



ON A NEW SPECIES OF THE GENUS *GYMNORHYNCHUS MUMBAIENSIS* SP. NOV. FROM
MARINE FISH *TRYGON ZUGEI* FROM MUMBAI, INDIA

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Abstract

The present investigation deals with the taxonomic evaluation of new species of the tapeworm of the genus *Gymnorhynchus mumbaiensis* from marine fish *Trygon zugei* from Mumbai. The new species *Gymnorhynchus mumbaiensis* Sp. Nov. is comes closer to all the known species of the genus *Gymnorhynchus* in general topography of organ but differs due to shape of the body, scolex and morphology of internal organs.

Key-Words: *Gymnorhynchus*, *Trygon zugei*, Mumbai.

INTRODUCTION

Cuvier, (1817) established the genus *Floriceps* to accommodate some larval form and named scolex. The genus *Gymnorhynchus* was established by Rudolphi, 1819. *G. gigas* to a species obtained from *Sparus raji*. The genus *Gymnorhynchus*, *G. malleus* is another species described by Linton (1924) as *synbothrium malleum*. Southwell in the year 1929 changed the name as *Gymnorhynchus malleus* collecting from *Dasybatus Kuhlii* from Ceylon water. *G. cybiumi* is another species of this genus described by Chincholikar and Shinde (1977) from *Cybiium guttatum* in Ratnagiri. Robinson (1959) described *G. isuri* which was again recovered and re-examined by Caira and Barados (1996) collecting *G. thapari* Bhagwan and Shinde from *Isuri oxyrinchus* in Montauk in India later on *G. barsai* Pramanik and Manna (2007) in *Dasyatis walga*.

Materials and Methods:

For the taxonomical study of tapeworms, the marine fishes were collected from different places during the period of Oct. 2008 - Sept. 2010 of Ratnagiri district of Maharashtra state. The hosts are easily identified by Day [39]. The viscera were brought to the laboratory immediately, repeatedly washed in cold saline, cut and observed under binocular microscope. The collected worms were washed in distilled water and fixed in hot 4 % formalin for specific identification. The flattened parasites were washed thoroughly under running tap water and subjected to Borax Carmine stain. All drawings were made with the aid of camera lucida. All measurements are in millimeters, unless

otherwise indicated. The identification is made with the help of "Systema Helminthum" by Yamaguti S. (1961)

Description:

Ten specimens of the cestode parasite were collected from spiral valve of a marine fish, *Trygon zugei* Muller and Henle, (1906), in the month of May, 2008. These worms were flattened, preserved in 4% formalin, stained in Borax carmine and whole mount slides were prepared for further anatomical studies. The scolex is large in size, almost cylindrical in shape, bears four bothridia, overlapping on each other, with four proboscides and measures 11.178 (11.140-11.216) in length and 1.64 (1.602-1.678) in breadth. The scolex is divided into three parts, anterior part is pars bothridialis, middle part is pars vaginalis and posterior part is pars bulbosa. The pars bothridialis is medium in size, oval in shape, overlapping on each other and measures 0.157 (0.150-0.165) in length and 0.119 (0.116-0.122) in breadth. The bothridia are medium in size, elongated, consist of four protrusible (Tentacles) and measures 1.177 (1.160-1.194) in length and measures 0.247 (0.228-0.267) in breadth. The tentacles are long, armed with hooks and measures 1.714 (1.696-1.732) in length and 0.027 (0.045-0.0095) in breadth. The arrangement of the hooks on the proboscides, differs at various places 8-9 hooks in transverse row and measures 0.133 (0.089-0.0178) in length and 0.0669(0.0446-0.0892) in breadth. The pars bothridialis is followed by pars vaginalis, which is the longest region, gives out four, long, coiled tubes, which are unarmed,

connected to posteriorly situated bulbs and measures 2.258 (1.892-2.624) in length and 0.157 (0.155-0.160) in breadth. The posteriorly placed, pars bulbosa is medium in size, oval in shape, bulbs overlapping on each other and measures 1.660 (1.642-1.678) in length and 0.201 (0.199-0.203) in breadth.

The neck is short, almost of equal width and measures 0.025 (0.029-0.035) in length and 0.010 (0.012-0.016) in breadth.

