

# STUDIES ON *VAMPIROLEPIS PASSERINA* SP. NOV (CESTODA: HYMENOLEPIDIDAE RAILLIET ET HENRY, 1909) FROM *PASSER DOMESTICUS*

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## KEY WORDS

Cestoda  
Hymenolepididae  
*Passer domesticus*  
*Vampirolepis passerina*  
Sp. Nov.

Received on :  
29.08.2010

Accepted on :  
21.01.2011

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## ABSTRACT

The present investigation deals with a new species of the genus *Vampirolepis* Spassky, 1954 collected from the intestines of *Passer domesticus* from Mukhed, Dist. Nanded (M. S.) India. The *Vampirolepis passerina* Sp. Nov. comes closer to all the known species of the genus *Vampirolepis* in general topography of organ but differs due to having scolex distinctly marked off from strobila, which is oval to rounded in shape narrow at anterior side while broad at posterior side. Rostellum armed, oval to rounded. Rostellar hooks 10 in numbers, arranged in a single circle. Suckers four in number, oval to rounded, arranged in a line. Neck long. Mature proglottids 8-9 times broader than long. Testes are three in numbers. Cirrus pouch elongated, cirrus thin, with the cirrus pouch. Vas deferens is small, coiled tube. Genital pore medium, oval, marginally placed, unilateral. Vagina posterior to cirrus pouch. Ovary compact, in the central part of proglottids. Ootype compact. Vitelline gland post ovarian in position.

## INTRODUCTION

No scientific ecological survey can be carried out without most painstaking identification of all species of ecological significance. Taxonomic studies are important in diagnosing the structural and morphological status of the body. In case of parasite's taxonomy, large number of helminths generally occurs in birds. They create some problems to health of birds. The expansion and intensification of culture has also faced serious problem from pathogens, which are responsible for significant mortalities and poor growth that is reflected in low survival and poor yield. Taxonomic studies are important for documenting and understanding the global biodiversity. Keeping in mind the nutritional, economical, and medicinal value of birds, the author has been investigated the present work of taxonomic observation of *Vampirolepis*.

The genus *Vampirolepis* was erected by Spassky, 1954 to accommodate the type species *Vampirolepis Semenovi* from *Erythrina erythrina* at Smolensk, Oblast. Then *Vampirolepis Somariensis* was reported by Malhotra and Capoor, 1980 from *Turtoides striatus* at Allahabad, U.P. India. Kalse and Shinde, 2000 described two species viz. *Vampirolepis dhulensis* and *Vampirolepis nagardevalaensis* from the avian host. Subsequently, five species viz. *Vampirolepis alii* Pawar et al., 2005; *Vampirolepis khodasensis* Lakhe et al., 2005; *Vampirolepis rostelloarae*, Tat, 2007; *Vampirolepis Parbhaniensis* Garad and Nanware, 2010a and *Vampirolepis aurangabadensis* Garad and Nanware, 2010b have been added to genus.

## MATERIALS AND METHODS

During the course of study on Avian cestode parasites from Nanded (M.S.) India, eleven specimens of the genus *Vampirolepis* Spassky, 1954 were collected from the intestines of *passer domesticus* during July, 2006 to June, 2009 from Mukhed, Dist. Nanded (M.S.) India. These parasites were flattened, preserved in 4% formalin, dehydrated through series of alcoholic grades and stained in Harri's Haematoxyline, cleared in xylene and mounted in D.P.X. Camera Lucida sketches were drawn from permanent preparation. Measurements were taken with an aid of an occulometer in mm.

## RESULTS

### Description (based on eleven specimens, Figs. 1 and 2)

The worms are creamy white in colour, transparent, having scolex, neck, immature, mature proglottids and measures 70-80 mm in length.

