4(3) branches; 6-Mx with 3, 4(3) branches; dorsomentum (Dm) heavily pigmented, with 16-22(19) teeth; ventro-median cervical sclerite (VmCS) moderately pigmented, medium-sized. *Antenna* (A). Moderately pigmented, short, without spicules; seta 1-A single or 2(1) branched, short, attached 0.56-0.64 from antennal base; 2, 3-A subapical, 4-6-A apical; 2-A moderately long; 3-A approximately 0.31 length of 2-A; 4-A approximately 0.41 length of 2-A; 5-A sclerotized basal area approximately 0.20 length of 2-A; 6-A approximately 0.18 length of 2-A. *Thorax* (Prothorax = P, Mesothorax = M, Metathorax = T). Setae 1, 2-P, 1, 3-M and 1, 2-T long; 1, 2, 5-8-P, 5-10, 12-M and 7, 9, 10-T stout, slightly aciculate; 0-P with 4-6(4) branches; 1-P with 2-4(3) branches; 2, 6-P single or 2(1) branched; 3-P with 2-4(2) branches; 4-P single or 2(2) branched; 5-P with 2-5(5) branches; 7-P with 3-6(5) branches; 8-P with 3-8(4) branches; 9-P with 2, 3(2) branches; 10-12-P single; 14-P with 3-5(5) branches; 1-M single or 2(2) branched; 2-5, 7, 10-12-M single; 6-M with 5-7(6) branches; 8-M with 4-7(6) branches; 9-M with 4-7(5) branches; 13-M with 4-9(5) branches; 14-M with 2-6(3) branches; 1-T with 2-4(2) branches, caudad of 2-T; 2, 6, 10-12-T single; 3-T with 2-5(4) branches; 4-T single or 2(2) branched; 5-T single to 4(2) branched; 7-T with 5-8(6) branches; 8-T with 4-7(4) branches; 9-T with 3, 4(3) branches; 13-T with 2-6(4) branches. *Abdomen* (I-VIII, X). Setae 1-I-VIII, 5-II-VII, 6-I-VI, 7-I and 13-II-VII long, stout, lightly aciculate; 2-I-VII stout; 1, 11-I with 3-6(4) branches; 2, 9-I single to 3(2) branched; 3, 7, 10-I single; 4-I with 5-8(6) branches; 5-I with 2-4(2) branches; 6-I with 5-7(6) branches; 13-I with 2-5(3) branches; 0, 9, 11, 12, 14-II single; 1, 13-II with 2-4(3) branches; 2, 3, 10-II single or 2(1) branched; 4-II with 3-7(4) branches; 5-II with 2-4(4) branches; 6-II with 2, 3(3) branches; 7-II single to 4(2) branched; 8-II with 2-5(2) branches; 0, 2, 3, 9, 10, 14-III single; 1, 13-III with 2-4(3) branches; 4, 11, 12-III single or 2(1) branched; 5-III with 2-4(2) branches; 6-III with 2 branches; 7-III with 2-5(4) branches; 8-III single to 3(2) branched; 0, 2, 3, 8-12, 14-IV single; 1, 13-IV with 2-4(3) branches; 4-IV single or 2(1) branched; 5-IV with 2-4(2) branches; 6-IV with 2 branches; 7-IV with 3-5(4) branches; 0, 3, 8-12, 14-V single; 1, 5-V with 2-4(3) branches; 2-V single or 2(1) branched; 4-V with 2-6(4) branches; 6-V with 2 branches; 7-V with 2-4(4) branches; 13-V with 3-5(3) branches; 0, 2-4, 9, 11-14-VI single; 1-VI with 2-4(3) branches; 5-VI with 2-4(2) branches; 6-VI with 2 branches; 7-VI single or 2(1) branched; 8, 10-VI single to 4(3) branched; 0, 2, 4, 7, 9-12, 14-VII single; 1, 13-VII with 2-4(3) branches; 3-VII single to 3(1) branched; 5-VII with 2-5(2) branches; 6-VII with 2-5(4) branches; 8-VII with 3-7(6) branches; 0, 2, 4, 14-VIII single; 1-VIII single to 4(4) branched; 3-VIII with 3-6(3) branches; 5-VIII single to 5(3) branched; comb on VIII with 5-9(9) scales arranged in a single row, each scale thorn-like, with a long

stout median apical spine and small denticles on laterobasal areas; saddle moderately pigmented with an unpigmented area around base of seta 1-X, with several stout spicules on dorsal portion of caudal margin, incompletely rings segment X, acus absent; seta 1-X with 2-4(2) branches, long, stout, lightly aciculate; 2-X with 4-6(5) branches; 3-X single; 4-X composed of 10 setae attached to grid, each with 3, 4(3) branches; 4 anal papillae, long, broad, apices rounded, ventral 2 approximately 0.9 length of dorsal 2. *Siphon* (S). Moderately pigmented; index 2.0-2.8, mean 2.34; acus present; pecten on basal 0.37-0.42, with 3-11(6) spines, each with several stout denticles on ventro-basal area; seta 1-S with 2-5(3) branches, long, stout, lightly aciculate, inserted on basal 0.51-0.54 of siphon distad of last pecten spine; 2, 6, 7, 9-S single; 8-S single or 2(1) branches.

