

**STUDY OF A NEW TAPEWORM, *PESUDOARAE JAGMENENSIS*, N.G., N.SP.
FROM CLARIAS BATRACHUS FROM DISTRICT CHHATARPUR (M.P.) INDIA
MUKTASINGH**

Department of Zoology,
Pt. J. L. N. College,
BANDA (U.P.) INDIA

Received : 18.10.16; Revised : 25.10.16; Accepted : 19.11.16

ABSTRACT

Four fishes, *Clarias batrachus* were collected with the help of local fisherman of Chandla, District Chhatarpur (M.P.) India. Two cestodes were reported in its alimentary canal. Scolex dome shaped without groove, Neck small 'Oar shaped' ovary posteriorly located partly cortical as well as in medullary parenchyma.

Figures : 03

References : 19

Table : 01

KEY WORDS : Chhatarpur, *Clarias batrachus*, *Pseudoourae*.

Introduction

Four fishes, *Clarius batrachus* were caught with the help of local fisherman of Chandla, Chhatarpur (M.P.) India. One was found infected with two alike cestodes in its intestine . Morphological studies of the worm revealed them to belong the new genus, *Pseudoourae* n.g. of the family Capingentidae⁵ of order Caryophyllidea.

Material and Method

From the local fish market Chandla, Chhatarpur(M.P.), catfish was procured for the helminthes. Usual techniques for collection and preservation of the cestode was employed. Whole mount was stained in Mayer's Haemalum and cleared in xylol. Figures are drawn with cameralucida. All the measuerments have been given in millimeters unless otherwise stated.

Generic Discussion

Medium sized, unsegmented worms. Scolex dome shaped without groove. Neck present. Testes numerous, oval to round, medullary scattered only in anterior region to cirrus pouch. Cirrus pouch median, oval to round well developed. Internal seminal vesicle present. External seminal vesicle absent. Ovary 'Oar shaped', posteriorly located partly cortical as well as medullary. Vitellaria partly cortical and partly

medullary, reaches up to the level of cirrus pouch. Postovarian vitellaria absent. Receptaculum seminis absent. Vagina present. Uterus long, coiled, non glandular, open into cirrus pouch. Eggs non operculate. Parasites of fresh water fishes.

Description

***Pseudoourae jagmenensis* n.g., n.sp.**

Medium sized. Worm measures 12.132-21.56 X 1.532-1.637 (16.94 X 1.584). Scolex dome shaped, without groove, cushion suker and any type of additional adhesive organ. absent. Neck measures 1.625-1.840 X 1.312-1.536 (1.732 X 1.434).

Testes numerous, oval to round, medullary measure 0.05-0.112 X 0.062-0.0125 (0.081 X 0.093), reaches up to cirrus pouch. Cirrus pouch median, oval to round measures 0.92-0.95 X 0.82-1.0 (0.93 X 0.91). Internal seminal vesicles measure 0.284-0.392 X 0.32-0.34 (0.338 X 0.332). External seminal vesicle absent.

Female genitalia posteriorly situated. Ovary 'Oar shaped' measures 0.921-1.09 X 2.05-2.12 (1.00 X 2.08), ovarian lobes situated in cortical as well as medullary while isthamus in medullary region. Receptaculum seminis absent. Vagina measures 0.0375-0.062 (0.0418) in dimeters.

