

## Short Communication

# First record of *Lepidochaetus zelinkai* (Gastrotricha, Chaetonotida) from India

Daizy Bharti\* and Santosh Kumar

Zoological Survey of India, Prani Vigyan Bhawan, M-Block, New Alipore,  
Kolkata – 700 053, India; daizybharti83@gmail.com

### Abstract

A population of the chaetonotid gastrotrich *Lepidochaetus zelinkai* (Grünspan, 1908) was identified from the terrestrial soil collected from the Mahananda Wildlife Sanctuary, West Bengal, India. The species is commonly reported from the freshwater habitats of Europe, Canada, Argentina, Brazil, Korea and Japan. This is the first report of the species from India. Brief description, based on live photomicrographs has been provided. In addition, two videos have also been submitted in NZC (National Zoological Collections) as supplementary files showing details on the movement and internal/external structures.

**Keywords:** Gastrotrich, Live Observation, Morphology, Protected Areas

### Introduction

The diversity of free living freshwater and terrestrial gastrotrichs has not been studied intensively from India, however some report exists (Annandale 1907; Naidu 1962; Visvesvara, 1963; Dhanapathi, 1976; Rao and Chandramohan, 1977; Sharma, 1980; Sharma and Sharma, 1987; Naidu and Rao, 2004; Harkal and Mokashe, 2013). According to Chatterjee *et al.*, (2019) thus far about 80 species of gastrotrich are recorded from India, out of which about half are exclusively marine and belongs to the order Macrodasyida. Probable reason for such a low diversity could be the lack of experts in India and the difficulty in identification because of their microscopic size. Further, reinvestigation is restricted by the lack of detailed information on the live observations, i.e., mediocre quality photomicrographs presented in articles which increase the chances of synonym. It is proposed that the diversity of gastrotrich from India should be studied based on the detailed morphology based on live specimens. Further, it should be supplemented with molecular analyses.

The present investigation adds a gastrotrich *Lepidochaetus zelinkai* (Grünspan, 1908) as the first report to Indian fauna,

identified from the soil samples collected from the Mahananda Wildlife Sanctuary, West Bengal, India. The details based on live specimens have been presented.

### Material and Methods

Sampling and sample processing: Terrestrial soil (about 200 gm) was collected from the Laltong beat (opposite seventh mile) Mahananda Wildlife Sanctuary, West Bengal (26°48'35"N 88°27'04"E). Soil samples were processed at room temperature 20°C by adding some squashed wheat kernels to promote bacterial growth after bringing them to laboratory. Specimens were extracted from the soil runoffs and observation on live were made along with photomicrography and video using stereo zoom (SZ2-ILST, Olympus, Japan) and bright field (CX 43, Olympus, Japan) microscopes. In vivo counts and measurements of six specimens were conducted at a magnification of 40–1000×.

### Results and Discussion

*Lepidochaetus zelinkai* (Grünspan, 1908) was identified from the soil samples collected from the Mahananda Wildlife Sanctuary, India. The species was identified

\* Author for correspondence

along with presence of protozoan ciliates of the genus *Notohymena* and *Colpoda* from the same soil sample. A brief description of the gastrotrich species is presented:

