A new species of the genus *Shindeobothrium*, Shinde and Chinholikar, 1975 from *Trygon* sp. at Ratnagiri.

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The genus *Shindeobothrium* is erected by Shinde and Chinholikar 1975 as *s. indica* from *Trygon* sp. at Ratnagiri. The present communication describes a new species of the genus.

**Material and methods**

Four specimens of the genus *Shindeobothrium* were collected from the *Carcharias acutus*. All cestodes were fixed in 4% formalin and stained with Harri's *haematoxylin*, drawings were made with the aid of camera lucida and the measurements are in millimeters.

**Description:** *Shindeobothrium carchariasi* n.sp.

Worms measure 7 cm. in length, scolex with four bothridia, measuring 0.004 - 0.006 x 0.002 - 0.004 in diameter. Neck present, measures 0.05 in length and 0.016 in its maximum width.
Mature segments longer than broad (0.54 x 0.12). Testes oval, in two rows, 10 in number and preovarian (0.022 - 0.025 x 0.012 - 0.013). Cirrus pouch oval and submarginal at 1/4 from the anterior margin of the segment (0.038 x 0.024). Cirrus thin, straight and unarmed (0.038 x 0.001). Vas deferens runs slightly posterior (0.034 x 0.001). Genital pores irregularly alternate, submarginal and oval.

Ovary 'H' shaped, situated at 1/6 of the segment from anterior margin and measures (0.07 - 0.009 x 0.033) Vagina anterior to cirrus pouch, elongated, thin tube, runs transversely and measures (0.42 x 0.003). Genital pores oval, submarginal, irregularly alternate and measures (0.019 x 0.01), ootype oval, small and measures (0.038 x 0.012). Uterus elongated, thin tube, up to anterior margin of the segment and measures (0.41 x 0.007) - 0.015. Vitellaria granular, corticular and thin strips.

Discussion

The present form differs from *S. indica* Shinde and Chincholikar, 1975 in the following characters.

It differs from *S. indica* in the shape and size of the pseudo-scolex (quadrangular, short vs. dome shaped, long), size of neck (long vs. short), number of testes
(50 vs. 17), shape of ovary (H-shaped vs. 'U' shaped), position of genital pore (at 1/4 from anterior margin vs. 1/2 of lateral margin of segment). Hence it is assigned the status of a new species and named *S. carcharias* n.sp. after the generic name of the host.

Type species *Shindeobothrium carcharias* n.sp.
Host *Carcharias acutus* Myller and Henle.
Habitat Intestine
Locality Ratnagiri (West coast of India), M.S.

Acknowledgement - The authors are thankful to Prof. R. Nagabhushanam for providing laboratory facilities.

Reference

Sshineobothrium carchariass n.sp.

Fig. 1, 2  Scolex
Fig. 3  Mature segment
On a new species of *Lytocestus* (Cestoda : Caryophylleidae, Leuckrt, 1878) from *Clarias batrachus* at Aurangabad, M.S. India.

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**Abstract**

This paper deals with the description of a new species of *Lytocestus* viz. *L. clariasi* n.sp. from *Clarias batrachus* at Aurangabad. It differs from all the earlier reported species of the genus, in having length of the body of the worm 21 mm, and width 2.05 mm, testes 550 - 600, in central medulla; cirrus pouch like a bell with thin handle; vagina a narrow tube, in middle line; uterus a convoluted tube; ovary follicular, near posterior margin of worm; vitelline follicles in 3 to 4 rows on each side and pre-ovarian.

**Material and Methods**

Twenty two specimens of the cestode were collected from the duodenum of *Clarias batrachus* Bloch at Nagpur, in the month of August, 1979. Thirteen specimens are stained with hematoxylin for the anatomical study and
and nine specimens are preserved in 4% formalin. These are stained with Harri's hematoxylin. The drawings are made with the aid of Camera lucida.

