

## A New Species of Monogenean Parasite Genus, *Bychowskyella* Achmerow, 1952 from The Fishes of U.P. And Bihar

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### Abstract

Current research paper describes a new Monogenean species, *Bychowskyella ailiai*, a parasite on gills of *Ailia coila* (Ham. 1822). Fishes were collected from the Ganges river, Chapra, Bihar. The present paper pertains with new species of the genus *Bychowskyella* Achmerow, 1952. *Bychowskyella ailiai* is characterized by the shape of copulatory complex, dorsal bar, ventral anchors, dorsal anchors, ventral bar and all haptor sclerites.

**Keywords:** *Bychowskyella*, copulatory complex, dorsal bar, ventral anchors, dorsal anchors, ventral bar and haptor sclerites.

### Introduction

Monogenoidea are small ectoparasitic flatworms, mostly found on the gills, fins and skin of freshwater and marine water fishes. Monogenoidea belongs to phylum platyhelminthes. The Siluriformes are considered to be one of the oldest fish group and largest fish order. These fishes are found both in fresh as well as marine water. Fishes are the major host of class Monogenoidea. Regardless of the hard work of taxonomists, monogenean diversity is still not well known (Boeger; Vianna, 2006) so extra emphasis on the study of monogenean diversity should be given. River Ganges and its tributaries flowing through the North India have great diversity of fishes. Till date many species of monogenean parasite have been reported from it but still many are left. So this work has been taken into the account to identify new species of these parasites from the fresh water fishes found in the river Ganges and its tributaries. This paper provides the identification of a new species of Monogenea from the Siluriformes fishes of river Ganges. During the survey of monogenean parasites of freshwater fishes of U.P. and Bihar. Twenty specimens of *Ailia coila* (Ham., 1822), examined from Chapra at Bihar fish market. Among twenty, thirteen were found infected with a monogenoidean belonging to the genus *Bychowskyella* Achmerow, 1952.

### Material and Methods

Fishes were either directly collected from the water bodies or from fish markets of Chapra, Bihar. Name of hosts follow those provided in fish base (Froese and Pauly, 2008). Live fish were dissected carefully to take out its gills. The gills were either gently scraped into water to dislodge the live monogeneans or left into the water to allow the parasite to detach themselves. Detached worms were transferred on clean slides along with small droplets of water. Then water droplets were covered by clean cover slips and observed live under a phase-

contrast microscope. Host gills were removed and placed in vials containing hot (60°C) 5% formalin for relaxation and fixation. Examination of these gills was done under stereomicroscope to ensure collection of monogeneans. Some specimens were mounted unstained in Malmberg's fixative and Hoyer's medium for the detailed study of sclerotised structures. Some specimens were stained with Aceto-alum carmine and Gomori's trichrome, dehydrated in a series of ethanol, cleared in xylene and were mounted in Canada balsam to determine internal features. Illustrations, all in micrometers, were obtained using a calibrated micrometer and phase contrast microscope and are represented as the average followed by the range and number (n) of measurements taken in parentheses. The dorsal view is considered to be great for taking dimensions of organs and other structures.

### Results

*Bychowskyella ailiai* n.sp. (Figure 1)

Type host: *Ailia coila* (Ham., 1822)

Type locality: Ganges river, Chapra, Bihar

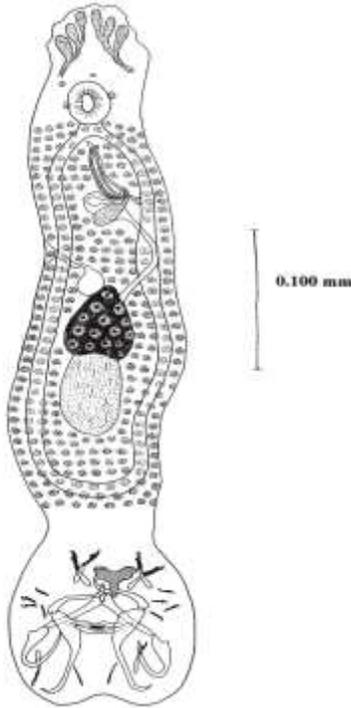
Site of infection: Gills.

