Rec. zool. Surv. India, **89**(1-4) : 293-298, 1991.

ON THE OCCURRENCE OF *DJOMBANGIA PENETRANS* BOVIEN, 1926 (CESTODA : CARYOPHYLLIDEA : LYTOCESTIDAE) IN WEST BENGAL, INDIA AND NOTES ON ITS DIAGNOSTIC CHARACTERS

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INTRODUCTION

The genus *Djombangia* was erected by Bovien (1926) with *D. penetrans* as its type species, collected from the intestine of a siluroid fish *Clarias batrachus* (L.) at Java. The present study is based on four specimens of *D. penetrans* collected from the junction of duodenum and intestine of *Clarias batrachus* (L.) from Malda, West Bengal in March, 1984. The study of these specimens revealed interesting intraspecific variations and the species is redescribed in the present communication. Classification is based on Mackiewicz (1972). All measurements are in millimeters.

SYSTEMATIC ACCOUNT

Class CESTOIDEA Rudolphi, 1808
Subclass CESTODA Carus, 1863
Order CARYOPHYLLIDEA Van Beneden (in Carus, 1863)
Family LYTOCESTIDAE Wardle and McLeod, 1952 (=LYTOCESTINAE Hunter, 1927)
Genus **djombangia** Bovien, 1926

Djombangia penetrans Bovien, 1926
(Figs. 1 and 2)

1974. *Djombangia indica* Satpute and Agarwal, *Indian J. Exptt. Biol.* **12** : 373-375.

1977. *Djombangia caballeroi* Sahay and Sahay, *Excerta Parasitologica En Memoria Del Doctor Eduardo Caballero Y Caballero*, 371-376.

1985. *Djombangia clariae* Kundu, Bhattacharya and Datta, *Bull. Zool. Surv. India*, 7 (2-3) : 151-154.

Diagnostic character : Body white, divisible into scolex, neck and body proper, covered with thick tegument except in the region of scolex, measures 9.7—13.47 × 2.97—4.18. Head or anterior part globular or triangular with terminal introvert, 0.55-1.32×0.82 — 1.10, profusely supplied with glandular cells along the margin which concentrate below the apex in a semilunar fashion resulting in formation of some evagination or sucker. Neck muscular, 0.66—1.21 × 0.27—0.82, contractile in nature. Body proper oval or leaf-shaped with rounded posterior end ; pretesticular

Fig. 1 : Anterior part of *Djombangia penetrans* showing scolex and neck.
Fig. 2 : Posterior part of *Djombangia penetrans* showing details of internal organs.

region 0.44—1.21×1.76—2.31 and uterotesticular region 5.28—8.36×2.97—4.18.

After fixing in A F A under cover slip pressure it contracts due to which deep denticulations appear in the margin of the body. Testes follicular, numerous, distributed in lateral medullary field, from behind neck to anterior level of ovary which is follicular bilobed on two sides of median line, two lobes measure 0.69—0.93× 0.33—0.44 and 0.71—0.93 × 0.33—0.49 respectively and connected by wide strips of isthmus measuring 0.49—0.66 × 0.11—0.16. Uterus extends from testicular zone to posterior extremity of ovary. Shell gland mass well developed, located posterior to ovary Vitelline follicles measure 0.06—0.13 × 0.06—0.11, distributed in cortical region out side testes and extend from behind neck to anterior margin of ovary except in one specimen where it extends upto middle of ovary. Common atrium situated near hind end of body. Eggs operculate, elliptical and measure .066—.088× .044—.044. The spines mentioned by Bovien (1926) not clearly discernible. Measurements of different body organs of all the four specimens are included in Table I

Host : *Clarias batrachus* (L.)
Locality : Malda (West Bengal) ; Date of Coll. : 20.3.1984

Deposited in the National Zoological Collection, Zoological Survey of India, Calcutta, Registration No. W 7610/1—W 7613/1.

REMARKS

Parasites of the genus *Djombangia* Bovien, 1926 are characterised by their peculiar shape, globular head, short neck and disposition of the uterus. The body is broad and fleshy. The head of the parasites of this genus generally penetrate through and projects outside the intestinal wall. From the shell gland mass the uterus ascends and reaches up to the neck and then it descends to open through the female opening at posterior end.

Variations in the present specimens from those of *D. penetrans* Bovien, 1926 are mainly in structures of sucker. The comparison of the present specimens with the type specimen and those of other species described so far from India are based on literature and presented in Table II. From this table it is apparent that all the Indian species including the present specimens differ in minor characters from *D. penetrans* Bovien, 1926. The difference in the cirrus sac, location of the genital atrium, the structure of the sucker and the length of the neck in various species described so far from India are of such minor nature that they do not warrant erection of a new species. Chakraborty and Tandon (1988) referred their specimen to *D. indica* Satpute and Agarwal, 1974 as it is having prominent cirrus sac, post-ovarian vitelline follicles and receptaculum seminis. Mackiewicz (1981) remarked that *D. indica* is described from flattened specimens, and the correct assessment of its status could be done only after comparison with *D. caballeroi* Sahay and Sahay, 1977. In the light of the present studies it is concluded that there are variations in the structure of different organs in the species belonging to the genus *Djombangia* Bovien, 1926 (Table II) as such the species described so far from India are considered to be synonym of *D. penetrans* Bovien, 1926.

