

RRST-Zoology

A new Pseudophyllidean *Senga rupchandensis* n.sp. from *Channa striatus* (Bloch, 1793) at Jalna District (M.S.), India

P.R. Pardeshi and C.J. Hiware*

¹S.B.E.S. College of Science, Aurangabad-431004

²Department of Zoology, Dr. Babasaheb Ambedkar Marathwada University Aurangabad-431004

Article Info	Abstract
Article History Received : 02-02-2011 Revised : 26-05-2011 Accepted : 27-05-2011	The present communication deals with the description of a new species of genus <i>Senga</i> [3], viz <i>Senga rupchandensis</i> n.sp. from <i>Mastacembelus armatus</i> , Jayakwadi Dam, Paithan at Aurangabad District, the present form differ from the known species of the genus in the shape and size of the scolex, number of hooks and arrangement of rostellum, shape of segment, number of testes, position of cirrus pouch and arrangement of vitellaria.
*Corresponding Author Tel : +91-7798588743 Email: pardeshi-zoo777@rediffmail.com	Key Words: Cestode, <i>Senga rupchandensis</i> n.sp., <i>Mastacembelus armatus</i>
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Introduction

The genus *Senga* was established by Dollfus [3] with its type species *S. bensardi* from *Betta splendens*, the Siamese fighting fish in an aquarium at Vincennes, France. *S. ophiocephalina* [22] as *Anchistrocephalus ophiocephalina* from *Ophiocephalus argus* at Taimen, China and identified with a form previously recorded by [21] as *Anchistrocephalus polytera* (*Anchirocephalus*) - syn. *Anchirocephalus* from *Ophiocephalus striatus* in Bengal, India. *S. pycnomera*, [26] as *Bothriocephalus pycnomera* from *Ophiocephalus marulius* at Allahabad, India. *Senga lucknowensis* [10] from *Mastacembelus armatus* in India. [4] recorded *Senga malayana* from *Channa striatus*. *S. parva* and *S. filiformis* from *Channa micropeltes* at Malacca.

Senga species reported [13] the plerocercoid from *Panchax panchax*. Genus *Senga* [24] synonymised with the genus *Polynchobothrium* and proposed and proposed new combinations for the species. *S. pahangensis* reported [5] from *Channa micropeltes* at Tesak Bera. Redescribed *Senga bensardi* [19] from *Ophiocephalus gachua* in India.

Later, described another species *S. vishakapatnamensis* [17] in India. Described the life cycle of *S. vishakapatnamensis* [17] from *Ophiocephalus punctatus* in a lake at Kondakaria, A.P., India. [25] *Senga* as distinct genus in the family Ptychobothidae, Later, [2] described new species *S. khami* from fresh water fish *Ophiocephalus marulius* from Kham river at Aurangabad, India. Later, [9] described a new species *Senga godavari* from *Mastacembelus armatus*, at Nanded, India. Later, [9] was added the species *S. aurangabadensis* from *Mastacembelus armatus* at Aurangabad, M.S., India. Kadam *et al.*, [11] described a new species *Senga paithanensis* from intestine of *M. armatus*. Majid *et al.*, [12] was added *S. raoii* and *S. jagannathe* from host *Channa punctatus*. New two species described by Jadhav *et al.*,

[8] as *S. maharashtrii* and *Senga gachuae* from the intestine of *Mastacembelus armatus*. Later, [13] was added *S. chauhani* from the host *Channa punctatus*. Then, [22] added a new species *Senga mohekare* from the host *Mastacembelus armatus* at Parli, Dist. Beed, (M.S.), India.

One more new species is added by [6] as *S. armatusae* from *Mastacembelus armatus* at Pune, M.S., India. Described [16] new species *S. tappi* from *M. armatus* at Shirpur, Dist. Dhule. Later, [7] described the review article of the genus *Senga* from freshwater fish in India. Pande *et al.*, [15] described two new species *S. ayodhensis* from *Amphinothus cuchia* and *S. baught* from *Rita-rita*. Bhure *et al.*, [1] described new species *S. jadhavae* from *Mastacembelus armatus*. Later, [14] described the new species *S. nathsagarensis* from the freshwater fish *Mastacembelus armatus*.