Prevalence: 65% (13 of 20 fish examined).

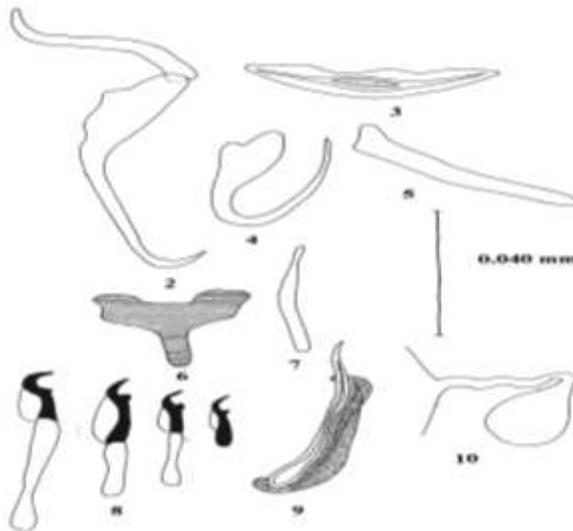
Type specimens: Holotype

Body is elongated, with well marked cephalic lobes, peduncle and haptor measures 0.470 - 0.480 mm x 0.115 - 0.120 mm. Cephalic region is broad having well developed cephalic lobes. Head organs are four pairs. Eye-spots are two pairs, pigmented granules absent to numerous in cephalic regions. Pharynx is spherical and measures 0.032 - 0.040 mm. Intestinal caeca are united posteriorly. Haptor (Figure 2) is discoidal to somewhat hexagonal and measures 0.108 - 0.110 mm x 0.140 - 0.145 mm, demarcated from body by a peduncle. Two pairs of anchors, dorsal bar, paired ventral bar, unpaired onchium and seven pairs of dissimilar hooks are present in haptor. Dorsal anchors are with slightly developed roots, stout base, straight shaft of 0.049 - 0.052 mm and short recurved point of 0.018 - 0.020 mm. Two long curved patches are present on dorsal anchors and measures 0.032 - 0.035 mm. Ventral anchors are with less developed roots, stout base, slightly curved shaft and its inner length 0.028 - 0.030 mm, outer length 0.024 - 0.026 mm, inner root 0.004 - 0.005 mm, outer root 0.002 - 0.003 mm and recurved point 0.024 - 0.026 mm. Dorsal bar is straight, fenestrated in middle and measures 0.060 - 0.065 mm. Ventral bar is paired, each measures 0.040 - 0.045 mm. Onchium is leaf-like and measure S 0.018 - 0.20 mm. Two sclerotised, rod-like pieces are present near the dorsal anchors and measure 0.017 - 0.018 mm. Four types of hooks each hook consists of an elongate base and crochet-shaped tip. Of large pair is of 0.035 - 0.040 mm, median pair length 0.032 - 0.035 mm and third large pair length is 0.025 - 0.030 mm. Four pair of small hook are 0.015 - 0.020 mm. Testis is located mid dorsal to ovary, oval and measures 0.050 - 0.055 mm x 0.032 - 0.035 mm. Vas deferens arises from anterior end of testis, runs anteriorly to loop around left intestinal caecum, where it dilates to form seminal vesicle. Ductus ejaculatorius, on leaving seminal vesicle dilates forming a small vesicle, narrows again prior to entering copulatory tube. Copulatory complex consists of copulatory tube and accessory piece. Copulatory tube is elongated and measures 0.043 - 0.048 mm. Accessory piece parallel to cirrus and measures 0.045 - 0.050 mm. Ovary pear shaped, situated in middle of body and measures 0.026 - 0.030 mm. Funnel shaped vagina with elongated tube is mid lateral opening into an oval receptacle seminal. Vitelline

follicles dense, throughout trunk except in region of reproductive organs.



