



RESEARCH ARTICLE

FIRST RECORD OF A TREMATODE PARASITE *ASPIDOGASTER BAERAE* N.SP. (TREMATODA: ASPIDOGASTRIDAE) IN THE GUT OF *F.BENGALENSIS* (MOLLUSCA: GASTROPODA) FROM SOUTH 24 PARGANAS, WEST BENGAL

Bipasa Dey and Biplab Bhowmik

Parasitology Laboratory, Department of Zoology, Diamond Harbour Women's University, Sarisha, South 24 Parganas, West Bengal, India PIN-743368

ARTICLE INFO

Article History:

Received 14th January, 2026
Received in revised form
24th February, 2026
Accepted 25th March, 2026
Published online 30th April, 2026

Keywords:

Filopiludina bengalensis, *Aspidogaster*,
Bishnupur II, Parasite, Trematode.

*Corresponding author:

Biplab Bhowmik

Copyright©2026, Bipasa Dey and Biplab Bhowmik. 2026. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Citation: Bipasa Dey and Biplab Bhowmik. 2026. "First record of a trematode parasite *aspidogaster baerae* n.sp. (trematoda: aspidogastridae) in the gut of *f.bengalensis* (mollusca: gastropoda) from south 24 parganas, west Bengal". *International Journal of Current Research*, 18, (04), 36983-36986.

ABSTRACT

A trematode parasite belonging to the Genus *Aspidogaster* was isolated from the gill of a freshwater gastropod snail, *Filopiludina bengalensis* and identified based on its morphological characters and morphometry. The parasite was found to infect gill of the mollusc. The body of the parasite in an extended form is about 3mm long and is cylindrical shaped from the dorsal side with protrusions of the sucker visible on both sides in the posterior region of the body. From the ventral side, the parasite appears to have an elongated cylindrical trunk with mouth aperture on one end connected to the sucker on the other end. The sucker bears rows of alveoli. The present trematode was compared with other species of the same genus with the help of available literatures. It was found morphologically different from the previously reported species on the basis of several features. The host, *Filopiludina bengalensis* was collected from Bishnupur II block of South 24 Parganas District, West Bengal. This is the first record of *Aspidogaster* from *F. bengalensis* suggesting its record in a new freshwater gastropod mollusc and a new geographical location.

INTRODUCTION

Filopiludina bengalensis (Lamarck, 1822), also called *Bellamya bengalensis* or the banded pond snail, is a freshwater gastropod mollusk, found in the littoral zones of stagnant freshwater bodies (Saha and Hossain 2103). Distributed widely across the Western Ghats and eastern Himalayas, central and north-eastern regions of India, this gastropod mollusk plays a very important role in the aquatic trophic chain. It is a filter feeding organism; moreover it also accumulates more amounts of heavy metals and other toxic substances into its soft tissues than the water. So, it is also used as a model to study the quality of water (Roy Martein et al, 2024). The mollusk is also reported to have symbiotic relationship with many other organisms. One common trematode parasite that is reported from *F.bengalensis* belongs to the Genus *Aspidogaster*. It was first reported by Baer 1826 in the freshwater bivalve mollusk *Anodonta* sp. from Russia (Baer 1826). They are distributed worldwide, infecting both freshwater and marine hosts (Rohde 1972, 1994, 2001, 2002). They are considered an obligate parasite completing their entire life cycle inside a molluscan host (Aubert 1855, Dollfus 1957, Monticelli 1892, Voeltzkow 1888); however some researchers (Rhodes 2001) suggest a more complex life cycle of the trematode consisting of a primary molluscan host and also vertebrate animals for the later development. *Aspidogaster* is known to have pathogenic effects on its host, though the pathogenicity is quite low in

mild infections. Some parasitic species like *A.conchocola* have shown to trigger certain immune response related to host's blood (Huehner and Etges 1981). Cichy et al 2017, observed decline in the reproductive capacity of mollusks affected by *A.conchicola*. In severe infestation, complete loss of fertility was also observed. Damage to the pericardial tissues were observed by (Chao-Pin et al 2016). In the present work, the digenean trematode parasite was isolated from a freshwater gastropod mollusk *Filopiludina bengalensis*, in the area of Bishnupur II, South 24 Parganas, West Bengal. The parasite was identified based its morphological features and comparative study from the previous reports. The detailed study of morphology suggest that the parasite may belong to a new species.

