STUDIES ON HELMINTH PARASITES OF CROWS.—TWO NEW SPECIES OF THE GENUS LUTZTREMA TRAVERSOS FROM CORVUS SPLENDENS (VIEILLOT) AND A DISCUSSION ON THE GENUS LUTZTREMA

By

SHAHNAZ BANO

Chemotherapy Division, C.D.R.I., Lucknow, U.P.

(With 2 text-figures)

I—DESCRIPTION

Lutztrema singhi sp. n.

DIAGNOSIS.—Body lanceolate, measuring 3.94-5.31 mm. x 0.30-0.52 mm. Oral sucker usually sub-terminal measuring 0.10-0.16 x 0.09-0.15 mm. Ventral sucker 0.20-0.26 mm. x 0.21-0.29 mm. Ratio between oral and ventral sucker 2:3.

Testes usually larger than ventral sucker but sometimes as large as ventral sucker; anterior measures 0.25-0.4 mm. x 0.19-0.45 mm. and posterior 0.26-0.52 mm. x 0.19-0.4 mm. in size. Cirrus sac pre-acetabular 0.17-0.27 mm. x 0.07-0.09 mm. in size. Ovary post-testicular measuring 0.16-0.21 mm. x 0.16-0.24 mm. Eggs operculate, measure 0.0297-0.0363 mm. x 0.0198-0.0231 mm. Excretory bladder tubular with terminal excretory pore.

DESCRIPTION.—The writer collected several specimens of this trematode on four occasions from gall bladder and liver of Corvus splendens (Vieillot).

Body elongated, lanceolate, with blunt rounded anterior and a blunt conical posterior end; broadest in region of ventral sucker and tapers gradually from behind ventral sucker towards posterior end; entire body covered with minute spines, and measures 3.94-5.31 mm. x 0.30-0.52 mm. in size.

Oral sucker usually sub-terminal but sometimes terminal; measures 0.10-0.16 mm. x 0.09-015 mm. Ventral sucker larger than oral, situated in posterior region of anterior third of body, measures 0.20-0.26 mm. x 0.21-0.29 mm. Ratio between two suckers 2:3.

Mouth leads directly into globular or oval pharynx, measuring 0.037-0.087 mm. x 0.05-0.087 mm. Oesophagus continued into a single intestinal caecum extending up to a level about one third of body length from hind end.

Testes large, round or oval, margins entire, situated somewhat obliquely one behind other in hind region of anterior third of body; usually larger than ventral sucker but sometimes equal to it. Anterior testis measures 0.25-0.4 mm. x 0.19-0.45 mm.; posterior one 0.26-0.52 mm. x 0.19-0.40 mm.

Cirrus sac an elongated flask-shaped structure, situated a short distance in front of ventral sucker; measures 0.17-0.27 mm. x 0.07-0.09 mm.; encloses a tubular, convoluted vesicula seminalis, an ejaculatory

duct and cirrus. A *pars prostatica* present, not clearly distinguishable in whole mounts but clearly seen in sectioned material.

*Genital pore* present midway between oral and ventral sucker.

*Ovary* globular or sub-globular, smaller than testes, post-testicular, situated near about junction of anterior and middle thirds of body, measures 0.16-0.21 mm. x 0.16-0.24 mm. *Mehlis gland complex* situated behind ovary. Oviduct, duct from receptaculum seminis, common
vitelline duct, Laurer's canal open at common point surrounded by glands. *Uterus* arises from this point.

Receptaculum seminis present behind ovary; measures 0.05-0.06 mm. × 0.06 mm. Vitellaria pre-equatorial in position. Vitelline follicles large, present on both sides of body, tending to merge in median line. *Uterus* with both descending and ascending limbs; uterine coils profusely developed, extend posteriorly up to end of body; anteriorly, ascending limb of uterus passes first between ovary and posterior testis and then between the two testes; eventually runs in a sinuous course, by right side of cirrus sac and opens outside by genital pore. *Eggs* oval, thick-shelled, dark-brown and operculate; measure 0.0297-0.063 mm. × 0.0198-0.0231 mm.
Excretory bladder tubular with terminal excretory pore.