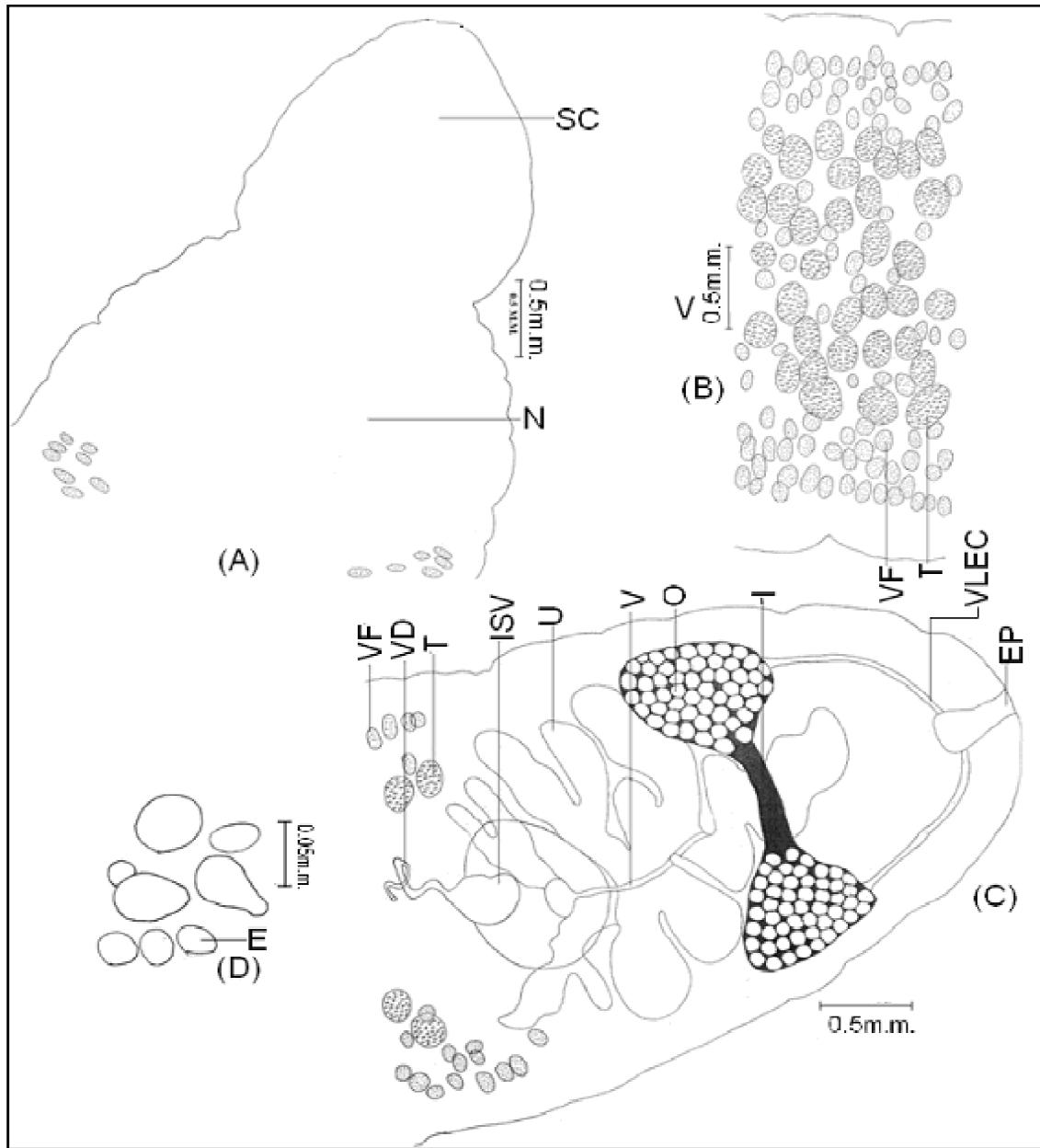


Fig. 1 : *Pseudooarae jagmenensis*, n.g., n.sp., A:- Scolex (50X), B:- Middle region of Body (50 X), C – Posterior region of the body (50 X), D - Eggs (225 X)

Vitelline follicles measure 0.05-0.12 X 0.06-0.18 (0.08 X 0.12), reaches up to cirrus pouch. Post ovarian vitellaria absent.

Uterus coiled, non-glandular measures 1.26-1.97 X 2.0-2.13 (1.61 X 2.065), extending

anterior to cirrus pouch.