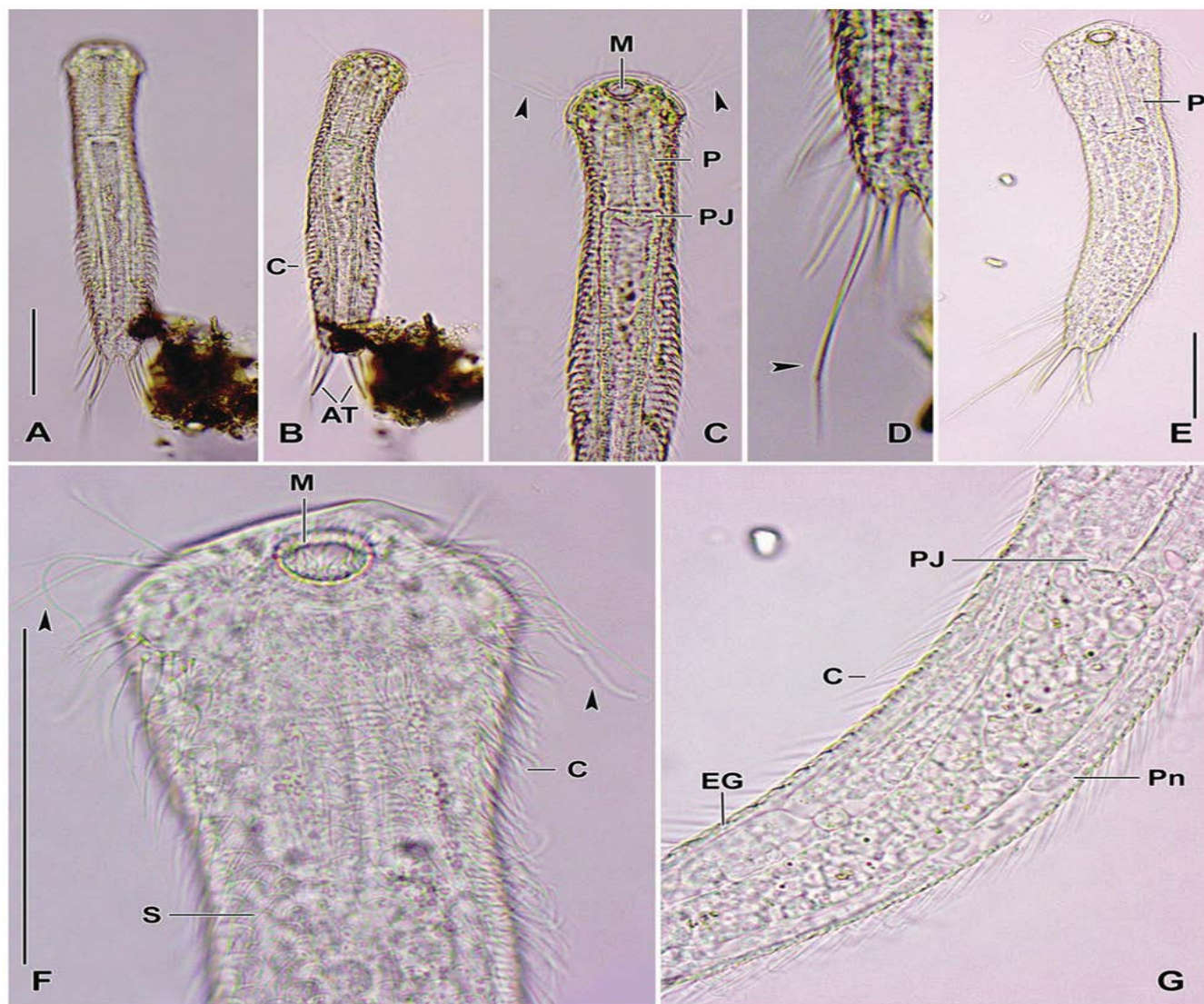
Order CHAETONOTIDA Remane, 1924

Family CHAETONOTIDAE Gosse, 1864

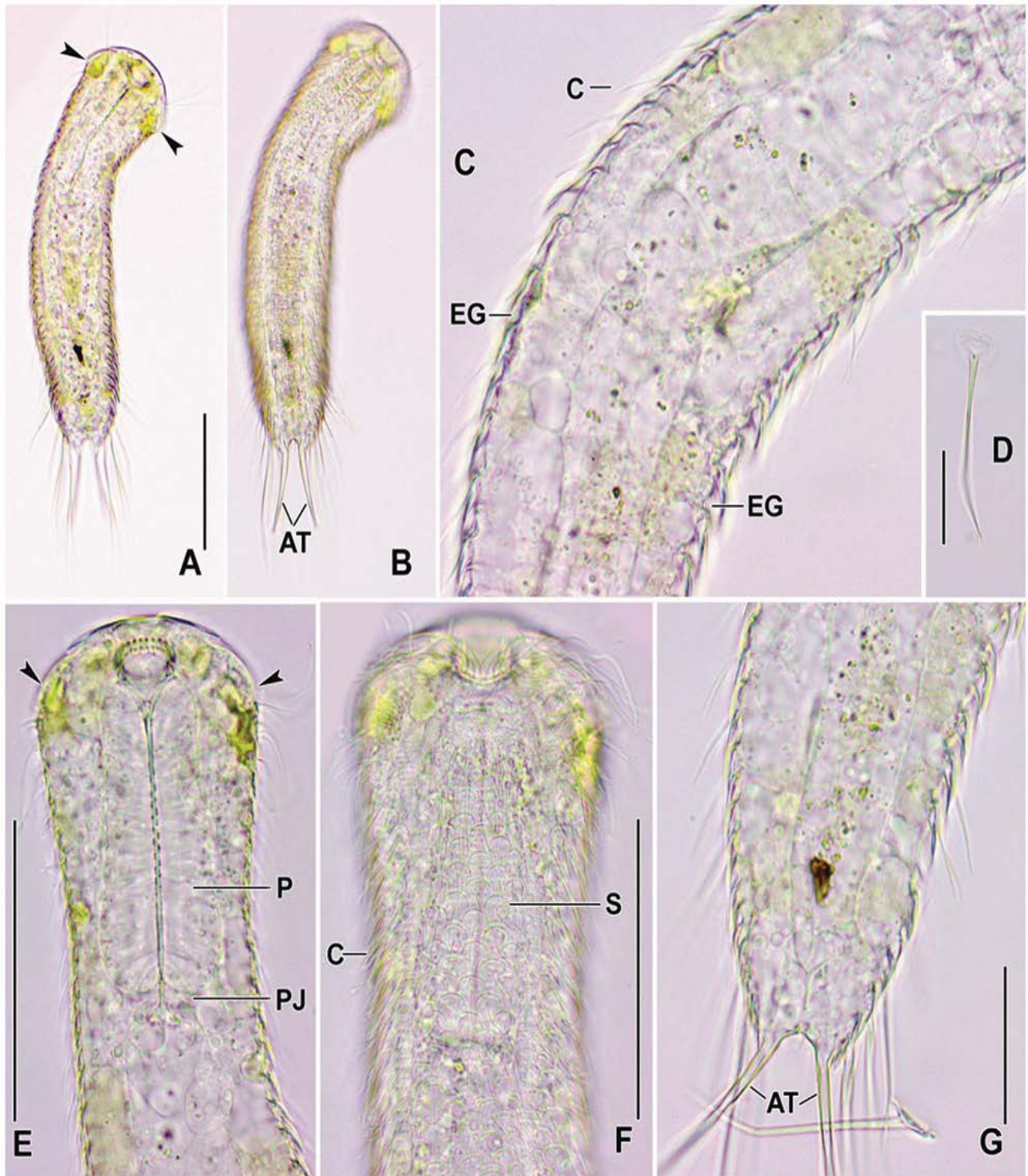
Genus *Lepidochaetus* Kisielewski, 1991

*Lepidochaetus zelinkai* (Grünspan, 1908) (Figure 1A-G, 2A-G, 3A-F)

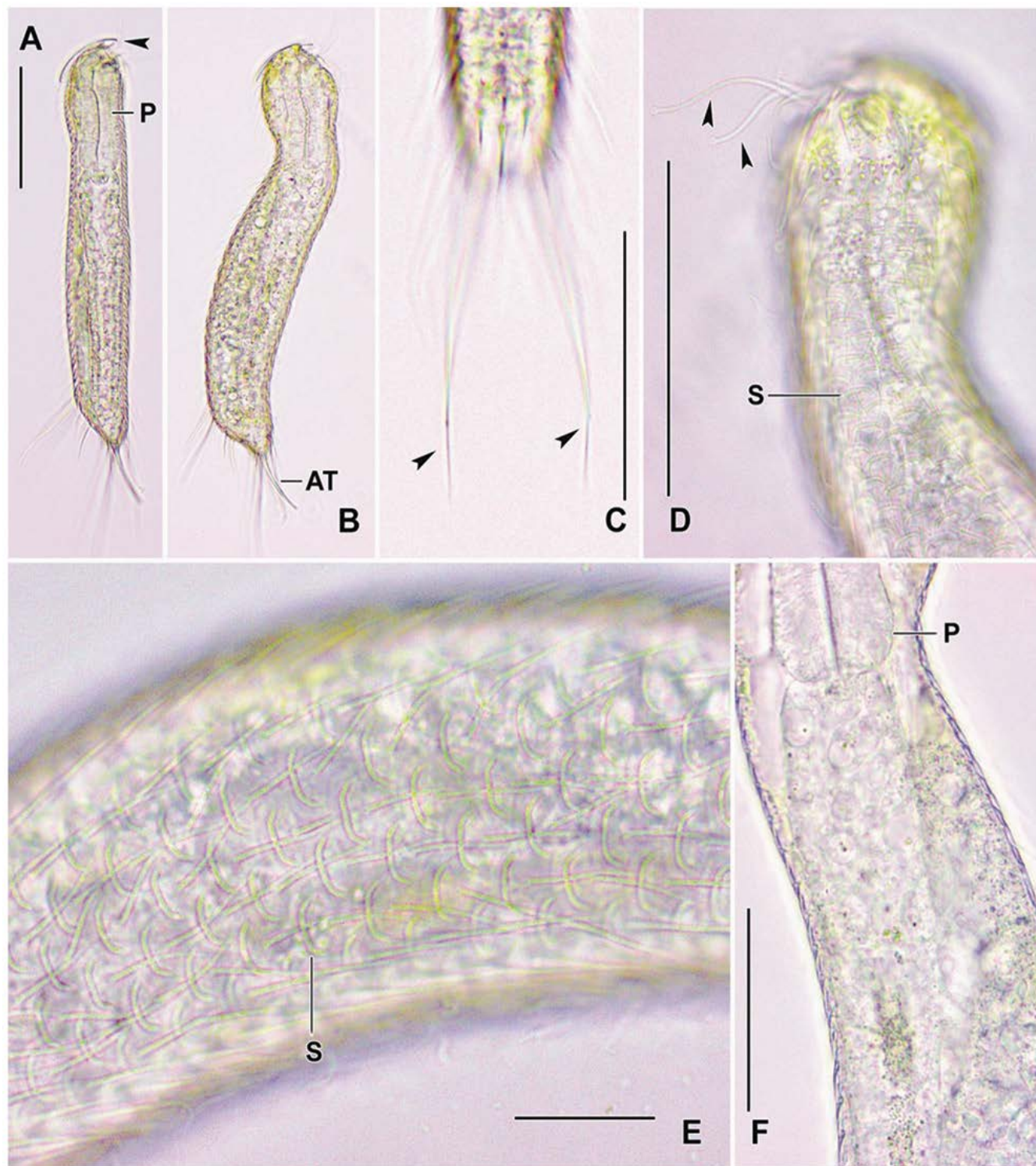
The shape of *Lepidochaetus zelinkai* is ten-pin, long and slender with a distinct three to five-lobed head and large cephalion with shield. The mean dimensions are: body length = 190  $\mu\text{m}$ , body maximum width = 35  $\mu\text{m}$ , head width = 50  $\mu\text{m}$ , cephalion shield width = 40  $\mu\text{m}$ , mouth length = 12  $\mu\text{m}$ , pharynx length = 48  $\mu\text{m}$ , pharynx width = 20  $\mu\text{m}$ , trunk width = 33  $\mu\text{m}$ , trunk cirri length = 14  $\mu\text{m}$ , posterior most spine = 60  $\mu\text{m}$ , Adhesive tube length = 31  $\mu\text{m}$ , scales = 7  $\mu\text{m}$  (observations based on 6 specimens from live). The indistinct neck separates the



