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OCCURRENCE OF A NEW SPECIES OF A LARVAL NEMATODE *PROLEPTUS JAMMUENSIS* IN CRAB HOST BELONGING TO *POTAMANSPS AND PARATELPHUSAME SONIANA* FROM WATER BODIES OF JAMMU PROVINCE OF J&K STATE OF INDIA

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ABSTRACT
Two genus of crab *viz. Potaman*sps. from Poonch district and *Paratelphusamesoniana* (Handerson)from Jammu district of J&K state, were studied for a period of two years from Dec. 2008 to Nov. 2010 on monthly basis for recoveryn of metazoan parasitic infection. The study revealed the presence of larval stages of nematode parasite *Paraleptus,*Dujardin 1845, in thoracic muscles and viscera of crab host *Potaman* sp. and Paratelphusamesoniana. Further study of the nematode form reveals that out of four genera under the class namely, *Proleptus* Dujardin, 1815, *Heliconema* Travassos, 1919, *Paraleptus* Wu, 1927 and *Pseudoproleptus* Khera, 1955, the present worm seemingly appears to belong to genus *Proleptus*Dujardin, 1815, because the larval form under discussion characteristically has a cephalic collerettewhich is very much similar in shape with that of genus *Proleptus* Dujardin 1815 but quite different from that of *Paraleptus*Wu, 1927. On the basis of the shape, morphometry of Oesophagus and very long body size the present larval form shows resemblance with adult of genus *Proleptus.* When the present worm was compared with the known species of the genus *Proleptus*viz; *P. obtusus* Dujardin, 1845, *P. infleatus* Linstow, 1890, *P. australis* Baylis, 1933 (Table 1), it distinctly appears to differ from them in morphometric details such as (i) shape and size of collerette (which is formed by the cuticle),(ii) in measurements of muscular and glandular oesophagus (iii) nerve ringetc. The name *Proleptusjammuensis* is being proposed in honour of Jammu region of J&K state from where the present worm has been recorded for the first time.

KEYWORD: larval nematode,*Paraleptus,* Jammu province, J&K, India.

INTRODUCTION

Two genus of crab were obtained viz *Potaman*sps. from Poonch district and *Paratelphusa mesoniana* (Handerson)from Jammu district of J& K state. Recovery of parasites was done as per methods employed by Moravec *et al.* (1997).The nematodes were fixed in hot 70% alcohol and preserved in 10% glycerine alcohol. These specimens were cleared in lactophenol for appropriate observations. En face preparations followed the methods of Anderson (1958), and identification of nematodes to species level was based on Yamaguti (1961), Moravec and Arai (1971) and Sood (1989).

OBSERVATION

Proleptus Dujardin, 1845

(Larvel stage)

The genus *Proleptus* was created by Dujardin in 1845 for *P. acutus* as type species, syn. *Spiropteradecnodes* Crepl. 1851 – York and Maplestone, 1926, in *Raja Clavata*, Rennes Iceland, Other species of the genus are: P. *africans* (Linst. 1899) in *Anjuilla* sp. Capland, South Africa. In *Conger conger*, Irish Atlantic slope. *P. anabantis* Pearse, 1933, in *Anabas testudineus*, Siam .*P. australis* Baylis, 1933, in *Galeocerdotigrinus*, Queensland. *P. Coronatus* (Beneden, 1858) syn. of *P. obtusus*Duj:-Kreis, 1940, in *Raja radians, Scylliumcancula*, Belgium. *P. alegands* (Oerley, 1855) in *Hexanchusgrisana. P. gordioides* (Bneden, 1858) in *Galenscanis*. *P. inplatus* (Linstow, 1890) in *Scylliumimmortum, P. malayi*, Sandosham, 1954, in *Scyllium* sp. Malaya. *P. obtusus* Dujardin, 1845, syn. *Coronillascillicola* Benederi, 1871, in *Scylliumcatulus, S. canicula, Acanthias vulgaris, Raja radians, Aetobatisnarinari,* Atlantic. Larvae in *Carcinusmaenas* and *Eupagurus bernhardus* Lloyd (1928) *P. problematicus* Kreis, 1940, in *Acanthias vulgaris*, Roscoff. *P. rajae*, syn. *P. rajaecalvatae*linstow, 1890, in *Raja batis*, Ireland. *P. robustus* (Beneden, 1871) syn. *Coronillar* r. B. in *Raja ciraularis, R. Clavata,* Belgium. Also in *R. Clavata, R. maderensis, R. miraletus,* and *Musteluslaevis*, Atlantic *Raja* sp. Montevideo.*P. sordidus* Lent etFreitas, 1948, in *Rhinobatuspervellens*, Uruguay. *P. trygnorrhinae* Jhonston *et* Mawson, 1943, in *Trygonorrhina jasciata, Aptychotremabanksii, S. Australia*. *P. urolophiJ* honstonet Mawson, 1951, in *Urolophustestaceus,* New S. Wales. In present investigation, 121 worms were collected from thoracic muscles and viscera of crab host belonging to *Potaman* sp. from Poonch and 310 worms from crab host belonging to genus *Paratelphusa (Berytelphusa) mesoniana*(Handerson) from Jammu. When examined, these worms were observed to show resemblence in diagnostic characters with genus *Proleptus* on preliminary examination, which have been described below as a species of *Proleptus.*

