



e-ISSN: 2319-8753 | p-ISSN: 2320-6710

IJIRSET

International Journal of Innovative Research in
SCIENCE | ENGINEERING | TECHNOLOGY

INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

Volume 10, Issue 2, February 2021

ISSN INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA

Impact Factor: 7.512

9940 572 462

6381 907 438

ijirset@gmail.com

www.ijirset.com

A New Monogenean-ectoparasites *Polylabroides siddharthai* n.sp. From Edible Fresh-water Cat Fish *Sciaena coiter* of District Basti, Uttar Pradesh, India

SURYA PRAKASH MISHRA

Associate Professor and Head, Department of Zoology, Ganpat Sahai P.G. College Sultanpur, Uttar Pradesh, India

ABSTRACT: The fresh-water fish *Sciaena coiter* (Ham.) was collected from local fish market of district Basti (U.P.) and examined 05 specimens, of which only one specimen was found infected with 02 specimens of said species. The site of infection being the gill filaments of the host. Mamaev and Parukhin, (1976) established the Genus *Polylabroides* for the worms collected from *Acanthopagrus bifasciatus*. The known species of Genus *Polylabroides* (Mamaev and Parukhin, 1976) are viz., *Polylabroides multispinosus*, Roubal, 1981; *Polylabroides quadrispinosus*, Byrnes, 1985 and *Polylabroides longispinosus*, Byrnes, 1985. The present form differs from all these species except *Polylabroides longispinosus* in having difference in organization of cirrus. However, it differs from *Polylabroides longispinosus* in following features- in having rounded prohaptor; in having curved cirrus spines (Straight in case of *Polylabroides longispinosus*); in having testes arranged in two columns and more in number; in having serrated inner margin of clamp sclerites and having one piece of central sclerites. On subsequent study, the present form appears to be a new species of the genus *Polylabroides* (Mamaev and Parukhin, 1976) and described as a new species and named *Polylabroides siddharthai* n.sp.

KEYWORDS: Monogenean ectoparasites, *Polylabroides siddharthai*, *Sciaena coiter*.

I. INTRODUCTION

Monogenean is a class of parasitic flatworms that are mainly ectoparasites of fishes but occasionally they are found as endoparasites (Gussev, 1974; Byrnes, 1985). Monogenean are browsers that move about freely on the fish's body surface feeding on mucus and epithelial cells of the skin and gills; however, a few adult monogenean will remain permanently attached to a single site on the host (Quilichini, et. al. 2009; Mishra, 2021a). Monogenean undergo asexual mode of reproduction and multiply rapidly to form dense population on the gills of the host. The population structure of this monogenean, however, depends on a wide range of environmental factors; the relative importance of these factors varies from species to species and also within the same species depending on the host taxonomy and the nature of habitat (Chubb, 1977; Mamaev, 1988; Mishra, 2021b).

Monogenean constitutes a group, which play an important role as pathogens of severe diseases (Hoffman, 1979 and Srivastava, 1980). This is because they affect those organs and tissues which are vital to the normal functioning such as gills and skin, the organs of respiration (Mishra, 2007, 2014a). In majority of cases, monogenean cause dual type of injury to their hosts. Through their hooks and other organs of attachment, they break the continuity at the site of attachment and result is to localize hemorrhage (Mishra, 2008, 2014b). Monogenean infestations cause irritation and excessive mucus production and create an opening for bacterial invasion (and Mishra, 2020a). A few monogeneans on a healthy mature fish are not usually significant; however, moderate numbers can cause significant mortalities (Mishra and Pande, 2008). When fish are exposed to environmental or behavioural stressors, the potential damage from monogenean is greater. Prevention of monogenean infestations by appropriate quarantine is preferable to treatment of the parasites after they have become established in a system (Venkatnarsaiah and Kulkarni, 1980; Mishra, 2020b). Monogeneans are the most ubiquitous and abundant group of helminth parasites in the aquatic environment (Diggles, and Lester, 1993). Monogeneans feed upon the blood and cells of ruptured tissues (Bychowsky, 1957; Mishra, 2015 and). Researchers have established that the volume of the blood sucked from the fish is quite appreciable and this leads to certain conditions like anemia and mortality (Rizvi, 1971 and Mishra, 2014c).

