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Occurrence of a new piscine tapeworm *Senga govindii* in *Mastacembelus armatus* (Lacepede, 1800) from Sina kolegoan Dam

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Abstract
The present communication deals with the occurrence of a new mammalian tapeworm *Senga* (Dollfus, 1934) *govindii* Sp. Nov. from *Mastacembelus armatus* (Lacepede, 1800) in Sina kolegoan Dam Osmanabad Dist.(M.S.). It comes closer to all the known species of the genus *Senga* but differs from all the known species of the genus in having in the shape and shape of the scolex, 45-50 hooks, mature segment three times broader than long, total number and arrangement of testes, position of cirrus pouch, vitellaria granular, Ovary is bilobed.

Keywords: Piscine tapeworm / *Senga govindii* Sp. Nov.,*Mastacembelus armatus* and Sina kolegoan Dam.

INTRODUCTION

The genus *Senga* was established by Dollfus, 1934 [6] with its type species *S. besnardi* from *Bettasplendens* at Vinecunes, France. *S. ophiocephalina* Tseng, 1933 [23] as *Anchistrocephalus ophiocephalina* from *Ophiocephalus argus* at Taimen, China and identified with a form previously recorded by Southwell, 1913 as *Anchitrocephalus polyptera*(*Anchitrocephalus*) Monticello, 1890 -Syn. *Anchistrocephalus* Luhe, 1899 from *Ophiocephalus striatus* in Bengal, India. *S. pcynomera* Woodland, 1924 [25] as *Bothrio cephalus pcynomera* from *Ophiocephalus marulius* at Allahabad, India.*S. lucknowensis* by Johri, 1956 [12] from *Mastacembelus armatus* in India. Fernando and Furtado, 1964 [7] recorded *S. malayana* from *Channa striata*, *S. parva* and *S. filiformis* from *Channa micropeltes* at Malacca. Ramadevi and Hanumant Rao, 1966 reported the plerocercoid of *Senga* sp. from *Panchax panchax*. Tadros, 1968 synomised the genus *Senga* with the genus *Polyonchobothrium* and proposed new combinations for the species. Furtado and Chauhan, 1971 [8] reported *S. pahangensis* from *Channa micropeltes* at Tesak Bera. Shinde, 1972 [9] re described *S. besnardi* from *Ophiocephalus gachua* in India. Ramadevi and Rao, 1973 [19] reported another species of *S. visakhapatanamensis India*. Ramadevi, (1973) [19] described the life cycle of *S. visakhapatnamensis* from *Ophiocephalus punctatus*in a lake at Kondakaria, Andhra Pradesh, India. But they do not agree with Tadors statements. Wardle, McLeod and Radinovsky, 1974 put *Senga* as a distinct genus in the family *Ptychobothridae*. Deshmukh, 1980 [20] reported *S. khamif*rom *Ophicephalus marulius*, a fresh water fish from Kham river at Aurangabad. Jadhav and Shinde, 1980 [11] reported *S. godavari* from *M. armatus* at Nanded, M.S. India. One more species *S. aurangabadensis* was added by Jadhav and Shinde, 1980 [11] from *M. armatus* at Aurangabad M.S. India. Kadam *et.al*., 1981 [13] added *S. paithanensis* from host *M. armatus.* Majid *et. al.,* 1984 [15] added *S. raoi* and *S. jagannathae* from *Channa punctatus.* Two more new species erected by Jadhav *et.al*. 1991 as *S. maharashtrii* and *S. gachuae* from the intestine of *M. armatus* Monzer Hasnain, 1992 added *S. chauhani* from *Channa punctatus*. Tat and Jadhav, 1997 [22] added *S. mohekarae* from the intestine of the *M. armatus*, at Parli, Dist. Beed, M.S. India. Patil and Jadhav [18] added *Senga tappi* from *M. armatus* in 2003. Jadhav, 2005 [2] made the review article of the genus *Senga* from freshwater fishes from Maharashtra state, India. Pande *et. al*, 2006 [17] added two new species i.e. *S. ayodhensis* from *Amphinuous cuchia* and *S. baughi* from *Rita rita.*Kalse added *S, panzarensis* in 2009 [14] from *M. armatus.* Bhure *et.al,* 2010 [4] added one new species *S. madhavii.* Pardeshi and Hiware, 2011[16] added *S. rupchandensis* from *Channa striatus* Maharashtra state, India. Lastley, Bhure and Nanware, 2011 [5] added *S. satarensis* from *M. armatus.* The present communication, deals with the description of a new species, *Senga* (Dollfus, 1934) *govindii* Sp**.** Nov. Collected *Mastacembelus armatus* (Lacepede, 1800) in Sina kolegoan Dam Osmanabad Dist. (M.S.). India.