Proleptus Dujardin, 1845

Super family: Physalopteroidea (Railliet, 1995 sub. fam.) Soboler, 1949)

Family: Physalopteridae (Ralliet, 1893 sub. fam.) Leiper, 1908.
Sub family: Proleptinae (Schulz, 1927)
Descriptive note: Based on 20 randomlly collected worms from crab hosts belonging to *Potaman* species and *Paratelphusamesoniana* from Poonch and Jammu respectively (Fig. 1 to 5, Table-2 & 3.)
Body: light brown in colour and elongated 18.9-26.8 in length.Mouth : not fully developed, cephalic collerette present 0.20-0.26 in diameter (Fig.1 & 4). Oesophagus: divided into an anterior muscular (0.34-0.39) and posterior glandular portion (3.70-3.79). At the pharyngio-intestinal junction a heart-like bulging of oesophagus into the intestinal canal clearly visible (Fig. 2). Reproductive organs are not developed. Tail is 0.15-0.19 in length. Opening of alimentary canal at a little distance away from posterior end.Tail : 0.161 and blunt [Table 2.].
Host: Crab host belonging to genus *Potaman*sp. (Handerson) and *Paratelphusa* (*Berytelphusa) mansonia* (Handerson).
Location: Thoracic muscles and viscera
Locality: Station II at Poonch and Station III at Jammu.

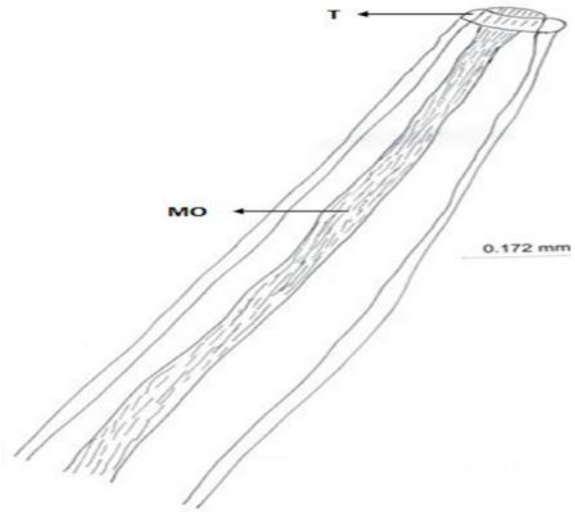

FIGURE1: Camera lucida drawing of *Poleptus jammuensis*n.sp. Anterior region (Larval stage)
CC – Cephalic cuticularcollar; MO – Muscular oesophagus

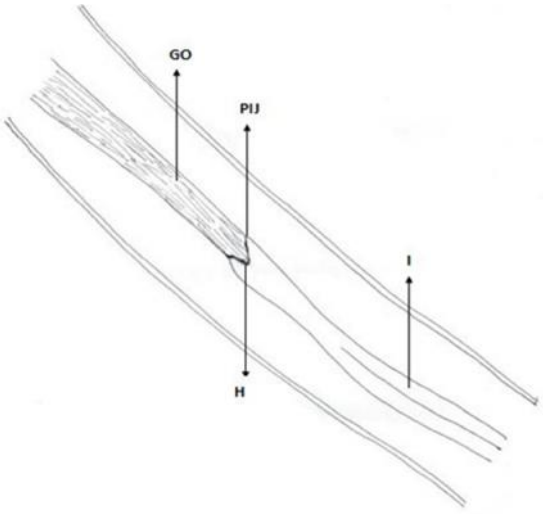

FIGURE 2: Camera lucida drawing of Pharyngio - intestinal junction of*Proleptusjammuensis*n.sp. showing heart-like bulging.
GO-Glandular oesophagus ; PIJ – Pharyngio- intestinal junction, H- Heart – like bulging ; I – Intestine