The present communication deals with the description of new species *Senga rupchandensis* n.sp. from *Channa striatus* (Bloch, 1793).

Material and Methods

Five worms were collected from the intestine of *Channa striatus* (Bloch, 1793) from Godavari River, Shahagad, Jalna district, M.S., India, in the month of May 2007. cestode were collected or removed from the intestine, washed in distilled water, flattened between coverglass and slides, fixed in 4% formalin until 24 hours, washed in distilled water, stained with Harri's Haematoxyline, dehydrated in ascending series of alcoholic grades (30%, 50% 70% 90% 100%), cleared in xylene, mounted in DPX. Drawings were made with the help of Camera Lucida and all the measurement are taken in millimeter, Identification was carried out by using Systema Helminthum Vol. II, [27].

Description

The worms are long, creamish in colour. The scolex flat, tubular, cylindrical in shape and measures 0.7159 mm. in length and 0.2386 mm. in breadth. The scolex bears two bothria overlapping one another, bothria are flat or elongated sac like structure, it measures (right bothria) 0.4886 mm. in length and 0.1931 mm. in breadth and left bothria measures 0.4545 mm. in length and 0.1477 mm. in breadth. Right bothria is larger than left bothria. The rostellum is flat having two rows of semicircular hooks, 42-55 in number. Neck is absent.

Mature proglottids are longer than broad; it measures 1.2523 mm. in length and 0.4514 mm. breadth. Testes are rounded; 350-370 in number and it measures 0.09223 mm. in diameter. Cirrus pouch sac like, oval in shape and it measures 0.05339 mm. in length and 0.03883 mm. in breadth. Cirrus is elongated and located anterior to genital pore. Genital pore rounded in shape and measures 0.06796 mm. in diameter.

Vagina is elongated, tubular structure and connects with ootypes. Vagina measures 1.0873 mm. in length and 0.08737 mm. in breadth. The cirrus pouch overlaps to the uterus. Ootype is circular or rounded between both ovarian lobes. Ovary bilobed and separated from the Ootype, right ovary lobe measures 0.2184 mm. in length and 0.07766 mm. in breadth, left ovary lobe measures 0.1601 mm. in length and 0.1213 mm. in breadth. Ootype is rounded and it measures 0.08737 mm. in diameter. Isthmus is located posterior end of the ootype or between the ovarian lobes; it measures 0.2766 mm. in diameter. Vitellaria are follicular.

Gravid proglottids are broader than mature proglottids. Eggs are oval, non-operculated and it measures 0.01925 mm. in length and 0.01069 mm. in breadth.

Discussion

The genus *Senga* was established by [3], with its type species *S. bensardi* from *Betta splendens* at Vincennes, France. Later on described the twenty five species of *Senga* given are as follows,

The present worms differ from the species *S. ophicephalina* [23] from *Ophiocephalus argus* in China which is having scolex is (cylindrical vs pear shaped), testes (350-370 vs 50-55) in number, vitellaria lobulate.

S. bensardi [3] from *Betta splendens* in France which is scolex (tubular or cylinder vs triangular), hooks 50 in number, testes (350-370 vs 160-175) in number, vitellaria (follicular vs granular).

The present worm differs from the species *S. pcynomera* [26] from *Ophiocephalus marulius* in India which is having scolex is (tubular or cylindrical vs elongated), hooks (42-55 vs 68) in number, mature proglottides are indistinct, ovary discontinuous in two groups, testes (350-370 vs 120-150) in number, vitellaria (follicular vs granular).

The present worm differs from the species *S. lucknowensis* [10] from *Mastacembelus armatus* in India which is having scolex (tubular or cylindrical vs pear shaped), hooks (42-55 vs 36-48) in number, testes (350-370 vs 100-150) in number, vitellaria lobulate and discontinuous two groups.

The present parasites differ from the species *S. malayana* [4] from *Channa striatus* in Malacca. Which is having scolex (tubular, cylindrical vs circular), hooks (42-55 vs 60) in number, testes (350-370 vs 120-150) in number, vitellaria (follicular vs lobate).

