

Research Article

FIVE NEW DISTRIBUTIONAL RECORDS OF TREMATODE PARASITES OF COMMERCIALY IMPORTANT FISHES FROM JHARKHAND, INDIA

Anindita Ghosh

Zoological Survey of India, 'M' Block, New Alipore, Kolkata- 700053, India

Article History: Received 19th January 2025; Accepted 27th February 2025; Published 31st March 2025

ABSTRACT

Present document reveals five new distributional records of trematode parasites, *Allocreadium nicolli* Pande, 1938, *Allocreadium thapari* Gupta, 1950, *Genarchopsis goppo* Ozaki, 1925, *Isoparorchis hypselobagri* (Billet, 1898) Ejsmont, 1932 and *Astiotrema reniferum* (Looss, 1898) Stossich, 1904 from Jharkhand, India. All these trematode parasites were collected from fishes of commercially importance as these are all food fishes.

Keywords: Commercially important fishes, Jharkhand, New Distributional record, Trematode.

INTRODUCTION

Class Trematoda is the major group of animals in Phylum Platyhelminthes and are widely known as 'Flukes'. They show a very complicated life cycle, larval forms of these parasites are usually found in invertebrates or in small fishes, adults are found in vertebrates. Trematodes usually invade intestine of their vertebrate hosts, but in heavy infection they may penetrate stomach, lung, gall bladder and air bladder too.

In the present document five Trematode parasites, *Allocreadium nicolli* Pande, 1938, *Allocreadium thapari* Gupta, 1950, *Genarchopsis goppo* Ozaki, 1925, *Isoparorchis hypselobagri* (Billet, 1898) Ejsmont, 1932 and *Astiotrema reniferum* (Looss, 1898) Stossich, 1904 has been reported which are new distributional records from Jharkhand. Earlier only 16 species were reported from this state. It shows that this state has much more to explore in terms of study of trematode parasites of vertebrate hosts. Description and distribution of the specimens have also been reported here. Host-parasite list (Table 1) has also been documented in this study. All these trematode parasites were collected from commercially important fish hosts as all of them are food fishes.

MATERIAL AND METHODS

All these five specimens were obtained from the intestine of different fish hosts which were collected either from

fisherman in the fishing sites or purchased from fish markets in Jharkhand. Special endeavour were given to dissect the fishes as fresh as possible so that trematode parasites could be recovered live and easily collected. Collected parasites were pressed in between two slides or one slide and coverslip according to their thickness so that morphological characters could be well visible under microscope and kept in 70% ethyl alcohol. Specimens were then stained with Borax Carmine, dehydrated with ascending grades of Ethyl alcohol, cleaned in Clove oil and mounted in slides with Canada Balsam. Morphological characters of trematodes were observed under Leica DM 1000 and identified on the basis of Keys to the Trematoda Vol. 1-3 (2002- 2008).

RESULTS AND DISCUSSION

Following five species of trematodes are reported here as first distributional record from Jharkhand India.

Phylum PLATYHELMINTHES Minot, 1876

Class TREMATODA Rudolphi, 1808

Order PLAGIORCHIIIDA La Rue, 1957

Family ALLOCREADIIDAE Looss, 1902

Genus *Allocreadium* Looss, 1900

*Corresponding Author: Anindita Ghosh, Zoological Survey of India, 'M' Block, New Alipore, Kolkata- 700053, India Email: aninditaghosh939@gmail.com

1. *Allocreadium nicolli* Pande, 1938 (Figure 1)

Material examined: Host- *Channa striata* (Bloch, 1793), Locality: Nakti Dam, West Singhbhum, Jharkhand, W11037/1, NZCZSI.

Distinguishing characters: Body elongated, aspinose, 2.01x 0.416, anterior broader than posterior end; oral sucker larger than acetabulum 0.198x 0.215; acetabulum 0.157x 0.164; genital pore median, testes tandem, anterior testis 0.174x 0.160, posterior testis 0.221x 0.157; cirrus sac elongated, extends upto anterior half of acetabulum, ovary rounded, 0.0892 in diameter; vitellaria extends from posterior margin of acetabulum to hind end occupying whole testicular and post testicular region; excretory pore terminal.

Distribution: India: Earlier present species was reported from Madhya Pradesh, Uttar Pradesh and West Bengal in India.

2. *Allocreadium thapari* Gupta, 1950 (Figure 2)

Material examined: Host: *Mystus vittatus* (Bloch, 1794), Locality: Stream near Tebo, West Singhbhum, Jharkhand, W10887/1, NZCZSI.