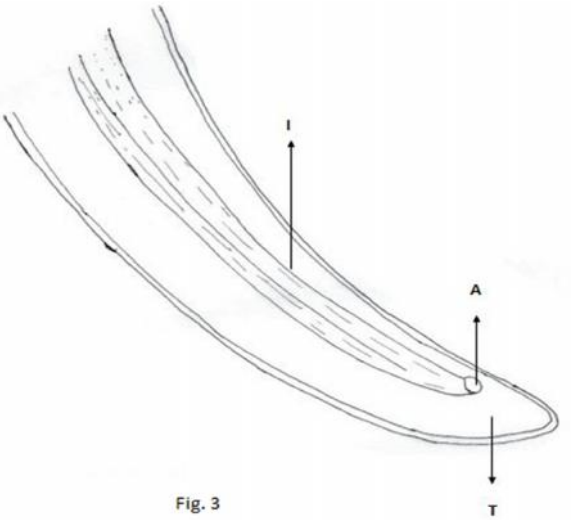

FIGURE 3: Posterior end of *Proleptus jammuensis*n. sp. showing anus and blunt end
I – Intestine ; A-Anus ; T-Tail

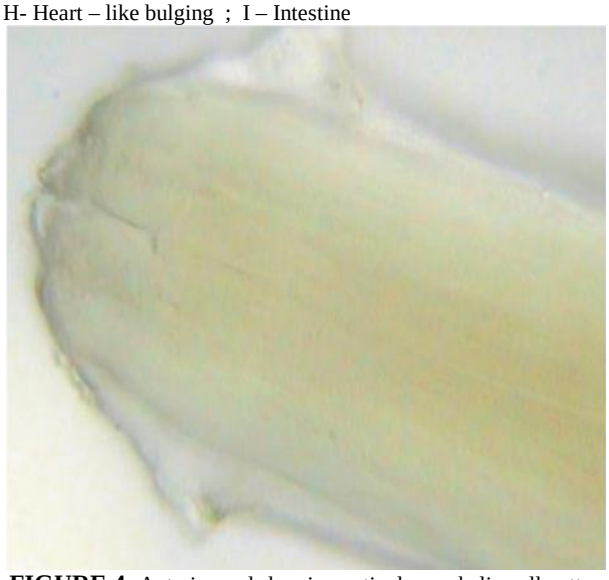

FIGURE 4: Anterior end showing cuticular cephalic collerette and conical tooth.

