



## First record of avian cestode *Variolepis podicepsi* n.sp. from *Podiceps rufficollis* (Pallas) from Jhansi, U.P., India

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**Abstract:** Twenty eight cestodes were obtained from three little grebs, *Podiceps rufficollis* (Pallas) from Jhansi. Morphological studies of the cestodes revealed that they belonged to the genus, *Variolepis* Spasskii and Spasskaja, 1954 of the sub family Hymenolepidinae Perrier, 1897 family Hymenolepidae Ralliet and Henery, 1909 and regarded as n.sp *Variolepis podicepsi*.

**Keywords:** Greb, Jhansi, *Podiceps rufficollis*, *Variolepis podicepsi* n.sp, Tapeworm

### INTRODUCTION

Birds are invariably infected by a large number of Parasites. Among the parasite that infect, Helminth, represented by 5 well characterized taxonomic units, Cestoda, Trematoda, Nematoda, Monogenoidea and Acanthocephala, form a major group and often cause veterinary problem world wide (William and Jones, 1994). Helminth parasites are important not only because they cause human and other vertebrate disease but also because they are an essential component of global biodiversity (Poulin, and Morand, 2004). These parasites constitute more than half of the biodiversity (Toft, 1986). During the study on avian cestodes in Jhansi, we come accidentally killed little grebs, *Podiceps rufficollis* (Pallas) was collected and specimens were from obtained intestines.

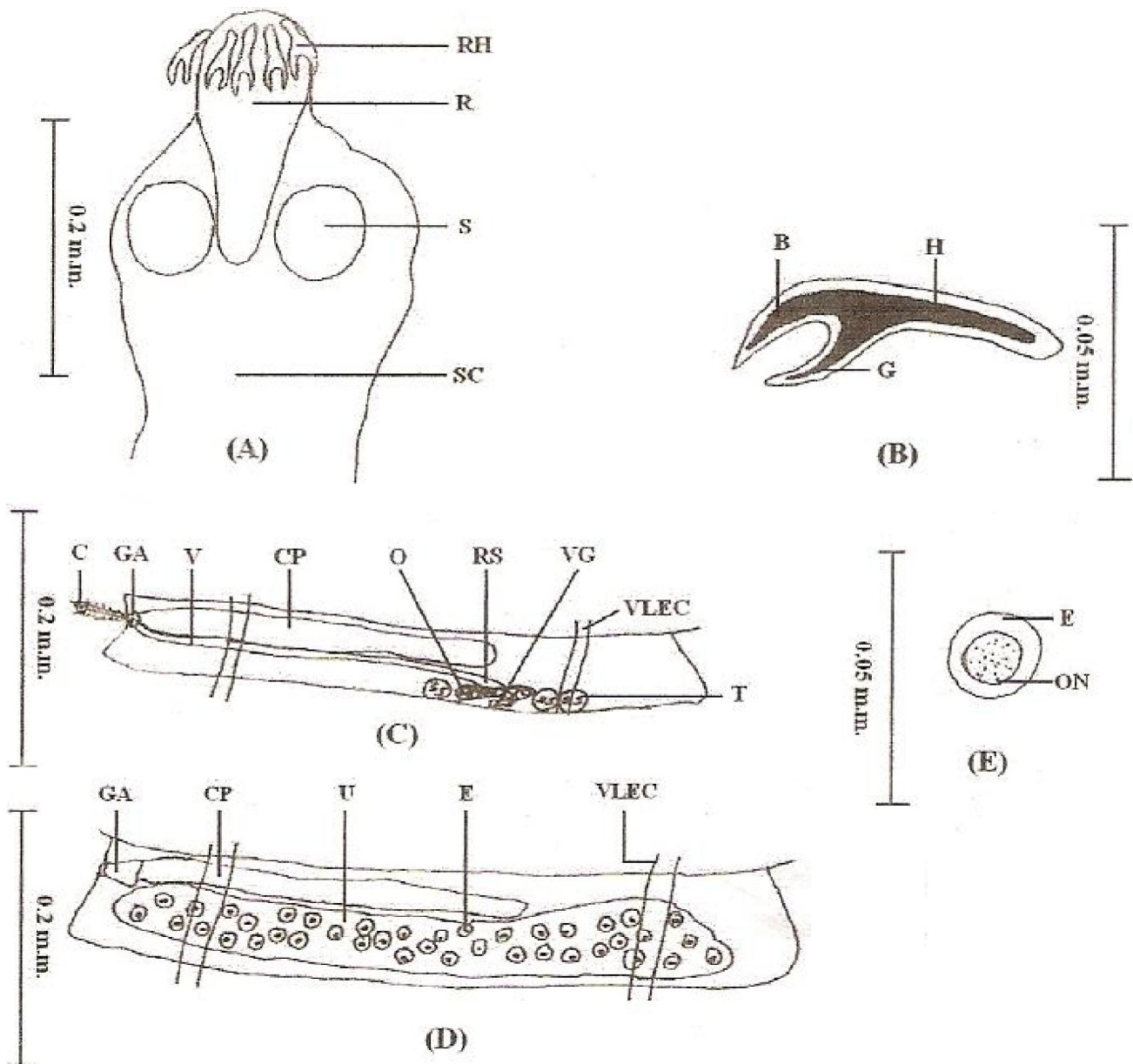
### MATERIALS AND METHODS

The intestines were removed from hosts and cut open into saline water. It lightly shaken and content decanted several times and thoroughly examined under the simple microscope. The parasites were found attached in the mucosa by its scolex. Worms were strached in the lukewarm water with help of fine brush and later fixed in 5% formalin. Whole mounts were stained in Mayer's haemalum and cleared in xylol. Camera lucida drawings were made. All the measurements in millimeters unless otherwise stated.

