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ORIGINAL ARTICLE

Taxonomic Studies on Cestode Genus *Senga* (Dollfus, 1934) (Ptychobothridae, Luhe, 1902) From *Mastacembelus Armatus* (Lacepede, 1800) With Description of A New Species

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ABSTRACT

Present investigation deals with taxonomic studies of Pseudophyllidean cestode Senga rostellata sp. nov. collected from the intestine of Mastacembelus armatus (Lacepede, 1800) at Nanded (M.S.) India during the period of February, 2011 to January, 2013. Worm comes closer to all known species of this genus in general topography of organs but differs in having triangular scolex, narrow anteriorly and broad posteriorly, having pair of bothria, which is sessile, extends from the anterior end to posterior end of the scolex, rostellum oval to rounded in shape, armed with 20-22 hooks, neck long, mature proglottids three times broader than long, testes 25-30 in number, pre-ovarian, scattered in two groups, cirrus pouch cylindrical, vagina thin tube, runs posteriorly, ovary bilobed, Gravid proglottids are 4-5 times broader than long, uterus sacular filled with 30-35 eggs and vitellaria follicular.

Key Word: *Mastacembelus armatus (Lacepede, 1800) Ptychobothridae Luhe,1902, Senga Dollfus,1934, Taxonomic Studies.*

INTRODUCTION

The genus *Senga* was established by Dollfus (1934) with its type species *S.besnardi* from *Betta splendens*, the Siamese fighting fish, in an aquarium at Vincennes, France. *S. ophiocephalina* Tseng, 1933, syn. *Anchisrocephalus o. T., A. polyptera* Southwell, 1913 nec *A. polypteri (*Leydig*)* of Montic., 1890, occurs in *Ophiocephalus argus;* Tsian and Pieping, China. *S. pcynomera* (Woodland, 1924), syn. *Bothriocephalus p.W.*, is reported from *Ophicephalus marulius* at Allahabad, India. Johri (1956) described *Senga lucknowensis* from the spiny eel, *Mastacembelus armatus* Lacep. from Lucknow, India. After that, many researchers reported and described some new *Senga* species parasitizing freshwater fishes. It indicates that genus *Senga* is very abundant and diversified. Fernando and Furtado (1964) Recorded *Senga malayana* from *Channa striatus*; *Senga parva* and *Senga filiformis* from *Channa micropeltes* at Malacca. P. Ramadevi and K. Hanumantha Rao (1966) reported pleurocercoid of *Senga* sp. from freshwater fish *Panchax panchax* (Ham. and Buch.) at Kondakarla, (Vishakapatnum), A.P. Beside, Furtato and Chauhan (1971) reported *Senga pahangenesis* from *Channa micropeltes* at Tesak Bera. P. Ramadevi and Rao (1973) described *Senga vishakapattanmensis* from intestine of freshwater fish *Ophiocephalus punctatus*. *Senga taunsaensis* was described by Zaidi Daulat Ali and Khan Daler (1976) from *Channa gachua* (Hamilton) at Taunsa Barrage, Pakistan Gupta and Sinha (1980) described *Senga punctati* from *Ophiocephalus puntatus* and *Senga mastacembali* from *Mastacembalus armatus*, Lukhnow, India. Shinde and Deshmukh (1980) described *Senga khami* from freshwater fish *Ophiocephalus marulius* at Kham river, Aurangabad, India. Jadhav and Shinde (1980) added *Senga aurangabadensis* in *Mastacembelus armatus* at Aurangabad, India. Shinde and Jadhav (1980) reported *Senga godavari* from *Mastacembelus armatus*, at Nanded, India. Kadam, Jadhav and Shinde (1981) described *Senga paithanensis* from intestine of *Mastacembelus armatus*. Majid and