The genus *Polylabroides* (Dillon, and Hargis, 1965b; Achmerow, 1964; Gussev, 1974; Mamaev and Parukhin, 1976) has been recorded and described in detail from the gills of teleost fishes of super family Siluroidea. Several

workers like Yin and Sproston (1948); Jain (1957); Tripathi (1959); Byrnes, (1985); Mamaev, 1988; Singh, et. al., (1992); Roubal and Diggles, (1993) has reported different species of genus *Polylabroides* from different teleost as different name. During the study of fresh-water monogenean of district Basti, we came across single infected specimen of *Sciaena coiter*, infected with monogenean belonging to the genus *Polylabroides* (Roubal, and Diggles, 1993). On subsequent study, the present form appears new to us and described here in as such.

II. MATERIAL AND METHODS

The fishes for the present investigation were collected from fresh-water bodies and local fish market of district Balrampur, Uttar Pradesh, India. The monogenean were collected by Mizelle's freezing techniques. They were kept in refrigerator for 8 to 48 hours. The low temperature not only relaxes the worm but also help in automatic removal of mucus in which there flukes were entangled. Subsequently, the gills were removed, placed in separate tubes, half filled with water and shake vigorously. This solution now poured in clean petri-dish diluted with water and examined under binocular microscope. The worms thus collected were washed and fixed in hot 70% ethyl alcohol or 10% neutral formalin. Study of chitinoid hard parts were made in either temporary (glycerin) or permanent preparations. Permanent preparations were made after dehydrating through ascending grades of alcohol, clearing in xylene and mounting in Canada balsam. Camera Lucida sketches were made from permanent preparations within a week since the stain fades away in ten days.

III. DESCRIPTION

The body is elongated with tapering anterior and broad posterior end, measuring 3.19 - 3.22 * 1.00 - 1.10 mm. The head is provided with a pair of rounded, muscular buccal suckers each measuring 0.039 - 0.050 mm. The pharynx is oval, muscular and measures 0.041 - 0.051 * 0.031 - 0.041 mm. The oesophagus is simple, bifurcated and anterior to cirrus. The intestinal caeca is diverticulated and extending up to haptor.

The testes are post-equatorial, post-ovarian, multi-locular and 12 - 13 in number. These testes are rectangular in shape and measures 0.82 - 1.55 * 1.6 - 2.4 mm. Genital atrium is oval and measures 0.081 - 0.082 * 0.097 - 0.10 mm. It contains 30 - 31 small and 50 - 52 large spines. The large spines are with curved and pointed tip. The prostatic duct also enters and opens in to cirrus. The seminal receptacle is well developed, rounded, situated at the proximal end of the ovary and measures 0.18 - 0.21 mm. in diameter.

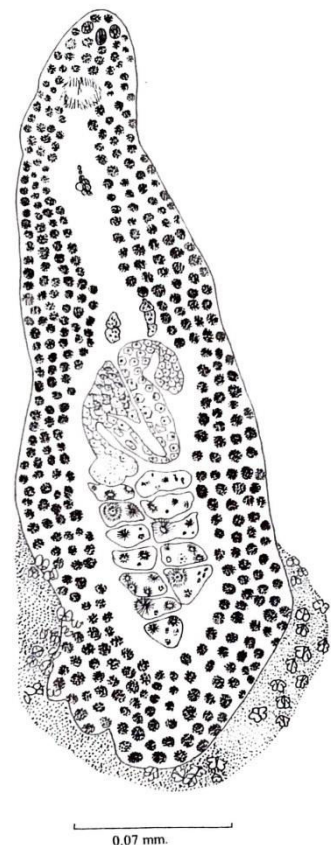
The ovary is rounded, equatorial, pre-testicular, '?' shaped and measures 1.58 - 1.63 * 0.082 - 1.48 mm. Two-three darkly stained reproductive glands are also present on the anterior lateral side of the ovary. Vitelline follicles are well developed, scattered from head up to haptor.

The haptor is asymmetrical, indistinctly set off from the body and starts from near posterior one-third of the body commencing at the level of testes. It is equipped with irregularly distributed clamps 34 - 36 in number. The larger clamps are at the center of the body. The clamps are basic microcotyle type without accessory sclerite and sucker measuring 0.042 - 0.05 * 0.07 - 0.08 mm.