Results

The mature, flattened specimen measures 21 mm in length and 2.05 mm in its maximum width, across the cirrus pouch. The head or undifferentiated scolex is short, bluntly rounded, markedly narrower than the body, measures 2.65 mm in length and 1.30 mm in its maximum width at middle. In some immature specimens, it is also marked with longitudinal furrows. The longitudinal muscle fibres are well developed in head region, in relation to that in trunk. Bothria and introvert are absent in the scolex. Neck very short and indistinct.

The testes are scattered among the vitellaria, which occupy the central medulla, from the cirrus sac region to the neck region. They are 550 to 600 in number, measure 0.13 x 0.15 mm in diameter. Internal or external seminal vesicle is absent. Cirrus is in shape, not unlike a bell, with a thin handle, with thick muscular wall (Moghe, 1931), measures 0.500 x 0.633 mm. The cirrus sac opens by a slit like aperture at its distal end and measures 0.04 x 0.16 mm in diameter.
The vagina is a narrow tube, situated in the middle line, anteriorly dilated to receive the uterus opening and then opens by a common, thick walled uterovaginal pore, measures 0.03 x 0.11 mm in diameter. It runs posteriorly as a straight tube, joining the shell gland, measures 1.29 mm in length and 0.03 to 0.07 mm in width. Receptaculum seminis absent. The uterus is a convoluted tube, clearly observed in immature worm and not extend anteriorly up to the cirrus sac opening. It opens by a common utero-vaginal pore, posterior to the cirrus sac opening, the distance between two openings being 0.113 mm. These genital apertures are situated in the last one-seventh to one-eighth of the body length. The ovary takes the form of numerous follicles (34 to 40 in number) on either side and is situated near the posterior margin of the body. The ovarian follicles reach up to the anterior margin of the shell gland, in mature worms but reach up to the middle region of the shell gland in immature worms. There is a transverse bag-pipe shaped isthmus, joining the two ovarian masses. The dilated portion of the isthmus lies slightly more to one side than to the other. Length of the ovary at the isthmus region is 1.14 mm and width of the ovarian masses is 0.68 mm,
length of isthmus is 0.44 mm and width is 0.11 to 0.14 mm. Shell gland is situated just below the isthmus region, measures 0.54 x 0.61 mm, in diameter in mature worm. The ovarian follicles are corticcular and isthmus is medullary in position.

Vitelline follicles are preovarian, corticcular in position, are seen to be more numerous.

**Specific diagnosis:**

Lytocestinae; Body elongate, tapering anteriorly; length of the body of the worm 21 mm and width 2.05 mm; scolex undifferentiated. Testes 550 to 600, in central medulla; vagina a narrow tube, in middle line; uterus is a convoluted tube; ovary follicular near posterior region of worm; vitelline follicles in 3 to 4 rows, on each side and pre ovarian parasitic in fresh water fishes.

**Discussion:**

The genus *Lytocestus* was erected by Cohn (1908) with type species *L. adhaerens* and uptill now six more species are added to this genus, which are as follows:
(1) *L. filiformis* Woodland, 1923.

(2) *L. indicus* Moghe, 1925.

(3) *L. javanicus* Bovier, 1926.

(4) *L. burmanicus* Lynsdale, 1956.


1. After going through the literature the worm under discussion differs from all other species but comes closer to *Lytocestus indicus* Moghe, 1925; in the structure of ovary, which is bilobed, consisted of numerous follicles, in each lobe, which are connected by a bag-pipe shaped isthmus, but differs from the same in many characters, which are as follows:

2. The present cestode, in having the length of the body 21 mm. and width 2.05 mm differs from *L. indicus*, which is having the length of the body 27.40 mm and width 0.3 – 0.5 mm.

3. The present worm in having testes 550 – 560 in number, in central medulla, in a single, filled, evenly distributed, differs from *L. indicus* which is having the testes 230 – 270 in number, which are rounded, extending up to the cirrus sac and same extending lateral to the cirrus sac.
5. The present form in having cirrus pouch like a bell (not unlike a bell), with thin handle, differs from *L. indicus* which is having the cirrus pouch oval in shape.