MATERIALS AND METHODS

Collection of Samples: The samples were collected from the period of June 2023- June 2025. Several stations from Bishnupur II block were selected for the sampling purpose. Snails were collected randomly by hand picking method with the help of locals. They were brought to the lab, washed carefully and identified using morphological characters. For more precise identification, the host was stored in 10% formaldehyde solution, labeled and submitted to the Zoological Survey of India



Fig I (a) and (b): Study Site- Bishnupur II Block

Morphological Study: Host was cleaned and dissected carefully using sterile instruments. The gill was removed and put on clean grease-free slide and scraped using a fine capillary tube. Slides containing infection were air dried, fixed in methanol solution for 5 minutes and stained in eosin for one minute. The stained slides were observed under OLYMPUS BX43 compound microscope.

RESULTS

Identification of the host: The snail has a spirally coiled shell, made up of calcium. It is light brown to greenish brown in colour. The openings consist of an operculum which is attached to the foot muscle. Body consists of the mouth, tentacles and visceral mass. Concentric lines of growth are present all over the body which helps to determine the age of the mollusk. ZSI identified the molluscan sample as *Filopiludina bengalensis* and provided the accession number NZSIM.37423/10.



Fig II. Host Sample- *Filopiludina bengalensis*

Identification of the parasite: The parasite seems to be long and cylindrical from the dorsal surface. From the ventral surface, there is a long narrow cylindrical neck which connects the ventral sucker to the mouth. Posterior end is narrow and tapered while anterior end is round and broad. The ventral sucker is oval shaped. Mouth cup shaped. Ventral disc oval in shape. Three longitudinal alveolar rows are present. Number of

depression present in the ventral sucker is 24-27. The length of the parasite is 749.96µm and width is 240.64µm. The neck is about 175.46 µm in length and diameter of the mouth is 46.20µm.

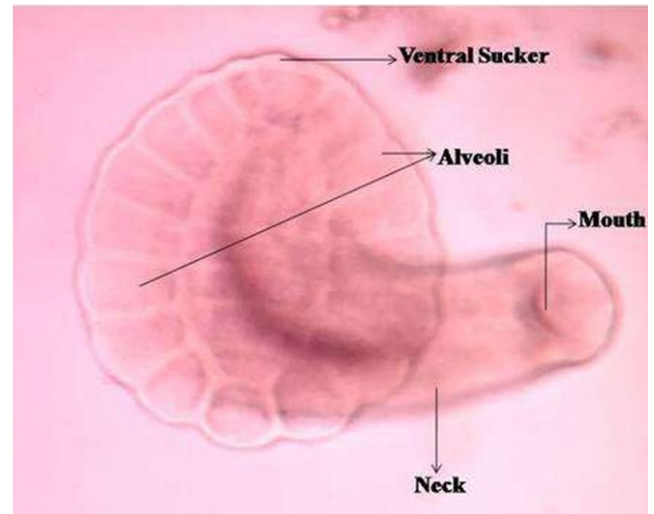


Fig III (a)



Fig III (b)

Fig III. (a) Compound Microscopic image of *Aspidogaster* (b) Stained Compound Microscopic Image

Taxonomic Position of *Aspidogaster*

Phylum: Platyhelminthes
Class: Trematoda
Subclass: Aspidogastrea
Order: Aspidogastrida
Family: Aspidogastridae
Genus: *Aspidogaster*
Species: *baerae* n.sp.