Shinde (1984) added *Senga raoii* and *Senga jagannathe* from freshwater fish *Channa puntatus*, Jagannathpur, Orissa. Gupta and Parmar (1985) reported *Senga indica* from intestine of freshwater fish *Mastacembelus armatus* (Lacepede, 1800); from Lucknow India. Gariola and Malhotra (1986) reported *Senga gangesii* from *Mystus vittatus* found in river Ganges at Allahabad, U.P., India. *Senga pathankotensis* was reported by Duggal, C.L. and Bedi, H. (1989). Jadhav and Deshmukh and Gavhane (1991) described *Senga gachuae* from freshwater fish *Channa gachua* at Aurangabad, M.S.India. *Senga maharashtrii* was reported by Jadhav B.V., Gavhane A.B. and Jadhav A.P. (1991) from intestine of *Mastacembelus armatus* at Daryapur, M.S.India. *Senga chauhani* was reported by Hasnain M. (1992) from fish host *Channa puntatus* at Jamshedpur, India. Mathur, Srivastav and Daisy Rani (1994) described *Senga jhasiensis* from *Mastacembelus armatus* (Lecepde, 1800); Jhansi (M.P.), India. *Senga mohekarae* from *Mastacembelus armatus* added by Tat and Jadhav (1997). Wangswad, Marayong and Jadhav (1998) described *Senga chiangmaiensis* from *Mastacembelus armatus*, Maesa Stream, Chiang Mai, Thailand. *Senga armatusae* (Hiware 1999) was described and reported in *Mastacembelus armatus* at Pune, India. Patil and Jadhav (2003) described *Senga tappi* from *Mastacembelus armatus* at Shrirpur, Dhule, India. Jadhav (2005) published review article of genus *Senga* from freshwater fishes in India. *Senga sharpiloi* (Polyakova and Kirin, 2005) was recovered and reported in *Channa micropeltes*, Vylov-Lennogo of the coast of Singapur. Pande *et al.* (2006) added two species, *Senga ayodhensis* from *Amphinuous cuchia* (Ham.) at Ayodhya, U.P. and *Senga baughui* from *Rita rita* (Ham.) Basti, U.P. India. Bhure *et al.,* (2007) described *Senga jadhavae* from *Mastacembelus armatus* at Aurangabad. *Senga chandkapurensis* (Khadap *et al.,* 2007) was reported from freshwater teleost *Mastacembelus armatus* at Chandikapur. Dist. Bidar, Karnataka, India. Srivastava *et al.,* (2007) reported *Senga tictoi* from intestine of freshwater fish *Puntius ticto* at Jhansi, U.P., India. Kankale Nilima (2008) described *Senga nathsagarensis* from freshwater fish *Mastacembelus armatus* at Nathsagar Dam, Paithan, Dist Aurangabad (M.S.) India *Senga kaigaonensis,* (Wankhede and Reddy, 2009) was recorded from freshwater fish *Mastacembelus armatus* (L.) Kaigaon toka, Dist Aurangabad (M.S.) India. Mangnale and Kalse (2009) reported *Senga panzaraensis* from small intestine of *Mastacembelus armatus* caught at Panzara River, Dhule, M.S., India. *Senga madhavae* (Bhure *et al*., 2010); *Senga satarensis* and *Senga mangalbaiae* (Bhure and Nanware, 2011) were reported from from freshwater fish *Mastacembelus armatus* from Maharashtra state. Pardeshi and Hiware (2011) described *Senga rupchandensis* from *Channa straitus* at Jalana, M.S. India. Dhole *et al.,* (2011) *Senga rostellarae* and *Senga chandrashekhari* from *Mastacembelus armatus*. Maharashtra state India. Jadhav *et al.*, (2012) added *Senga govindii* from intestine of *Mastacembelus armatus* from Sina kolegaon Dam, Osmanabad Dist. (M.S.) *Senga silcharensis* (Puinyabati, H., Shomorendra, M. and Kar Devashish, 2013) was reported from intestine of freshwater fish *Channa puntatus* (Bloch) from Chatla Haor, Silchar, Assam. Bhure *et al.,* (2014) described *Senga microrostellata* from *Mastacembelus armatus* (Lecepde, 1800); at Parabhani (M.S.) India. More recently Fartade Asawari and Fartade Madhukar, 2014 described *Senga nandedensis* from freshwater fish *Mastacembelus armatus* in Godavari basin (M.S.) India.

MATERIALS AND METHODS

During collection of Piscean cestode parasites, One Hundred Twenty Two cestodes were collected from the Ninty Two infected intestine out of One Hundred Twenty examined freshwater fish host *Mastacembelus armatus* (Lacepede, 1800) at Nanded (M.S.) India during the period of February, 2011 to January, 2013.

These cestodes are preserved in hot 4% formalin and eight specimens are stained with Harris haematoxylin and Borax carmine, dehydrated in ascending grades of alcohol, cleared in xylene, mounted in D.P.X. and drawings are made with the aid of camera lucida attachments. Photomicrographs were taken by Trinocular computerized Research microscope. All measurements are recorded in millimeters.