MATERIAL AND METHODS

Cestode parasites were collected from the intestine of *Mastacembelus armatus* (Lacepede, 1800) at. Sina kolegoan Dam Osmanabad Dist (M.S.) India, during the period of June, 2009 to May, 2010. These cestodes preserved in hot 4% formalin and stained with Harris haematoxylin and Borax carmine, passed through various alcoholic grades, cleared in xylene, mounted in D.P.X. and drawings are made with the aid of camera lucida. All measurements are given in millimeters. The identification is made with the help of Systema Helminthum.

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DESCRIPTION

The worms were considerably long, thin, milky white in colour, with scolex, numerous immature and mature segments. The scolex is large, well developed, triangular and measures 8.54 (8.16-8.92) in length and 2.46 (0.22-4.69) in breadth. Rostellum, armed with 45-50 hooks and measures 6.12(4.83-7.41) in length and 1.28 (0.96-1.61) in breadth. The scolex bears two bothria, sac like and measures 2.01(1.90-2.13) in length and 0.72 (0.64-0.80) in breadth. Neck is present and measures 1.52 (0.95-2.09) in length and 1.44 (1.33-1.56) in breadth. Mature segment medium, rectangular, three times broader than long and measures 1.77 (1.56-1.98) in length and 3.01 (0.49-0.54) in breadth. The testes are medium, oval in shape, 100-130 in numbers, spread in the segment at each lateral side and measures 0.05 (0.03-0.07) in length and 0.12 (0.11-0.15) in breadth. The cirrus pouch oval, broader at anterior and narrow at posterior side and measures 0.22 (0.19-0.26) in length and 0.28 (0.22-0.34) in breadth. The cirrus is thin tube and measures 0.19 in length and 0.03 in breadth. Ovary is bilobed, large, situated middle of the segment and measures 0.57(0.45-0.68) in length and 0.61 (0.57-0.64) in breadth. The vagina is thin tube, starts from genital pore, posterior to cirrus pouch and measures 1.75 in length and 0.03 in breadth. Genital pore small, rounded and measures 0.09 in length and 0.07 in breadth. Gravid segment broader than long and measures about 1.94 in length and 5.49 in breadth.Uterus large, saccular, filled with numerous eggs and measures 0.98 (1.10-0.87) and 1.33 (1.86-0.80) in breadth. Eggs are oval, non operculated and measures 2.25 (1.61-2.90) in length and 7.58 (6.45-8.70) in breadth.Thevitellaria are granular, arranged in two-three rows at each lateral margin of the segment.

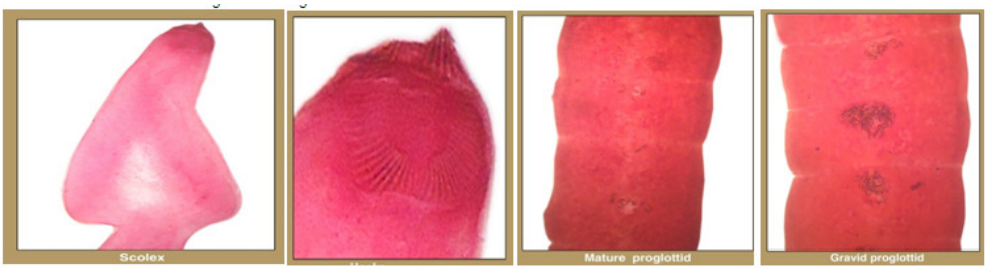

Fig 1. Microphotograph of *Sengagovindii* Sp. Nov.