The present parasites differ from the species *S. parva* [4] from *Channa micropeltis* in Malacca in the presence of scolex (tubular, cylindrical vs pear shaped), hooks (42-55 vs 38-40) in number, testes (350-370 vs 150-180) in numbers, vitellaria are (follicular vs granular).

The present parasite differs from the species *S. pahanensis* Furtado *et al.*, [5] from *Channa micropeltis* in Tasek, Bera which is having scolex s (tubular, cylindrical vs triangular), neck is (absent vs present), testes testicular (not lobed vs lobed) and vitellaria (follicular vs lobulated).

The present worms differ from the species *S. visakhapatanamensis* Ramadevi *et al.*, [17] from *Channa punctatus* in India, in having scolex (tubular, cylindrical vs circular), hooks (42-55 vs 50-55), and testes (350-370 vs 40-55) in number, vitellaria (follicular vs lobulated).

The present parasites differ from the species *S. khami* [2] from *Ophiocephalus marulius* in India which is having scolex (tubular, cylindrical vs rectangular), hooks (42-55 vs 55-57) in number, neck present, testes (350-370 vs 155) in number.

The present parasite or worm differs from the species *S. aurangabadensis* Jadhav *et al.*, [9] from *Mastacembelus armatus* in India which is having scolex is (tubular, cylindrical vs oval), hooks 50-52 in number, testes (350-370 vs 240-260) in number.

The present worm differs from the species *S. godavarii* Shinde *et al.*, [9] from *Mastacembelus armatus* in having scolex (tubular, cylindrical vs pear shaped), hooks 42-55 in number, testes (350-370 vs 230) in number, vitellaria follicular with 3-4 rows.

The present worm differs from the species *S. paithanensis* Kadam *et al.*, [11] from *Mastacembelus armatus* in India. Which is having scolex (tubular, cylindrical vs triangular), hooks 54 in number, neck (absent vs present), testes (350-370 vs 130-135) in number.

The present parasites differ from the species *S. raoii* [12] from *Channa punctatus* which is having scolex (tubular, cylindrical vs pear shaped), hooks 46 in number, testes (350-370 vs 65-70) in number, vitellaria are (follicular vs granular).

The present worm differs from the species *S. jagannathae* [12] from *Channa punctatus* from India, which is having scolex (tubular, cylindrical vs pear shaped), hooks 44 in number, testes (350-370 vs 240-250) in number, vitellaria are (follicular vs granular).

The present parasite differs from the species *S. gachuae* Jadhav *et al.*, [8] from the host *channa gachua* in India which is having scolex (tubular, cylindrical vs pear shaped), hooks (42-55 vs 22-25) in number, testes (350-370 vs 60-70) in number.

The present worm differs from the species *S. maharashtrii* Jadhav *et al.*, [8] from *Mastacembelus armatus* in India, which is having scolex (tubular, cylindrical vs oval), testes (350-370 vs 80-90) in number, vitellaria are follicular with (single vs 4-5 rows).

The present parasite differs from the species *S. chauhani* [13] from *Channa punctatus* in India which is having scolex (tubular, cylindrical vs oval), hooks (42-55 vs 40-44) in number, neck (absent vs present); testes (350-370 vs 200-210) in number, vitellaria are follicular with 4-5 rows.

The present worm differs from the species *S. mohekarae* [22] from *Mastacembelus armatus* in India, which is having

scolex (tubular, cylindrical vs oval), hooks (42-55 vs 151) in number, neck (absent vs long), testes oval and (350-370 vs 300-310) in number, vitellaria follicular 3-4 rows in each side.

The present worm differs from the species *S. armatusae* [6] from *Mastacembelus armatus* in India, in the presence of hooks (42-55 vs 32-40) in number, mature proglottids four broader than long, testes scattered, (350-370 vs 230-240) in number, vitellaria two rows.

