

ON A NEW TREMATODE PARASITE *EPISTHMIUM SOLANENSIS* N. SP.
(ECHINOSTOMATIDAE : ECHINOSTOMATINAE) FROM A BIRD HOST,
BUBULCUS IBIS COROMANDUS BODDAERT FROM SOLAN,
HIMACHAL PRADESH, INDIA

SHUVAJIT CHAKRABARTI AND ANINDITA GHOSH

Zoological Survey of India, M-Block, New Alipore, Kolkata - 700 053

INTRODUCTION

Birds show a good number of trematode infection in their internal organisms which may not fatal to them, parasitized with symbiotic effect. Nine examples of Bulbul, *Bubuicus ibis coromandus* Boddaert were caught by mist net at Solan Camp during the faunal exploration. Out of which two were been dissected out to examine the faunal biodiversity of helminthes infection, rest were allowed to fly again to the sky. Three trematodes were collected from two , Abird hosts and are identified as *Episthmium (soianensis)*, which are new to science.

MATERIAL AND METHOD

Materials were collected in normal saline(4%), narcotized in 70% alcohol. Stained with borax carmine; measurements are in this communication are in mm.

SYSTEMATIC POSITION

Family ECHINOSTOMATIDAE Poche, 1925

Subfamily ECHINOSTOMATIDAE Faust, 1929

Genus *Episthmium* Luhe, 1909

Episthmium solanensis n. sp. (Fig. 1)

Details of Host : *Bubuicus ibis coromandus* (Boddaert); *Location* : Intestine; *Locality* ; Solan, Himachal Pradesh, India; *Date of collection* : 27th March, 2011; *Collector* : S. Chakrabarti & Party.

Body of the fluke elongate , 2.688-4.64 in length and 0.656-1.194 in maximum width attained at the level of the acetabulum; cuticle studded with spines

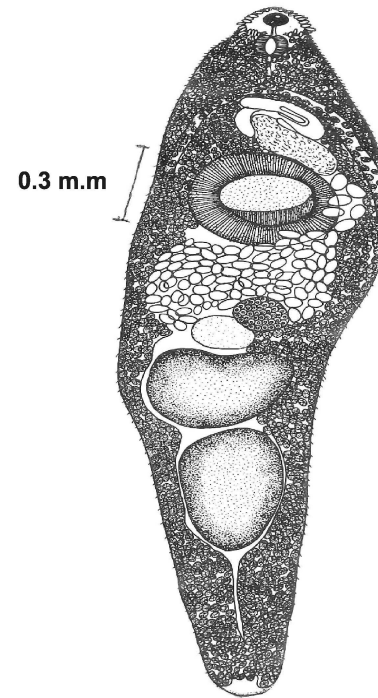


Fig.1

Fig. 1. *Episthmium solanensis* n.sp from *Bubulsus ibis coromandus* of Solan, Himachal Pradesh; holotype, Dorsal view.

which are backwardly directed ; head collar (Fig. 2) reniform with a / crown of 24 spines, dorsally interrupted, there are twelve spines on each side with four forming the corner spines; oral sucker sub-terminal, 0.08-0.096 in diameter; prepharynx small, pharynx well developed, 0.112-0.16 x 0.128-0.16, esophagus small, bifurcates into caeca in front of acetabulum; caeca almost to posterior end of body; acetabulum much larger than oral sucker

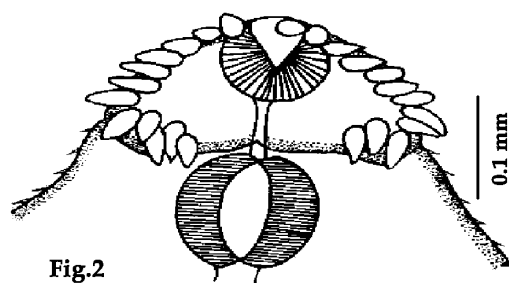


Fig.2

Fig. 2. Same, collar with spines.

and $0.4-0.56 \times 0.368-0.544$, fore body $0.528-0.96$, approximately $1/5$ th of body length. Testes large, smooth, situated in posterior half of body, anterior one transversely elongate and posterior one longitudinally elongate, $0.335-0.672 \times 0.368-0.688$ and $0.448-0.8 \times 0.32-0.528$ respectively; cirrus sac (Fig. 3) is strongly muscular, $0.8-1.12 \times 0.112-0.128$, lies dorsal to acetabulum, overlapping its anterior half; seminal vesicle occupying the major portion of cirrus sac, is bent on itself, thereby giving a bipartite appearance; pars prostatica small and opens into the cirrus; genital pore lies immediately in front of acetabulum in the median line; cirrus eversible.