**Figure 1: *Bychowskyella ailiai n.sp.***  
 Whole mount (Ventral view)



**Figure 2: *Bychowskyella ailiai n.sp.***  
 2. Dorsal anchor, 3. Dorsal bar, 4. Ventral anchor, 5. Ventral bar, 6. Onchium, 7. Sclerite, 8. Hooks, 9. Copulatory complex, 10. Vagina

## Discussion

To the best of my knowledge, following species are known under the genus *Bychowskyella* Achmerow, 1952 viz, *B. asiatica* (Jain, 1959) Gusev, 1961; *B. indica* (Jain, 1959) Gusev, 1961; *B. gomtia* (Jain, 1959) Gusev, 1961; *B. gharui* (Tripathi, 1959) Gusev, 1961; *B. vacha* (Tripathi, 1959) Gusev, 1961; *B. wallagonia* (Jain 1959) Gusev, 1961; *B. cauveryi* (Tripathi, 1959) Gusev, 1961; *B. tchangi* Gusev, 1974; *B. bychowskii* Gusev, 1977; *B. caballeroi* Gusev, 1976; *B. tripathii* Kumar and Agrawal; *B. singhi* Rajeshwari and Kulkarni, 1983; *B. bagariusi* Sharma, 1987; *B. chauhani* Venkatnarsaiah, 1989; *B. pricei* Majumdar and Agrawal, 1989; *B. fossilisi* Majumdar and Agrawal, 1989; *B. gusevi* Majumdar and Agrawal, 1989; *B. lucknowensis* Agrawal and Sharma, 1990 and *B. kanpurensis* Agrawal, Shukla and Vishwakarma 1996; *B. Jaini* Agrawal, Shukla and Vishwakarma, 1996. The present specimens chiefly differs from all the above species in the shape of copulatory complex (its tube is elongated and an accessory piece is parallel to the cirrus).

Furthermore, it differs from *B. asiatica* (Jain, 1959) Gusev, 1961; *B. gomtia* Jain, 1959; *B. Vacha* (Tripathi, 1959) Gusev, 1961; *B. wallagonius* Jain, 1959; and *B. kanpurensis* Agrawal, Shukla and Vishwakarma, 1996 in the shape of dorsal bar (dorsal bar is disc-like in the present specimens). It also differs from *B. indica* (Jain, 1959) Gusev, 1961; *B. gharui* (Tripathi, 1959) Gusev, 1961 and *B. lucknowensis* Agrawal and Sharma, 1990 in the shape of ventral anchors (ventral anchors have less developed roots, stout base, slightly curved shaft and long recurved point in the present species). It also differs from *B. jaini* Agrawal, Shukla and Vishwakarma, 1996 in the shape of dorsal anchors (dorsal anchors having slightly developed roots, stout base, straight shaft with long curved patches and short recurved point). Furthermore, the present species also differs from other *Bychowskyella* species viz, *B. cauveryi* (Tripathi, 1959) Gusev, 1961; *B. tchangi* Gusev, 1974; *B. bychowskii* Gusev, 1977; *B. caballeroi* Gusev, 1977; *B. tripathii* Kumar and Agrawal; *B. singhi* Rajeshwari and Kulkarni, 1983; *B. bagariusi* Sharma, 1987; *B. chauhani* Venkatnarsaiah, 1989; *B. pricei* Majumdar and Agrawal, 1989; *B. fossilisi* Majumdar and Agrawal, 1989 and *B. gusevi* Majumdar and Agrawal, 1989; in the shape of dorsal anchors, ventral anchors, dorsal bar, ventral bar and all haptor sclerites.

Therefore, the present specimens regarded are to represent as a new species and named *Bychowskyella ailiai n. sp.*

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