DISCUSSION

In the following research work, *Aspidogaster* has been studied for its morphological feature. It has been collected and studied for the first time from Bishnupur II Block, South 24 Parganas District. The morphology has shown the species to have certain characters that are similar to the previously reported species, *A. conchicola* (Baer, 1826), *A. limacoides* (Diesing, 1834) and

Table I. A comparative table showing the characteristic features of different species of *Aspidogaster*

Description	<i>A.conchicola</i>	<i>A.limacoides</i>	<i>A.ijamai</i>
Reported by	Baer, 1826	Diesing, 1834	Kawamura, 1913
Reported From	North America (Stafford 1896), Europe (Atopkin et al 2017), China (Chen et al 2010), Poland and Ukraine (Yuryshynets and Krasutska 2009)	Northern Germany Suthar et al (2021), Reimer (2002), China (Atopkin et al 2017)	Korea (Lee et al 2017)
Body Shape	Anvil shaped body	Elongated body, rounded at both anterior and posterior end	Anvil Shaped
Body Surface	Dorsoventrally flattened, with ventral sucker	---	Adhesive disc present at the ventral surface
Body Dimensions	Length-3mm Width-1mm	---	---
Shape of the mouth	Funnel shaped	Round, surrounded by a buccal funnel	Small, round shaped
Rows of alveoli	Four longitudinal rows	26 latitudinal rows	Four longitudinal rows
Number of depressions	114 (Atopkin et al 2017), 110 (Bakker and Diegenbach)	54-58	46-50

A.ijamai (Kawamura, 1913) in several features like shape of the mouth, ventral disc and structure of anterior and posterior ends. However, several features like longitudinal rows of alveoli in the ventral disc and number of alveoli is different from the mentioned species. The studied species of *Aspidogaster* has three longitudinal rows of alveoli and 24-27 depressions in its ventral adhesive disc. The length and breadth of the present species is significantly different from the mentioned species of *A.conchicola* mentioned in the comparative table. Significant differences in these features indicate that the present species of *Aspidogaster* isolated in *F.bengalensis* may be a new species. Hence, looking at all the features, we propose the name *Aspidogaster baeae* n.sp.

Conflict of Interests and Funding: There is no conflict of interest between the authors. No funding was received to assist with the preparation of this manuscript.

Key Points

- The *Aspidogaster* is a trematode parasite often found infecting gills of molluscs and other aquatic vertebrates.
- It has shown pathogenicity in the host like reducing the fertility and showing blood related immune response.
- A new species has been described in the present work.
- The species has been reported from a new geographical area.

ACKNOWLEDGEMENT

The authors are grateful to Department of Zoology, Diamond Harbour Women's University, for granting permission to carry out the research work.

Statements and Declarations: The authors have no conflict of interest to declare that are relevant to the context of this article.

Author's Contribution: All the authors have equally contributed to the successful writing of this review. The manuscript has been read and approved by all authors.

REFERENCES

Aubert, H. (1855). *Ueber der Wassergafassystem die Geschlechtsverhältnisse, die Eibildung und die Entwicklung des Aspidogaster conchicola mit Berücksichtigung und Vergleichung anderer Trematoden. Zeitschrift für wissenschaftliche Zoologie*, 7, 349–376.