TABLE—I

MEASUREMENTS AND VARIATIONS OF 4 MATURE SPECIMENS

	Specimens			
	1	2	3	4
Lenght of parasites	13.47	11.78	11.11	9.07
Maximum breadth	4.18	4.01	3.3	2.97
Hold fast length	0.55	0.88	1.32	0.66
Hold fast breadth	1.1	0.82	0.77	0.82
Neck length	1.21	1.05	0.66	0.99
Neck breadth	0.82	0.60	0.27	0.33
Pretesticular body length	1.21	0.82	0.44	0.88
Pretesticular body breath	2.31	1.76	1.98	1.76
Utrrotesticular region length	8.36	8.25	7.37	5.28
Uterotesticular region length	4.18	4.01	3.3	2.97
Ovary length (Right lobe)	0.93	0.88	0.69	0.71
Ovary breadth (Right lobe)	0.44	0.44	0.33	0.33
Number of ovarian follicles (Right lobe)	30	-	—	—
Ovary length (left lobe)	0.93	0.91	0.71	0.77
Ovary breadth (Left lobe)	0.44	0.49	0.38	0.33
Number of ovarian follicles (Left lobe)	33	--	—	—
Ovarian Isthmus length	0.66	0.49	0.49	0.55
Ovarian Isthmus breadth	0.16	0.16	0.13	0.11
Size of Testes (Based on 3 exs.)	0.16×0.16	0.15×0.16	0.16×0.16	0.16×0.16
	0.16×0.16	0.19×0.16	0.16×0.14	0.16×0.16
	0.16×0.16	0.17×0.16	0.16×0.16	0.14×0.15
Size of Vitalline follicles (Based on 3 exs.)	0.11×0.11	0.13×0.11	0.11×0.11	0.09×0.09
	0.11×0.11	0.13×0.11	0.11×0.09	0.08×0.08
	0.11×0.11	0.11×0.11	0.11×0.11	0.06×0.06
Size of Eggs (Based on 10 exs.)	0.05-0.09×0.03-0.05	0.05-0.08×0.03-0.04	0.05-0.09×0.03-0.04	0.05-0.08×0.03-0.04
	(0.072×0.041)	(0.068×0.038)	(0.066×0.036)	(0.063×0.035)

TABLE—II

MORPHOLOGICAL VARIATIONS OF DIFFERENT SPECIES OF GENUS *DGOMBANGIA* BOVIEN, 1926 OCCURRING IN *CLARIAS BATRACHUS* (LINN.) AND *HETEROPNEUSTES FOSSILIS* (BL.)

	Djombangia panetrans Bovien, 1926.	*D. indica Satpute &* Agarwal, 1974	*D. caballeroi* Sahay & Sahay, 1977	*D. clariae* Kundu, Bhattacharya & Datta, 1985	*D. penetrans* Bovien, 1926 (Present study)
Body	9-10×3	7.3-13.8×1.8-4.3	7.86-8.12×2.70-2.76	14.035×5.087	9.7-13.47×2.97-4.18
Cirrus sac	Not well defined	Very prominent	Well defined	Discernible	Not well defined.
Cenital atrium	Near ovarian Isthmus.	Opposite uterovaginal apearture.	Anterior to Cirrus sac	In front of ovarian isthmus.	Near the hind end not anterior to Cirrus sac.
Sucker	Circular, at the tip of scolex.	Distinct, at the tip of hold fast.	Slit like grove at the tip of hold fast.	Evagination at the tip of scolex.	Very feeble evagination at the tip of scolex.
Neck	Continuous with scolex and body.	Short neck, not marked off from the scolex and body.	Neck marked off from the scolax by a line.	Neck is not short, not marked off from the scolex by a line.	Neck continuous with scolex and body.
Eggs	Eggs with spinous shell eva 62-75 uu×30—40 u spinous projection—4 u.	Eggs operculated bearing spinous projections on the surface 64-81 u × 43-58 u spinous projection—3 u.	Eggs non operculated and smooth 0.08×0.04	Eggs non operculated and smooth 82-96×41.	Eggs operculate 0.067×0.037.
Host	*Clarias batrachus*	*Clarias batrachus*	*Heteropneustes fossilis*	*Clarias batrachus*	*Clarias batrachus*

SUMMARY

Djombangia penetrans Bovien, 1926 has been redescribed based on the specimens collected from the fish *Clarias batrachus* (L.) from Malda, West Bengal, India. The present specimens differ in minor morphological characters from the type specimens. All the other species of the genus *Djombangia* Bovien, 1926 described so far from India have been considered synonyms of *D. penetrans* Bovien, 1926.

ACKNOWLEDGEMENT

The author is thankful to the Director, Zoological Survey of India for necessary facilities. The author also expresses his sincere thanks to Dr. R. P. Mukherjee and Dr. C.B. Srivastava, Scientists 'SD' for critically going through the manuscript and to Shri I.B. Datta of Zoological Survey of India for his help in the preparation of this paper. He would also like to thank Dr. J.S. Mackiewicz, Biological Sciences, State University of New York, Albany, Ny 12222 (U.S.A.) for his suggestions.

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