Scolex is distinctly marked off from strobila, which is oval to rounded in shape, narrow at anterior side and broader at posterior side measures 0.9752 (0.720-1.229) x 0.673 (0.625-0.720) in length and breadth. Rostellum is armed, medium, almost oval to rounded in shape, extending posteriorly, almost up to the middle of the scolex, surrounded by single circle of hooks and measures 0.029 (0.026-0.031) x 0.082 (0.079-0.084) in length and breadth. Rostellar hooks arranged in a single circle, which are ten in numbers, the handle is long and

prongs are short and measures 0.090 (0.074-0.106) x 0.0079 (0.005-0.010) in length and breadth. Suckers medium in size, oval to rounded in shape, four in numbers, arranged in a line at anterior side of scolex, overlapping to each other and measures 0.174 (0.169-0.180) x 0.153 (0.148-0.159) in length and breadth. Scolex is followed by neck, which is long, broad anterior and narrow posteriorly and measures 1.06 (0.954-1.16) x 0.333 (0.243-0.424) in length and breadth.

Mature proglottids are 8-9 times broader than long, with convex lateral margins, with short, blunt projection and measures 0.275 (0.243-0.307) x 2.53 (2.52-2.55) in length and breadth. Testes are three in numbers, medium in size, almost oval to round in shape, placed in two groups, one poral and two aporal in position, roughly arranged in triangle and measures 0.127 in diameter. Cirrus pouch is a small, elongated, runs transversely, slightly placed obliquely, situated in the central side of the segments and measures 0.206 (0.190-0.222) x 0.068 (0.063-0.074) in length and breadth. Cirrus is thin opens from common genital pore, coiled, contained within the cirrus pouch and measures 0.196 (0.190-0.201) x 0.007 (0.005-0.010) in length and breadth and forms vas deferens, which is small in size, coiled, tubular, anteriorly directed and measures 0.169 (0.159-0.180) x 0.007 (0.005 - 0.010) in length and breadth. The cirrus and vagina opens from common genital pore, which is medium in size, oval to elongated in shape, placed marginally, unilateral and measures 0.037 (0.031-0.042) x 0.026 (0.021-0.031) in length and breadth.

Vagina is long tube, arise from genital pore, posterior to cirrus pouch, runs transversely and forms receptaculum seminis,

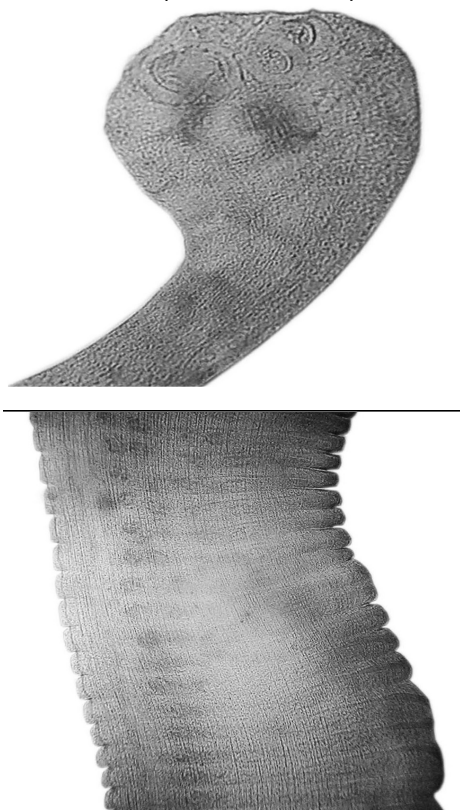


Figure 1: Micro-photoplate of *Vampirolepis passerina* Sp. Nov.