6. The present cestode in having the ovary bilobed, each lobe almost quadrangular, containing numerous, separate follicles, lobes away from each other, extending almost up to the lateral margin of the worm, situated at posterior extremity of the worm, connected by a bag-pipe shaped isthmus, differs from *L. indicus* which is having the ovary bilobed, each lobe almost circular, containing numerous follicles, lobes near each other, in the central medulla, away from the lateral margin of the worm, away from the posterior extremity of the worm, and connected by a long pipe shaped isthmus.

6. The present worm in having the ootype large, round posterior to the isthmus differs from *L. indicus* which is having the ootype small, round and posterior to the ovarian follicles.

7. The present form in having the uterus coiled, preovarian, coils transversely arranged, differs from
L. indicus which is having the uterus coiled, divided into two groups; preovarian, and postovarian and the walls of the uterus thick.

8. The present cestode in having vitellaria follicles large, oval, in 2–4 rows, on each side, differs from L. indicus which is having vitellaria follicular, small, round, in 2 rows, on each side.

These characters are sufficient to erect a new species and hence the name L. deshmukhi is proposed in honour of Dr. R.A. Deshmukh, who has done good work on cestodes.

Type species L. deshmukhi n.sp.
Host Clarias batrachus
Habitat Duodenum
Locality Nagpur, M.S., India
Date of collection 3rd August, 1975

Acknowledgement

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Literature cited


Lytocestus batrachusi n.sp.

Fig. A, B  Scolices (anterior part)
Fig. C  Posterior end of mature segment
Fig. D  Eggs
On a new species of Lytocestus Cohn, 1908 (Cestoda: Carophylleidae) Leuckut, 1878) from Clarias batrachus at Aurangabad, M.S., India.

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Abstract: This paper deals with the description of a new species of Lytocestus Cohn, 1908 from Clarias batrachus viz. L. batrachusi n.sp. collected at Nagpur and is being reported at Aurangabad. It differs from all the earlier species, in having the length of the body 14-16, head spatulate to oblong; testes 275 - 300 in number, rounded, from base of neck to the cirrus sac; ovary 'H' shaped, lobes in corticular region, consisted of follicles, vagina straight, presence of receptaculum seminis, vitellaria follicular in 1-2 rows; on each side, corticular, from base of neck to anterior tip of the ovary and eggs operculated.

Material and methods: Two specimens of the cestode were collected from the duodenum of Clarias batrachus. Both at Nagpur, in the month of August, 1975. These specimens are preserved in 4% formalin and are stained

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with Harri's hematoxylin, for the anatomical study. The drawings are made with the aid of Camera lucida.

**Results:** The flattened worms measure 14 to 16 mm in length and 0.7 mm in width at cirrus sac region. Scolex undifferentiated but may vary in shape from spatulate to oblong in relaxed specimens to swollen to pear shaped in contracted specimens. Scolex with no bothria introvary or furrows, joining the body proper or trunk by a long neck, measuring 3.2 mm in length and 0.51 mm in width. The trunk is differentiated in to anterior vitellaria testicular zone and posterior utero-ovarian zone.

Testes spherical or roughly rounded in shape, measure 0.11 mm in diameter, 275 to 300 in number, extending from the buse of the neck to the cirrus sac, occupy the central medulla of the body and are some what larger than vitelline follicles.

Cirrus sac rounded to oval, measure 0.041 x 0.0390 mm, lined by a thin muscular wall. The cirrus sac is situated in the central medulla and opens near its posterior margin, by a slit like opening and measures 0.11 x 0.33 mm in diameter.
Ovary corticular, 'H' shaped, with closely packed follicles, never reaches to vicinity of utero-vaginal pore. Each ovarian lobe measures 0.98 mm in length, connecting with other lobe by a band-like isthmus, present in medullary region, measures 0.280 x 0.068 mm and length of the ovary at 15 isthmus region is 0.50 mm, shell gland situated posterior to isthmus, in between two ovarian lobes, measures 0.25 mm to 0.28 mm in diameter. The ovarian lobes extend below the shell gland, vagina is a straight tube, measures 0.92 mm in length and 0.01 mm in width.

