



A NEW SPECIES OF MONOGENEAN PARASITE GENUS, BYCHOWSKYELLA ACHMEROW, 1952 FROM THE FISHES OF CLARIAS

Anuradha Pandey*, Nirupma Agrawal

*Corresponding Author Address: Department of Zoology,

University of Lucknow, Lucknow- 226007.

Email: pandeydranuradha@gmail.com

Abstract

Current research paper describes a new Monogenean species, *Bychowskyella dubagensis* n.sp. a parasite on gills of *Clarias batrachus* (Linn., 1758). Fishes were collected from the Ganges river, Chapra, Bihar. The present paper pertains with new species of the genus *Bychowskyella* Achmerow, 1952. *Bychowskyella dubagensis* is characterized by the shape of copulatory complex, dorsal bar, ventral anchors, dorsal anchors, ventral bar and all haptoral sclerites.

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

1. Introduction

Monogeneans are a class of parasitic flatworms that are 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, seventeen specimens of *Clarius batrachus* (Linn., 1758), examined from Chapra at Bihar fish market. Among eight were found infected with a monogenoidean belonging to the genus *Bychowskyella* Achmerow, 1952.

2. Materials and Method

Fish host were collected from water bodies and fish markets during 2008. Name of hosts follow those provided in fishbase (Froese and Pauly, 2004). Live fish were killed and their gills were either gently

scraped to dislodge the live monogeneans or left in water to allow the parasite to detach. Detached worms were transferred on slides to small droplets of water, covered by clean coverslips and studied 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 Malmbergs fixative and Hoyer's medium for study of sclerotised structures. Other specimens were stained with Aceto-alum carmine and Gomori's trichrome. Dehydrated in an ethanol series, cleared in xylene and 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. Dimensions of organs and other structures represent the greatest measurement in dorsoventral view.

3. Results

Out of seventeen specimens of *Clarias batrachus* (Linn., 1758) examined from the Chapra, Bihar, eight were found infected with a monogenean belonging to the genus *Bychowskyella* Achmerow, 1952. Forty-one worms were collected from the gill filaments of the hosts. On subsequent study they appear new to science and are described here in such.

Body is elongated, with well marked cephalic lobes, peduncle, haptor and measures 0.425 - 0.430 mm x 0.115 - 0.120 mm. Cephalic regions is broad and cephalic lobes are well developed. Head organs are three pairs. Eye-spots are two pairs. Pharynx is spherical and measures 0.040 - 0.045 mm in diameter. Intestinal caeca are united posteriorly. Haptor is discoidal to somewhat hexagonal, demarcated from body by a peduncle and measures 0.120 - 0.125 mm x 0.135 - 0.140 mm. Dorsal anchors are without roots, with stout base, long shaft, total length 0.045 - 0.050 mm and fine recurved point, 0.005 - 0.006 mm. Two long recurved patches are present on dorsal anchor and measures 0.035 - 0.040 mm. Ventral anchors are with short roots, total length is 0.022 - 0.025 mm and recurved point 0.006 - 0.008 mm. Dorsal bar is almost straight, fenestrated in the middle and measures 0.045 - 0.050 mm x 0.010 - 0.012 mm. Ventral bar is paired, fenestrated, long, and each measures 0.040 - 0.045 mm. Onchium is rectangular shield like and measures 0.015 - 0.018 mm. Hooks are of three types, each hook is crochet-shaped with elongated handle. Two large pairs, length 0.032 - 0.035 mm, one pair of medium sized, length 0.026 - 0.028 mm and four pairs of small hooks are 0.015 - 0.020 mm. Two rod-like sclerotised pieces observed near the dorsal anchors and length measures 0.018 - 0.020 mm. Testis is elongated and measures 0.092 - 0.098 mm x 0.054 - 0.068 mm. Vas deference arises from the anterior end of testis, runs anteriorly to loop around left intestinal caecum, where it dilates to form a seminal vesicle. Ductus ejaculatorius, on leaving seminal vesicle dilates to form a small vesicle, then narrows again prior to entering copulatory tube. Copulatory complex consists of copulatory tube and an accessory piece. Copulatory tube is curved and elongated and measures 0.068 - 0.070 mm.