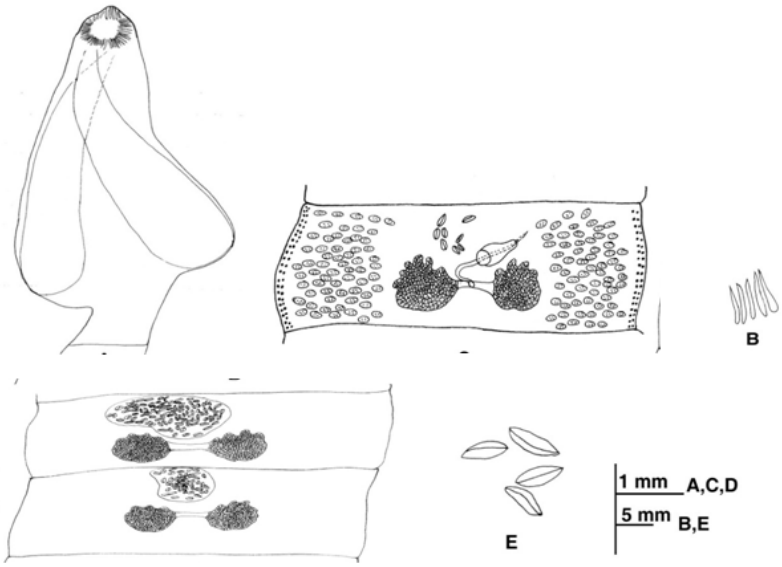

Fig 2. Camera Lucida of *Sengagovindii* Sp. Nov.

DISCUSSION

The genus *Senga* was established by Dollfus with the type species *Senga besnardi* from *Betta splendens*. The present worm comes closer to all the known species of the genus *Senga* Dollfus, 1934 [6] in general topography of organs. But differs due to some characters from following species. The present worm differs from *S. besnardi* Dollfus, 1934 [6] in the shape of scolex which is triangular, hooks 50 in numbers, testes 160-175 in numbers, ovary compact and reported from *Betta splendens* in France. The present cestode differs from *S. ophiocephalina* Tseng, 1933 [23] in having hooks 47-50 in numbers, testes 50-55 in numbers, ovary bilobed but equatorial in position, vitellaria lobate and reported from *Philocephalus argua*in China. The present tapeworm differs from *S. pcynomera* Woodland,1924 [25] in having scolex elongated, hooks 68 in numbers, mature segments are indistinct, ovary discontinuous into two groups and reported from *Philocephalusm aruliu*sin India. The present parasites differs from *S. lucknowensis* Johri,1956 [12] in having hooks 36-48 in numbers, ovary post equatorial, vitellaria lobulate and discontinuous in two groups. The present cestode differs from *S. malayana* Furnando and Furtado, 1964 in having scolex circular, hooks 60 in numbers, ovary slightly bilobed, post equatorial, vitellaria lobate, discontinuous in two groups and reported from *Channa striata,* in Malacca.The present tapeworm