Eggs non operculate measures 0.087-0.18 X 0.037-0.0817 (0.092 X 0.065). Excretory pore measures 0.5-0.56 X 0.26-0.27 (0.53 X 0.26). Excretory canal measure 0.375-0.05 (0.4) in

TABLE - 1 : Comparison of the characters of the genera of family Capingentidae⁵ comes closer to *Pseudooarae* n.g.

S. No.	Characters	<i>Pseudo-caryophyllaeus</i> ²	<i>Pseudo-bilobulata</i> ¹⁷	<i>Pseudo-batrachus</i> ¹¹	<i>Sukhpatae</i> ¹⁶	<i>Pseudoheroinverta</i> ¹⁵	<i>Sudhaena</i> ⁶	<i>Pseudobilata</i> ¹²	<i>Pseudooarae jagmenensis</i> n.g.
1	Scolex	Rounded	Blunt	Rounded, grooved	Blunt	Blunt	Blunt	Spoon	Dome shaped
2	Neck	Very long	Small	Very long	Medium	Medium	Medium	Small	Small
3	Testes	Numerous	Numerous	Few (5 to 10)	Numerous	Numerous	Numerous	Numerous	Numerous
4	Internal seminal vesicle	Present	Absent	Absent	Absent	Absent	Present/Absent	Present	Present
5	Ovary	Band shaped	Bilobed shaped	'H' shaped	Omega shaped	Inverted 'A' shaped	'M' shaped	Uneven bilobed shaped	Oar Shaped
6	Vitelline follicles	Reches below to cirrus Pouch	_____	Reches below to cirrus pouch	Reches below to cirrus pouch	Reches below to cirrus pouch	Reches below to cirrus pouch	Up to the level of cirrus pouch	Reches up to anterior level of cirrus pouch
7	Receptaculum seminis	Absent	Absent	Absent	Absent	Absent	Absent	Present	Absent

S. No.	Characters	<i>Pseudo-caryophyllaeus</i> ²	<i>Pseudobilobulata</i> ¹⁷	<i>Pseudobatrachus</i> ¹¹	<i>Sukhpatae</i> ¹⁶	<i>Pseudoheroinverta</i> ¹⁵	<i>Sudhaena</i> ⁶	<i>Pseudobilobata</i> ¹²	<i>Pseudooarae jagmenensis</i> n.g.
8	Uterus	Anterior to ovary	Reaches below to ovary	Reaches below to ovary	Anterior to ovary	Anterior to ovary	Anterior to ovary	Reaches below ovary	Reaches below ovary
9	Eggs	Non-operculate	—	Operculate	Non-operculate	Non-operculate	Operculate	Operculate	Operculate
10	<i>Clarias batrachus</i>	<i>Heteropneustes fossilis</i>	<i>Heteropneustes fossilis</i>	<i>Heteropneustes fossilis</i>	<i>Heteropneustes fossilis</i>	<i>Heteropneustes fossilis</i>	<i>Clarias batrachus</i>	<i>Clarias batrachus</i>	<i>Clarias batrachus</i>

