



## Larval form of the genus *Thubunaea* Seurat, 1914 from the body cavity of an insect, *Supella* sp., at Meerut (U.P.), India

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**Abstract:** The present communication deals with a larval nematode belonging to the genus *Thubunaea* Seurat, 1914, from the body cavity of an insect, *Supella* sp., at Meerut, U.P. Both encysted and free larval stages were recovered. Morphology of the larvae is described in detail.

**Keywords:** *Thubunaea*, *Supella*, Larval nematode

### INTRODUCTION

During the course of study of insect parasitic nematodes of Meerut, writers came across two specimens of *Supella* sp., infected with some cyst and a few free larval forms of varying sizes. The site of infection being body cavity of insect. On detail morphological examination, it was found to be the third larval stage of the genus *Thubunaea* Seurat, 1914, which has also been once described by Basir, 1948 from *Gymnogryllus erythrocephalus* at Aligarh. Moreover, earlier adults of this genus has been described by the workers like Goldberg *et al.* (2002); Goldberg *et al.*, (2003); José Pérez *et al.*, (2007); Goldberg and Bursey (2009); Goldberg and Bursey (2010) and Ávila and Silva (2010). The larvae at disposal of the authors besides being a new host record, exhibits minor variations thus, briefly redescribed as such as the probable larval form of *T. grayiacola* Sandground, 1933.

### MATERIALS AND METHODS

*Supella* sp. was collected from kitchen and stores from different localities of Meerut. The specimens were brought to the laboratory and identified with the help of classical works of Imms (1960) and Davies (1977). The insects were anaesthetized with the help of Chloroform. Subsequently, a thorough examination of their alimentary canal and the whole body was made under stereoscopic binocular microscope. The nematode parasites were picked up with the help of fine glass dropper. After removal from host, the parasites were washed in normal saline and fixed either in A.F.A. fixative or in hot 70% Alcohol. For the study of morphology, parasites were cleared in Glycerine or Lactophenol. The diagrams were made with the help of Camera Lucida to support the morphological observations.

