

The Biology and Immature Stages of *Uranotaenia (Pseudoficalbia) srilankensis* Peyton (Diptera: Culicidae)<sup>1</sup>

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**ABSTRACT.** The descriptions, illustrations and biology of the pupa and larva of *Uranotaenia (Pseudoficalbia) srilankensis* Peyton are presented for the first time.

*Uranotaenia (Pseudoficalbia) srilankensis* was described in 1974 from a series of adult males and females from several localities in 3 different provinces of Sri Lanka. At that time the immature stages were unknown, but it was suggested that they would most likely occur in fresh water crab holes as do most known species of the Recondita series, to which this species was tentatively assigned. This prompted the 2 junior authors to investigate fresh water crab holes in several localities of Sri Lanka in search of this species. Several collections of immatures and/or adults were collected under their supervision in October 1978 and were later identified as *srilankensis*. Included among these collections were specimens of the host crabs from 2 different localities and species of the mosquito genera *Aedes* Meigen and *Culex* Linnaeus. The following descriptions of the pupa and larva are based on a portion of those collections. The illustrations of the male terminalia and adult female thorax in Fig. 1 are reproduced from Peyton (1974) in order to provide full illustrative treatment of the species for the benefit of those who may not have access to the original description.

The pupa and larva of *srilankensis* exhibit all of the characteristics of the Recondita series as defined in Peyton (1977). The terminology and numbering of the setae are essentially those of Belkin (1962) and Peyton (1977).

**PUPA (Fig. 1).** Chaetotaxy and general appearance as figured. Integument light yellowish brown except on posterior scutal plate, metanotum, abdominal segments I, II and occasionally III dark brown. *Cephalothorax.* Setae 1,2-CT 2-4 branched, 3-CT 2-5 branched, 4-CT 3-5 branched, 5,9-CT 4-6 branched, 7-CT 2-4 branched, 8-CT with 6-8 finely barbed branches. *Respiratory Trumpet.* Light brown, tracheoid on anterobasal 0.2; index about 3.5-4.5, not noticeably expanded apically. *Metanotum.* Seta 12-CT with 4-8 finely barbed branches. *Abdomen.* Setae with simple branches except for 1-I and 9-VIII with strongly barbed branches; seta 1-II usually 7,8(4-12) branched, 2-II strong, single, longer than segment III, 3-II 2-7 branched from about middle, 5-II 4-6 branched, 6-II 2-4 branched; 1-III usually 4(3-6) branched, 3-III 2-4 branched, 5-III 3-5 branched, 6-III single or double; 1-IV 3-5 branched, 3-IV 3-5 branched, 5-IV single, strong, long, about 1.4 or more the length of segment V, 6-IV single to

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4 branched; 1-V 2-4 branched, 3-V double to triple, 5-V single, strong, long, about 1.5 the length of segment VI, 6-V single to triple; 1-VI 2-4 branched, 3-VI double, 5-VI single, strong, long, about 1.3 or more the length of segment VII, 6-VI single, strong, long, about 1.00-1.25 the length of the segment; 1-VII usually double (2-4), 3-VII 2-4 branched, 5-VII single, weak, short, 0.3-0.5 the length of segment VIII, 6-VII double, located ventrally, 9-VII single to triple; 9-VIII usually with 7-9(4-10) strongly barbed branches. *Paddle*. Midrib darkly pigmented for entire length; outer part with marginal serrations; inner part broader than outer part and slightly extended apically, with marginal spicules on apical 0.5.