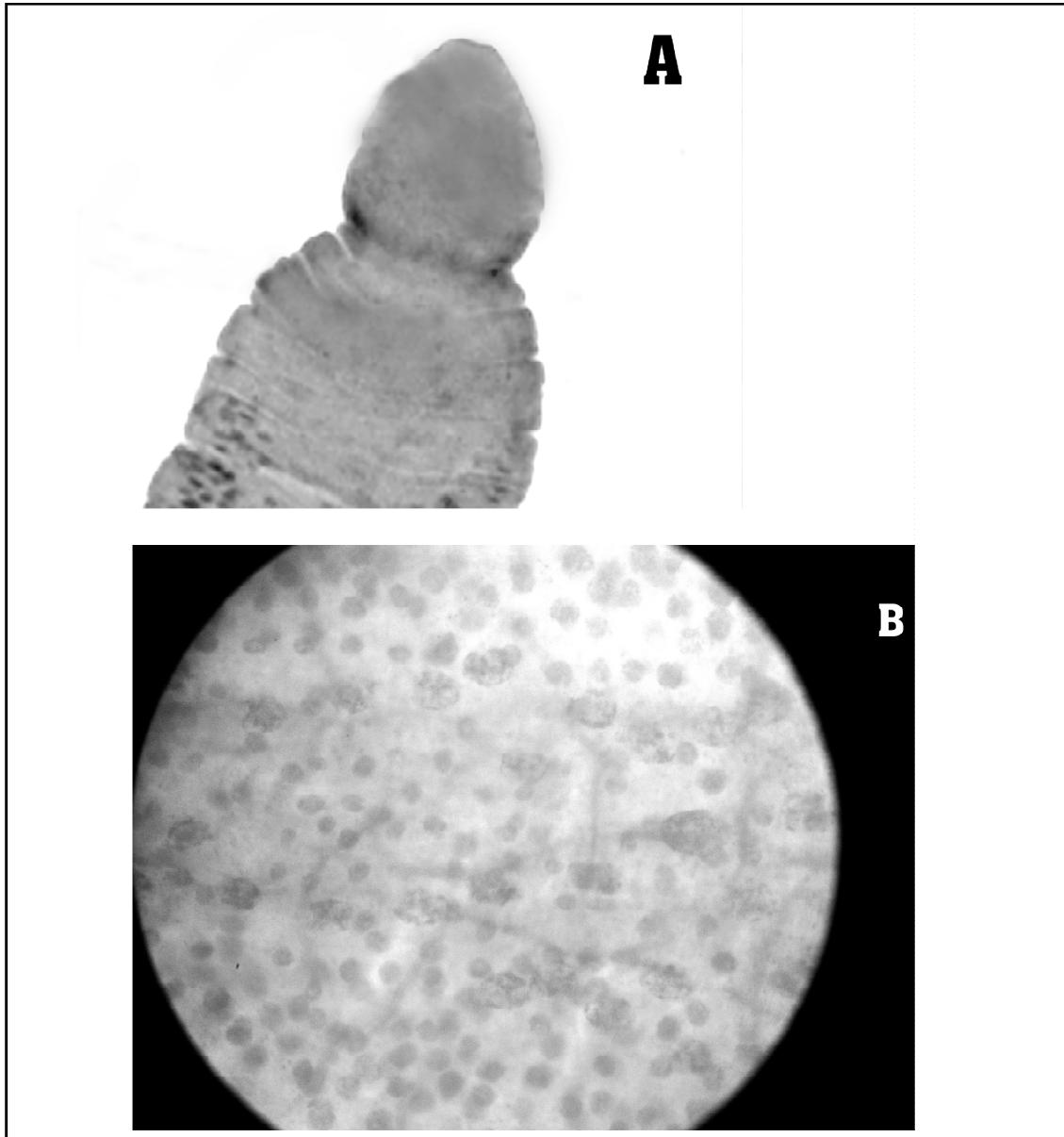


Fig. 2 : *Pseudooarae jagmenensis*, n.g., n.sp., A- Scolex with neck (50X) B- A portion of worm showing position of testes and vitellaria . (50X)

diameter.

Discussion

The present form comes closer to *Pseudocaryophyllaeus*², *Pseudobilobulata*¹⁷, *Pseudobatrachus*¹¹, *Sukhpatae*¹⁶, *Pseudoheteroinuerta*¹⁵, *Sudhaena*⁶ and

*Pseudolobuleta*¹².

The present form differs from *Pseudocaryophyllaeus*²; in having dome shaped scolex, 'Oar shaped' ovary, vitelline follicles reaches up to anterior level of cirrus pouch, uterus reaches below to ovary.

