

**DESCRIPTION OF THE LARVA AND PUPA OF
AEDES (VERRALLINA) AGRESTIS
 (DIPTERA: CULICIDAE)**

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ABSTRACT. The fourth-instar larva and pupa of *Aedes (Verrallina) agrestis* Barraud are described and illustrated for the first time.

INTRODUCTION

The female of *Aedes (Verrallina) agrestis* Barraud, 1931 was originally described from southern India. It was briefly redescribed by Barraud (1934). Subsequently, Reinert (1974) and Tewari and Hiriyan (1988) added descriptions of the female genitalia and the male, respectively. We have reared the immatures of *Ae. agrestis* in the laboratory by obtaining eggs from wild-caught females captured in Western Ghats, India. Descriptions of the

fourth-instar larva and pupa are presented here with illustrations.

MATERIALS AND METHODS

Five fully fed wild-caught females were kept in the laboratory for oviposition. They laid 152 eggs, which were individually reared. Considerable mortality occurred during rearing and only five adult progeny were obtained. Identification of species was con-

Table 1. Chaetotaxy of the fourth-instar larva of *Aedes (Verrallina) agrestis*.¹

Seta no.	Head		Thorax			Abdominal segments	
	A	C	P	M	T	I	II
0	—	1	6-12	—	—	—	1
1	3-6(5)	1	1-3(2)	2-6(3)	3-6	1	1
2	1	—	2,3(2)	2-4(3)	3-6	1	1
3	1	1	2-4(3)	1,2(1)	5-16	4-7(5)	3-7(5)
4	1	3-6	2-5(4)	5-10(6)	4-8(5)	12-16(14)	9-16
5	1	2-4(3)	1	1	1	3-9(7)	4-6(5)
6	1	1,2(1)	1	4-9(7)	2-5(4)	2,3(2)	1,2(2)
7	—	5-9(7)	2	1,2(1)	7-10(7)	1,2(1)	5-9(7)
8	—	3,4(4)	1	6-9(7)	12-17(13)	—	2,3(3)
9	—	3-5(4)	2	7-9(9)	2-5(3)	3-5(4)	1,2(1)
10	—	4-6(5)	1	1	1	4-6(5)	2,3(2)
11	—	4,5(4)	2-4(3)	1	1,2	4,5(4)	3-5(4)
12	—	4-8(8)	1	1	1	—	2-4(4)
13	—	3-5(5)	2-4(2)	6-13	9-13(10)	1,2(1)	9-14
14	—	1	—	6,7	—	—	—
15	—	5-8(6)	—	—	—	—	—

¹ Based on 17 specimens.