### RESULTS

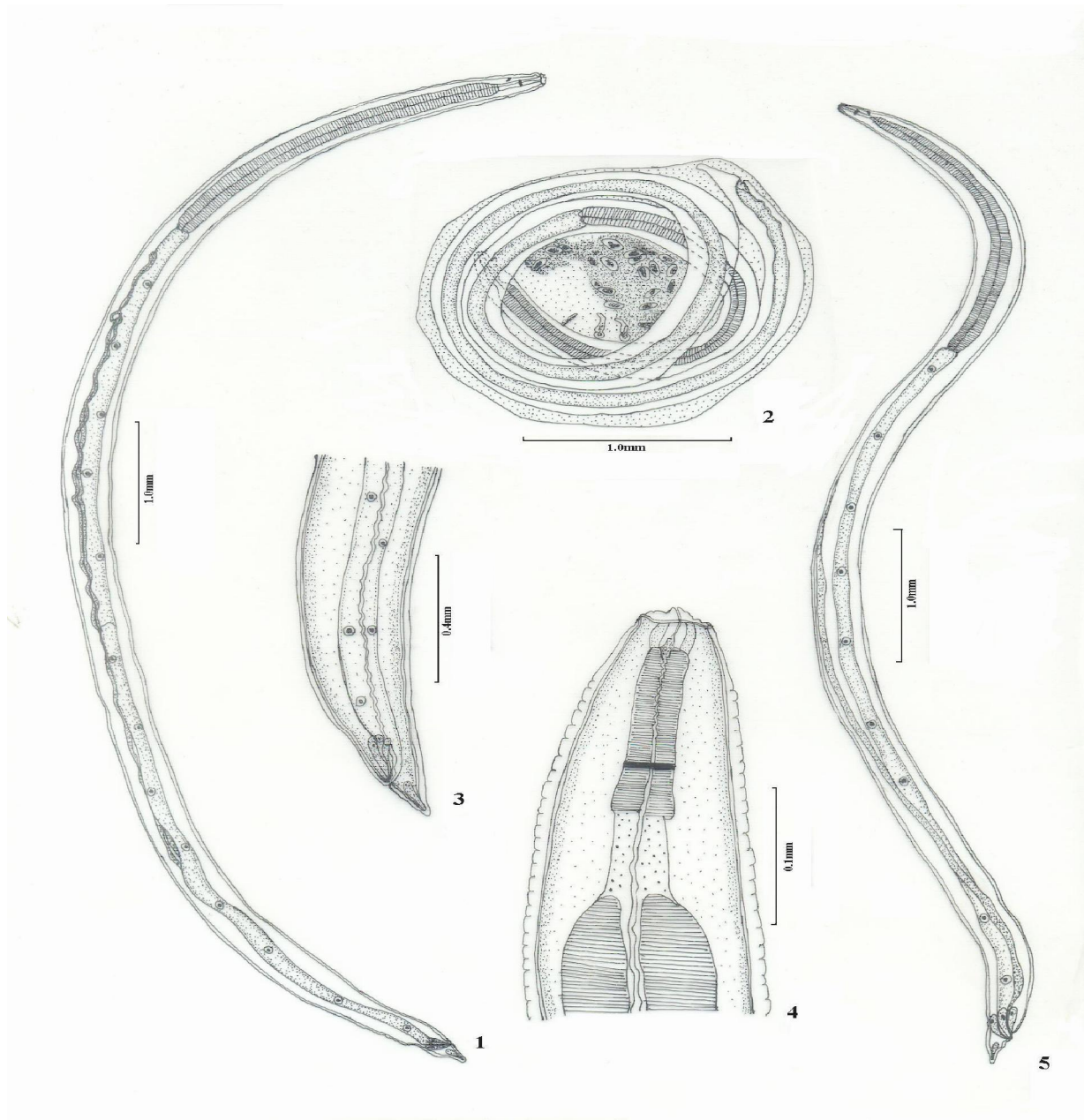
**No. of host examined-20, No. of host infected – 02,** Body length varies from 8.20-10.33 mm. Lateral alae present, extending from head to tip of the tail, about 0.01-0.015 mm broad. Cuticular striations present. Mouth cavity opens into a vestibule, 0.040-0.042 mm long. Nerve ring surrounds the middle of the anterior portion of oesophagus about 0.13-0.15 mm from the anterior end. Excretory pore situated about 0.26-0.30mm from anterior end. Oesophagus occupies a length of about one fourth of the body, being 2.62-2.72 mm long. It is divisible into two distinct parts, a short anterior part, 0.24-0.26 mm long and 0.038-0.042mm broad, followed by a long posterior part, measuring 2.32-2.35 and 0.018-0.20 mm. Anterior part of the oesophagus is muscular in anterior portion and glandular in posterior portion while, the posterior part of the oesophagus is completely muscularised. Intestine well developed. It has an average width about 0.10-0.12 mm. Posteriorly, it communicates with a short and narrow rectum, which is more or less hidden by the surrounding rectal glands. Three rectal glands present. All rectal glands are nearly of the same size. Anus situated about 0.14-0.16 mm from the posterior end. Tail conoid in form. Caudal papillae absent. Sexes can be easily differentiated in these larvae. The females have already developed a complete outline of the reproductive apparatus. The position of vulva is not very clear. Uteri two. These extend posteriorly as ovaries, which run parallel to each other. Male larvae can be easily distinguished from the female larvae by the form of reproductive apparatus. Testis, developed extending upto the 2/3 part of the body. Some cysts were also found in the body cavity of the insect. The wall of the cyst is membranous and its major portion is filled with the coils of larva, the cysts are nearly spherical in form and vary in size being 1.89-1.90mm in

diameter. Larvae in cyst form about three-and a-half coils. Cysts were lying free in the body cavity of the host. There appears to be no morphological differences between the free larvae and those, which are found, encysted. Even the reproductive apparatus has developed to the same stage in both (Table 1, Plates I and II).