Figure 1. Fish Host *Mastacembelus armatus* Lacepede,1800

RESULTS (Description Based on Eight Specimens)

All the cestodes are long, consisting of scolex, immature, mature and gravid proglottids. Scolex is triangular, narrow anteriorly and broad posteriorly and measures 1.180 (1.123-1.236) in length and 0.494 (0.280-0.708) in breadth. Scolex having pair of bothria, which is sessile, extends from the anterior end to posterior end of the scolex. Bothria measures 0.983 (0.955-1.011) in length and 0.235 (0.112-0.359) in breadth. Anterior end of the scolex terminates in a rostellum, which is oval to rounded in shape and measures 0.084 (0.056-0.112) in length and 0.264 (0.247-0.280) in breadth. Rosetellum is armed with 20-22 hooks, which are measures 0.088(0.083-0.094) in length and 0.009(0.008-0.011) in breadth. Neck is long and measures 0.365(0.280-0.449) in length and 0.348(0.337-0.359) in breadth.

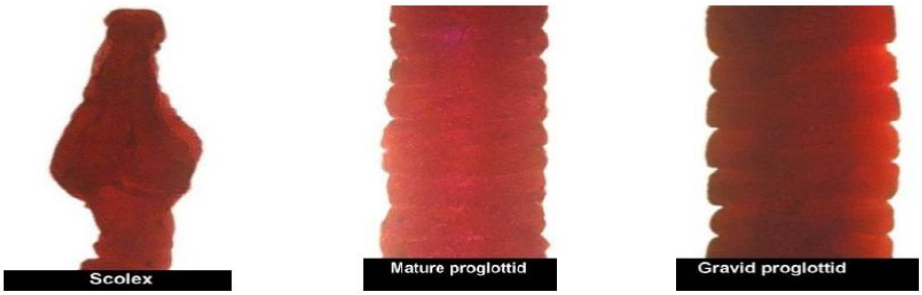

Figure 2. Microphotoplate of *Senga rostellata* Sp. Nov.

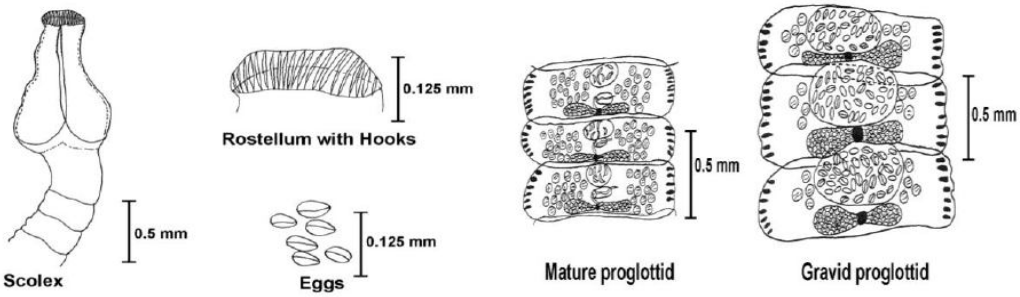

Figure 3. Cameralucida Diagram of *Senga rostellata* Sp. Nov.

Mature proglottids are about three times broader than long and measures 0.325 (0.314-0.337) in length and 1.236 (1.213-1.258) in breadth. Testes are small, oval in shape, pre-ovarian 25-30 in number, scattered in two groups and measures 0.056 in diameter. Cirrus pouch is cylindrical in shape, pre – ovarian in position, situated in the centre of the segment and measures 0.123 (0.112-0.134) in length and 0.078 (0.067-0.089) in breadth. Cirrus is thin, present within the cirrus pouch and measures 0.109 (0.101-0.112) in length and 0.016 (0.011-0.022) in breadth. Vas deferens is short, thin, straight tube and measures 0.061 (0.056-0.067) in length and 0.028 (0.022-0.033) in breadth. Vagina and cirrus pouch open a common pore known as genital pore, which is small in size, oval in shape and measures 0.039 (0.033 - 0.044) in length and 0.028 (0.022 - 0.033)in breadth. Vagina is a thin tube, slightly curved, arises from the genital pore, runs posteriorly and forms receptaculum seminis and measures 0.089 (0.078-0.101) in length and 0.016(0.011-0.022) in breadth. Receptaculum seminis is straight tube open into ootype

and measures 0.039 (0.033 - 0.044) in length and 0.028 - (0.022 - 0.033) in breadth. Ootype is oval, medium in size and measures 0.044 in diameter. From the ootype ovarian lobes start. Ovary is distinctly bilobed, transversely placed at posterior margin of the proglottids and each lobe measures 0.264 (0.247-0.280) in length and 0.067 (0.056-0.078) in breadth. Vitellaria are follicular, on each lateral side from anterior to posterior margin of the proglottids.

Gravid proglottids are 4-5 times broader than long and measures 0.365 (0.337-0.395) in length and 1.544 (1.516- 1.573) in width. Uterus is Saccular, filled with 30-35 eggs and measures 0.280(0.224-0.337) in length and 0.702(0.674-0.730) in breadth. Eggs are elongated, tapering at both ends and measures 0.045(0.041-0.050) in length and 0.025(0.022-0.027) in breadth. The uterine pore is rounded, towords anterior region of the proglottids.