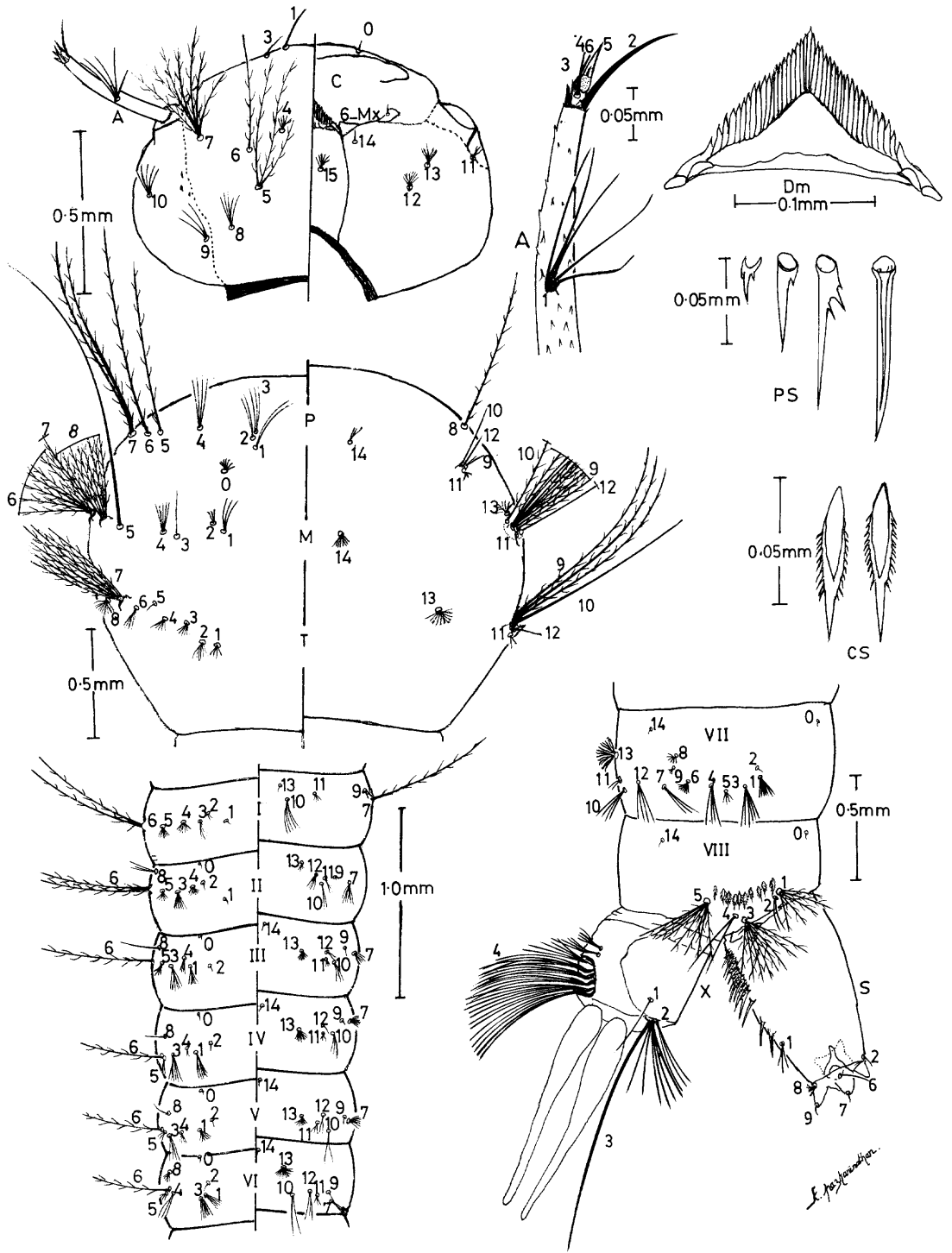


Fig. 1. *Aedes (Verrallina) agrestis*, fourth-instar larva. A = antenna, C = cranium, CS = comb scale, Dm = dorsomentum, M = mesothorax, P = prothorax, PS = pecten spine, S = siphon, T = metathorax, I-X = abdominal segments, 6-Mx = seta 6-Mx.