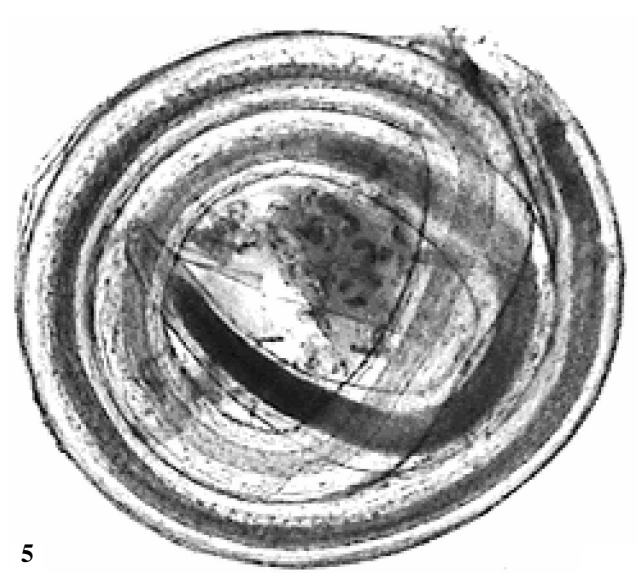
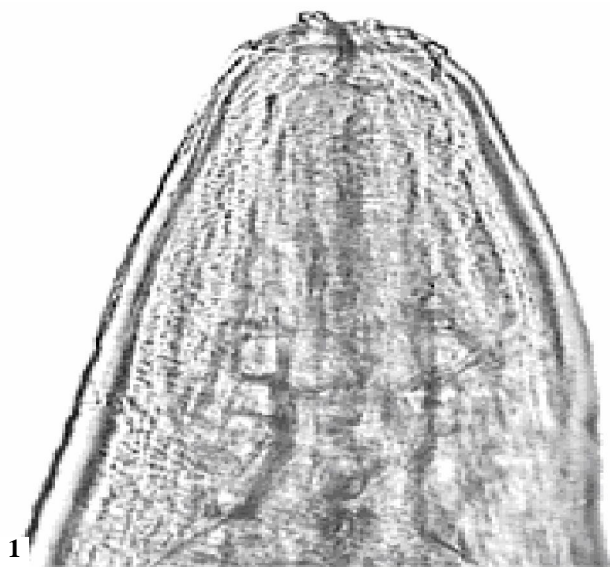
**DISCUSSION**

Teeth pattern on lips and form of the stoma enables us to place these larvae in the family Physalopteridae which is characterized by having asymmetrical lips. This family has been represented with only two genera *viz.*, *Thubunaea* Seurat, 1914 and *Physalopteroides* Wu and

Liu, 1940. Basir (1948) doubted the establishment of the genus *Physalopteroides* Wu and Liu, 1940, with which we also agree. Most important feature of the genus *Thubunaea* Seurat, 1914 is its characteristic vestibule which has also been advocated by Basir (1948). To the best of our knowledge, genus *Thubunaea* Seurat, 1914 has eleven species in all. Out of which five are with asymmetrical lips *viz.*, *T. asymmetrica* Baylis, 1930; *T. agamae* Sandground, 1933; *T. grayiacola* Sandground, 1933, *T. dactyluris* Karve, 1938 and *T. impar* Malan, 1939. Earlier, Basir, 1948 described the larvae of *T. impar* from the body cavity of *Gymnogryllus erythrocephalus* at Aligarh. The present larvae come closest to *T. grayiacola*,



**Plate I.** *Thubunaea impar* Basir, 1941 **Figs. 1-5.** 1) Free larva (female), entire, lateral view, 2) Encysted larva, entire, 3) Posterior region, enlarged, 4) Anterior region, enlarged, 5) Free larva (male), entire, lateral view.



**Plate II.** Photomicrograph *Thubunaea impar* Basir, 1941. **Figs. 1-5.** 1) Anterior region, 400x. 2) Anterior region, 1000x, 3) Posterior region, 100x, 4) Posterior region, 400x, 5) Encysted 100x.

as the cephalic structure of *T. grayiacola* is almost similar to that in the larvae under study. The position and number of the teeth are same in both, in all there are two pairs of teeth and the teeth on the left lip are less developed than on the right. Besides this, it also exhibits variations in the measurements of different parts of the body as shown in the table.

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**Table 1.** Showing measurement of various body parts of the larval forms of the genus *Thubunaea* Seurat, 1914.

	Larvae of <i>T. impar</i> described by Basir, 1948	Present worm
Host	<i>Gymnogryllus erythrocephalus</i>	<i>Supella</i> sp.
Habitat	Body cavity	Body cavity
Locality	Aligarh	Meerut
Body length	6.00-8.30 mm.	8.20-10.33 mm.
Body width	-	0.30-0.32mm.
Alae width	5.3-7.0 $\mu$	0.010-0.015 mm.
Length of mouth cavity	22 $\mu$	0.040-0.042 mm.
Teeth	Three pairs	Two pairs
Oesophagus length	1.85-2.07 mm.	2.62-2.72 mm.
1 <sup>st</sup> part of oesophagus	225-240 $\mu$ x 25-30 $\mu$	0.24-0.26 x 0.038-0.042mm.
2 <sup>nd</sup> part of oesophagus	1.62-1.83	2.32-2.35 x 0.18-0.20 mm.
Nerve ring from anterior end	130 $\mu$	0.13-0.15 mm.
Excretory pore behind the nerve ring	40 $\mu$	0.11-0.13 mm.
Intestine width	70 $\mu$	0.10-0.12 mm.
Rectum length	80 $\mu$	0.21-0.22 mm.
No. of rectal glands	Three	Three
Anus from the posterior end	150-170 $\mu$	0.14-0.16 mm.

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