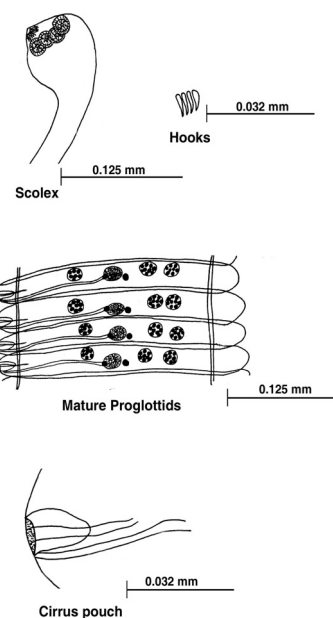


Figure 2: Camera Lucida diagram of *Vampirolepis passerina* Sp. Nov.

measures 0.927 (0.901-0.954) x 0.013 (0.010-0.015) in length and breadth. Receptaculum seminis is small in size, tubular, reaches and opens into ootype and measures 0.174 (0.159-0.190) x 0.018 (0.015-0.021) in length and breadth. Ootype is oval to round in shape, small in size, compact, and measures 0.042 in diameter. Ovary is compact, medium in size, placed in central part of proglottid, having numerous blunt accini and measures 0.196 (0.190-0.201) x 0.206 (0.201-0.212) in length and breadth. Vitelline gland is a compact, almost oval to round in shape, medium in size, post-ovarian in position and measures 0.0031 in diameter. Longitudinal excretory canal runs either side of segment and measures 0.254 (0.243-0.265) x 0.013 (0.010 - 0.015) in length and breadth.

## DISCUSSION

Spassky, 1954 erected the genus *Vampirolepis* with *V. semenovi* as its type species from *Erythrina erythrina* at Smolensk, Oblast. Subsequently, nine species viz. *V. somariensis* Malhotra and Capoor, 1980; *V. medii* Subhashini Sharma *et al.*, 1989; *V. dhulensis* Kalse *et al.*, 1998; *V. nagardevalaensis* Kalse *et al.*, 1998; *V. alii*, Pawar *et al.*, 2005; *V. khodasensis* Lakhe *et al.*, 2005; *V. rostelloarae* Tat, 2007; *V. parbhaniensis* Garad and Nanware, 2010a; *V. aurangabadensis* Garad and Nanware, 2010b have been added to the genus.

The new form comes closer to all the known valid species of genus *Vampirolepis* in general topography of organs but differs due to some significant morphological features from following species.

1. The new form differs from *V. semenovi* Spassky, 1954, in the presence of numbers of hooks (10 Vs 8-10), in the presence of cirrus pouch (elongated Vs short).
2. The present worm further differs from *V. somariensis* Malhotra and Capoor, 1980, in the presence of number of hooks [10 Vs 8-11 (13)], in the presence of cirrus pouch, (elongated Vs narrow) and the presence of vitelline gland

(compact, oval to rounded, post ovarian Vs triangular, medium).