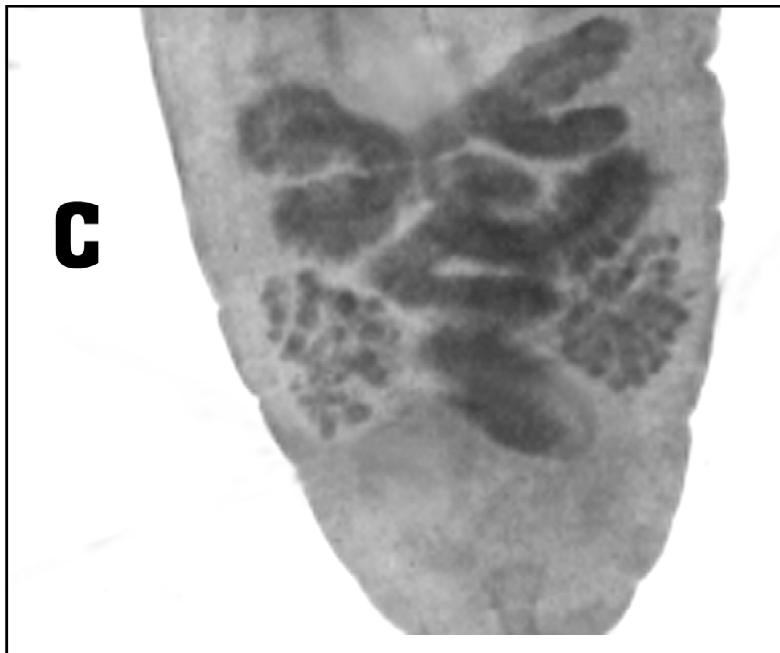


Fig. 3 : *Pseudooarae jagmenensis*, n.g., n.sp., C - Posterior region of worm showing ovary (50X)

From *Pseudobilobulata*¹⁵; it differs in having dome shaped scolex, prominent internal seminal vesicle and 'Oar shaped' ovary.

From *Pseudobatrachus*¹¹; it differs in having dome shaped scolex, absence of groove, small neck, numerous testes, prominent internal seminal vesicle, 'Oar shaped' ovary, vitelline follicles reaches up to anterior level of cirrus pouch and non operculate eggs.

From *Sukhpatae*¹⁶; it differs in having dome shaped scolex, small neck, prominent internal seminal vesicle, 'Oar shaped' ovary, vitelline follicles reaches up to anterior level of cirrus pouch and uterus reaches below to ovary.

From *Pseudoheteroinverta*¹⁵; it differs in having dome shaped scolex, small neck, prominent internal seminal vesicle, 'Oar shaped' ovary, vitelline follicles reaches up to anterior level of cirrus pouch and uterus reaches below to ovary.

From *Sudhaena*⁶; it differs in having dome shaped scolex, small neck, 'Oar shaped' ovary, vitelline follicles reaches up to anterior level of cirrus pouch and uterus reaches below to ovary and non operculate eggs.

From *Pseudolobulata*¹²; it differs in having dome shaped scolex, 'Oar shaped' ovary, vitelline follicles reaches up to anterior level of cirrus pouch, absence of receptaculum seminis and non operculate eggs.

Thus the proposed new genus, *Pseudooarae* n.g. differs from all the known genera of the family Capingentidae⁵.

In the light of above discussion the proposed new genus, *Pseudooarae jagmenensis* n.g., n.sp. may be provisionally accommodated as a new genus and new species.

The genus is named on the shape of ovary, while species is named after the pond from where the hosts were collected.

Type species	: <i>Pseudooarae jagmenensis</i> n.g., n.sp.
Host	: <i>Clarias batrachus</i> (Linn.)
Habitat	: Intestine
Locality	: Chandla, Tehsil- Ioundi, Chhatarpur (M.P.) India
Date of Collection	: 21 th may 2009
Number of specimens	: 02
Accession numbers	: BBCZD/MS/C-26, 27
Deposition	: Parasitological laboratory, Department of Zoology, Bipin Bihari (P.G.) College, Jhansi (U.P.) India

REVISED KEY TO THE VARIOUS GENA THE FAMILY CAPINGENTIDAE⁵.