DISTRIBUTION. The following specimens of *Ae. platylepidus* were examined.

BRUNEI. Kg. Sungei Besar; 4 ♀pl.

MALAYSIA. *Sabah*, Kuala Penyu, Kudat, Palau Banggi, Pulau Berhala, Tawau, Kg. Apas, Kg. Tanjong; 15 ♀pl, 1 ♀p, 38 ♀, 8 ♂pl, 39 ♂, 10 L.

REPUBLIC OF THE PHILIPPINES. *Balabac Island*, Cape Melville; 2 ♀ (paratypes). *Basilan Island*, Isabella; 1 ♀, 1 ♂. *Palawan Island*, Puerto Princesa; 1 ♀ (holotype).

BIONOMICS. In Sabah, Malaysia, immatures were collected from colored water in treeholes (13 times) and bamboo stumps (2 times) situated 1 to 2 m above ground, located at or near sea level in mangrove swamps and coastal villages, and collected in association with immatures of *Ae. (Finlaya) albolateralis* (Theobald), *Ae. (Stg.) albopictus* (Skuse), *Ae. (Lorrainea) celebricus* Mattingly, *Ae. (Lor.) fumidus* Edwards, *Ae. (Fin.) niveus* (Ludlow), *Ae. (Fin.) niveus leonis* Colless, *Ae. (Stg.) scutellaris* (Walker), *Armigeres (Armigeres) joloensis* (Ludlow), *Culex (Acalloemyia) obscurus* (Leicester) and *Toxorhynchites (Toxorhynchites) splendens* (Wiedemann). In Brunei, immatures were taken from colored water in a treehole in a fallen log, located in a coastal village, and in association with immatures of *Ae. (Stg.) albolineatus* (Theobald), *Ae. albopictus*, *Ae. fumidus* and *Ae. niveus leonis*. Knight and Hull (1951:201) reared the type-series females from larvae collected from: a treehole on Palawan Island, and a fallen coconut spathe and a log depression in a mangrove area on Balabac Island.

DISCUSSION. Prior to this study the pupae were known for *Ae. albolineatus*, *Ae. arboricola* Knight and Rozeboom, *Ae. boharti* Knight and Rozeboom, *Ae. laffooni* Knight and Rozeboom, *Ae. bambusicola* Knight and Rozeboom, *Ae. hoogstraali* Knight and Rozeboom, and *Ae. impatibilis* (Walker), within the *Albolineatus* Group (see illustrations in Huang 1979). *Aedes platylepidus* pupae are easily separated from those of the first 4 species which have seta 5-CT single, very long, stout and aciculate while this seta is 2 branched, short, thin and simple (approximately equal in length to 4-CT) in *Ae. platylepidus* and also in *Ae. bambusicola*, *Ae. hoogstraali* and *Ae. impatibilis*. Pupae of *Ae. platylepidus* are distinguished from those of the remaining 3 species by the following

features (*Ae. platylepidus* features in parentheses): *Ae. bambusicola* have seta 6-VII long, stout and aciculate (short, thin and simple), 9-VII very short, thin, simple and single (long, stout, aciculate and 3-5 branched), and 1-P with at least 9 branches (3-6 branched); *Ae. hoogstraali* have seta 10-CT single to 4 branched, usually 2, 3 branched (single), 11-I apparently absent (3-6 branched, well developed), 9-VII single to 4 branched, usually 2, 3 branched (3-5 branched, usually 5 branched), and paddle index 2.00-2.35 (index 1.48-1.79); and *Ae. impatibilis* have seta 10-CT with 2 branches (single), 1-P with 2 branches (3-6 branched, usually 4-6 branched), and paddle relatively narrow, inner distal portion symmetrical, apex acuminate (moderately broad, inner distal portion asymmetrical, apex broadly rounded). Pupae of *Ae. platylepidus* go to couplet 2 in the key by Huang (1979:21).