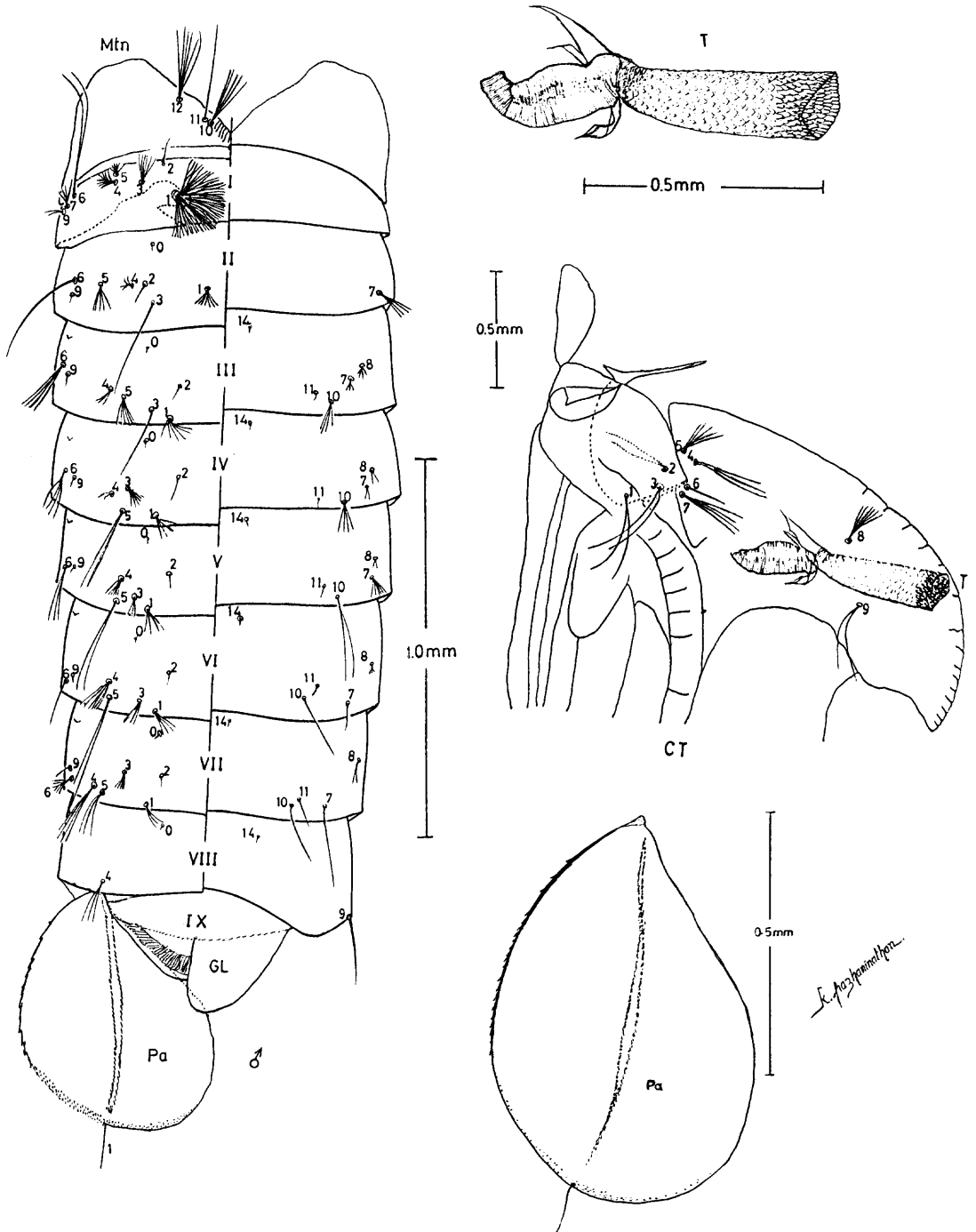


Fig. 2. *Aedes (Verrallina) agrestis*, pupa. CT = cephalothorax, GL = genital lobe, Mtn = metanotum, Pa = paddle, T = trumpet, I-IX = abdominal segments.