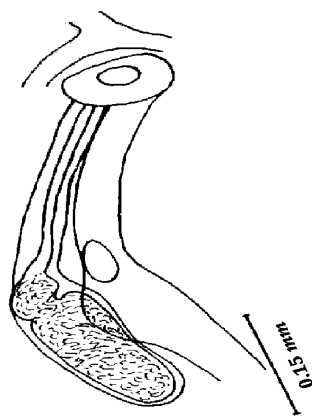


Fig. 3

Fig. 3. Same, showing the terminal genitalia.

Ovary small, almost round, placed slightly towards right side anterior to testis, $0.16-0.24 \times 0.16-0.272$; receptaculum seminis absent; vitellaria profusely developed extending in lateral fields as far forward as pharynx, usually confluent across median line anterior to genital pore and posterior to testes; uterus occupying the intercaecal space between ovary and acetabulum; eggs oval, operculate, $82-54 \mu$; excretory vesicle not observed.

DISCUSSION

Luhe, 1909 created the Genus *Episthmium* designating *E. africanum* as its type but the generic status of the genus *Episthmium* Luhe, 1909 has been a matter of controversy. It was considered as a synonym of *Echinochasmus* Dietz, 1909 by Odhner, 1910, Nicoll, 1914, Bhalerao, 1926, Mendhiem, 1943 and Dawas, 1946. Baschkirova, 1941 has considered this genus as a subgenus of *Echinochasmus* but it has been considered as a separate genus by

Luhe, 1909, Travassos, 1938, Shigin, 1958, Yamaguti, 1958, Sulgostowska, 1960, Rai, 1963, Odening, 1963, Hodasi, 1967, Karyakarte, 1969 and Gupta et Mehrotra, 1971. In the present study the view that *Episthmium* as separate genus has been taken.

At present the genus *Episthmium* Luhe, 1909 comprises the following valid species recorded so far from the bursa fabricii or intestine of birds are shown in Table : I

Yamashita, 1937 and Szidat, 1940 suggested that *E. africanum* is identical with *E. bursicola*. Yamaguti, 1971 suggested that the contrary seems true because in *E. africanum* the post testicular area is much bigger and the eggs are much larger.

The present species resembles with *E. africanum* (Stiles, 1901) Luhe, 1909 in general structure and appearance but differs from it in having a long cirrus sac, larger testes, shorter post ovarian space and the tapering hind body. Eggs are larger and more numerous in the present form.

SUMMARY

Present study deals with eleven valid species under the genus *Episthmium* Luhe, 1909 and with a new creature which is unique in feature and seems as new to science. Three examples of that were collected from Solan, Himachal Pradesh, so it is described as *Episthmium solanensis* n. sp.

ACKNOWLEDGEMENTS

Authors are thankful to Director, Zoological Survey of India for providing the laboratory facilities to carry out the study. We also express our heartfelt thanks to Dr. Avtar Kaur, O/c, Zoological Survey of India, Solan Center and the State Government, Himachal Pradesh for extending their co-operation during the Survey.

Table: I

Sl. No.	Name of the parasite	Diagnostic characters	Host	Location of the parasite in their host
01	<i>E.africanum</i> (Stiles, 1901) Luhe, 1909	3.3-4.0x0.7-0.8 22 collar spines	<i>Milvus parasiticus</i> <i>Numidaptilo rhynga</i>	Intestine Bursa fabricii
02	<i>E.bursicola</i> (Creplin,1837) Luhe, 1909	2.96x0.75 22 collar spines	<i>Circaetus gallicus</i> <i>Ardea cinerea</i> <i>Ardea purpurea</i>	Intestine Bursa fabricii
03	<i>E.chauhani</i> Rai, 1962	2.68-4.12x0.92 -1.56 24 coilar spines	<i>Bubulcas ibis</i>	Bursa fabricii
04.	<i>E.gaiinum</i> Tubangui et Musilungan,1941	1.1x0.4	<i>Gailus gailus domesticus</i>	Intestine
05.	<i>E.ghanense</i> Hodasi,1967	1.4-2.4x0.4-0.5	<i>Gailus gailus domesticus</i>	Intestine
06	<i>E.intermedium</i> Skrjabin,1919	2.68-3.48x0.88-1.04 24 coilar spines	<i>Batauria aeruginosus</i>	Bursa fabricii
07	<i>E.mathevossianee</i> (Shakhtaktinskia, 1953) Sulgostowska, 1960	1.65-1.85x0.56-0.58	<i>Coiybus cristatus</i> , <i>Natta rufina</i> <i>Aythya fuligui</i>	Bursa fabricii
08	<i>E.oscari</i> Travassos, 1922	6x2	<i>Gailus domesticus</i>	Intestine
09	<i>E.prosthoitellatum</i> (Nicoll, 1914) Price,1931	2.0-2.4x0.75-0.9 24 collar spines	<i>Hyeracidea</i> sp.	Intestine
10.	<i>E.proximum</i> Travassos, 1922	7x2	<i>Ardea cocoi</i> <i>Euxenuramaguari</i> sp.	Bursa fabricii
11.	<i>E. skrjabini</i> (Oshmarin et Skrjabin,1947) Skrjabin et Baschkirova,1956	0.79x0.306 22 collar spines	<i>Coiybus stellatus</i>	Intestine
12	<i>E. solanensis</i> (Present species)	2.688-4.64x 0.656-1.194 24 collar spines	<i>Bubulcus ibis coromondus</i>	Intestine