### RESULTS

Cestodes measure 75 - 105 cm in length and 0.53 in maximum breadth as seen in gravid proglottids. Gravid proglottids broader than long and craspedot. Scolex

measures 0.14 – 0.25 X 0.072 – 0.23 (0.18 X 0.15). Suckers Four, oval to round, unarmed, measures 0.042 – 0.078 X 0.042 – 0.072 (0.060 X 0.057). Rostellum armed, measures 0.066 – 0.20 X 0.064 – 0.090 (0.135 X 0.082). Rostellar hooks ten in number, arranged in a single row measure 0.058 – 0.064 (0.068) in length. Handle 0.032 – 0.040 (0.036); guard 0.016 – 0.026 (0.024) and blade 0.021 – 0.030 (0.028) in length. Neck measure 0.35 – 0.39 X 0.13 – 0.16 (0.37 X 0.14). Immature proglottids measure 0.018 – 0.030 X 0.18 – 0.35 (0.024 X 0.26); mature proglottids measure 0.048 – 0.072 X 0.35 – 0.44 (0.060 X 0.40) and gravid proglottids measure 0.072 – 0.096 X 0.43 – 0.53 (0.084 X 0.48). Testes three in number in which one poral and two aporal, oval to round measure 0.012 – 0.015 X 0.015 X 0.012 – 0.021 (0.014 X 0.018). Cirrus pouch elongated measure 0.22 – 0.29 X 0.012 – 0.030 (0.25 X 0.021) and ventral longitudinal excretory canal up to the 2/3<sup>rd</sup> of the proglottids width. Cirrus armed, measure 0.030 – 0.078 X 0.006 – 0.012 (0.054 X 0.009). Internal and external seminal vesicles absent. Female genitalia slightly aporal. Ovary bilobed measure 0.006 – 0.012 X 0.042 – 0.072 (0.009 X 0.057). Vitelline gland post ovarian compact 0.006 – 0.009 X 0.018 – 0.024 (0.008 X 0.021). Vagina posterior to cirrus pouch measure 0.006 – 0.015 (0.011) in diameter. Receptaculum seminis measure 0.018 – 0.036 X 0.006 – 0.012 (0.027 X 0.009). Genital atrium measure 0.006 – 0.018 (0.012) wide and 0.006 – 0.030 (0.018) in deep. Genital openings unilateral and located in the anterior half of the proglottid margin. Uterus sac like measure 0.036 – 0.072 X 0.35 – 0.45 (0.054 X 0.40), extended beyond the limits of ventral longitudinal excretory canals. Eggs measure 0.008 – 0.016 X 0.008 – 0.019 (0.012 X 0.014). Onchospheres measure 0.0064 – 0.011 X 0.008 – 0.013 (0.009 X 0.010). Ventral longitudinal excretory canals



**Fig.1.** *Variolepis podicepsi* n. sp. (A) Scolex (100 X), (B) Rostellar hooks (450 X)(C) Mature proglottid (100 X), (D) Gravid proglottid (100 X), (E) Egg (450X). Abbreviations: B – Blade, C- cirrus, CP- Cirrus Pouch, E – Egg, G - guard, GA – Genital atrium, H – Handle, O - Ovary, ON – Onchosphere, R – Rostellum, RH – Rostellar Hooks, RS - Recetaculum seminis, S - Sucker, SC- Scolex, T- Testes, U - Uterus, V- Vagina, VG - Vitelline gland, VLEC – Ventral longitudinal excretory canal.

measure 0.006 – 0.018 (0.012) in diameter.

## DISCUSSION

The present form comes closer to *Variolepis planestici* (Mayhew, 1925) Spasskii and Spasskaja, 1954; *V. victoriata* (Inamdar, 1934) Spasskii and Spasskaja, 1954; *V. hughesi* (Yamaguti, 1959), *V. variabilles* (Mayhew, 1925) Yamaguti 1959; *V. passerus* Tiwari, 1987 and *V. tritis* Tiwari, 1987.

From *V. planestici* (Mayhew, 1925) Spasskii and Spasskaja, 1954, the new species differs in having Larger worm, longer rostellar hooks, narrower testes, different

shape of ovary, narrower eggs and narrower onchospheres. From *V. victoriata* (Inamdar, 1934) Spasskii and Spasskaja, 1954, it differs in having narrower worm, larger rostellar hooks, wider testes, different extension of larger cirrus pouch, different shape of narrower ovary, smaller eggs and narrower onchospheres.