Distinguishing characters: Body elongated with smooth cuticle, both anterior and posterior end rounded, 3.50x 0.965; oral sucker terminal, larger than acetabulum, 0.472x 0.597; prepharynx absent, pharynx 0.179x 0.201, acetabulum 0.319x 0.360; genital pore median; testes tandem, almost contiguous, anterior testis 0.353x 0.439, posterior testis 0.390x 0.467; flask shaped cirrus sac extend in between intestinal bifurcation to anterior part of acetabulum; ovary pretesticular, situated at the position of posterior end of acetabulum, 0.185x 0.248; vitelline follicles extend laterally from posterior end of acetabulum to the hind end of the body occupying whole posttesticular region.

Distribution: India: Present species was earlier reported from Uttar Pradesh.

Family DEROGENIDAE Nicoll, 1910

Subfamily HALIPEGINAE Poche, 1926

Genus *Genarchopsis* Ozaki, 1925

Table 1. Host-parasite list.

Sl. No	Host	Parasite
1	<i>Channa punctata</i> (Bloch, 1793)	<i>Genarchopsis goppo</i> Ozaki, 1925 <i>Astiotrema reniferum</i> (Looss, 1898) Stossich, 1904
2	<i>Channa striata</i> (Bloch, 1793)	<i>Allocreadium nicolli</i> Pande, 1938
3	<i>Mystus cavasius</i> (Hamilton, 1822)	<i>Genarchopsis goppo</i> Ozaki, 1925
4	<i>Mystus vittatus</i> (Bloch, 1794)	<i>Allocreadium nicolli</i> Pande, 1938 <i>Isoparorchis hypselobagri</i> (Billet, 1898) Ejsmont, 1932
5	<i>Wallago attu</i> (Bloch & Schneider, 1801)	<i>Isoparorchis hypselobagri</i> (Billet, 1898) Ejsmont, 1932

3. *Genarchopsis goppo* Ozaki, 1925 (Figure 3)

Material examined: Host: *Channa punctata* (Bloch, 1793), *Mystus cavasius* (Hamilton, 1822); Locality: Nakti Dam, West Singhbhum, W10909/1, W10948/1, NZCZSI.

Distinguishing characters: Body elongated, smooth, anterior end rounded, 3.07x 0.948; oral sucker subterminal, almost rounded, 0.367x 0.381, prepharynx absent, pharynx globular, 0.168 in length; ventral sucker larger than oral

sucker, 0.837x 0.744; genital pore at the position of intestinal bifurcation; testes postacetabular, symmetrical; cirrus pouch absent; ovary posttesticular, vitelline glands two, symmetrical; excretory vesicle 'Y' shaped.

Distribution: India: Present species was earlier reported from Andhra Pradesh, Madhya Pradesh, Rajasthan, Uttar Pradesh and West Bengal.

Elsewhere: China, Japan, Thailand.

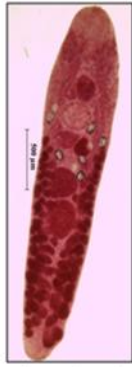
*Allocreadium nicolli* Pande, 1938

Figure 1

*Allocreadium thapari* Gupta, 1950

Figure 2

*Genarchopsis goppo* Ozaki, 1925

Figure 3

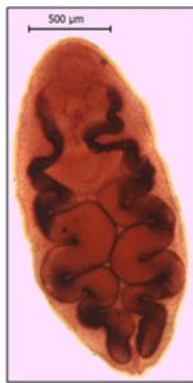
*Isoparorchis hypselobagri* (Billet, 1898) Ejsmont, 1932

Figure 4

*Astiotrema reniferum* (Looss, 1898) Stossich, 1904

Figure 5

Family ISOPARORCHIIDAE Travassos, 1922

Genus *Isoparorchis* Southwell, 19134. *Isoparorchis hypselobagri* (Billet, 1898) Ejsmont, 1932

(Figure 4)

Material examined: Host: *Mystus vittatus* (Bloch, 1794), *Wallago attu* (Bloch & Schneider, 1801); Locality: Chandil Dam, Jamshedpur, W10890/1, W10911/1, NZCZSI.

Distinguishing characters: Body elongated, foliate with smooth tegument, 1.35x 0.641; oral sucker subterminal, 0.16x 0.24; prepharynx absent; oesophagus very short; intestinal caeca sinuous, terminates at the posterior end of the body, caeca overlaps uterus; acetabulum larger than oral sucker, 0.468x 0.241; testes symmetrical, oval, postacetabular; genital pore, median, just behind the intestinal bifurcation; ovary transversely elongated, excretory vesicle 'Y' shaped.

Distribution: India: Present species was earlier reported from Andhra Pradesh, Assam, Jharkhand, Karnataka, Kerala, Manipur, Meghalaya, Odisha, Tamil Nadu, Telangana, Uttar Pradesh and West Bengal.