- Atopkin, D. M., Shedko, M. B., Sokolov, S. G., & Zhokhov, A. E. (2017). Phylogenetic relationships among European and Asian representatives of the genus *Aspidogaster* Baer, 1827 (Trematoda: Aspidogastrea) inferred from molecular data. *Journal of Helminthology*, 92(3), 343–352.
- Baer, K. E. (1826). *Sur les entozoaires ou vers intestinaux. Bulletin des Sciences Naturelles et de Géologie*, 9, 123–126.
- Baer, K. E. von. (1827). *Beiträge zur Kenntniss der niederen Thiere*. Königsberg.
- Chen, M., Zhang, L., Wen, C., Sun, J., & Gao, Q. (2010). Phylogenetic relationship of species in the genus *Aspidogaster* inferred from rDNA sequences. *Acta Hydrobiologica Sinica*, 34(2), 312–316.
- Diesing, K. M. (1834). *Aspidogaster limacoides*: Eine neue Art Binnenwurm. *Isis von Oken*, 27, 1231.
- Dollfus, R. P. H. (1958). Sous-classe Aspidogastrea. In *Cours d'helminthologie. I. Trematodes. Annales de Parasitologie Humaine et Comparée*, 33, 305–395.
- Gibson, D. I. (1987). Questions in digenean evolution. *Parasitology*, 95, 429–460.
- Kawamura, T. (1913). *On Aspidogaster ijimai*, n. sp. *Annotationes Zoologicae Japonenses*, 8, 229–234.
- Lamarck, J.-B. (1822). *Histoire naturelle des animaux sans vertèbres* (Vol. 6, Part 2, p. 174). Paris.
- Lee, D., Park, H., Choe, S., Kang, Y., Jeon, H. K., & Eom, K. S. (2017). New record of *Aspidogaster ijimai* Kawamura, 1913 (Trematoda: Aspidogastridae) from *Cyprinus carpio* in Korea. *Korean Journal of Parasitology*, 55(5), 575–578.
- Martin-Roy, R., Thyrring, J., Mata, X., Bangsgaard, P., Bennike, O., Christiansen, G., ... Der Sarkissian, C. (2024). Advancing responsible genomic analyses of ancient mollusc shells. *PLOS ONE*, 19(5), e0302646.
- Monticelli, F. S. (1892). *Cotylogaster michaelis* n.g., n.sp. e revisione degli Aspidobothridae. In *Festschrift zum siebzigsten Geburtstage Rudolf Leuckarts* (pp. 168–214). Leipzig.
- Reimer, L. W. (2002). *Aspidogaster limacoides* – ein Neozoe aus einer Plötze der mittleren Weser. *Fischer und Teichwirt*, 1, 10–11.
- Rohde, K. (1972). The Aspidogastrea, especially *Multicotyle purvisi* Dawes, 1941. *Advances in Parasitology*, 10, 77–151.
- Rohde, K. (1994). The minor groups of parasitic Platyhelminthes. *Advances in Parasitology*, 33, 145–234.
- Rohde, K. (2001). The Aspidogastrea: An archaic group of Platyhelminthes. In D. T. J. Littlewood & R. A. Bray

- (Eds.), *Interrelationships of the Platyhelminthes* (pp. 159–167). Taylor & Francis.
- Rohde, K. (2002). Subclass Aspidogastrea Faust & Tang, 1936. In D. I. Gibson, A. Jones, & R. A. Bray (Eds.), *Keys to the Trematoda* (Vol. 1, pp. 5–14). CABI Publishing & The Natural History Museum.
- Saha, P. K., & Hossain, M. D. (2011). Assessment of heavy metal contamination and sediment quality in the Buriganga River, Bangladesh. In *Proceedings of the 2nd International Conference on Environmental Science and Technology* (Vol. 6, pp. 384–388). IPCBEE.
- Stafford, J. (1896). *Anatomical structure of Aspidogaster conchicola*. *Zoologische Jahrbücher, Abteilung für Anatomie*, 9, 477–542.
- Suthar, J., Al-Jufaili, S., Bray, R. A., Frank, M., Theisen, S., & Palm, H. W. (2021). Redescription of *Aspidogaster limacoides* Diesing, 1834 from freshwater fishes of northern Germany. *Parasitology Research*, 120(10), 3405–3416.
- Voeltzkow, A. (1888). *Aspidogaster limacoides*. *Arbeiten aus dem Zoologisch-Zootomischen Institut in Würzburg*, 8, 290–292.
- Yuryshynets, V., & Krasutska, N. (2009). Records of *Aspidogaster conchicola* (Baer, 1827) in *Sinanodonta woodiana* in Poland and Ukraine. *Aquatic Invasions*, 4(3), 491–494.