3. The present form differs for *V.dhulensis* Kalse and Shinde, 2000 in having shape and size of Scolex (oval to rounded, 0.975 x 0.673 Vs Squarish, 0.325 x 0.379); shape and size of rostellum (oval to rounded, 0.029 x 0.082 as against oval, 0.107 x 0.063); Number of rostellar hooks (10, arranges in single circle Vs 20, arranged in double circle); shape and size of cirrus pouch (small, elongated, 0.206 x 0.068 Vs oval, 0.129 x 0.060); ovary (compact Vs Bilobed); Vagial ( posterior to cirrus pouch Vs anterior to cirrus pouch) and reported from (*passer domesticus* Vs *Acridotherus tristis*).
4. The new form *V.passerina* further differs from *V.nagardevalaensis* Kalse and Shinde, 2000 in having shape and size of scolex (rounded, 0.975 x 0.673 Vs oval, 0.364 x 0.345); shape and size of cirrus pouch (small, elongated, 0.206 x 0.068 Vs cylindrical, 0.121 x 0.058); ovary (compact Vs bilobed Genital pore (marginal unilateral Vs irregularly alternate) and collected from (*passer domesticus* Vs *Turdoides Malcolmi*);
5. The present worm differs from *V.khodasensis* Lakhe *et al.*, 2005, in the presence of neck (long Vs short), Size of rostellum (armed, oval to rounded Vs medium), Size and position of suckers (oval to rounded, arranged in a line Vs medium), position of testes (one poral and two aporal roughly arranged in triangular Vs medium, elongated), position of vitelline gland (compact, post-ovarian, oval to rounded Vs medium).
6. The present cestode differs from *V. alii* Pawar *et al.*, 2005, in the presence of neck ( long Vs short), Testes (medium Vs large), cirrus pouch (elongated Vs small), ovary (compact in single mass Vs medium and distinctly bilobed), vitelline gland (small Vs medium).
7. The present form differs from *V.rostellorae*, Tat, 2007, in having scolex distinctly marked off from the strobila, broader at middle slightly tapering towards anterior end, 0.267 – 0.403 x 0.058 – 0.248. Neck medium 0.097 – 0.112 x 0.116 – 0.146. Rostellum oval to elongated in shape with rostellar sac. Rostellar sac large, elongated, oval 0.007-0.116 x 0.067-0.087. Rostellar hooks in single circle with long handles, bipronged 0.146 – 0.155 x 0.017 – 0.025. Rostellar hooks are 10-12. Suckers four, medium, oval 0.097 – 0.116 x 0.067 – 0.087. Mature segments broader than long. Testes 3, large, oval, placed centrally, 2 anteriorly and one posteriorly in triangular position 0.116 – 0.147 x 0.102 – 0.121. Vas deferens short, straight, tube like 0.024 x 0.005. Cirrus pouch medium, unilateral, cylindrical, directed anteriorly 0.180 – 0.194 x 0.049 x 0.097. Ovary distinctly bilobed, each lobe compact, lobes almost equal sized, placed anteriorly 0.049 – 0.112 x 0.058 – 0.214. Vagina starts from genital pore, long, posterior to cirrus pouch, forms seminal receptaculum 0.534 x 0.015, Genital pore unilateral, small, oval, marginal 0.039 – 0.049 x 0.005 – 0.010.
8. The observed species differs from *V.parbhaniensis* Garad and Nanware, 2010a, in having Number of rostellar hooks (10 Vs 12), Size of Neck (1.06 x 0.333 Vs 0.1411 x 0.0919-

0.0994mm), Size of mature proglottids (8-9 times broader than long Vs 3-4 times broader than long), Size of testes (0.127 mm in diameter Vs 0.2232-0.02427 x 0.1504 – 0.2038mm). Size of cirrus pouch (0.206 x 0.068 Vs 0.2427 x 0.0485- 0.0776mm) position of cirrus pouch (centrally placed in the segment Vs anterior to the segment) shape and size of vas deferens (small, coiled 0.169 x 0.007 Vs thin, long, 0.5872 x 0.0048-0.0145mm) shape and position of ovary (compact, centrally placed in the segment Vs Bilobed, almost anterior half of the segment) size of vagina (0.927 x 0.013 Vs 0.8542 x 0.0048 – 0.0026), size of genital pore 0.0630 x 0.0145 – 0.0241)

9. The observed specimen *V.passerina* further differs from *V.aurangabadensis* Garad and Nanware, 2010b in having number of rostellar hooks (10 Vs 08) shape and size of cirrus pouch (Elongated, 0.206 x 0.068 Vs small, oval 0.0294 x 0.0121mm) shape and size of vas deferens (small, coiled, 0.0169 x 0.007 Vs thin, 0.1039 x 0.0017 – 0.0034mm), Size of ootype (0.0042mm Vs 0.0051), Size of genital pore (0.037 x 0.026 Vs 0.009 x 0.005 mm)

The above noted taxonomic characters are valid enough to erect a new species for these worm viz *vampirolepis passerina* Sp.Nov.after the host *Passer domesticus*.

#### ACKNOWLEDGEMENT

The authors are indebted to Dr. N.V. Kalyankar, Principal, Yeshwant Mahavidyalaya, Nanded-431 602 and Dr. Ashok Gavate, Principal, Shri Sant Gadge Maharaj Mahavidyalaya, Loha-431708 Dist. Nanded, for their help, inspiration and providing necessary laboratory facilities.

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