Receptaculum seminis present, anterior to the isthmus region, in which ripened eggs are present, the proximal portion, extends up to the cirrus sac level and opens by a common slit like thick walled, utero-vaginal pore, just posterior to the cirrus sac opening measures 0.06 x 0.015 mm in diameter. The distance between the two genital pores is 0.06 mm. The genital pores are situated in the posterior one tenth of the worm length. Vitellaria follicular, in 1-2 rows. On each side, corticular, extending from the base of the neck, to the anterior tip of the ovary. Each, follicle measures 0.06 mm x 0.07 mm in diameter.
Eggs are operculated, situated more in number at utero-vaginal pore and few are scattered in the sac. Some ripened eggs are found posterior to the shell gland in the sac.

The mature eggs measure 0.092 x to 0.109 x 0.042 to 0.055 mm and ripened eggs measure 0.114 x 0.064 mm.

**Discussion:** The genus *Lytocestus* was erected by Cohn (1903) with type species *L. affluerens* and until now, six more species are added to this genus, which are as follows:


1. After going through the literature, the worm under discussion, differs from all species but comes closer to *Cytocestus longicollis* Ramadevi, 1973 in having the structure of ovary, which is cortical 'H' shaped, with closely packed follicles, never reaches to the vicinity of utero vaginal pore, but differs from the same in many characters, which are as follows:
2. The present cestode, in having the length of the body 14 to 16 mm. and width 2.05 mm. differs from *L. longicollis* which is having length of the body 10.8 to 20.0 mm and width 0.50 - 0.89 mm.

3. The present worm in having testes 275 - 300 in number, extending from the base of the neck to the cirrus sac, in central medulla, differs from *L. longicollis* which is having the testes 140 to 150 in number.

4. The present form in having cirrus pouch rounded or oval differs from *L. longicollis* which is having the same oval.

5. The present cestode in having the ovary 'H' shaped, with closely packed follicles. The ovarian lobes connecting by a band-like isthmus, present in medullary region, the ovarian lobes extended below the shell gland, differs from *L. longicollis* which is having the ovary cortical, 'H' shaped, with closely packed follicles, never reach to the vicinity of uterovaginal pore.

6. The present worm in having the ootype situated posterior to isthmus, in between two ovarian lobes differs from *L. longicollis* which is having the same rounded, in between two ovarian lobes and 0.019 mm in diameter.
7. The present form in having the uterus saccular, extend below the shell gland, in which ripened eggs are present differs from *L. longicollius* which is having the uterus very short, lies in loose coils.

8. The present cestode in having the vitellaria corticulare, follicular, extending from the base of the neck to the anterior tip of the ovary in rows, on each side differs from *L. longicollius* which is having the same large, cortical, all round testes, extending the base of the neck to anterior tip of the ovary in 1-2 rows; on each lateral side. These characters are sufficient to erect a new species for these worms and hence the name *L. batrachusi* n.sp. is proposed after the species name of the host.

Acknowledgement: The authors are thankful to Prof. R. Nagabhushanam, Professor and Head, Zoology Department, Marathwada University, Aurangabad for providing laboratory facilities and the Junior author is thankful to U.G.C. for financial assistance.

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Lytocestus deshmukhin.sp.

Fig. A. Scolex (anterior end of worm)

Fig. B, C, D. Posterior end of worms

Fig. E Eggs
On a new species of *Avitellina* (Cestoda : Anoplocephalidae) Gough, 1911 from House sparrow at Aurangabad, M.S., India.

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**ABSTRACT**

This communication deals with a new species of *Avitellina* Gough, 1911 from Sparrow. It differs from all the earlier reported species in the large number of testes (26-27), in having 7-11 testes in outer two columns and 13-17 testes in inner columns, cirrus pouch oval, short, at the middle or just anterior to the middle of the segments; mature segments 5-6 times broader than long, uterus replaced by a single paruterine organ, one in each segment, containing numerous egg capsules each containing single egg. All measurements are in millimeters.