Table 2. Chaetotaxy of the pupa of *Aedes (Verrallina) agrestis*.¹

Seta no.	Cephalo-thorax		Abdominal segments										Paddle		
	CT	I	II	III	IV	V	VI	VII	VIII	P	P				
0	—	—	1	1	1	1	1	1	1	1	1	1	1	—	—
1	2-4(2)	16-20	6-10	5-7(6)	4-6(4)	3-5(4)	4-6(4)	1	1	3-5(3)	4-6(4)	1	1	—	1,2(1)
2	2	1	1	1	1	1	1	1	1	1	1	1	1	—	—
3	2	5-8(6)	1	1	4-7(6)	2-4(3)	4-7(6)	2,3(3)	4-6(5)	1	2,3(3)	—	—	—	—
4	3,4(3)	8-10(9)	5-7(7)	3,4(3)	2-4(2)	6-8(6)	2-4(2)	5-7	3,4(4)	4-6(5)	5-7	2-4(3)	2-4(3)	—	—
5	5-8	3-5(4)	5-9(5)	4-7(7)	2,3(2)	2,3(2)	2,3(2)	1-3(2)	2-4(3)	3,4(4)	1-3(2)	2-4(3)	2-4(3)	—	—
6	1,2(1)	1,2(2)	1	3,4	2-4	2-4(3)	2-4	1,2(1)	2-4(3)	5-9	1,2(1)	—	—	—	—
7	3-5(4)	3-5(4)	2-4(4)	2,3	2-4(2)	5-8(6)	2-4(2)	1,2(1)	2-4(2)	1	1,2(1)	—	—	—	—
8	6-9	—	—	3-5(4)	2-4(2)	2-4(2)	2-4(2)	2-4(3)	2-4(2)	2-4(2)	2-4(3)	—	—	—	—
9	2,3(2)	2	1	1	1	1	1	1	1	1	1	1	1	—	—
10	5-8	—	—	3-5(4)	4-6(4)	1,2(2)	4-6(4)	1	1	1	1	1	1	—	—
11	1	—	—	1	1	1	1	1	1	1	1	1	1	—	—
12	3-7(6)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
13	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
14	—	—	—	1	1	1	1	1	1	1	1	1	1	—	—

¹ Based on five specimens.

serrations on basal 0.69–0.71 of outer margin and scanty minute spicules on apical 0.24–0.31 of outer margin and apical 0.18–0.25 of inner margin; midrib not reaching apex; seta 1-P 0.15 length of paddle; index 1.31–1.41 (mean 1.36).

Specimen data. Specimens reared from eggs laid by wild-caught females from daytime resting collection made at Noolpuzha, Sultan Battery, Wynad District, Kerala, southern India; 1 male (A 1343) with associated larval (l 670) and pupal (p 643) exuviae and 1 4th-instar larva (L 364) deposited in the U.S. National Museum of Natural History, Smithsonian Institution; 1 female (A 1344) with associated larval (l 671) and pupal (p 644) exuviae and 1 4th-instar larva (L 367) deposited in National Institute of Virology, Pune, India; 2 males, 1 female, 4 larval and 3 pupal exuviae, and 9 4th-instar larvae retained in the museum of Centre for Research in Medical Entomology, Madurai, India.

Distribution and biology. Larval habitats could not be found even though searches were made in the same area that the male described by Tewari and Hiriyan (1988) was found. Many adults were found resting at ground level in a humid habitat under bamboo bushes during the daytime. A few females fed on the collectors. In the laboratory only fully fed females survived even though adults were provided raisins and glucose. Rearing of immatures was difficult, and high mortality was recorded in early instars. Eggs hatched 4 or 5 days after oviposition and adults emerged 5 or 6 days after hatching.

Taxonomic discussion. In his review of subgenus *Verrallina*, Reinert (1974) placed *Ae. agrestis* in Section A, Series III, after examining only females. Subsequently, Tewari and Hiriyan (1988) described the male and confirmed this placement. The chaetotaxy of the immatures further strengthens Reinert's (1974) view that *Ae. agrestis* belongs to Section A, Series III, as the larva possesses seta 1-A with 3–6 branches, seta 7-C with 5–9 branches, comb scales with stout median apical spine and small spicules basolaterally and seta 2-X with 7–11 subequal branches. Reinert reported that seta 4-P is 3–6 and 1–3

branched in sections A and B, respectively. In the case of *Ae. agrestis*, this character overlaps as 4-P is 2–5(4) branched. The larval chaetotaxy is very similar to species of the Uncus Group, which includes *Ae. crytolabis* Edwards, *Ae. latipennis* Delfinado, *Ae. leicesterei* Edwards, *Ae. torosus* Delfinado, and *Ae. uncus* (Theobald). In the pupa the trumpet is expanded apically and seta 9-VIII is single. Seta 2-IV-VI is cephalad of seta 4 of the corresponding segment, which is similar to *Ae. crytolabis*, *Ae. latipennis*, *Ae. leicesterei*, and *Ae. torosus*.

There are some minor differences in setal branching between the immatures of *Ae. agrestis* and other species of the Uncus Group, but these are not sufficient to be used as diagnostic characters.

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