1. Postovarian median vitellaria present——2
Postovarian median vitellaria absent——6
2. Uterine coil extend anterior to cirrus pouch.
Scolex with two large bothria———————
———————
*Capingens*³

Uterine coil not extending anterior to cirrus pouch .Scolex lacking botheria	3	Ovary uneven bilobed— <i>Pseudounevenata</i> ¹⁵
3. Ovary inverted A-shaped— <i>Adenoscolex</i> ¹		Ovary bean-shaped— <i>Pseudobeanata</i> ¹⁸
Ovary not as above	4	Ovary band-shaped— <i>Pseudostripata</i> ¹⁸
4. Ovary dumbbell shaped; scolex quite reduced; neck absent	<i>Breviscolex</i> ⁷	9. Neck present ovary band-shaped— — <i>Pseudocaryophyllaeus</i> ²
Ovary otherwise; scolex well developed, neck present	5	Neck present ovary bilobed— --- <i>Pseudobilobulata</i> ¹⁷ .
5. Ovary H- shaped	<i>Edhmonia</i> ⁸	Neck present ovary inverted A-shaped— — <i>Pseudoheteroinverta</i> ¹⁵
Ovary band- shaped	<i>Capingentoides</i> ²	Neck present ovary omega-shaped— — <i>Sukhpatae</i> ¹⁶
6. Ovary U- shaped uterine coils extending anterior to cirrus pouch	<i>Spartoides</i> ⁴	Neck present ovary H-shaped with long arms— — <i>Pseudobatrachus</i> ¹¹
Ovary U- shaped, uterine coils not extending anterior to cirrus pouch	<i>Mystoides</i> ⁹	Neck present ovary M-shaped with long arms— — <i>Sudhaena</i> ⁶
Ovary not U- shaped, uterine coils not extending anterior to cirrus pouch	7	Neck present ovary uneven bilobed— — <i>Pseudobilobulata</i> ¹²
7. Neck absent	8	Neck present ovary bow-shaped— — <i>Pseudobowae</i> ¹³
8. Neck present	9	Neck present ovary opposite cone-shaped— — <i>Pseudoconeata</i> n.g.
Ovary H- shaped	<i>Pseudolytocestus</i> ⁴	Neck present ovary dumbbell-shaped— — <i>Pseudodumbbellata</i> n.g.
Ovary inverted A- shaped	<i>Pseudoadnoscolex</i> ⁹	Neck present ovary kidney-shaped— — <i>Pseudokidniata</i> ¹⁹
Ovary fan- shaped	<i>Pseudoclariasis</i> ¹⁰	Neck present ovary oar-shaped— — <i>Pseudooarae</i> n.g.
Ovary inverted U- shaped	<i>Pseudoinverta</i> ¹⁰	
Ovary ear-shaped	<i>Pseudoauricularia</i> ¹⁵	

References

1. FOTEDAR, D.N. (1958) On a new cestode parasite (Protocephalidae: Cestoda). *Kashmir Sci.*, **31**:17-32.
2. GUPTA, S.P. (1961) Caryophyllaeids (Cestoda) from freshwater fishes of India. *Proc. Helminthol. Soc.* **73** : 183-186.
3. HUNTER, G.W. III (1927) Notes on the Caryophyllaeidae of North America . *J. Parasitol.*, **14** : 16-26.
4. HUNTER, G.W. III (1929) New Caryophyllidai from North America. *J. Parasitol.*, **15** : 185-192.
5. HUNTER, G.W. III AND HUNTER, W.S. (1930) Studies on the parasites of fishes of the Lake Champlain watershed. *Annu. Rep. N.Y. state conservancy Dep. Biol. Surv. Suppl.*, pp. 197-216.
6. KHARE, R. K. (2006) Morphotaxonomy of piscian cestodes and ecological observation of *Mastacembelus armatus* (Lacepede) in relation to parasitic infestation. Ph.D. Thesis, Bundelkhand Univ., Jhansi (U.P.) India. Pp. 1-185.