LARVA (Fig. 2). Chaetotaxy and general appearance as figured. Several setae of thorax stellate, with stout, pigmented, acutely pointed branches. Several setae of abdominal segments single, very stout, darkly pigmented, acutely pointed, simple or finely barbed as shown. *Head*. Light yellowish brown anteriorly, dark brown posteriorly and on collar. Seta 4-C 3,4 branched, anteromesad of 5-C, 5,6-C single, bases of each pair approximately equidistant, 7-C 7-10 branched, sparsely barbed, 11-C 2-4 branched; mentum with 16-18 teeth. *Antenna*. Light brown, occasionally noticeably darker toward base; seta 1-A double. *Thorax*. Seta 0-P 5-9 branched, 1-P double, 3-P 7-9 branched, 4-P 6-9 branched, 7-P 3,4 branched, 9-P single or double, simple or finely barbed, 14-P stellate, with 5-10 stout, finely barbed branches; 1-M stellate, with 3-5 stout branches, 8-M 7-10 branched, 9-M 7 branched, 14-M stellate, with 3-5 stout branches; 1-T stellate, with 4,5 stout branches, 3-T stellate, 3 branched, 5-T single, stout, 7-T 10-12 branched, 9-T 6-9 branched, 13-T double or triple, stout. *Abdomen*. Seta 1-I-VI long, stout, usually single, rarely double on V and single or double on VI, 2-I,II single, long, very stout, 4-I stout, double or triple, 6-I,II double, very stout to apex, branches acutely pointed, lightly barbed, 7-I,II single, very stout, acutely pointed, lightly barbed, 11-I usually double (2,3), long, very stout, branches acutely pointed, 13-I single; 4-II double or triple, 5-II single, stout, 9-II-VI single, very stout, sparsely barbed near base, acutely pointed, long, longest on II which is about equal to length of segment or slightly more than length of 7-II, 13-II double, stout; 5-III-VI single, very stout, acutely pointed, long, slightly longer than 9-III-VI, sparsely barbed near base, 6-III-VI double, long, branches stout, acutely pointed, 7-III with 2-4 stiff branches, 13-III,IV with 2,3 long, stout, acutely pointed branches; 7-IV-VI double or triple; 4-V usually with 2(2,3) stiff branches, 13-V usually with 2(2,3) stout, acutely pointed branches, 4-VI usually with 2(1,2) stiff branches; 1,3-VII double or triple, branches stout, acutely pointed, 6-VII with 2,3 stiff branches, 7,10,12-VII single, strong, 13-VII single to triple, strong; 1-VIII double, stout, 3-VIII 6-9 branched, 5-VIII single or double, stout; comb scales 12-17, subequal in length and width, on a small weakly sclerotized plate, each scale near uniform in width from near base to rounded apex, fringed with fine spicules laterally and slightly stronger ones apically. *Segment X*. Saddle incomplete ventrally, light brown, uniformly imbricate, with moderately strong spicules on posterolateral margin; seta 1-X usually double (2,3), stout, 4a-e-X with 7-9, 2-6, 5-7, 5-7 and 5-7 branches respectively, usually 4b-X on one side, with fewer branches and noticeably longer than its mate on the opposite side. *Siphon*. Light brown, uniformly imbricate from base to apex; index about 3.0; pecten teeth 10-17, extending from base to proximal 0.40-0.45 of siphon, each tooth fringed apically and on side toward base of siphon; seta 1-S with 5,6 stout branches, inserted at about 0.5 of siphon.

DISTRIBUTION. Known only from the following provinces in Sri Lanka: North Central, Northern, Sabaragamuwa, Southern and Western. The new collections

and distributional records reported here are from Alutgama, 800 m north of railway station, Kalutara District, Western Province (adults and larvae) and Talalla, 90 m west of Anicut, between mile post 106 and 107 along Matara-Hambantota road, Matara District, Southern Province (adults only). All collections were made by F. R. Karandawala, assisted by S. G. S. Peiris.

DISCUSSION. The pupa and larva of *srilankensis* are easily separated from other members of the Recondita series and very easily separated from any presently known *Uranotaenia* from Sri Lanka. The pupa will key to *sumethi* Peyton and Rattanarithikul in Peyton (1977) but can be separated from that species by numerous characters. A few of these are as follows: seta 1-II-VII with simple branches, 11-CT, 3-I-III not brush-tipped, 5-IV-VII simple and shorter. The larva will key to couplet 9 in Peyton (1977); however, it possesses characters in both halves of this couplet. It would key to *rossi* Delfinado in couplet 10 on the basis of the single seta 5-C, but is easily separated from *rossi* by the long, stout, single setae 1-I-VI, 2-I,II, 5-III-VI and 9-II-VI, plus numerous other differences. The pupal and larval descriptions and illustrations are based on an analysis of 11 reared associated skins of each stage.