Elsewhere: Australia, China, Japan, Pakistan, Vietnam.

Family OPISTHORCHIIDAE Looss, 1899

Genus *Astiotrema* Looss, 19005. *Astiotrema reniferum* (Looss, 1898) Stossich, 1904

(Figure 5)

Material examined: Host: *Channa punctata* (Bloch, 1793); Locality: Palkot, near Sundridih, Gumla, W10910/1, NZCZSI.

Distinguishing characters: Body elongated with narrow rounded anterior end and rounded broader posterior end, 1.669x 0.259; cuticle with backwardly directed spines, spines are denser in anterior portion than the posterior half; oral sucker subterminal, 0.147x 0.145; prepharynx rudimentary, pharynx ovoid, partially elongated, 0.07x 0.112; oesophagus long; intestinal caeca extends upto the level of posterior end of testes; ventral sucker smaller than oral sucker; genital pore median, preacetabular; testes tandem, post equatorial, spherical, anterior testis, 0.263x 0.221, posterior testis 0.287x 0.281; cirrus sac long, claviform, extends upto the level of ovary; ovary entire, 0.221x 0.152; receptaculum seminis large, lies at the left of ovary; vitelline follicles overlaps caeca, extends from the

level of anterior portion of ovary to the level of anterior end of posterior testis; uterus convoluted, extends from ootype to upto the posterior end of body; excretory vesicle 'Y'shaped.

Distribution: India: Maharashtra, Uttar Pradesh and West Bengal

Elsewhere: Egypt, Ethiopia, Sudan, Uganda, Zambia, Zimbabwe.

CONCLUSION

Present study deals with five new distributional record of trematoda, *Allocreadium nicolli* Pande, 1938, *Allocreadium thapari* Gupta, 1950, *Genarchopsis goppo* Ozaki, 1925, *Isoparorchis hypselobagri* (Billet, 1898) Ejsmont, 1932 and *Astiotrema reniferum* (Looss, 1898) Stossich, 1904 from Jharkhand, India. All these parasites are collected from fish hosts which are commercially important as all these are food fishes. Distinguishing characters of these parasites along with their distributions have also been incorporated here. Earlier sixteen species of trematode parasites from different vertebrate hosts were reported from Jharkhand which shows that much scope is there to explore in terms of trematode study from this state.

ACKNOWLEDGEMENT

Author is thankful to the Director, Zoological Survey of India for her constant support and encouragement for successful completion of the study.

CONFLICT OF INTERESTS

Not applicable

ETHICS APPROVAL

Not applicable

REFERENCE

Billet, A. (1898). Notes sur la faune du Haut-Tonkin. II. Sur quelques Distomes. *Bulletin Scientifique de la France et de la Belgique*, 28, 283-309.

Bray, R. A., Gibson, D. I. and Jones, A. (2008). Keys to the Trematoda, vol. 3. *CAB International, Wallingford*, pp 824

Ejsmont, L. (1932). Note sur le genre *Isoparorchis*. *Annales de Parasitologie Humaine et Comparée*. 10 (5), 453-457.

Gibson, D. I., Jones, A. and Bray R A. (2002). Keys to the Trematoda, vol. 1. *CAB International, Wallingford*, pp 521

Gupta, S. P. (1950). On a new trematode, *Allocreadium thapari* n. sp. of the sub-family Allocreadiinae Looss, 1899 from the intestine of a fresh-water fish, *Rita rita* (Ham). *Indian Journal of Helminthology*. 2, 17-22.

Jones, A., Bray, R. A. and Gibson, D. 2005. Keys to the Trematoda, vol. 2. *CAB International, Wallingford*, 768pp

Looss, A. (1898). Quelques observations à propos de la note: Forme nuove etc. de entozoi d' Egitto de Mr. le docteur Sonsino dans ce journal, vol. 20 1896. *Zentralblatt fur Bakteriologie, Parasitenkunde, Infektionskrankheiten und Hygiene*. 1 Abt. 23 (11), 433-461.

Ozaki, Y. (1925). On a new genus of fish trematodes, *Genarchopsis*, and a new species of *Asymphylogora*. *Japanese Journal of Zoology*, 1, 101-108.

Pande, B. P. (1938). The trematode genus *Allocreadium* in North Indian fresh-water fishes. *Proceedings of the Indian Academy of Sciences*. 7B, 54-60.

Pandey, K. C. and Agrawal, N. (2013). Metacercarial Fauna of India. *Records of the Zoological Survey of India*, Occ. Paper, 349, 1-310.

Stossich, M. (1904). Alcuni distomi della collezione elmintologica del museo zoologico di Napoli. *Annuario del Museo Zoologico della R. Università di Napoli (Nuova Serie)*, 1 (23), 1-14.