

TWO NEW SPECIES OF THE GENUS *LYTOCESTOIDES* BAYLIS, 1928
(CESTOIDEA : CESTODA : CARYOPHYLLIDEA : LYTOCESTIDAE)
FROM A FRESHWATER FISH IN MAHARASHTRA, INDIA

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ABSTRACT

The present communication deals with two new caryophyllid species *Lytocestoides naldurgensis* and *L. mackiewicz* from a freshwater fish *Cirrhina mrigala* (Hamilton) examined at Naldurg, Osmanabad, Maharashtra. Both species are characterised by having (i) follicular rather than granular vitellaria in two sets—one laterally in the cortical region from the base of the scolex to the preovarian level, and the other group of follicles in the postovarian region, the two sets being connected by one or two rows of follicles lateral to ovary, and (ii) far less number of testes (80-85 in one and 50-55 in the other) as compared to very numerous testes (200-400) in the already known species. In these two characters the two new species differ from all the known species of the genus. They are further different from the type species *Lytocestoides tanganyikae* Baylis, 1928 in that the testes are uniformly distributed in the medullar parenchyma, whereas in the type species they are concentrated in the peripheral medullary region leaving the central part devoid of testes. The two new species are distinct from *L. aurangabadensis* Shinde, 1970 (including its two varieties, namely, *L. aurangabadensis* var. *minuta* Shinde, 1970 and *L. aurangabadensis* var. *minor* Shinde, 1970) and *L. paithanensis* Shinde and Deshmukh, 1975 in the possession of follicular vitellaria extending from the base of head to the posterior end of the body as against granular vitellaria from the anterior end to posterior end of the body, and in the absence of a group of testes in the postovarian region.

The new species *L. mackiewicz* is distinguished from *L. naldurgensis* in having less number of testes (50-55 vs. 80-85) and in that the cortical vitellaria are in two rows (layers) as compared to one.

The shape of the head (or scolex) may vary according to state of contraction at the time of fixing.

INTRODUCTION

The genus *Lytocestoides* was erected by Baylis (1928) with its type species *L. tanganyikae* Baylis, 1928 from a freshwater fish *Alestis* sp. at Kirando in Tanganyika, Africa.

Shinde (1970) described *L. aurangabadensis* and *L. aurangabadensis* var. *minor* from the fish *Barbus collus*, and *L. aurangabadensis* var. *minuta* from *Labeo calbasu* at Aurangabad, India. Later on, Shinde and Deshmukh

(1975) added one more species *L. paithanensis* to this genus from the fish *Pseudeutropius taakree* at Paithan, India. The present paper deals with two new species of this genus.

MATERIAL AND METHOD

The material for this paper was collected from a freshwater fish *Cirrhina mrigala* (Hamilton) from a lake at Naldurg, District Osmanabad, Maharashtra. The specimens were stained with Mayr's carmalum, dehydrated in grades of alcohol, cleared in xylol and mounted in Canada balsam. The drawings were made with the aid of a camera lucia. All the measurements are in millimeters. On study, the two lots of specimens were found to belong to two different species of the genus *Lytocestoides* Baylis, 1928. The holotype and paratype specimens are deposited with the Department of Zoology, Marathwada University, Aurangabad, Maharashtra.

SYSTEMATIC ACCOUNT

Lytocestoides naldurgensis n. sp.

(Figs. 1A, 1B)

Description (based on 5 of 10 specimens): Body single-segmented, broader anteriorly, gradually tapering posteriorly, 4.77-5.44 in length, 1.05-1.55 in maximum width. Head triangular, broader at base, narrow anteriorly, 0.66 in length, 1.50 in width.

Testes 80-85 in number, preovarian, anterior to cirrus pouch, oval in shape, situated in central medulla in a single field, extending laterally up to subcortical region and tending to protrude into region of head, each testis about 0.10 in length and 0.19 in width. External seminal vesicle indiscernible.

Cirrus pouch small, oval, transversely placed just posterior to middle of body, enclosing coiled cirrus.