DISCUSSION

Species of the genus *Senga* are reported from labyrinthiform and cypriniform fishes of South East Asia. *S. besnardi* Dollfus, 1934 is from *Betta splendens* the Siamese fighting fish, in an aquarium at Vincennes, France.

Present worm comes closer to all the known species of the genus *Senga* Dollfus, 1934 in general topography of organs, but differs from *Senga ophiocephalina* Tseng, 1933 in having pear shaped scolex, shallow bothria, neck absent, testes 50-55 in numbers and vitellaria lobate. The present form differs from *S. besnardi* Dollfus, 1934 in having scolex triangular, hooks 50 in numbers, neck absent, mature segment wider than long, testes 160-175 in numbers, vagina posterior to cirrus pouch, compact ovary and Vitellaria granular. It differs from *S. pcynomera* Woodland, 1934 in having elongated scolex, hooks 60 in numbers, neck absent, ovary discontinuous in two groups and indistinct segmentation, Vitellaria granular and reported from *Ophiocephalus marulius* at Allahabad, India. The Cestode *Senga rostellata* Sp. Nov. differs from *S. lucknowensis* Johri, 1956 in having body 210-212mm, Scolex pear shaped, narrow anteriorly and broad posteriorly, bothria paired, fleshy, terminating anteriorly in disc, which is notched on two side, disc bears two half crown of hooks, 36-48 in numbers, neck absent, immature segment square, mature proglottids wider than long, testes numerous, around the ovary, lies in medullary region, cirrus sac muscular, cirrus coiled, cirro-vaginal opening lies at anterior to ovary, ovary bilobed, uterus anterior to ovary, it winds anteriorly in irregular fashion making about 7-10 turns, vitelline follicles are situated in groups, in cortical parenchyma, eggs oval, thin shelled, without opercula, and reported from freshwater fish *Mastacembelus armatus* (Lecep); Lucknow, India. The present worm differs from *S. malayana* Fernando and Furtado,1964 in having body scolex tubular, cylindrical or circular, hooks 60 in numbers, neck absent, mature proglottids broader than long, 100-500 in numbers, testes 120-150 in numbers, ovary bilobed, vagina short tube vitellaria lobate, in two groups and reported from Malayan freshwater fishes. It differs from *S. parva* Fernanado and Furtado, 1964 in having pear shaped scolex, hooks 42-44 in numbers, neck absent, mature segment broader than long, 80-100 in numbers, testes 150-180 in numbers, ovary globular, Vitellaria granular and reported from Malayan freshwater fishes. The Cestode differs from *S. filiformis* Fernando and Fertado, 1964 in having body 15-16 x 0.192 mm, hooks 55-57 in numbers, testes 350-370 or 120-150 in numbers, vitellaria follicular and reported from Malayan freshwater fishes. The present form differs from *S. pahangensis* Furtado et. al., 1971 in having scolex triangular, hooks 52 in numbers, neck present, mature proglottids broader than long, testicular lobes situated laterally in the medulla, ovary bilobed, vitellaria lobulate and reported from *Channa micropeltes*, Cuvier (Ophicephalae) of Malaysia. It differs from *S. visakhapattanmensis* Ramadevi et. al., 1973, in having circular scolex, 46-52 hooks, neck absent, testes 50-55 in numbers collected from *Ophiocephalus punctatus*, Visakhapatnam. The present form differs from *Senga taunsaensis* Zaidi Daulat Ali and Khan Daler,1976 in having scolex rectangular, bears two shallow bothria, apical disc bears crown of 44-46 hooks and is