Within the Albolineatus Group the fourth stage larvae are now known for *Ae. albolineatus*, *Ae. arboricola*, *Ae. boharti*, *Ae. laffooni*, *Ae. bambusicola*, *Ae. hoogstraali* and *Ae. platylepidus* (see illustrations of the first 6 species in Huang 1979). Larvae of *Ae. platylepidus* are easily separated from those of the first 4 species which possess the following characters (*Ae. platylepidus* characters in parentheses): thorax and abdomen pilose (not pilose); numerous multibranching stellate setae with aciculate branches on thorax and abdomen (stellate setae absent); seta 6-Mx with 8 or more branches (3, 4 branched); and seta 1-VIII with more than 10 branches (single to 4 branched). Numerous other differences, in addition to those named above, also separate these 4 species from *Ae. platylepidus*. The larvae of *Ae. platylepidus* is similar to those of *Ae. bambusicola* and *Ae. hoogstraali*. From *Ae. bambusicola* it is distinguished by the following (*Ae. platylepidus* in parentheses): seta 5-C with 3, 4 branches (5-12 branched); 11-C with 2, 3 branches (4-15 branched); 7-P with 2 branches (3-6 branched); 8-P with 2 branches (3-8 branched); 12-P with 2 branches (single); 14-P with 2 branches (3-5 branched); 6-M with 2 branches (5-7 branched); 8-M with 2 branches (4-7 branched); 2-X with 2, 3 branches (4-6 branched); and 1-X single (2-4 branched); and from *Ae. hoogstraali* by the following: seta 1-M with 3, 4 branches (single or 2 branched); 9-M with 3 branches (4-7 branched), and pecten spines with basal denticles not longer than 0.4 length of stout dorsoapical denticle (most basal denticles as long as dorsoapical denticle, other denticles at least 0.5 length of dorsoapical denticle). Larvae of *Ae. platylepidus* go to couplet 2 in the key by Huang (1979:25).

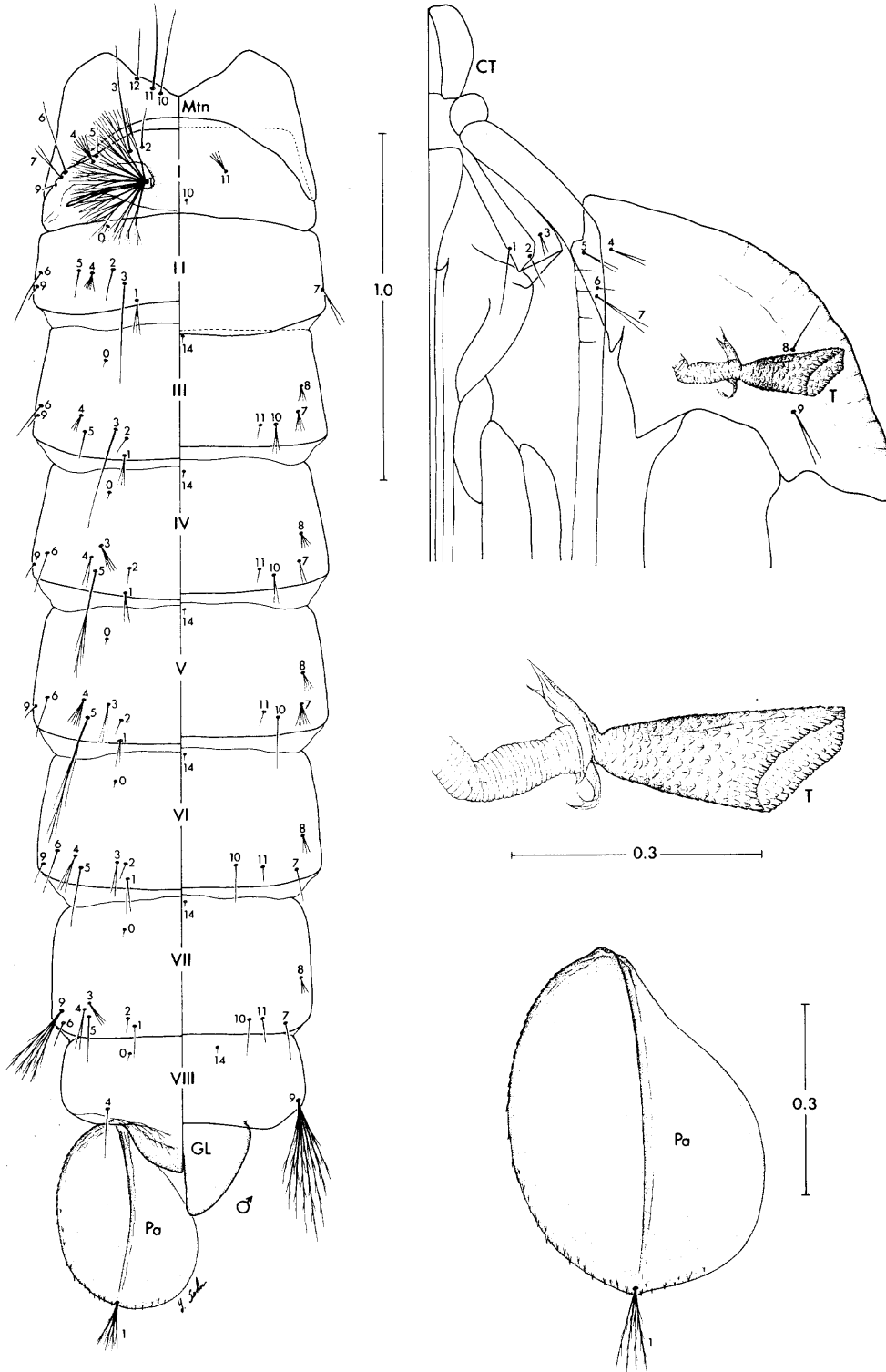
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LITERATURE CITED