Relation.—The present species differs from _L. monenteron_ (Price & McIntosh, 1935) Travassos, 1941, in having a comparatively narrower body, covered with spines, in having smaller ventral sucker and in having a larger ovary than that present in _L. monenteron_. Further, the eggs of the present form are also larger than those of _L. monenteron_.

The present species differs from _L. stunkardi_ n. sp., another species described by the author in having a larger body, larger testes and larger eggs but a comparatively smaller cirrus sac and smaller ovary. The testes are larger than the ventral sucker in the present species but they are smaller than the ventral sucker in _L. stunkardi_. Further, the ovary is smaller than testes in the present species but the ovary is as large as or even larger than testes in _L. stunkardi_. The vitelline follicles are present separately on both the sides of the body in _L. singhi_ but the follicles form a separate mass in _L. stunkardi_.

The ratio between oral and ventral sucker is 2:3 in _L. singhi_, but it is 1:2 in _L. stunkardi_.

**Lutztrema stunkardi** sp. n.

**Diagnosis.**—Body slender and elongate, measuring 2.32-4.06 mm. x 0.30-0.36 mm. in maximum width. Oral sucker usually sub-terminal, rarely terminal, 0.112-0.15 x 0.087-0.112 mm.; ventral sucker measures 0.20-0.24 mm. x 0.19-0.22 mm. Ratio between oral and ventral sucker approximately 1:2. Pharynx measuring 0.05-0.06 mm. x 0.05-0.06 mm. Testes tandem, anterior one measuring 0.11-0.187 mm x 0.125-0.162 mm. and posterior 0.125-0.187 mm x 0.125-0.15 mm. Cirrus sac pre-acetabular, measuring 0.112-0.187 mm. x 0.05-0.06 mm. Ovary post-testicular, measures 0.125-0.162 mm. x 0.15-0.2 mm. Genital pore 0.275-0.55 mm., behind anterior end of body. Eggs operculate, measure 0.026-0.033 mm. x 0.016-0.020 mm.

**Description.**—In all twenty specimens of this tremotade were collected on two occasions (Eight on 2.5.64 and twelve on 11.8.64).

Body spinose, slender and elongated with a blunt anterior and pointed posterior end; broadest in acetabular region, from behind this region, gradually tapering towards posterior end, measures 2.32-4.06 mm. in length and 0.30-0.36 mm. in width, in region of ventral sucker.

Oral sucker subterminal, rarely terminal, measures 0.112-0.15 mm. x 0.087-0.112 mm. in size. Ventral sucker larger than oral and located at about a quarter of body length from anterior end; measures 0.20-0.24 mm. x 0.19-0.22 mm. Ratio between oral and ventral sucker approximately 1:2.

Mouth leads directly into muscular pharynx, measuring 0.05-0.06 mm. x 0.05-0.06 mm. Oesophagus not sharply set off from intestinal caecum, measures approximately 0.086-0.137 mm. in length, oesophagus followed by a single intestinal caecum, extending posteriorly beyond region of vitellaria and terminating near end of middle-third of body.

Testes usually round with entire margins but sometimes longitudinally oval, obliquely tandem, and located posteriorly in anterior half.
of body; in most specimens more or less equal in size but in some, posterior testis slightly larger than anterior; anterior testis measures 0.11-0.187 mm. x 0.125-0.162 mm., posterior 0.125-0.187 mm. x 0.125-0.15 mm.


Cirrus pouch situated midway between oral and ventral suckers, measures 0.112-0.187 mm. x 0.05-0.06 mm., encloses a convoluted vesicula-seminalis, a narrow, coiled ejaculatory duct terminating into a cirrus. A pars prostatica present.

Genital pore located midway between anterior border of ventral sucker and anterior end of body.

Ovary round or oval, post-testicular in position, measures 0.125-0.162 mm. x 0.15-0.2 mm. in size. Mehlis gland complex situated
behind ovary. The two ducts from vitellaria of either side meet forming a common vitelline duct. The common vitelline duct, oviduct, the duct from receptaculum seminis, meet at a point surrounded by Mehlis' glands. Uterus arises from this point. Receptaculum seminis present but often not visible in fixed specimens. Vitellaria comprise large follicles, arranged not in distinct groups at sides of body but discretely in a mass behind ovary.