7. KULAKOVASKAY, O.P. (1962) *Breviscolex orientalis* n.g., n.sp. (Caryophyllaeidae: Cestoda) from fish in the Amur basin (In Russian). *Dokl. Acad. Nauk SSSR*, **143**: 1001-1004.
8. MACKIEWICZ, J.S. (1992). *Edlintonia ptychocheila* gen. n., sp. napingentid. (Cestoidea: Capingentidae) and other caryopylliid tapeworms from cyprinid fishes of North America. *Proc. Helminthol. Soc. Wash.*, **37** : 110-118
9. MATHUR, N. AND SRIVASTAVA, A.K. (1992) Study of new cestode, *Pseudoadenoscolex fossilis* n.g., n.sp. from freshwater catfish, *Heteropneustes fossilis* (Bloch.) *U.P. J.Zool* **14** (1) : 33-36.
10. PATHAK, A. (2002) Studies on the morphology, taxonomy and ecology of piscian cestode parasites of district Jalaun. Ph.D. thesis B.U. Jhansi, PP. 1-244
11. PATHAK, A. AND SRIVASTAV, A.K. (2005) Morphotaxonomical study of a new cestode, *Pseudobatrachus chandri* n.g., n. sp. from freshwater cat fish, *Clarias batrachus* (Linn.) *Ind. J. Environ. Sci.* **9**(2): 141-143.
12. SAHU, V.K. (2007) Faunistic Survey of piscian tapeworm of Bundelkhand region of Madhya Pradesh. Ph.D. Thesis Bundelkhand Univ., Jhansi (U.P.) India pp. 1-150.
13. SINGH, M., NARAYAN, A., SINGH, A.R. AND SRIVASTAV (2015) Study of a new tapeworm, *Pseudobowae Chhatarpurensis* n.g., n.sp. fro *Clarias batrachus* (Linn.) from district Chhatarpur *Flora and Fauna* **21** (1) : 75-79.
14. SRIVASTAV, A.K. AND KHARE, R.K. (2005) Study of a new tapeworm, *Heeradevina baruasagarensis* n.g., n. sp. From *Clarias batrachus* (Linn.) *Flora and fauna*, **11** (2): 25-27.
15. SRIVASTAV, A.K. AND KHARE, R.K. (2005) A new tapeworm of *Pseudoheteroinvrta tikamgarhensis* n.g., n. sp. from *heteropeutes fossilis* (Bl.). *Flora and Fauna*, **11** (2): 151-154.
16. SRIVASTAV, A.K., KHARE, R.K. AND SAHU, V.K. (2005) Morphotaxonomical status of *Sukhpatae prithvipurensis* n.g., n. sp. from fresh water cat fish, *Heteropneustes fossilis* (Bl.) of Bundelkhand region of Madhya Pradesh. *Proc. of Zoological Society of India*, 121-127.
17. SRIVASTAV, A.K. AND LOHIA, S. (2002) Status of *Pseudobilobulata* n.g. (Capingentidae Hunter, 1930) with description of a new species from freshwater fish of Jhansi Uttra Pradesh, India. *Flora and Fauna*, **8**(2): 75-76.
18. SRIVASTAVA, A.K., SAHU, V.K. AND KHARE, R.K. (2007) First report of a new caryophyllid worm, *Pseudobeanata paleraensis* n.g., n.sp. from *Carias batrachees* (Linn.) *Flora and Fauna* **21**(2) : 225-229.
19. SRIVASTAV, A.K., SINGH, M. AND NARAYAN, A. (2007) Study of a new tapeworm *Pseudokidinata Khonensis* n.g., n.sp. from *Clarias batrachees* (Linn.) from District Chhatarpur (M.P.) India. *Flora and Fauna* **16**(1) : 101-104.