Accessory piece is stick-like with pointed distal end and measures 0.040 – 0.045 mm. Ovary is anterior to testis, roughly oval in shape and measures 0.075 - 0.080 mm x 0.052 – 0.058 mm. Vagina and prostatic reservoir are not observed. Vitelline follicles are dense, throughout trunk, except in the region of reproductive organ.

4. Discussion

The present species differs from all the previously described known species of genus *Bychowskyella* Achmerow, 1952 in the shape of copulatory complex (copulatory tube is curved and elongated and an accessory piece is stick-like with pointed distal end in the present species).

It further differs from *B. cauveryi* Tripathi, 1959; *B. wallagonia* Jain, 1959; *B. indica* (Jain, 1959) Gusev, 1961; *B. gharui* (Tripathi, 1959) Gusev, 1961 and *B. lucknowensis* Agrawal and Sharma 1989 in the shape of dorsal bar (dorsal bar is straight, fenestrated in the middle in the present species). It also differs from *B. bychowskii* Gusev, 1977; *B. tripathii* Kumar and Agrawal, 1981; *B. fossilisi* Majumdar and Agrawal, 1989 and *B. raipurensis* Majumdar and Agrawal, 1989 in the shape of ventral bar (Ventral bars is paired, fenestrated, long in the present species). Furthermore, the present species also differs from viz. *B. caballeroi* Gusev, 1977; *B. kanpurensis* Agrawal, Shukla and Vishwakarma 1996 and *B. gusevi* Majumdar and Agrawal 1989 in the shape of ventral anchor (ventral anchors with short roots in the present species). It can also be differentiated from *B. singhi* Rajeshwari and Kulkarni, 1983; *B. jaini* Agrawal, Shukla and Vishwakarma 1996; *B. pricei* Majumdar and Agrawal 1989 in the shape of dorsal anchor (dorsal anchor are without roots and long recurved patches are present on dorsal anchor, in the present species). It can be also differentiated from *B. asiatica* (Jain, 1959) Gusev 1961; *B. gomtia* (Jain, 1959) Gusev, 1961; *B. chauhani* Venkatnarsaiah 1989; *B. bagariusi* Sharma, 1987 and *B. vacha* (Tripathi, 1959) Gusev, 1961 in the shape of dorsal anchor, ventral anchor, dorsal bar, ventral bar and all haptoral sclerites in the present species. Therefore, the present specimens regarded are to represent as a new species and named *Bychowskyella dubagensis* n. sp.