IV. DISCUSSION

Mamaev and Parukhin, (1976) established the Genus *Polylabroides* for the worms collected from *Acanthopagrus bifasciatus*. In all, following species are known under the genus viz., *Polylabroides australis* (Murray, 1931) Mamaev and Parukhin, 1976; *Polylabroides quadrispinosus*, Byrnes, 1985; *Polylabroides longispinosus*, Byrnes, 1985 and *Polylabroides multispinosus*, Roubal and Diggles, 1993.

The present form differs from all these species except *Polylabroides longispinosus* in having difference in organization of cirrus. However, it differs from *Polylabroides longispinosus* in following features- in having rounded prohaptor; in having curved cirrus spines (Straight in case of *Polylabroides longispinosus*); in having testes arranged in two columns and



more in number; in having serrated inner margin of clamp sclerites and having one piece of central sclerites.

On subsequent study, the present form appears to be a new species of the genus *Polylabroides* (Mamaev and Parukhin, 1976) and described as a new species and named *Polylabroides siddharthai* n.sp.

REFERENCES

- Achmerow, A. K. (1964):** Evolution of the middle attachment apparatus in the monogenean suborder-Dactylogyrus. *Trudy gelmint. Lab.* 14: 69-79.
- Bychowsky, B. E. (1957):** Monogeneans their systematics and phylogeny (Russian) T. Ransl. English by W.J. Hargis (Ed.), A.I.B., Washington, DC. 626 pp.
- Byrnes, T. (1985):** Four Species of *Polylabroides* (Monogenea: Polyopisthocotylea: Microcotylidae) on Australian Bream, *Acanthopagrus spp.* *Australian Journal of Zoology* Vol. 33 (5): 729 - 742. DOI: <https://doi.org/10.1071/z09850729>.
- Chubb, D.K. (1977):** Seasonal occurrence of helminthes in freshwater fishes. Part I. Monogenean. *Adv. Parasitol.*, 15: 133-199.
- Diggles, B. K. and Lester, R. J. G. (1993):** The influence of formalin, benzocaine and hyposalinity on the fecundity and viability of *Polylabroides multispinosus* (Monogenea: Microcotylidae) parasitic on the gills of *Acanthopagrus australis* (Pisces: Sparidae). *International Journal for Parasitology*, Vol. 23 (7): 877 - 884. DOI: [https://doi.org/10.1016/0020-7519\(93\)90053-2](https://doi.org/10.1016/0020-7519(93)90053-2).
- Dillon, W. A. and Hargis, W. J. Jr. (1965b):** Polyopisthocotyleids from New Zealand fishes; the families Discocotylidae, Microcotylidae, Axinidae and Gastrocotylidae. *Biol. Antarctic Seas II, Ant. Res. Ser.* Vol. 5: 251 - 280.
- Gusse, A.V. (1974):** Fresh water Indian Monogenoidea. Principles of systematics, analysis of the world fauna and their evolution. *Indian J. Helmith.* 25 & 26: 1-241.
- Hoffman, G.L. (1979):** Helminth parasite. In: Plumb, I. A. (ED.) *Principal Diseases of Farm-raised Catfish*. Southern Cooperative Series No. 225, pp. 40-58.
- Jain, S.L. (1957):** *Mizelleus indicus* n. gn. (subfamily- Tetraonchinae) from the gill filament of *Wallagonia attu* (Bloch.) *Ann. Zool. Agra.* 2: 56-62.
- Mamaev, Y. L. and Parukhin, A. M. (1976):** On the genus *Polylabris* Euzet et Cauwet, 1967 and some closely allied species of Microcotylids (Monogenoidea: Micricotylidae). *Parazitologiya* 10: 245-254 (In Russian).
- Mamaev, Y. L. (1988):** *Polylabroides zini* sp. n., a new species of higher monogenean from a marine fish, *Acanthopagrus latus*. *Helminthologia* 25: 195-200.
- Mishra, Surya Prakash (2007):** A new monogenean, *Ancylo-discoides amethii*, n. sp. from fresh water fish *Notopterus notopterus*. *J. Liv. World* Vol. 14 (1): 13-17.
- Mishra, S.P. and Pande, P.N. (2008):** A new monogenean *Metahalio-trema Tripathi* n. sp. from fresh water fish *Rita rita* (Ham.) *J.PAS Zoological Sciences* Vol. 14: 40-45.
- Mishra, Surya Prakash (2014a):** A new Monogenea *Diclidophora srivastavai* n. sp. from fresh water fish *Setipinna phasa*. *Int. J. Curr. Microbiol. App. Sci.* Vol. 3 (12): 201-204.
- Mishra, Surya Prakash (2014b):** A new monogenean *Hamatopeduncularia saketensis* n. sp. from fresh water fish *Wallago attu*. *Int. J. Multidis. Res. Dev.* Vol. 1 (7): 244-246.
- Mishra, Surya Prakash (2014c):** A New Monogenea *Paramazocraes nawabganjensis* n. sp. from fresh water fish *Eutropichthyes vacha*. *Int. J. Eng. Sci. Inv. Res. Dev.* Vol. 1 (5): 190-193.
- Mishra, Surya Prakash (2015):** On a new species of Monogenea *Diplozoon chauhani* n. sp. (Diplozooidae) from Indian fresh water food fish *Cirrhinus mrigala*. *Int. J. Fish. Aqua. Stud.* Vol. 2 (4): 140-141.
- Mishra, Surya Prakash (2020a):** Monogenetic Trematode Infestations in Indian Cat Fishes of River Gomti at District Sultanpur, Uttar Pradesh, India. *Int. J. Modern. Trends in Science and Technology.* Vol. 6 (8): 120-124.
- Mishra, Surya Prakash (2020b):** Monogenetic trematode infestations in Indian major carps of Ayodhya division, Uttar Pradesh, India. *J. Emer. Tech. Innov. Res.* Vol. 7 (7): 1920-1928.
- Mishra, Surya Prakash (2021a):** On a new ectoparasitic Monogenea *Rhamnocercus chauhani* n. sp. from gills of fresh water fish *Wallago attu* of district Siddhartha Nagar, Uttar Pradesh, India. *Int. J. of All Research Education and Scientific Methods.* Vol 9(1): 507 - 510.
- Mishra, Surya Prakash (2021b):** On a new monogenetic trematode *Paramazocraes guptai* n. sp. from gills of fresh water fish *Eutropichthyes vacha* of district Gonda, Uttar Pradesh, India. *Int. J. Fisheries and Aquatic Research* Vol. 6(1): 1 - 3.
- Quilichini, Y.; Foata, J. and Marchand, B. (2009):** Ultrastructural study of spermatogenesis and the spermatozoon of *Microcotyle pancerii* (Monogenea: Polyopisthocotylea: Microcotylidae), Parasite of Meagre *Argyrosomus regius* (Pisces: Teleostei). *The Journal of Parasitology*, Vol. 95 (2): 261 - 270.