**DESCRIPTION**

Four worms were collected from the intestine of the common house sparrow i.e. *Passor domesticus* in the month of August, 1981 at Aurangabad, Maharashtra, India.
The worms are white in colour, the scolex is of medium size, almost quadrangular in shape and measures 0.42 in length and 0.75 in width. Rostellum is absent, the four suckers are big in size, oval in shape, highly muscular, occupy the whole width of anterior region of scolex, and measures 0.42 in length and 0.75 in width. Neck is long and measures 0.95 in length and 0.84 in width.

The mature proglottids are broader than long, almost 4-5 times broader than long, very thin and measure 0.09 in length and 0.60 in width. The testes are 24-47 in number, in different 3 proglottids. The number of varies in different proglottids i.e. 27, 24, 25, round in shape, in two lateral groups and each lateral is divided into two groups, one on each side of the longitudinal canal, excretory canal. The segments testes in different lateral groups in different segments range from 11 - 16, 11 - 13, 12 - 13, the cirrus pouch is oval, short, either at middle of just anterior to the middle or just anterior to the middle of the proglottids and measures 0.05 in length and 0.003 in width. The vas deferens is thin, extends upto the middle of the segment and measures 0.14 in length and width.
The ovary is oval, compact, either in the middle or near posterior margin of the proglottids, in poral half, transversely elongated and measures 0.12 in length and 0.59 in breadth.

The vagina is a thin tube posterior to the cirrus pouch, enlarges near the genital atrium, runs straight in the middle of the proglottid transversely and measures 0.19 in length.

The tape of gravid proglottid is much reduced in width than the mature one actually segments broader than long about 4-5 times broader than long and measures 0.68 in length and 0.13 in width.

The uterus is replaced by a single paruterine organ, one in each proglottid, oval in shape and broader at one side, tapering at the other, poral in position, wider part towards genital pore, each containing 33-36 egg capsules, each capsule containing one egg and measures 0.24 in length and 0.09 in breadth. The eggs measure 0.008 in diameter.

**DISCUSSION**

The genus *Avitallina* is established by Gough in 1911 from goat, as *A. contripunctata*. Later on 23 species are added to this genus.
According to M.K. Raina, 12 species are synonymised and 11 species are considered valid.

The author agrees with M.K. Raina about the number of valid species.

1. After going through the literature the worm under discussion comes closes to A. tatia Bhalerao, 1936 in having large number testes (above 21) 24-27 in each segment, where as A. tatia is having testes 16-24 in each segment and hence it is compared with it as follows:

2. In having number of testes large, the present cestode in having testes 24-27, in three different segments, 7-13 in outer columns and 13-17 in inner columns comes closer to A. tatia which is having 3-4 testes in external two columns (6-8) and 5-8 testes in inner two columns (10-16).

3. The cirrus pouch in the present cestodes is oval, short either at the middle or just anterior to the middle of the proglottid measures 0.05 x 0.003 where as the same in A. tatia is an elongated poral, 0.393 x 0.042 to 0.050, 3 to 4 times as longer as the copulative region of vagina.
4. The present worm is having mature proglottids, all 5-6 times broader than long, measure 0.09 in length and 0.060 in width. Where as the width of mature segment is 2.16 in *A. tatia*.

5. The present worm is having the vagina a thin tube, posterior to cirrus pouch absence of receptaculum seminis (not clearly seen) whereas the same in *A. tatia* forms receptaculum seminis oval, 0.104 - 0.143 x 0.049 to 0.090, lying half way between the uterus and the excretory canals.

6. In the present form, in the gravid segments, the uterus is replaced by a single paruterine organ, one in each proglottid oval in shape, wider at the oral side, tapering at aporal side and each containing numerous egg capsules, each containing one egg. Whereas as in *A. tatia* the uterus and the paruterine organ alternate, paruterine organ pyriform in shape.

   Alternating in horizontal plane and the paruterine organs occupy the entire space between the excretory vessels.