notched at two opposite ends, long hooks 42-44 in numbers, rudimentary hooks 04 in numbers, neck absent, proglottids acraspedote and broader than long, testes numerous, occupied lateral medullary field, ovary bilobed, submedian, medullary, post equatorial, uterus coiled, lie in medial medulla, opens at cirrovaginal apperature, eggs numerous, small, oval and reported from the intestine of *Channa gachua* (Hamilton) at Taunsa Barrage, Pakistan. The present cestode differs from *S.punctati* Gupta and Sinha, 1980 in having body 150-180 x1.20-1.49mm, hooks 28 to 30 in number, small, neck absent, mature proglottids longer than broad, interrupted vitellaria, bilobed ovary and reported from the intestine of *Ophicephalus punctatus* from Lucknow, India. It differs from *S. mastacembali* Gupta and Sinha, 1980 in having scolex 0.92-0.99 mm, rostellar hooks 30-36 in numbers, neck absent, mature proglottids broader than long, subequal ovary, vitellaria scattered in the cortical parenchyma and reported from the intestine of *Mastacembelus armatus* caught at Lucknow, India. The Cestode *Senga rostellata* Sp. Nov. differs from *S. khami* Shinde et. al., 1980 in having rectangular scolex, hooks 55-57 in numbers, neck present, mature proglottids slightly broader than long, testes 155 in numbers, ovary bilobed, post equatorial, vitellaria follicular and reported from *Mastacembelus armatus* Kham River, Aurangabad, India. The Cestode *Senga rostellata* Sp.Nov. differs from *S. aurangabadensis* Jadhav et. al., 1980 in having oval scolex, hooks 50-52 in numbers, neck absent, mature proglottids two times broader than long, cirrus pouch medullary, testes 240-260 in number, ovary bilobed, post equatorial, vagina short tube, vitellaria follicular, corticular in position. It differs from *S. godavarii* Shinde *et. al.,* 1980 in having pear shaped scolex, neck absent, testes rounded, 220-230 in numbers, arranged in two fields, cirrus pouch Oval, situated in anterior half of the proglottids, vagina anterior to cirrus pouch, vitellaria follicular, arranged in 3-4 rows and reported from *M. armatus,* Nanded M.S.India. It differs from *S. paithanensis* Kadam et. al., 1981 in having scolex triangular, prominent, large, hooks 54 in numbers, neck present, testes rounded, oval, 130-135 in numbers, scattered in two lateral groups, ovary bilobed with long blunt acini, vagina thin tube, vitellaria follicular, arranged in 2-3 rows and collected in *Mastacembelus armatus* at Paithan, Dist. Aurangabad, M.S., India. The present Cestode differs from *S. raoi* Majid et. al., 1984 in having pear shaped scolex, broad at middle and tapering at both the ends, bothria two, shallows, latter extending up to the posterior region of scolex, hooks 46 in numbers, neck absent and testes small, rounded, 65-170 in numbers, cirrus pouch oval, Ovary post-equatorial, bilobed, each lobe compact, vitellaria granular and reported from *Channa punctatus* at Jagannathpuri, Orissa, India. It differs from *S. jagannathae* Majid et. al., 1984 in having scolex pear shaped, broader at posterior ends, bothria two, spoon shaped, hooks 44 in numbers, neck short, testes small, rounded and 240-250 in numbers, cirrus pouch oval, ovary Bilobed, compact, spatulate, vagina anterior to cirrus pouch, vitellaria granular and reported from freshwater fish *Channa punctatus* at Jagnnathpuri, Orrisa. It differs from *Senga indica* Gupta and Parmar,1985 in having size of worms 176 x1.32mm, rostellar hooks 36, neck absent, mature proglottids longer than broad, gravid proglottid longer than broad and collected from intestine of freshwater fish *Mastacembelus armatus* (Lacepede,1800); from Lucknow, India. The present specimen differs from *S. gangesii* Gairola, D. and Malhotra, S.K., 1986 in having body 200 mm, rostellar hooks 72-75 in numbers, arranged in two semicircle and reported from *Mystus vittatus*. The Cestode Senga rostellata Sp. Nov. differs from Senga pathankotensis Duggal, C.L. and Bedi, H., 1989 in having 52+4 apical hooks; post-equatorial, distinctly bilobed ovary; continuous vitellaria in mature proglottids; vitelline follicles larger than testicular follicles and distinct as well as indistinct type of segmentation and reported from freshwater fish, Punjab, India. It differs from *S. gachauae* Jadhav et. al., 1991 in having pear shaped scolex, hooks 22-25 in numbers, testes 60-70 in numbers, oval, arranged in two fields and collected from *Channa gachua* at Solapur, M.S. India; from *S. maharashtrii* Jadhav et.al., 1991 in having oval scolex, hooks 45-47 in numbers, neck absent, testes oval, arranged in two fields and 80-90 in numbers and reported from *Mastacembelus armatus* at Amravati (Daryapur) M.S. India.The present