Uterus, with descending and ascending limbs, extensively developed, its coils filling up almost entire post-ovarian region of body; ascending limb of uterus passes between the two testes in its final course making several coils in front of anterior testis, runs forward subsequently dorsal to ventral sucker and opening to exterior behind the anterior end of body by means of a genital pore, measuring 0.275-0.55 mm.

Eggs oval, light-brown, operculate; measure 0.026-0.033 mm. x 0.016-0.02 mm.

Excretory bladder tubular with terminal excretory pore.

II—DISCUSSION

Travassos (1941) instituted the genus Lutztrema with Lyperosomum obliquum Travassos, 1917, as type-species. He included Lyperosomum monenteron Price et McIntosh, 1935, and L. transversum Travassos, 1917 under his newly erected genus. Besides, he described three new species Lutztrema marinholutzi, L. verrucosum and L. insigne. He characterised the genus Lutztrema by the presence either of a single intestinal caecum or double, but rudimentary intestinal caeca.

Again, Travassos (1944) in his monograph on Dicrocoeliidae Odhner, 1910, further placed Lutztrema attenuatum Dujardin, 1845, L. donicum (Isaitschikoff, 1919), L. transversogenitalis (Layman, 1922), L. kakea (Bhalerao, 1926), and L. colorosum (Patwardhan, 1935) which have two rudimentary caeca.

Yamaguti, 1958 in his monograph “Systema Helminthum” followed Travassos (1941) and (1944) in retaining species with two rudimentary intestinal caeca under Lutztrema.

The writer begs to differ from Travassos (1944) and Yamaguti (1958) in including species of Lyperosomum Looss, 1889 with two intestinal caeca under the genus Lutztrema. The genus Lutztrema, in author's opinion, should be restricted to include species with only one intestinal caecum. Hence, the writer is of the opinion that the species with rudimentary double caeca namely, Lutztrema attenuatum, L. alaudae Layman, 1926, L. kakea and L. colorosum should be removed from the genus Lutztrema and reinstated to their original generic position under Lyperosomum. In the author’s opinion only the following species, Lutztrema obliquum, L. transversum, L. monenteron, L. marinholutzi, L. verrucosum and L. insigne having only one intestinal caecum should be retained under Lutztrema.

Of the known species of this genus, the present form closely resembles L. monenteron (Price and McIntosh, 1935), from which it can be distinguished by smaller size of body, relative size of the gonads and ventral sucker. The testes are smaller than ventral sucker. Further, the ovary in the present form is as large as or larger than testes, whereas in L. monenteron, the testes are larger than the ventral sucker and the ovary is smaller than testes. The size of eggs is also
almost same as the eggs of *L. monenteron* when the size of the body is decidedly smaller. The present form differs from *L. singhi* n. sp. in having smaller body, testes and in having comparatively larger ovary. The ratio between oral and ventral sucker in present form is 1:2, while in *L. singhi* it is 2:3. The testes are larger than ventral sucker in *L. singhi*, but they are as large as or smaller than ventral sucker in present form.

### III—Summary

Two new species of the genus *Lutztrema* Travassos, helminth parasites of *Corvus*, are described in this paper. It is proposed to include in the genus *Lutztrema* only species with one intestinal caecum. Accordingly only six species are considered under the genus.

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### V—References


----------. 1944. "Monograph on Dicrocoeliidae Odhner, 1910".


**Abbreviations used in text-figures**

- **Cir**  
  Cirrus
- **C.S.**  
  Cirrus sac
- **Ex.bl.**  
  Excretory bladder
- **g.p.**  
  Genital pore
- **int. cae**  
  Intestinal caecum
- **L.C.**  
  Laurer's Canal
- **M.Gl.**  
  Mehlis' gland
- **Ov.**  
  Ovary
- **O. Su.**  
  Oral Sucker
- **P.P.**  
  Pars-prostatica
- **Ph.**  
  Pharynx
- **r. sem.**  
  Receptaculum seminis
- **Sp.**  
  Spine
- **t.**  
  Testis
- **ut.**  
  Uterus
- **v. sem.**  
  Vesicula seminalis
- **vit.**  
  Vitellaria
- **vit. d.**  
  Vitelline duct.
- **v. su.**  
  Ventral sucker