BIONOMICS. The immature stages were collected from fresh water crab holes along a canal bank at Alutgama, Western Province. The collections were made in October 1978 immediately following heavy rains which flooded some of the crab holes. Several resting adults were also collected from crab holes in the same vicinity. The larvae were collected in association with a small crab of the subfamily Sesarminae, *Chiromantes darwinensis* Campbell 1967. In addition to the crab, the following species of mosquitoes were collected from the same locality in association with *srilankensis*; *Uranotaenia (Uranotaenia) lateralis* Ludlow, *Aedes (Cancraedes) simplex* (Theobald), *Aedes (Paraedes) ostentatio* (Leicester), *Culex (Culiciomyia) spathifurca* (Edwards) and *Culex (Lophoceraomyia) infantulus* Edwards. In Talalla, Southern Province, in addition to the species found at Alutgama, 2 resting females of *Aedes (Verrallina) butleri* Theobald were also found in association with *srilankensis*. In this area the crab host was a much larger undetermined species of the genus *Cardisoma* Latreille 1825. Crabs from both areas were closely examined for mosquito eggs that might be attached, as is known to occur with some African crab species, but none were found. Information on the collections and identification of the crabs and the other mosquitoes found in association with *srilankensis* were made by the 2 junior authors.

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*srilankensis*

Fig.1

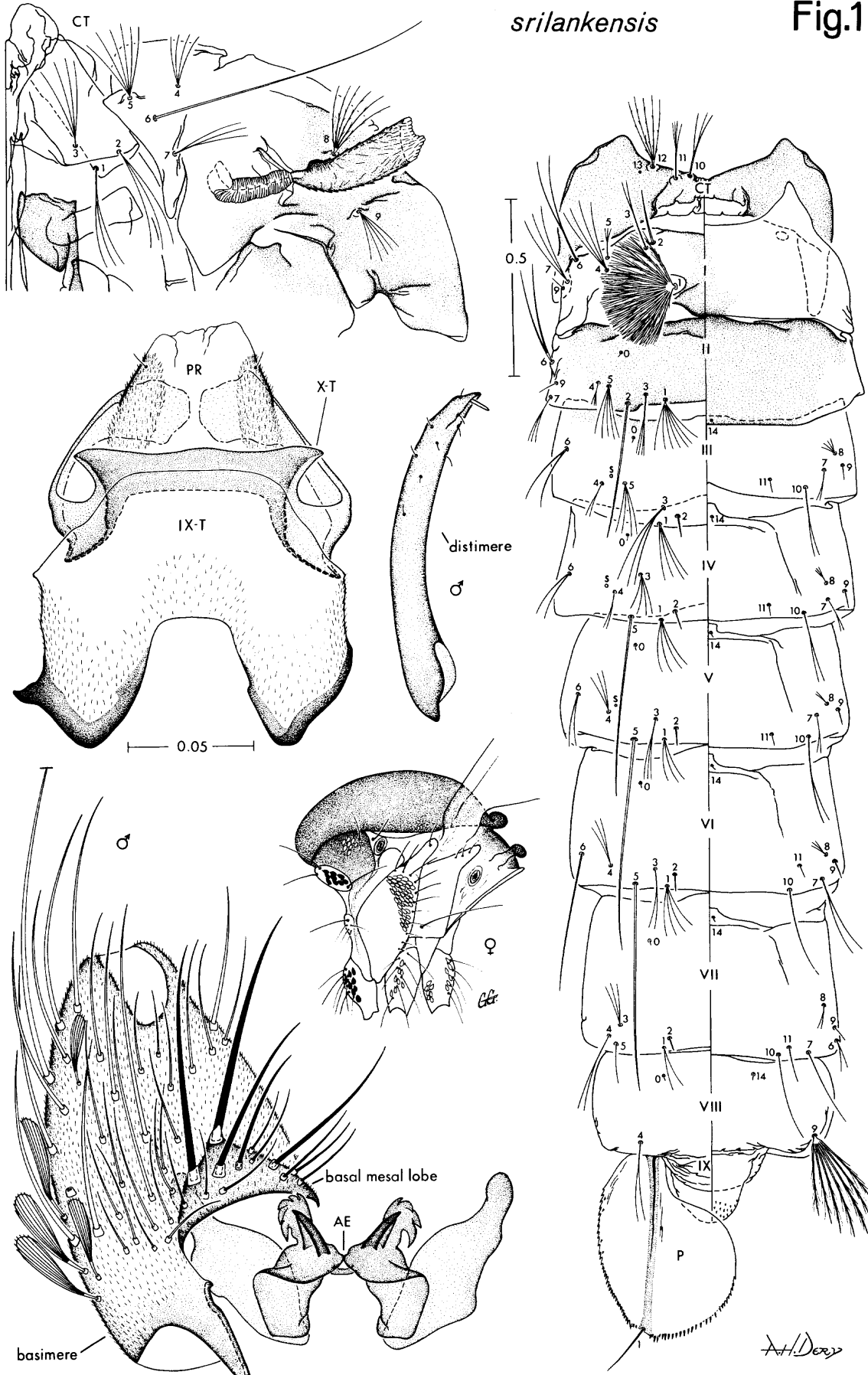
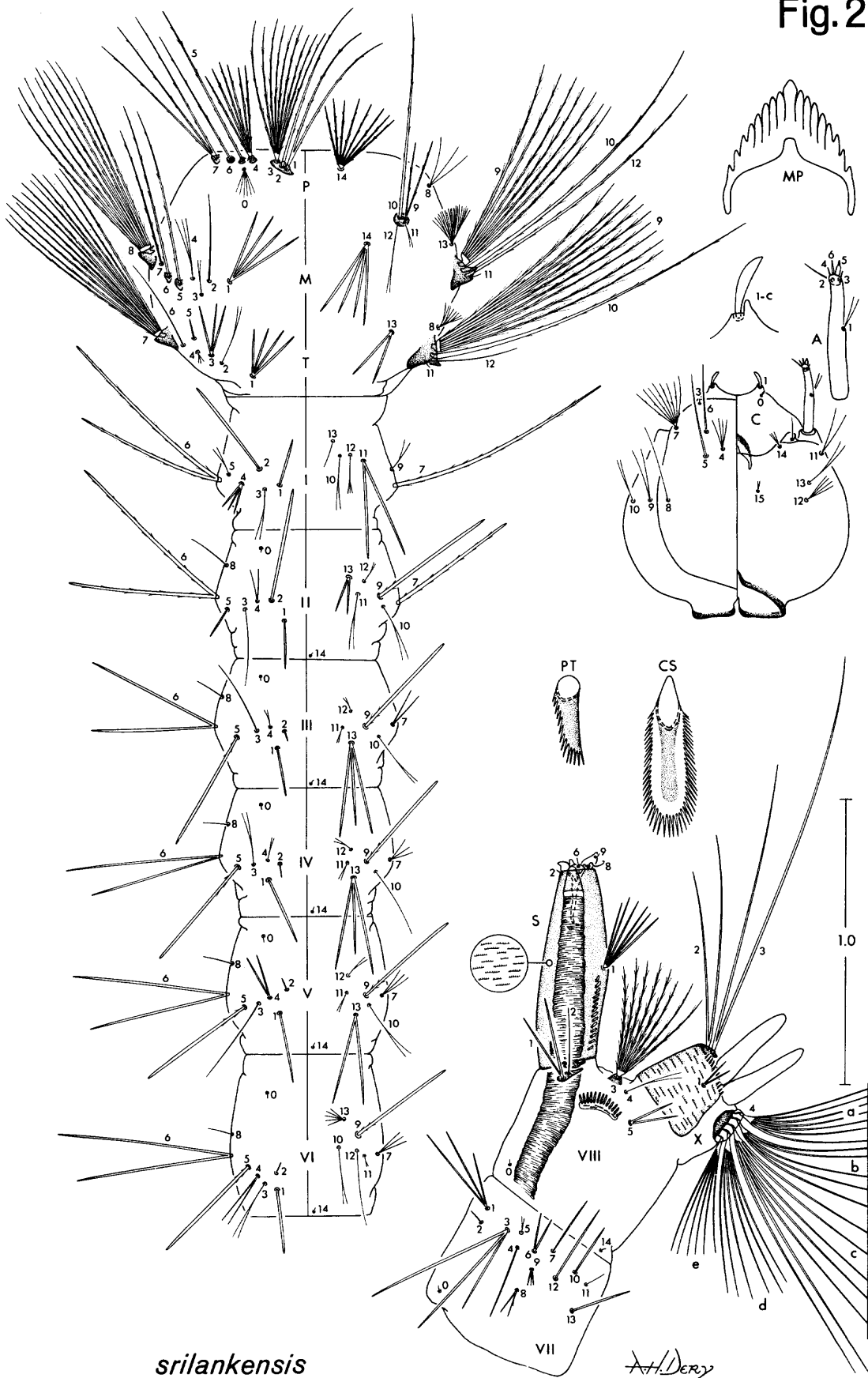


Fig. 2



*srilankensis*

A.H. DERY