Cestode differs from *S. chauhani* M. Hasnain, 1992 in having scolex large, oval, rostellar hooks 40-44 in numbers, neck short, mature proglottids broader than long, testes oval, 200-210 in numbers, vagina thin tube, ovary bilobed and vittelaria follicular, arranged in 4-5 rows and collected from fish host *Channa punctatus* at Jamshedpur. It differs from *Senga jhansiensis* Mathur, Srivastav and Daisy Rani,1994 in having scolex 0.98-1.4 x0.23-0.61mm, rostellar hooks 28-32 in numbers, neck present, mature proglottids broader than long, gravid proglottids broader than long and collected from *Mastacembelus armatus* (Lacepede,1800); Jhansi (M.P.), India.It differs from *S. mohekarae* Tat and Jadhav, 1997 in having elongated scolex, hooks 151 in numbers, arranged in two semicircle groups, testes 300-310 in numbers.The Cestode *Senga rostellata* Sp.Nov. differs from *Senga chiangmaiensis* Wongsawad, Marayong & Jadhav, 1998 in having scolex large, pear-shaped, bothria four, large, elongated, occupying major portion of the scolex, rostellum large, located on the anterior end of the scolex, consists of 28 hooks, placed in 4 quadrants, arranged in a circle, ovary bilobed, butterfly-shaped, situated in the posterior third of the segment, testes ovoid, distributed in 2 fields in the central medulla, eggs ovoid, round and collected from *Mastacembelus armatus*, Maesa Stream,Chiang Mai, Thailand. The present form differs from *S. armatusae* Hiware, 1999 in having scolex triangular, 32-40 hooks, neck absent, mature proglottids four times broader than long, testes small, rounded, 230-240 in numbers, vagina anterior to cirrus pouch, ovary bilobed, post equatorial, vitellaria follicular, arranged in double rows and reported from freshwater fish, *Mastacembelus armatus* at Pune (M.S.); from *S. tappi* Patil et. al., 2003 in having scolex triangular, 42-44 hooks, testes 285-295 in numbers, rounded, distributed in two fields, vagina anterior to cirrus pouch. It differs from *Senga sharpiloi* Polyakova and Kirin,2005 in having adult cestodes medium, thin body, fusiform, scolex pyramidal, pear-shaped, provided armed apical disc and a pair of shallow bothria, bothria oval, almost oblong, with thick edges, cross section of bothria scolex H-shaped, hooks large, arranged in two semicircle rings, 44-50 in numbers, mature segments rectangular, testes rounded, located in the medullary parenchyma, cirrus sac small, located in median field of segments, ovary consists of two symmetrical wings joined in the middle by a narrow isthmus, numerous yolk follicles corticle in position, vitellaria very close to each other, genital atrium lies at center dorsal segment in its median field ahead ovary, vagina straight tube, oviduct short, uterine pore involutive (false), lies on the ventral surface at the anterior margin of the segment, eggs oval, small, thin shell, smooth, without a lid and recovered from *Channa micropeltes*, Vylov-Lennogo off the coast of Singapore. It differs from *S. ayodhensis*, Pandey 2006 in having scolex conical, hooks 29 in numbers, neck absent, testes numerous, rounded, ovary bilobed, vagina thin coiled, vitellaria follicular; from *S. baghuai*, Pandey 2006 in having scolex pear shaped, hooks 28 in numbers, neck long, mature segment broader than long, testes 40-50 in numbers, ovary compact, vagina thin, vitellaria follicular. The present worm differs from *S jadhavae* Bhure et al., 2007 in having scolex triangular, rostellum rounded, rostellar hooks 50-54 in numbers, neck short, testes small, rounded, 310-320 in numbers, ovary bilobed, vagina coiled tube, vitellaria follicular, arranged in 4-5 rows, uterus Saccular and recovered from *Mastacembelus armatus* (Lacepede,1800); Aurangabad (M.S.), India.The *S. rostellata* Sp. Nov. differs from *S. chandkapurensis* Kahadap et al.,2007 in having scolex barrel shaped, rostellum armed, rostellar hooks 28-30 in numbers, circularly arranged, neck short, mature proglottid broader than long, testes small, rounded, 170-180 in numbers, cirrus pouch oval, obliquely placed, ovary large, distinctly bilobed, transversly placed, vagina anterior to cirrus pouch, uterus Saccular, Vitellaria granular and reported from intestine of freshwater fish *Mastacembelus armatus* at Chandikapur Dist Bidar, Karnataka, India. It differs from *S. tictoi* Shrivastava,2007 in having scolex oval, narrow at both ends, rostellum bilobed, rostellar hooks 24-28 in numbers, 0.042-0.054mm, bothria elongated, deep, neck absent, proglottids broader than long, craspedote, testes oval to round, 60-120 in numbers, cirrus pouch bounded by thin membrane, ovary bilobed, medial, posteriorly located, receptaculum seminis absent, vitelline follicles corticle, arranged in two lateral