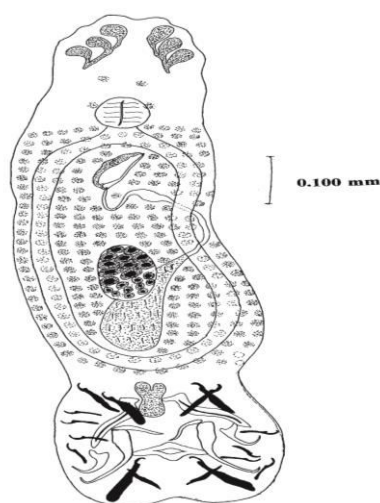


Fig. 1: *Bychowskyella dubagensis*

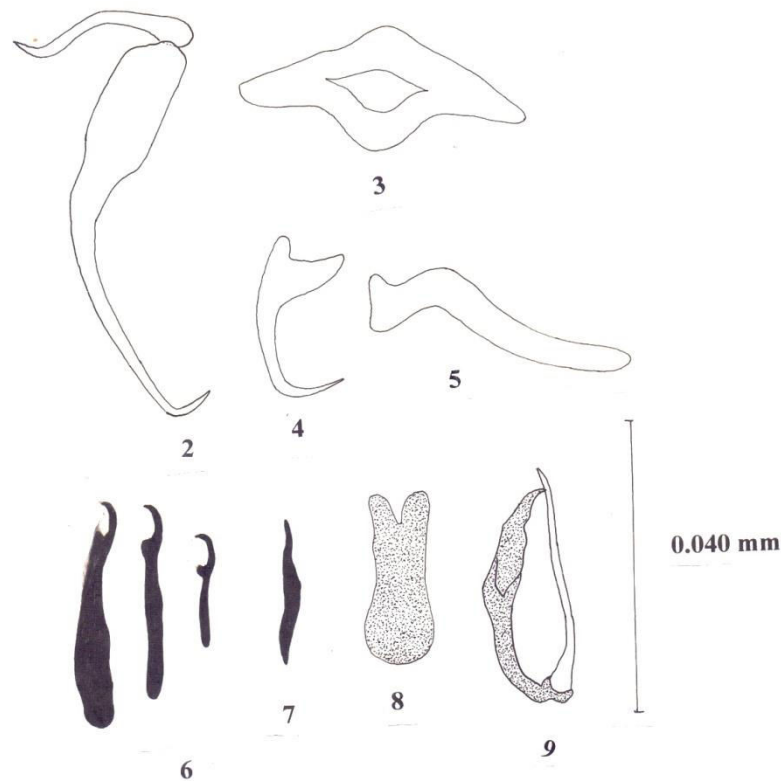


Fig. 2: *Bychowskyella dubagensis* n. sp. 2.
Dorsal anchor 3. Dorsal bar 4. Ventral
anchor 5. Ventral bar 6. Hooks 7. Sclerites 8.
Onchium 9. Copulatory complex

5. Acknowledgement

Author is thankful to the Head Department of Zoology, University of Lucknow, Lucknow, for providing laboratory facilities. Author is also thankful to Prof. K. C. Pandey for his valuable suggestions.

References

1. Agrawal, N., Shukla, S. K. and Vishwakarma, P. 1996. Some known and unknown species of the genus *Bychowskyella* Achmerow, 1952 (Monogenea) from freshwater catfishes of Uttar Pradesh, India *Indian J. Helminth.*, 13, 36-51.
2. Gusev, A. V. 1977. A species of *Bychowskyella* (Monogenoidea, Dactylogyridae) from Indian freshwater fishes. *Ex. Parasit. en. mem. dr. Ed. Caballere Y. Caballere.*, 4, 45-51.



3. Gusev, A.V. 1961. New subfamily of monogeneans (Monogenoidea). (In Russian). *Doklady Akademii Nauk SSSR*, 139, 1,480-1,482.
4. Jain, S. L. 1959. Some observations of the Monogenetic trematodes from the gill filaments of some Indian freshwater fishes. *Curr. Sci.*, 28, 332-333.
5. Majumdar, S. and Agarwal, S.M. 1989. Studies on monogenean parasites in freshwater Mizelle, J. D. 1936. New species of trematodes from the gills of Illinois fishes. *American Midland Naturalist*, 17, 785-806.
6. Sharma, R. K. 1987 On a new monogenetic trematode *Bychowskyella bagariusi* sp. nov. from a freshwater fish *Bagarius bagarius* from Etawah, Uttar Pradesh, *Kanpur University Research Journal (Science)*, 4 (1983), 77-79.
7. Tripathi, Y. R. 1957/1959. Monogenetic trematodes from fishes of India. *Ind. Jour. Helminth.*, 9, 1-149.
8. Venkatanarsaiah, J. 1989. *Bychowskyella chauhani* n. sp. from a fresh water fish, *Wallagonia attu*, from the Mahair River, Andhra Pradesh, India. *Indian journal of Helminthology*, (N.S.), 5 (1988), 41-42.