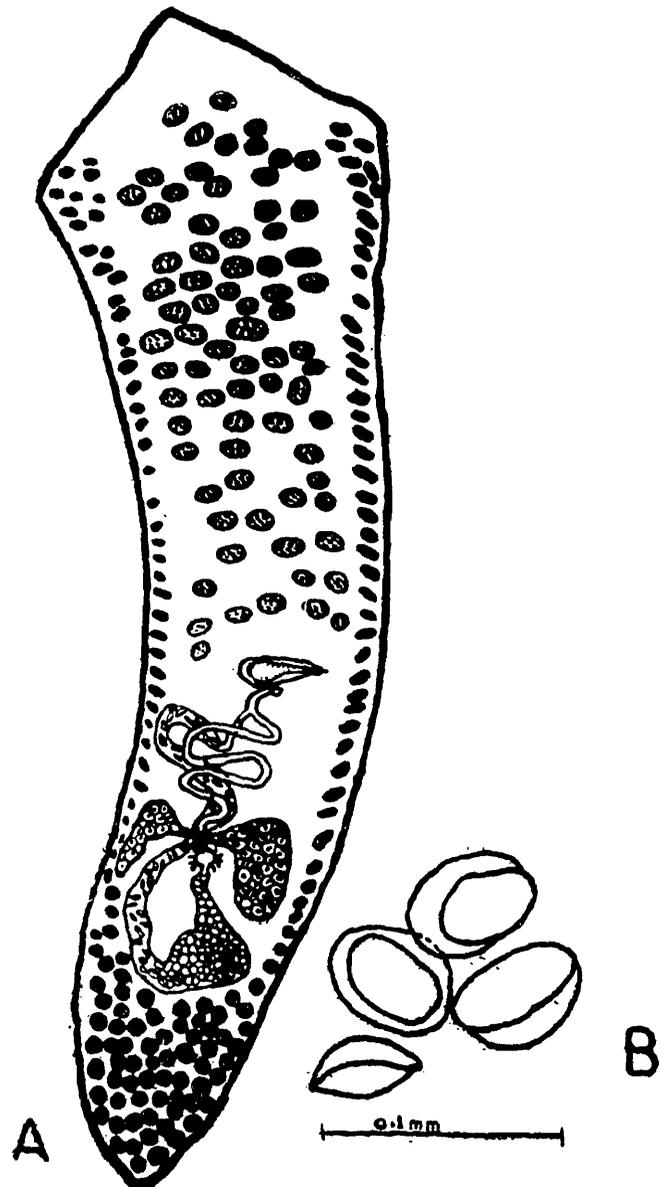


Fig. 1.

Fig. 1A. *Lytocestoides naldurgensis* n. sp.
Entire Worm.

Fig. 1B. *Lytocestoides naldurgensis* n. sp. Eggs.

Ovary follicular, bilobed with a narrow isthmus in between the two lobes, situated in medullary region at one-fourth from posterior margin, 0.33-0.49 in length, 0.66-0.77 in width. Uterus tubular, aglandular,

coiled, initially descending in postovarian region and then ascending anteriorly in preovarian region, 3.35 in length, 0.33 in width, filled with eggs. Vagina tubular, thin, coiled, joining uterine tube behind cirrus pouch. Uterovaginal opening slightly posterior to cirrus pouch. No genital atrium. Eggs numerous, operculated, 0.056×0.033 . Vitelline follicles almost in a single row in cortical field.

Host : *Cirrhina mrigala*
(Hamilton),
(Family : Cyprinidae).
Location : Intestine.
No. of specimens : 10
Locality : Naldurg, Maharashtra.
Holotype : M. U. Helm. Coll.
No. Z/C/140
Paratype : No. Z/C/P/101.

Discussion : *Lytocestoides naldurgensis* basically differs from the type species *Lytocestoides tanganyikae* in having follicular vitellaria (slightly less in size than testis) rather than granular ; in possessing much less number of testes (80-85 vs 200) which are distributed uniformly in medullar parenchyma (whereas in the type species they form a layer surrounding the central portion of parenchyma).

L. naldurgensis can easily be separated from *L. aurangabadensis* Shinde, 1970, *L. aurangabadensis* var. *minor* Shinde, 1970, *L. aurangabadensis* var. *minuta* Shinde, 1970 and *L. paithanensis* Shinde and Deshmukh, 1975 in having (i) follicular rather than granular vitellaria, (ii) granular vitellaria in the latter four forms distributed in the cortex from anterior end to posterior end of body, (iii) fewer number of testes (80-85 vs 300-400),

and (iv) in the absence of a group of testes in the postovarian region.

The shape of head or scolex may vary according to the state of contraction at the time of fixing.

Lytocestoides mackiewiczi n. sp.

(Figs. 2A, 2B)