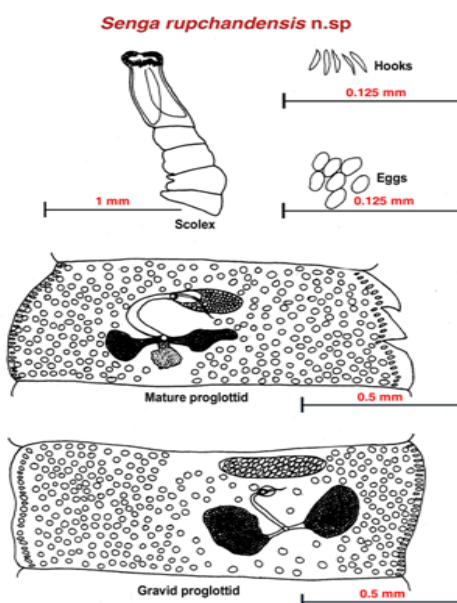
The present worm differs from *S. tappi* Patil *et al.*, [16] from *Mastacembelus armatus* in India which is having scolex (tubular, cylindrical vs triangular), testes (350-370 vs 285-295) in number.

The present parasite differs from the species *S. ayodhensis* Pande *et al.*, [15] from *Amphinuous cuchia* in India, which is having scolex (tubular, cylindrical vs conical), hooks (42-55 vs 29) in number, testes numerous.

The present worm differs from the species *S. baught* Pande *et al.*, [15] from Rita-rita in India. Which is having scolex (tubular, cylindrical vs pear shaped), hooks (42-55 vs 28) in number, neck (absent vs present), and testes (350-370 vs 40-50) in number.

The present worm differs from the species *S. jadhavae* Bhure *et al.*, [1] from *Mastacembelus armatus* which is having scolex (tubular, cylindrical vs triangular), hooks 50-54 in number, testes oval (350-370 vs 120-150) in number.

The present worms differ from the species *S. nathsagarensis* [14] from host *Mastacembelus armatus* which is having hooks are (42-55 vs 30-32) in number, testes (350-370 vs 200-250) in number, vitellaria are follicular in (single vs 2-3rows).



Comparative chart showing the account of different species of *Senga* Dollfus, 1934

Species / Characters	<i>S. ophiocephalina</i> [23]	<i>S. bensardi</i> [3]	<i>S. pycnomera</i> [26]	<i>S. lucknowensis</i> [10]	<i>S. malayana</i> [4]	<i>S. parva</i> [4]	<i>S. pahanensis</i> Furtado <i>et al.</i> , [5]	<i>S. vishakhapatnamensis</i> Ramadevi <i>et al.</i> , [17]
Scolex	Pear shaped	Triangular	Elongated	Pear shaped.	Circular	Pear shaped	Triangular	Circular
Hooks	47-50 in number.	50 in numbers.	68 in number.	36-48, in number	60 in number	38-40, number of hook	52 in number.	46- 52 in number
Neck	Absent	Absent	Absent	Absent	Present	Present	Present	Absent
Mature Segment	Broader than long	Wider than longer.	Indistinct segmentation	Broader than long	Broader than long	Broader than long	Broader than long.	Broader than long.
Testes	50-55	160-175	120-150	100-150	120-150	150-180	Testicular lobed situated laterally in the	50-55

							medulla	
Cirrus Pouch	Oval	Oval	Oval	Oval	Oval	Oval	Oval	Oval
Ovary	Bilobed.	Compact, not bilobed	Discontinuous in two group	Bilobed	Bilobed.	Bilobed.	Bilobed.	Bilobed.
Vagina	Short tube.	Posterior to cirrus pouch	Short tube.	Short tube.	Short tube	Short tube	Short tube	Short tube
Vitellaria	Lobate	Granular	Granular	Lobulated & discontinuous in 2 groups.	Lobate, discontinuous in two groups	Granular.	Lobulated	Bilobed post equatorial.