bands, uterus median, sac like, eggs oval, operculated and reported from intestine of freshwater fish *Puntius ticto* at Jhansi U.P., India. It differs from *S.nathsagrensis* Kankale, 2008 in having scolex long, elongated, slightly cone shaped, rostellum round to oval, hooks long, unequal, 30-32 in numbers, neck long, mature proglottids broader than long, testes 200-250 in numbers, cirrus pouch oval, pre ovarian, cirrus short, thin, curved, vagina thin long tube, seminal receptaculum long, ovary bilobed, dumbbell shaped, ootype small, gravid proglottids broader than long, uterus Saccular, lies at middle region of segment, eggs 25-27 in numbers, uterine pore oval, vitellaria follicular, arranged in 2-3 rows and reported from fresh water fish *Mastacembelus armatus* (L.) Nathsagar Dam, Paithan, Dist Aurangabad (M.S) India. The present form differ from *S. kaigaonensis,* Wankhede and Reddy, 2009 in having scolex triangular, anterior end pointed, rounded and posterior end broad, hooks 36 in numbers, mature segment broader than longer, testes 285-295 in number, cirrus pouch pre-ovarian, obliquely placed and reported from fresh water fish *Mastacembelus armatus* (L.) Kaigaon toka, Dist Aurangabad (M.S) India. It differs from *S. panzaraensis,* Mangale and Kalse, 2009 in having scolex triangular, scolex bears two bothria, rostellum oval, hooks 58 in numbers, neck short, mature segment five times broader than long, testes small, rounded, 40-45 in numbers, cirrus pouch oval, medium, transversely placed, genital pore small, oval, ovary large, bilobed, vagina thin tube, slightly curved, ootype rounded, vitellaria granular, arranged in four to five rows, eggs oval, operculated and collected from small intestine of *Mastacembellus armatus* caught at Panzara river, Dhule,M.S., India. The *S. rostellata* Sp. Nov. differs from *S. madhavae* Bhure et al., 2010 in having Scolex triangular, rostellum rounded, armed with 40-44 hooks, which arranged in two semicircle unequal length i.e. long and short, neck absent, mature proglottids 5-6 times broader than long, testes small, oval, 200-220 in number, Cirrus pouch oval, pre-ovarian, situated in the centre of the proglottids, Vagina thin tube, receptaculum seminis straight tube, ootype oval, medium, ovary dumbbell shaped, Vitellaria granular, uterus Saccular and recovered from *Mastacembelus armatus* (Lacepede,1800); Pune (M.S.), India. The Cestode *Senga rostellata* Sp. Nov. differs from *S.satarensis* Bhure et al., 2011 in having Scolex pear shaped, tapering anteriorly and broad posteriorly and measures 0.635 × 0.410 mm, pair of sessile bothria, rostellum oval to rounded, armed with 28-30 hooks, neck absent, mature proglottids 6-7 times broader than long, testes small, oval, 175-200 in number, cirrus pouch oval, vas deferens short, thin, straight tube, Vagina thin tube, slightly curved, receptaculum seminis Ovary large, vitellaria granular, uterus Saccular, eggs elongated and recovered from *Mastacembelus armatus* (Lacepede,1800); Satara (M.S.), India. It differs from *S. mangalbaiae* Bhure et al., 2011 in possessing Scolex conical, tapering at the apex and broad at the base, distinctly marked off from the stroblia, bothria two, fleshy, rostellum oval to rounded, armed with 38-42 hooks, neck absent, mature proglottids 2-3 times broader than long, testes oval to rounded, 70-80 in numbers, scattered lateral side of segment, cirrus pouch small, oval, cirrus thin, straight, genital pore small, oval, Ootype small, oval, Ovary large, distinctly bilobed, each lobe like a nut shaped, uterus Saccular, eggs oval, non-operculated, vitellaria granular, arranged in 2-3 rows and collected from *Mastacembelus armatus* (Lacepede,1800); Osmanabad (M.S.), India. It differs from *S. rupchandensis,* Pardeshi et. al., 2011 in having body long, scolex flat, tubular, cylindrical, scolex bears two bothria, overlapping one another, bothria flat or elongated, sac like, rostellum flat, having two rows of semicircular hooks, 42-55 in number, neck absent, testes rounded, 350-370 in number, cirrus pouch sac like, oval, vagina elongated, tubular, ovary bilobed, right ovarian lobe, vitellaria follicular, eggs oval, non-operculate and recovered from *Channa striatus* (Bloch, 1793) at Jalna District (M.S.), India. The present differs from *Senga rostellare,* Dhole et. al., 2011 in having body long, Scolex pear shaped, medium, elongated, 1.08 ×0.57mm, bothria two, large, rostellum armed with a semi circle 41 hooks, neck absent, mature segments medium, quadrangular, testes medium, rounded, 217-242 in numbers, almost in single field, crowded together, cirrus pouch elongated,oval, cirrus short, thin, curved, ovary medium, distinctly bilobed, each lobe with 2- 3 blunt round acini, vitellaria