Table: II : Comparison between *E. africanum* (Stiles, 1901) Luhe, 1909 and *E. solanensis* (present species)

SI. No	Name of the Parasite	Length of the parasite	Width of the parasite	No of collar spines	Length and nature of the cirrus sac of the parasite	Length and width of the testes of the parasite	Measurement of the post ovarian space of the parasite	Eggs of the parasite
01	<i>E. africanum</i> (Stiles, 1901) Luhe, 1909	3.3-4.0	0.7-0.8	22	Mucular 0.4-0.9x 0.01-0.11	0.221-0.421 x0.214-0.413 & 0.243-0.4 x0.11-0.22	0.82	64-34u
02	<i>E. solanensis</i> n. sp	2.688-4.64	0.656- 1.194	24	Strongly muscular 0.8-1.12x 0.112-0.128	0.335-0.672x 0.368-0.688 &0.448-0.8x 0.32-0.528	0.43	82-54u

REFERENCES

- *Baschkirova, E. Ia. 1941 'Echinostomatidae of Russian Birds'. *Turdy. Bashkirsk. Vet. Stants.* Vol. 3
- Bhalerao, G.D. 1926 'The trematode parasite of *Corvus isolens* (a Burma house crow) with a description of four new species.' *Parasit.*, **18** : 387-398
- *Dietz, E, 1909 'Die Echinostomatiden der Vogel.' *Zool. Anz.*, **34**(6) : 180-192
- Gupta N.K. and Mehrotra.V. 1971 'Observation on *Episthmium intermedium*'. *Res. Bull. Punjab. Univ. Zool.*(22(1/2): 255-257
- Hodasi, J.K. 1967 ' Digenetic trematodes from the domestic fowl in Ghana' *J. Helm*, **41**(4): 329-336.
- Karyakarte, P.P. 1969 '*Episthmium chauhani intermediatum* sub sp.n. (Trematoda, Echinostomatidae) from the egret, *Bubulcus ibis* in India' *Riv. Parasit.*, **30**(4): 283-286
- *Luhe, M.1909 'Parasitische Plattwürmer.I Trematoden' *Suss. Deutschl. Helm.*, **17**: 215pp.
- *Mendhim,K, 1943 'Deitrag zur Systematic und Biologie der Familie Echinostomastidae.' *Arch Naturgesch.*, **12** : 175-302
- *Nicoll, W.1914 The trematode parasites of North Queensland.I' *Parasite*, **6**(4):333-350.
- *Odening, K. 1963 'Echinostomatoidea, Notocotylata und Cyclocoelida (Digenea, Redieinei) aus Vogeln des Berliner Tierparks'. *Bijdr. Dierkunde*, **33** : 37-60.
- *Odhner, K., 1910 'Über Distomen, welche den Exkretionsporus als Anus verwenden Konnen.' *Zool. Anz.*, **35** : 432-433.
- Rai, S.L. 1963 'On a new trematode, *Episthmiurn chauhani* sp. n. of the genus *Episthmium*I; Luhe, 1909.' *Ind. J. Helm.*, **35** : 432-433.
- 'Skrjabin, K.I. 1919 'Trematoden der Bursa fabricii der Vogel vom Don.' *Trans Soc. Vet. Surg. Great Don Army Novotscherkask*, **1**: 15-29.
- *Skrjabin, K.I, Petov, A.M. and Baschkirova, E.A.1947 'Echinostomatiden of domestic and hunting sporting birds in sssR' *Trematodes of Anim and Man*: 392-505
- Stiles, C.W. 1901 '*Echinostomum bursicoia* Looss and *E.cioacinum* Braun from a nomenclatural standpoint. Notes on parasites 56. *Science*(328), **13**:593-594; *Zool.Ctbl.* **9**(11-12):360
- Sulgostowska, M. A. and Musiltr. 1960 'Intestinal trematodes of birds of mesonephric lakes. *Ada ParPol.m*, **8**(6) : 85-114.

Tuubangui, M. A. and Musilungan, V.A. 1941 'Trematode parasites of Philippine vertebrates. IX. Flukes from the Domestic fowl and other birds. *Philipp. J. Sci.*, 75(2) : 131-142

Yamashita, J. and Szidat, 1940. 'Studies on the Echinostomatidae II. A list of the family Echinostotidae, trematode parasites of reptiles, birds and mammals arranged systematically. *Trans Sapporo. Nat. Hist. Soc.*, 15(2) : 82-95

Yamaguti, S.1971 'Synopsis of Digenetic Trematodes of vertebrates' Vol. I. & II: 1-1074pp

***Not consulted in original.**