   In view of the distinguishing characters it is regarded as a new species and hence the name *A. aurangabadensis* n.sp. is proposed after the locality.
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<th><em>A. aurangabadensis</em> n.sp.</th>
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Avitellina aurangabadensis n.sp.

Fig. A  Scolex

Fig. B  Gravid segment

Fig. C  Mature segment
On a report of *Raillietina* (Cestoda : Dovaineidae) from king fisher, at Aurangabad, M.S., India.

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Abstract

This paper deals with the redescription of a species of *Raillietina* from king fisher at Aurangabad M.S., India. It is *R. (P.) pseudoechinobothridia*, Meggit, 1926. It is having some additional characters such as testes 100 – 105 in number, preovarian and 10–12 lateral to ovary, cirrus pouch of medium size, oblique, ovary roughly bilobed, compact, vagina thin tube, posterior to cirrus pouch, receptaculum seminis large, oval preovarian and gravid proglottids with numerous egg capsules, each containing 10 – 11 eggs.

Material and methods

Three worms were collected, preserved in 4% formulin, stained in iron hematoxylin, passed through alcoholic grades and mounted in balsam, all drawings are drawn with the aid of camera lucida, all measurements in millimeters.
**Description:**

Three big worms devoid of scolices, were collected from the intestine of king fisher, in the month of October, 1981. The worms are highly muscular, thick, broad and long, they contain numerous mature proglottids, which are broader than long, almost 3 times broader than long, narrow anteriorly and broad posteriorly, with posterior lateral border projecting outside and measure 0.531 in length and 1.456 in breadth.

The testes are 100 - 105 in number, round to oval in shape, in a single field, preovarian, from ovary to anterior to margin and from one lateral margin to another, more preovarian and 10-12 lateral to ovary, evenly distributed and measure 0.123 in diameter.

The cirrus pouch is of medium size, obliquely placed, just anterior to the middle of the proglottids and measure 0.176 in length and 0.072 in width. The cirrus is contained within the cirrus pouch, thin, straight, and measure 0.412 in length. The vas deferens is thin, long, curved, straight and measures 0.635 in length.

The ovary is large, almost bilobed, transversely situated, a little away from the posterior margin of the
proglottid, compact, with irregular margin, mostly
in aporal region of the proglottids and measures
0.630 x 0.123 in length and breadth. The vagina
is a thin tube, posterior to cirrus pouch, curved,
extends up to the middle of the segment and measures
0.922 x 0.009 in length and breadth. Before opening
in to the ootype, it enlarges and forms a large
receptaculum seminis, which is oval, preovarian, in
the middle of the segment, transversely placed and
measures 0.242 in length and 0.121 in width. The
otype is large, oval, dorsal to isthmus of ovary.

The gravid segments are almost squarish, a litter
wider than long and measures 0.08 x 1.10 in length and
breadth. The uterus breaks into numerous egg capsules,
each of which contains 9 - 11 eggs, the eggs capsules
are large, oval, measure 0.242 in diameter and eggs
measure 0.048 in diameter.

Discussion

On closer observations, these worms proved to be
Raillietina (F.) pseudoechinobothridia Meggit, 1926.

It is having some additional characters, which
are as follows: 
1. It differs in the number of testes (100 - 105 Vs. 30 - 50).

2. In the number of eggs, in each egg capsule (9-11 Vs. 3 - 4).

3. In the position of the genital pores (Just anterior to the middle Vs. in the posterior half of the segments).

As the characters are minor, it is redescribed here as *R. (F.) pseudoechniobothridia* Meggitt, 1926.

**Acknowledgements**

The author is thankful to Dr. G. B. Shinde, guide of the author and Dr. R. Nagabhushanam, Head, Zoology Department, Marathwada University, Aurangabad for providing laboratory facilities and also to U.G.C. for financial assistance by sanctioning the scheme on "Biology and control of some cestode parasites of marine food fishes from Arabian sea and Bay of Bengal (West coast of India).

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Raillietina (F.) pseudochniobothridia, Meggit, 1926.

Fig. A Mature segment

Fig. B Gravid segment