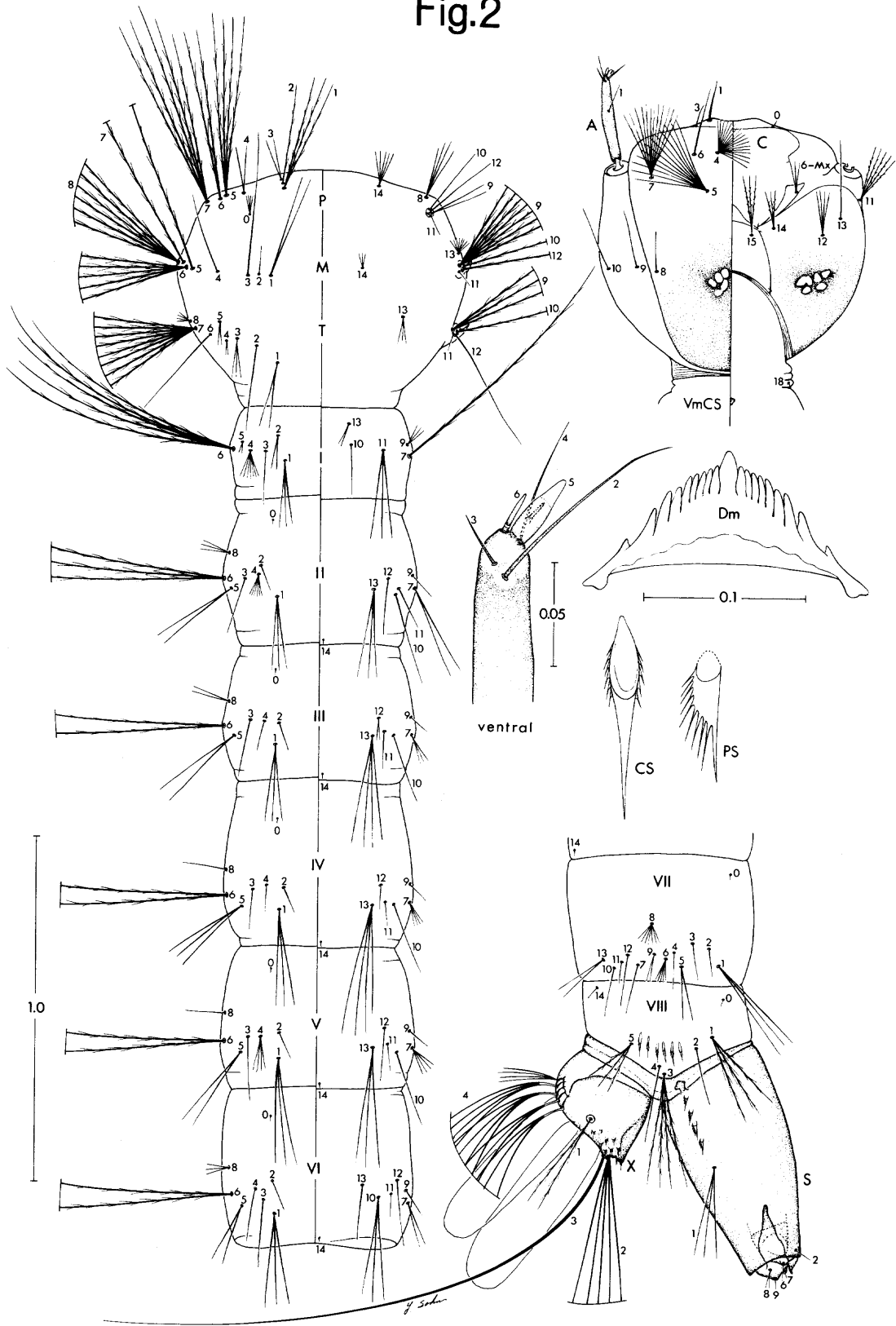
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Fig.1



platylepidus

Fig.2



platylepidus