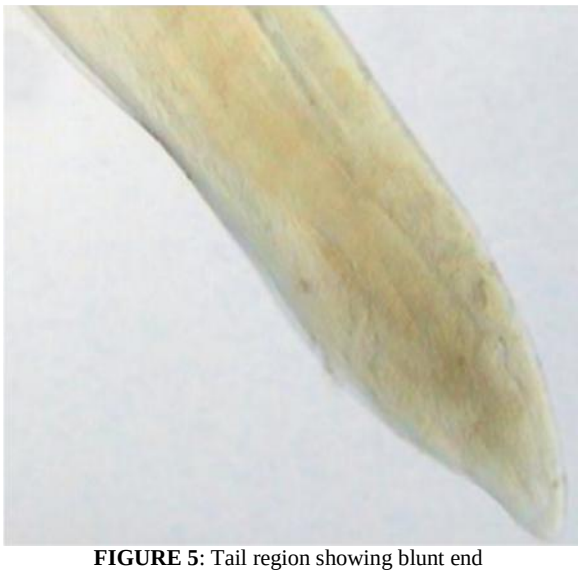

FIGURE 5: Tail region showing blunt end

DISCUSSION

The larval form under discussion as stated earlier is a roundworm belonging to class Nematoda. Out of eight orders of the class viz. Trichuridea, Tetanonemetidea, Dictophymidea, Ichthyostrongylidea, Oxyuroidea, Ascarididea, Spiruridea and Philometridea the round worm belong to order SpiruridеaDiesing, 1861 because of characters like (i) Mouth with two lips surrounding a chitinousbuccal cavity (ii) Oesophagus long cylindrical and divided into a shorter anterior muscular portion (0.483-0.50) and a longer posterior glandular portion (3.22-3.68) and (iii) Intestine simple without any diverticula. Out of eight families of order Spiruridea, viz. Hedruridae, Camallanidae, Cuculanidae, Gnathostomatidae, Physalopteridae,Spiruridae, Rhabdochonidae,andHaplonematidae, the nematode under discussion appears to belong to family PhysalopteridaeLeiper, 1908, due to its diagnostic characters like (i) Mouth with two lateral lips (ii) Presence of a large cephalic collerette and (iii) absence of buccal capsule. Further study of the nematode form reveals that out of four genera under the class namely, *Proleptus*Dujardin, 1815, *Heliconema*Travassos, 1919, *Paraleptus*Wu, 1927 and *Pseudoproleptus*Khera, 1955, the present worm seemingly appears to belong to genus *Proleptus*Dujardin, 1815, because the larval form under discussion characteristically has a cephalic collerette (Fig.1 & 4) which is very much similar in shape with that of genus *Proleptus*Dujardin 1815 but quite different from that of *Paraleptus*Wu, 1927. On the basis of the shape, morphometry of Oesophagus and very long body size (Table-1 & 2) the present larval form shows resemblance with adult of genus *Proleptus.* From morphometric discriptive details (Table- 2) and camera lucida drawings (Fig.1 - 3) it can be categorically stated that neither gonads nor any sexual dimorphism could be seen/observed in the present form. This clearly indicates that the stage of worm obtained from the present hosts is a larval stage and not the adult. In this context (Morvec *et al*., 2003) also stated that larval forms are known to harbour crabs – which act as intermediate hosts. According to Dogiel *et al.*, 1958, Reichenbach-Keinki, 1973, Crustacians are most common first intermediate hosts for nematode parasites that reach sexual maturity in fishes and other vertebrates. Similar to present findings George *et al*. (1993) reported the occurance of larval nematodes *Proleptus* sp. in the crab.

TABLE 1: Morphometery of *Proleptusjammuensis* larva collected from crab hosts belonging to genus *Potaman sp.* and *Paratelphusamesoniana* (Hand.) compared with different species of the genus *Proleptus.*

Organs Character	*P. obtusus* Dujardi, 1845	*P. inflatus* Linstow, 1890	*P. australis* Baylis, 1933	Present author
Body	32-38 x 0.55	32.8 – 42.9 x 0.4 – 0.6	20.72 x 0.52	24.4-26.8 ± 1.6 x 0.32 – 0.43 ± 0.07
Head diameter	-	0.19 – 0.21	0.038 x 0.02	0.20-0.25± 0.03
Muscular oesophagus	-	-	0.59	0.483-0.50 ± 0.01
Glandular oesophagus	3.6 – 4.7	4.28 – 4.92 x 0.14 – 0.15	2.14	3.22-3.68 ± 0.32
Tail length	-	-	-	0.15-0.19 ± 0.007

When the present worm was compared with the known species of the genus *Proleptus*viz; *P. obtusus* Dujardin, 1845, *P. infleatus* Linstow, 1890, *P. australis* Baylis, 1933 (Table-1), it distinctly appears to differ from them in morphometric details such as (i) shape and size of collerette (which is formed by the cuticle), (ii) in measurements of muscular and glandular oesophagus (iii) nerve ring (Fig.). Moreover recovery of this parasite from

crab host is first genus record from Jammu & Kashmir state. On the basis of difference of host, locality as well as that of morphometric and structural differences necessitates the author to give a new species name to the worm. The name *Proleptusjam muensis* is being proposed in honor of Jammu region of J&K state from where the present worm has been recorded. It is worth mentioning that the study of crabs (*Potaman sp.*) and *Paratelphusa mansonia* as intermediate hosts of metazoan parasites is a first ever attempt of its type not only from state of Jammu and Kashmir but to the best of the knowledge of the author, from northern India as well.

TABLE 2: Morphometery of Proleptusjammuensis n. sp. collected from crab hosts from Poonch and Jammu.

Organs Character	Present author
Body	24.4-26.8 ± 1.6 x 0.32 – 0.43 ± 0.07
Head diameter	0.20-0.25± 0.03
Muscular oesophagus	0.483-0.50 ± 0.01
Glandular oesophagus	3.22-3.68 ± 0.32
Tail length	0.15-0.19 ± 0.007

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