The mature segment are longer than broad, without projection at the anterior and posterior corner of the segments, with straight or concave or convex lateral margin and measures 1.330 (1.321-1.339) in length and 2.918 (2.861-2.975) in breadth. The testes are medium in size, round in shape, 150 in number, preovarian and measures 0.01905 (0.0095-0.0286) in diameter. The cirrus pouch is small in size, elongated, oval shaped in appearance, opens marginally, situated at one fourth from the posterior margin of the segments and measures 0.547 (0.534-0.561) in length and 0.055 (0.053-0.058) in breadth. The cirrus is thin, contained within the cirrus pouch and measures 0.040 (0.026-0.053) in length and 0.013 (0.008-0.017) breadth. The vas deferens is thin tube, short, anteriorly directed and measures 0.026 (0.017-0.035) in length and 0.0135 (0.008-0.0017) in breadth.

The ovary is medium in size, indistinctly bilobed, situated at the posterior region of the segments and measures 3.529 (3.510-3.548) in length and 0.118 (0.116-0.121) in breadth. The vagina is wide, posterior to cirrus pouch, starts from the genital pore, runs obliquely up to the middle of the segment, almost in the middle of the segments, reaches and open into ootype and measures 0.0803 (0.071-0.089) in length and 0.0066 (0.0044-0.0089) in breadth. Ootype is medium in size, rounded in shape and measures 0.044 in diameter. The uterus is medium in size, cylindrical in shape, situated in middle of the segments and measures 5.455 (5.417-5.493) and 0.457 (0.419-0.495) breadth. The common genital pores are medium in size, oval, marginal, irregularly alternate, situated at $\frac{1}{4}$ th from the posterior margin of the segments and measures 0.0190 (0.0095-0.0286) in length and 0.007 (0.0045-0.0095) in breadth.

The vitellaria are granular on each lateral side from the anterior to the posterior margin of the segments. The longitudinal excretory canals are medium and measures 0.22 in width.

Discussion

The worm under discussion, the scolex is large in size, almost cylindrical, scolex is divided into three parts, the pars bothridialis is short, narrow anteriorly and broad posteriorly, consist of four overlapped bothridia, through which protrude out, four, armed proboscides (tentacles), the pars vaginalis is very long, coiled, connected to the pars bulbosa, the pars bulbosa bears four, long bulbs, neck short, mature segments longer than broad, testes 150 in number, cirrus pouch oval, cirrus short, vas deferens short, anteriorly directed, ovary large in size, indistinctly bilobed, vitellaria are granular. The present form, differs from *G. gigas* (1817) which is having scolex 2.2 mm in length, short pars bulbosa, absence of neck, testes number 100, large cirrus pouch, vitelline glands large and encircling whole proglottid, uterus is wide sac. The present tapeworm, differs from *G. malleus* (1924) which is having large body, proglottid number 47, absence of neck, pars bulbosa short, absence of post bulbosa, short tentacle, number of testes 200, ovary bilobed, finely granular and different type of arrangement of hooks in different portion of tentacle in the latter. The present cestode parasite, differs from *G. cybiumi* (1977) in having 4.46 long scolex, pars bothridialis measures 0.46 to 0.51 in anterior region, very long hook on tentacle, hooks are grouped, each group consisting of 3 to 5 hooks, the hooks of the basal region with broad bases and distal end pointed pars bulbosa short and post bulbosa very short in the latter. The present form, differs from *G. isuri* (1959) in having more number of hooks, pars bulbosa medium size neck present. The present tapeworm, differs from *G. thapari* (2003) which is having scolex is large, cylindrical, having four bothridilas. The scolex divided into three parts, anterior pars bothridialis pars vaginalis, pars bulbosa. Pars bothridialis medium, oval the arrangement of hooks on the proboscides differs at various places six hooks of different shape pars bulbosa contain four bulbs large oval overlapping on each other, neck short. The present parasite, differs from *G. barsai* (2007) the parasite measures 30 mm in length, total number of proglottid 23, scolex long divided into four parts, pars bothridialis short, pars vaginalis more or less half of the scolex length, pars bulbosa long, pars post bulbosa present retractor muscles posterior to bulb. Each half turn

contains six hooks, short neck. pre-mature proglottids longer than wide, testes 140 in number, cirrus sac sub globular at the anterior face of the cirrus, some sub globular structure, present wing like ovary consist of many acini, vagina anterior to cirrus pouch, vitellaria granular.

By observing the above noted characters, it is desirable to erect a new species, to accommodate these worms and hence the name *Gymnorhynchus mumbainsis* is proposed after the city, Mumbai.

Taxonomic Summary:

Type of species :- *Gymnorhynchus mumbainsis* sp.nov.

Host :- *Trygon zugei* Muller and Henle, 1906.

Habitat :- Spiral valve.

Localitly:- Mumbai Coast, M.S. India.

Date of collection :- June 2008 to May 2010

Etymology:- Named after having the species locality

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