Species / Characters	<i>S. khami</i> [2]	<i>S. aurangabadhensis</i> [9]	<i>S. godavari</i> [20]	<i>S. paithanensis</i> Kadam, et. al. [11]	<i>S. raoii</i> [12]	<i>S. jagannathae</i> [12]	<i>S. gachuae</i> Jadhav et al., [8]
Scolex	Rectangular.	Oval.	Pear shaped.	Triangular prominent large	Pear shaped	Pear shaped, broader posterior ends.	Pear shaped.
Hooks	55-57 in number.	50-52 in number.	40-42 in number	54 in number	46 in number	44 in number	22-25 in number
Neck	Present	Absent	Absent	Present	Absent	Short	Short
Mature segment	Broader than long	Two time broader than long	Broader than long.	Broader than long	Broader than long	Broader than long	Broader than long
Testes	155 in number	240-260 in number.	220, 230 in number.	130-155 in number	Small, rounded 240-250.	Small, rounded 240-250.	60-70.
Cirrus pouch	Elongated.	Medullary.	Oval.	Oval and curved, anterior to isthmus.	Oval	Oval	Oval
Ovary	Bilobed.	<i>Post equatorial, bilobed</i>	Bilobed, short acini.	Bilobed, with long blunt acini	Bilobed, spatulate compact.	Bilobed, spatulate compact	Bilobed
Vagina	Short tube	Short tube	Short tube	Thin tube.	Thin tube.	Anterior to cirrus pouch.	Anterior to cirrus pouch., short thin, curved
Vitellaria	Follicular	Follicular, corticular	Follicular with 3-4 in Rows.	Follicular 2,3 rows on lateral side	Granular lateral to testicular fields.	Granular	Follicular

Species/ Characters	<i>S. maharashtrii</i> Jadhav <i>et al.</i> , [8]	<i>S. chauhani</i> [13]	<i>S. mahakarai</i> [22]	<i>S. armatusae</i> [6]	<i>S. tappi</i> [16]	<i>S. ayodhensis</i> Pande <i>et al.</i> , [15]	<i>S. baught</i> Pande <i>et al.</i> , [15]	<i>S. jadhavae</i> Bhure <i>et al.</i> , [1]
Scolex	Oval, broader, muscular	Large, oval	Oval, elongated	Triangular	Triangular anterior and pointed. Rounded and the posterior and broad.	Conical.	Pear shaped.	Triangular
Hooks	45-47 in number	40-44 in number	151 in number, Arranged circularly.	32,40 in number, circularly arranged	42-44 in number	29 in number.	28 in number.	50-54 in number.
Neck	Absent	Short	Present	Absent	Present	Absent.	Present.	Present.
Mature Segments	Broader than long	Broader than long	Broader than long	Four times broader than long	Three times broader than long.	Broader than long.	Broader than long.	Three times broader than long.
Testes	80-90 in number	Oval, 200-210 in number	Medium, oval, 300-310.	Small, rounded, distributed on other side on ovary; 230-240 in number.	Small rounded in shape 285-295 in number.	Numerous rounded in shape.	40-50 rounded in shape.	310-320 small, rounded in shape.
Cirrus pouch	Oval	Oval.	Oval, small	Oval	Oval	central	Oval	Oval
Ovary	Bilobed	Bilobed	Bilobed elongated.	Post equatorial, bilobed.	Bilobed, elongated, post equatorial.	Post equatorial, bilobed	Compact, oval unilobed.	Compact, oval, large, coiled, unilobed.
Vagina	Short thin, coiled, curved	Thin tube.	Thin tube, long, coiled.	Thin tube.	Thin tube.	Thin tube, coiled	Thin tube, coiled.	Thin tube.
Vitellaria	Follicular, rounded with 4-5 rows.	Follicular with 4-5 rows	Follicular with 3-4 rows in each side.	Follicular, double rows.	Follicular lateral to testicular.	Small, follicular	Follicular.	Follicular.

Species/ Character	<i>S. nathsgarensis</i> [14]	<i>Senga rupchandensis</i> n.sp.
Scolex	Long or elongated	Tubular, cylindrical
Hooks.	30-32 in number	42-55 in number, arranged two semicircular
Neck	Long	Absent
Mature segment	Longer than broader	Broader than long.
Testes	200-250 in number	350-370, oval, rounded in shape.
Cirrus pouch	Oval	Oval
Ovary	Bilobed, dumbbell shaped	Bilobed
Vagina	Thin tube	Short tube.
Vitellaria	Follicular with 2-3 rows.	Follicular, oval with single rows.

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