Description (based on 15 worms) : Body

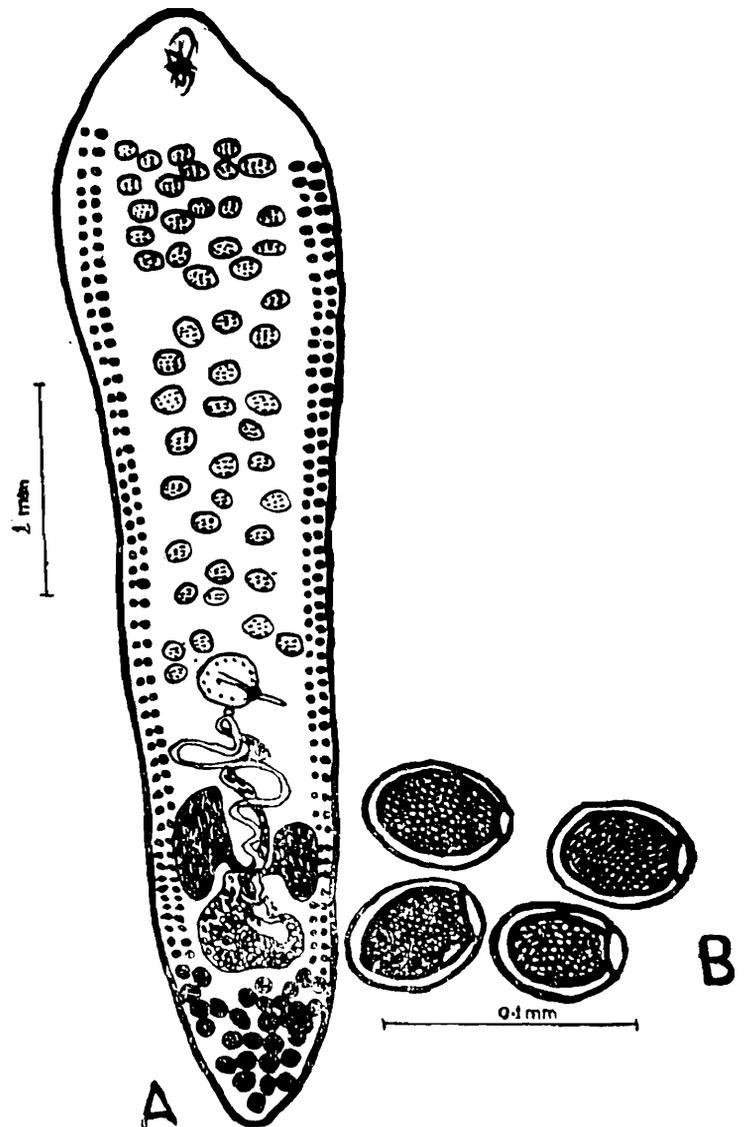


Fig. 2

Fig. 2A. *Lytocestoides mackiewiczi* n. sp. Entire Worm.

Fig. 2B. *Lytocestoides mackiewiczi* n. sp. Eggs.

single-segmented, broad anteriorly. tapering posteriorly, 5.0-6.0 in length, 1.0-1.3 in maximum width. Head broad at base, narrow and rounded at anterior end, with smooth or wrinkled surface.

Testes 50-55, anterior to cirrus pouch, in central medulla, extending anteriorly up to base of head, each 0.16 in average diameter. External seminal vesicle indiscernible. Cirrus pouch round, median, postequatorial, 0.30 in diameter. Cirrus protruded. Male genital pore lateral to cirrus pouch, submedian.

Ovary follicular, bilobed, lobes unequal in size, situated at one-fourth from posterior end of body, medullary but touching cortical region, connected by isthmus, 0.39-0.53 in length, 0.54-0.53 in width. Vagina tubular, thin, winding, preovarian, 1.8-2.0 in length. Uterus tubular, aglandular, wider than vagina, winding, initially descending in postovarian region and then ascending, 2.10-2.25 in length, 0.15 in width. Uterovaginal pore immediately posterior to cirrus pouch. No genital atrium. Eggs 0.067×0.044 . Vitellaria follicular, follicles 0.04-0.06 in diameter, in two rows in cortical region, extending from base of head to ovarian level and connected posteriorly to a group of postovarian follicles.

Host : *Cirrhina mrigala* (Hamilton),
(Family : Ceprinidae).

Location : Intestine.

No. of
specimens : 15

Locality : Naldurg, Maharashtra.

Holotype : M. U. Helm. Coll. No.
Z/C/141.

Paratype : No. Z/C/P/102.

Discussion : The present new species can

be easily distinguished from the type species *Lytocestoides tanganyikae* Balis, 1928 by the presence of (i) follicular rather than granular vitellaria, (ii) less number of testes (50-55 vs 200), and (iii) by the nature of distribution of the testes in the medullary region (in the new species the testes are evenly distributed in the medulla whereas in the type species they are peripheral surrounding the central median medullary parenchyma).

It differs from *L. naldurgensis* (present paper) in having less number of testes (50-55 vs 80-85) and in that the lateral vitelline follicles are in two rows rather than one,

It is distinct from *L. aurangabadensis* Shinde, 1970, *L. aurangabadensis* var. *minor* Shinde, 1970, *L. aurangabadensis* var. *minuta* Shinde, 1970 and *L. paithanensis* Shinde and Deshmukh, 1975 in the presence of (i) follicular rather than granular vitellaria, (ii) granular vitellaria in the latter four forms dispersed in the cortex from anterior end to posterior end of body, (iii) far less number of testes (50-55 vs 300-400), and (iv) in the presence of a group testes in the posterior region.

The species has been named after Dr. S. Mackiewicz, Professor, Department of Biological Sciences, State University of New York at Albany, New York in token of his valuable contribution to the knowledge of world caryophyllid cestodes.

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