follicular, arranged in one row, on each lateral side of segment, gravid segment slightly longer than broad, uterus sac like, eggs oval, operculate and collected from intestine of *Mastacembelus armatus* L.; M.S. India. It differs from *Senga chandrashekhari* Dhole et. al., 2011 in having scolex large, broad at the posterior end, narrow at the anterior end, bothria two, fleshy, hooks 78 in numbers, arranged in a semi circle, neck short, mature segment broader than long, slightly squarish, testes medium, rounded, 98-117 in numbers, evenly distributed, in two lateral fields, ovary medium, bilobed, transversely placed, vitellaria follicular, arranged in 1-2 rows, on each lateral side, gravid segment broader than longer, uterus sac like, eggs oval, operculate and reported from intestine of *Mastacembelus armatus* L.; M.S. India. It differs from *S. govindii,* Jadhav *et. al.,* 2012 in having worm long, thin, milky white in colour, with scolex, numerous immature and mature segments, scolex large, triangular, rostellum, armed with 45-50 hooks, bothria two, sac like, neck present, mature proglottids rectangular, three times broader than long, testes medium, oval, 100-130 in numbers, cirrus pouch oval, cirrus thin tube, ovary bilobed, large, situated middle of the segment, vagina thin tube, posterior to cirrus pouch, genital pore small, rounded, gravid segment broader than long, uterus large, Saccular, eggs oval, non operculated, vitellaria granular, arranged in two-three rows at each lateral margin of the segment and reported from intestine of *Mastacembelus armatus* (Lacepede, 1800) at Sina kolegoan Dam, Osmanabad Dist (M.S.) India. It differs from *Senga silcharensis* Puinyabati, H., Shomorendra, M. and Kar Devashish,2013 in having Scolex pear shaped, bluntly rounded apically, bothria two, shallow, oval, extending up to the posterior region of the scolex, Anterior region of scolex having rostellum with 44 hooks in two semi-circles, neck absent, mature and gravid segments broader than long, testes small, rounded, 60 in number, ovary post-equatorial, bilobed, and collected from the intestine of freshwater fish *Channa punctatus* (Bloch) from Chatla Haor, Silchar, Assam. The *S. rostellata* Sp. Nov. differs from *S.microrostellata* Bhure et.al.,2014 in having Scolex triangular, tapering at apex and broad at base, distinctly marked off from stroblia, bothria two, sessile, rostellum oval, armed with 18-20 hooks, arranged in a circle, neck absent, mature proglottids 8-9 times broader than long, testes small, oval to rounded, 250-300 in numbers, scattered lateral side of segment on either side of ovary and cirrus pouch, Cirrus pouch small, elongated, transversely placed, cirrus thin, short, straight, vas deferens short, thin tube, genital pore small, oval, vagina arises from gonopore, thin tube, runs towards posterior side, receptaculum seminis thin, short tube, ootype oval to rounded, Ovary large, distinctly bilobed, dumbbell shaped, Uterus Saccular, eggs oval, non-operculated, vitellaria follicular, arranged in a line and recovered from *Mastacembelus armatus* (Lacepede,1800); Parbhani (M.S.), India. It differs from *Senga nandedensis* Fartade Asawari and Fartade Madhukar,2014 in having scolex large, well developed, triangular, rostellum prominent, armed with 60-62 hooks, arranged in semicircle, bothria two, spatulate, extended up to posterior end of scolex, neck absent, mature segment small, rectangular, eight times broader than long, testes oval, small, 150-200 in numbers, cirrus pouch oval, medium, cirrus thin tube, ovary small, bilobed, dumbell shaped, vagina thin tube, posterior to cirrus pouch, genital pore small, rounded, vitellaria follicular, arranged in two lateral margin of the segment and collected from the fresh water fish *Mastacembelus armatus* in Godavari basin (M.S.) India.

Therefore, considering all the above differences, it is proposed to assign to the present form the rank of a new species and named as *Senga rostellata* Sp. Nov. on account of remarkable rostellum.

TAXONOMIC SUMMARY

Genus : *Senga* Dollfus, 1934
Species : ***Senga rostellata* Sp.Nov.**
Type host : *Mastacembelus armatus* (Lacepede, 1800)
Habitat (Site) : Intestine
Type locality : Nanded, M.S., India.

Prevalence : 122 mature tapeworms collected from 92 infected hosts out of 120 examined.
Period of collection: February, 2011 to January, 2013.
No. of Specimen : 122
Accession number : PGDZ/YMN/1-08/ February, 2011 to January, 2013
Etymology : The present species is named on account of remarkable rostellum.

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