differs from *S. parva* Furnando and Furtado, 1964 in having hooks 38-40 in numbers, testes 100 in numbers and reported from *Channa micropeltis*, in Malacca. The present cestode differs from *S. pahangensis* Furtado *et. al.,* 1971 [8] in having triangular scolex, hooks 52 in numbers, neck short, segmentation clear, testes laterally situated in the proglottids, vitellaria lobulated and reported from *Channa mkmicropeltis*, In Tasek, Bera . The present tapeworm differs from *S. visakhapatanamensis* Ramadevi *et.al.,*1973 [19] in having circular scolex, hooks 46-52 in numbers, testes 50-55 in number, vitellaria lobulated and reported from *Ophiocephalus punctatus,* in India. The present worm differs from *S. khami* Deshmukh and Shinde,1980 [20] having scolex rectangular, oval, shallow bothria, hooks 55-57 in numbers, short neck, testes rounded,155 in numbers and arranged in two fields, cirrus pouch is elongated, vitellaria follicular and reported from *Ophiocephalus marulius,* in India. The present cestode differs from *S. aurangabadensis* Jadhav *et.al*., 1980 [11] in having oval scolex, hooks 50-52 in numbers; in two half rows, over lapping on each other, mature segment longer than broad, testes 240-260 in numbers and vitellaria follicular. The present tapeworm differs from *S. godavarii* Shinde *et.al*.,1980 [21] in having hooks 40-42 in numbers, arranged in two half rows, testes rounded, 220-230 in numbers, cirrus pouch is oval, situated in anterior half of the segment and vitellaria follicular. The present form differs from *S. paithanensis* Kadam *et al.,*1981 [13] which shows prominent, large, triangular scolex, hooks 54 in numbers, neck present, testes oval to rounded,130-135 in numbers, arranged in two lateral groups, vagina posterior to cirrus pouch and vitellaria follicular. The present cestode differs from *S. raoi* Majid and Shinde,1984 [15] in having hooks 46 in numbers, testes 65-170 in numbers, vagina posterior to cirrus pouch and reported from *Channa punctatus,* in India. The present cestode differs from *S. jagannathae* Majid and Shinde,1984 [15] in having hooks 44 in numbers, testes 240 - 250 in numbers, ovary compact, vagina anterior to cirrus pouch and reported from *Channa punctatus,* in India. The present parasite differs from *S. gachuae* Jadhav et.al.,1991 [1] in having hooks 22-25 in numbers, neck present, testes 60-70 in numbers, vitellaria follicular and reported from *Channa gachua,* in India. The present cestode differs from *S. maharashtrii* Jadhav *et.al.,* 1991 which shows muscular scolex, hooks 45-46 in numbers, large, arranged in two half crowns, testes oval 80-90 in numbers and vitellaria follicular. The present worm differs from *S. chauhani* Monzer Hasnain,1992 in having scolex oval, hooks 40-44 in numbers and testes 200-210 in numbers, vitellaria non lobate and reported from *Channa punctatus,* in India. The present cestode differs from *S. mohekarae*, Tat and Jadhav, 1997 [22] which shows elongated scolex, hooks 151 in numbers, neck short and broad, testes 300-310 in numbers and vitellaria follicular. The present parasite differs from *S. armatusae* Hiware,1999 [3] in having scolex triangular, hooks 32-40 in numbers, vagina anterior to cirrus pouch and vitellaria follicular. The present cestode differs from *S. tappi* Patil *et.al*., 2003 [18] which is having triangular scolex, hooks 42-44 in numbers, neck is very short and squarish, testes 285-295 in numbers, small, rounded, distributed in 2 fields, vagina anterior to cirrus pouch and vitellaria follicular. The present parasite differs from *S. ayodhensis* Pande *et. al.,* 2006 [17] in having conical scolex, hooks 29 in numbers, testes numerous, vitellaria follicular and reported from *Amphinuous cuchia,* in India. The present cestode differs from *S. baughi* Pande*et. al*., 2006 [17] in having hooks 28 in numbers, neck present, testes 40-50 in numbers, ovary compact, vitellaria follicular and reported from *Rita rita,* in India.The present cestode differs from *S. panzarensis*kalse *et.al.,* 2009 [14] in having scolex triangular, hooks 58 in numbers, mature segment acraspedot, rectangular and testes 40-45 in numbers. The present cestode differs from *S. madhavii* Bhure*et. al.,* 2010 [4] in having scolex conical, hooks 40-44 in numbers and testes 200-225 in numbers. The present cestode differs from *S. rupchandensis* Pardeshi and Hiware, 2011[16] in having scolex tubular, cylindrical, hooks 42-55 in numbers, neck absent and testes 350-370 in numbers, Vitellaria follicular. *S. satarensis* Bhure and Nanware, 2011 [5] in having scolex pear shaped, tapering anteriorly and broad posteriorly, hooks 28-30 in numbers, neck absent and testes 175-200 in numbers, granular.

In above a foresaid discussion on the present parasite deserves the status of a new species and named *Senga govindii* Sp. Nov. the name is given in honour of well-known helminthologist Prof. G.B. Shinde

TAXONOMIC SUMMARY

Genus - *Senga* Dollfus, 1934 [6]
Species - *Senga govindii* Sp. Nov.
Type host - *Mastacembelus armatus* (Lacepede, 1800)
Habitat (Site) - Intestine
Type locality - Sinakolegoan Dam, Dist. Osmanabad.
HolotypeandParatype - Deposited in the Helminth Research Lab., Dr. B.A.M. University, Aurangabad, (M.S.) India .
Date of collection - 10 March, 2010
Etymology - Named in honour of Prof. G.B.Shinde, well Known Helminthologist.

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