**Figure 1.** Photomicrographs of *Lepidochaetus zelinkai* from live. A, B, E. Specimens, showing the body shape. C, D. Details of mouth, tentacles (arrowheads in C), pharynx (C) and long and thin posterior spine (arrowhead in D). F, G. Anterior and middle portion of a specimen showing mouth, tentacles (arrowheads in F) and internal structures. At, adhesive tubes; C, cirri; EG, epidermal gland; M, mouth; P, pharynx; PJ, pharyngeal junction; Pn, protonephridia; S, scales. Scale bars, 50  $\mu\text{m}$ .



**Figure 2.** Photomicrographs of *Lepidochaetus zelinkai* from live. **A, B.** Specimen, showing, the body shape, tentacles (arrowheads), posterior spines and adhesive tubes. **C, E-G.** Same specimen showing, details at different focus and sections, arrowheads in (E) points to the anterior lobe. **D.** Posterior spine. At, adhesive tubes; C, cirri; EG, epidermal gland; P, pharynx; PJ, pharyngeal junction; S, scales. Scale bars, 20  $\mu\text{m}$  (D, G) and 50  $\mu\text{m}$  (A, E, F).



**Figure 3.** Photomicrographs of *Lepidochaetus zelinkai* from live. **A, B.** Specimens showing side views. Note the cephalion head (arrowhead), posterior spines and adhesive tubes. **C.** Posterior region, arrowheads point to the thin and long spines. **D.** Arrowheads point to the tentacles. **E.** Middle section of a specimen, showing the arrangement of scales. **F.** A specimen, showing internal structures. At, adhesive tubes; P, pharynx; S, scales. Scale bars, 15  $\mu\text{m}$  (E), 35  $\mu\text{m}$  (F), and 50  $\mu\text{m}$  (A, C, D).

head from the trunk. The trunk narrows posteriorly into furca, each furcal branch with a single adhesive tube. Dorsal scales with double anterior edge, elliptical to heart shaped and partially overlaps. Three pairs of thin and long spines at the posterior dorsal trunk, overshoot the furcal branches.

The Indian population of *Lepidochaetus zelinkai* (Grünspan, 1908) shows similarity with the previously known populations for all the morphological characters. The species has a rather common distribution worldwide. It has been reported from Europe, Canada, Argentina, Brazil, Korea, and Japan (Grünspan, 1908; Greuter, 1917; Rudescu, 1967; Sudzuki, 1971; Grosso, 1976; Martin, 1981; Schwank, 1990; Kisielewski, 1991, 1998; Balsamo and Tongiorgi, 1995; Lee and Chang, 2000; Kånneby, 2011). The present study reports its presence from a soil sample

collected from the Laltong beat (opposite seventh mile) Mahananda Wildlife Sanctuary, West Bengal (26°48'35"N 88°27'04"E; 130 meter a.s.l.).

## Supplementary Files

Two videos showing details on the movement and internal/external structures have been submitted in NZC (National Zoological Conference) ZSI, Kolkata as supplementary files.

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