From *V. hughesi* Yamaguti, 1959, it differs in having longer worm, larger rostellar hooks, smaller testes, narrower cirrus pouch, different shape of smaller ovary, smaller vitelline gland, narrower eggs and narrower onchospheres. From *V. variabilles* (Mayhew, 1925) Yamaguti 1959; it differs in having smaller worm, wider

**Table 1.** Comparison of characters of the species closer to *Variolepis podiceps* n.sp.

S. No.	Characters	<i>V. planestici</i> (Mayhew, 1925) Spasskii and Spasskaja, 1954	<i>V. victoriata</i> (Inamdar, 1934) Spasskii and Spasskaja, 1954	<i>V. lughesi</i> (Yamaguti, 1959)	<i>V. variabilles</i> (Mayhew, 1925) Yamaguti, 1959	<i>V. passerus</i> Tiawari, 1987	<i>V. tristis</i> Tiawari, 1987	<i>V. podiceps</i> n.sp.
01	Size	10 - 35 X 0.5 - 1.5	60 X 1.35	37 - 50 X 1.0	3.0 X 1.0	10 - 15 X 1.1	21 - 34 X 1.4	75 - 105 X 0.52
02	Scolex (Dia.)	0.2	0.2	0.144 - 0.17	0.2	0.23 - 0.25	0.15 - 0.19	0.72 - 0.23
03	Sucker (Dia.)	-----	0.07	0.64 - 0.082	0.08	0.08 - 0.09	0.042 - 0.076	0.042 - 0.072
04	Rostellum	-----	0.12 X 0.87	0.04 - 0.054	0.02	0.05 - 0.07 X 0.04 - 0.06	0.07 - 0.08 X 0.03 - 0.04	0.07 - 0.2 X 0.06 - 0.09
05	Rostellar hooks	10	10	10	10	10	08	10
	Length	0.014	0.023 - 0.030	0.014 - 0.015	0.020 - 0.022	0.014 - 0.016	0.017 - 0.02	0.057 - 0.064
	Dia.	0.06 - 0.08	0.014	0.124 - 0.164	.....	0.12 - 0.17	0.028 - 0.098	0.012 - 0.021
06	Testes	-----	-----	.....	.....	Aporal, reaches up to VLEC	Poral and aporal reaches near to VLEC	Aoral crosses VLEC
07	Cirrus pouch	-----	0.21 X 0.043	0.16 - 0.18 X 0.045 - 0.053	.....	0.17 - 0.24 X 0.045 - 0.053	0.18 - 0.2 X 0.03 - 0.4	0.22 - 0.29 X 0.012 - 0.03
	Extension	-----	Up to mid line of proglottid	.....	1/3 <sup>rd</sup> width of proglottid	Crossing the VLEC	Up to or cross VLEC	Up to 2/3 <sup>rd</sup> of proglottid width and cross VLEC
08	Ovary	-----	0.17	0.28 - 0.40	.....	0.2 - 0.22	0.098 - 0.294	0.006 - 0.012 X 0.042 - 0.072
	Shape	Irregular fan shaped	-----	Bilobed or trilobed	Lobed	Lobulated fan shaped	Bilobed each lobe further lobulated	Bilobed
09	Vitelline gland	-----	-----	0.078 - 0.102	.....	0.05 - 0.08 X 0.08 - 0.10	0.028 - 0.056 X 0.042 - 0.112	0.006 - 0.009 X 0.018 - 0.024
	Shape	-----	-----	.....	.....	Variously lobed	Variously lobed	Compact
10	Receptaculum seminis	-----	-----	.....	.....	Present	Absent	Present
11	Eggs	0.035 - 0.047	0.048 - 0.045	0.047 - 0.05	.....	0.04 - 0.07	0.02 - 0.049	0.008 - 0.016
12	Onchosphere	0.024 - 0.032	0.019	0.031 - 0.033	.....	0.02 - 0.04	0.014 - 0.028	0.008 - 0.013

rostellum, larger rostellar hooks, different extension of cirrus pouch, and different shape of ovary.

From *V. passerus* Tiwari, 1987, it differs in having larger worm, longer rostellar hooks, smaller testes, narrower cirrus pouch, bilobed narrower ovary, compact smaller vitelline gland, smaller vitelline gland, smaller eggs and smaller onchospheres. From *V. tritis* Tiwari, 1987, it differs in having larger wider rostellum, greater number of larger rostellar hooks, narrower testes, different extension of cirrus pouch and different shape of ovary (Fig. 1 and Table 1).

In the light of above discussion, the present form has been regarded as a new species *Variolepis podicepsi* n. sp.

Type species : *Variolepis podicepsi* n. sp.  
 Host : *Podiceps rufficollis* (Pallas)  
 Habitat : Intestine  
 Locality : Jhansi (U.P.) India  
 Number of specimen : 28  
 Deposition : Parasitological laboratory,  
 Department of Zoology, B.B. (P.G.) College, Jhansi (U.P.)  
 India.

#### ACKNOWLEDGEMENT

Authors are thankful to Prof. A.K. Chopra, Department of Zoology and Environmental Science, Gurukula Kangri

University, Haridwar (UK) for pertinent encouragement during the preparation of manuscript.

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