23. Rizvi, S.S.H. (1971): Monogenea of Pakistan fishes *Ancyloidescooides mystusi* n. sp. and *Ancyloidescooides aori* n. sp. from gills of *Mystus aor* (Ham.).
24. Roubal, F. R. and Diggles, B. K. (1993): The rate of development of *Polylabroides multispinosus* (Monogenea: Microcotylidae) parasite on the gills of *Acanthopagrus australis* (Pisces: Sparidae). International Journal for Parasitology, Vol. 23 (7): 871 - 875. DOI: [https://doi.org/10.1016/0020-7519\(93\)90052-Z](https://doi.org/10.1016/0020-7519(93)90052-Z).
25. Singh, H.S.; Kumari, M. and Agarwal, S. (1992): On some known and unknown Monogeneans from *Wallago attu* (Bloch. And Schn.) Functional and Developmental Morphology. Vol. 2: 85-88.
26. Srivastava, C. B. (1980): Estimation of helminthic infections. Proceedings Workshop Technology Parasitol. Zool. Survey of India, pp. 29-31.
27. Tripathi, Y. R. (1959): Monogenetic trematodes of fishes from India. Indian J. Helmith. Vol. 9: 1- 149.
28. Venkatnarsaiah, J. and Kulkarni, T. (1980): New monogenetic trematodes of the genus *Calydescooides* Young, 1969 from gills of *Nemipterus japonicas*. Proc. Indian Acad. Parasit. Vol. 1: 20-22.
29. Yin, Wen- Ying and Sproston, N.G. (1948): Studies on the monogenetic trematodes of China, 1-5 Sinensia. Vol. 19: 57-85.



INNO  **SPACE**
SJIF Scientific Journal Impact Factor

Impact Factor:
7.512

ISSN INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA



INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

 **9940 572 462**  **6381 907 438**  **ijirset@gmail.com**



www.ijirset.com

Scan to save the contact details