

**A NEW SPECIES OF *Rhabdochona* RAILLIET, 1916
(NEMATODA: RHABDOCHONIDAE) FROM A FISH -
Glyptothorax Sp. FROM MOREH, MANIPUR**

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AUTHORS' CONTRIBUTIONS

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

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ABSTRACT

The present paper deals with the description of a new nematode recovered from a fish-*Glyptothorax* sp., collected from Moreh, Chandel district of Manipur. The host specimen was collected on September, 2016 from Moreh town, situated at border of India & Myanmar. The present specimen is characterised by 12 longitudinal ridges in the prostome; eggs with a bunch of polar filaments; long, conical with bluntly rounded tipped tail, with a pair of lateral phasmid; left spicule longer, sclerotized, right spicule shorter, boat-shaped, caudal papillae 16 pairs, preanal 8 and postanal 8. All these characters are different from the existing known species; hence it will be justified to give a position as new species, under the genus *Rhabdochona*.

Keywords: Nematode; parasite; fish; *Glyptothorax* sp.; *Rhabdochona*; Moreh; Manipur.

1. INTRODUCTION

The genus *Rhabdochona* was established by Railliet, 1916 with type species *R. denudata* (Dujardin, 1845) from *Cyprinus euritharophthalmus* [1,2,3,4,5,6]. The character of egg was taken as a key feature for the classification of genus *Rhabdochona* Railliet, 1916 by several workers like Gustafson (1949), Choquet (1951), Jainszeuska (1955), Campana- Rouget (1961), Roytman and Trofimenko (1964), Rasheed (1965), Holloway and Klewar [7], Moravec (1972, 1975), Margolis et al. (1975), etc [6].

Saidov (1953) based on the presence or absence of egg filaments the genus was subdivided into two genera, viz. *Rhabdochona*- eggs without filaments and *Filochona*- eggs with filaments [8,9,6]. Based on this character Jainszeuska (1955) created the new

subfamily Rhabdochonoidinae for the species with filamented eggs [9,6]. However, Yamaguti (1961) give great importance to the filaments when he raise the subgenus *Filochona* to the genus rank and accepted by subsequent workers [9,6]. But majority of the workers Roytman and Trofimenko (1964), Dzhalilov (1964), Rasheed (1964, 1965), Sahay, Nath and Kumar (1969), Sood (1972), Moravec (1968, 1972, 1975), and Margolis et al. (1975) disagree to recognize the generic rank of *Filochona* [6].

Moravec (1972) splitted the genus *Rhabdochona* into three subgenera, *Rhabdochona*, *Filochona*, *Globochona*, based on egg types, accepted by Margolis et al. (1975), Chabaud (1975) (following in the recent classification of the group), Fotedar and Dhar (1977) and Arya and Johnson (1977) [3,9,6].

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Moravec (1975) felt the necessity to include characters such as number of arrangement of teeth in the prostome, presence of cervical alae, shape of female tail tip, and shape of deirids apart from the character of eggs. Thus generating the number of subgenera to four viz. *Rhabdochona*, *Globochona*, *Globochonoides* and *Sinonema* which was accepted by Bilqees (1979), Soota and Dey Sarkar (1981) [6].

So far, about 10 species of the subgenus *Rhabdochona* Railliet, 1916 (syn. *Filochona* Saidov, 1953) viz., *Rhabdochona hospeti* and *R. kashmirensis* Thapar, 1950 from Hospet, Madras and Ramzua, Kashmir; *R. barbi* and *R. glyptothoracis* Karve and Naik, 1951 from Poona; *R. smythi* Agarwal, 1965 Lucknow; *R. beatriceinsleyae* HL Holloway, Jr. and HL Klewer, [7]; *R. cavasius* Rehan and Bilqees, 1973 from Kalri lake, Sind; *R. charsaddiensis* and *R. schizothoracis* Siddiqi and Khattak, 1984 from Pakistan; *R. hellichii turkestanica* Moravec F et al., [10] from India and all the known species shows some morphological similarities and fulfil the characters of the subgenus [11,5,6].

The genus *Rhabdochona* have more than 60 species world-wide, 7 of which were from Africa and majority were reported from Asian Continent particularly in Oriental region [3,4]. During the survey of the parasites from freshwater fish at Chandel district, a new species of this genus was recovered from the intestine of catfish, *Glyptothorax* sp. Only 3 parasites were recovered, out of which 2 are female. The present study was taken up to investigate the helminth parasites of fresh water fishes from different localities of Manipur.

2. MATERIALS AND METHODS

The nematodes were collected from the intestine of *Glyptothorax* sp. and kept in 0.7% normal saline, then fixed in warm AFA (Alcohol-Formaline-Acetate) and dehydrated in Glycerine Alcohol in a cavity block kept in a desiccator at room temperature. Mounting were done in dehydrated pure glycerine, then cover slip were sealed. Drawings were done using camera lucida. Photomicrographs were taken with Olympus CH20i and Nikon Stereo-zoom microscope model no. SMZ1270. All measurements are given in millimetres unless otherwise stated.

3. RESULTS

After a detail comparative study of the various species of *Rhabdochona*, the present species displayed some characters which are dissimilar to other related species. Some of them are- presence of 12 longitudinal ridges in the prostome, bunch of polar

filaments in eggs, conical tail leads to the identification of the present specimen to the subgenus *Rhabdochona*.

3.1 Description

Body long, cylindrical, medium- sized, tapering towards both ends. Cuticular transverse striations extremely fine with a paired of amphid in the anterior end. Buccal cavity supported by 12 longitudinal ridges.

3.1.1 Male

Body 8.51 X 0.11. Prostome funnel-shaped 0.03 X 0.02, with a tubular mesostome 0.07 X 0.01. Deirid and nerve ring at 0.05 and 0.16 from anterior end respectively. Muscular oesophagus 0.33 X 0.03, glandular oesophagus 2.34 X 0.06. Spicules unequal and dissimilar; right short, broad with rounded tip, more or less boat- shape, 0.08 X 0.02, left long, 0.40 X 0.02. Caudal papillae 8+ 0+ 8= 16. Caudal alae absent. Tail long, ventrally curved, with rounded tip.

3.1.2 Female

Body 21.61-26.05 X 0.20-0.26. Prostome funnel-shaped, 0.050.06 X 0.02-0.03 with a tubular mesostome 0.10X0.02. Deirid, nerve ring and excretory pore at 0.07, 0.21-0.28, 0.32-0.38 from anterior end respectively. Muscular oesophagus 0.93-1.00 X 0.05-0.06, glandular oesophagus 4.86-7.48 X 0.10-0.13. Vulva postequatorial, at 8.26-8.62 from posterior end. Vaginal tube directing upward. Genital aperture long extending upto the intestine in the anterior end and about 5 times length of the tail in the posterior end. Eggs oval, embryonated, 0.02-0.03 X 0.02, each pole with a bunch of fine long filaments. Tail 0.28-0.38 X 0.07 long, with pair of lateral phasmids and bluntly rounded tip.

3.2 Taxonomic Summary

Genus: *Rhabdochona*

Subgenus: *Rhabdochona*

Species: *Diocapapillum* n. sp.

Host: *Glyptothorax* sp

Site of infection: Intestine

No. of host examined: 5

No. of host infected: 1

No. of parasite collected: 3

Holotype: MUPLN₁₀R₁

Allotype: MUPLN₁₀R₂

Paratype: MUPLN₁₀R₃

Date of collection: 10th September, 2016

Etymology: The specific name based on caudal papillae of male specimen.

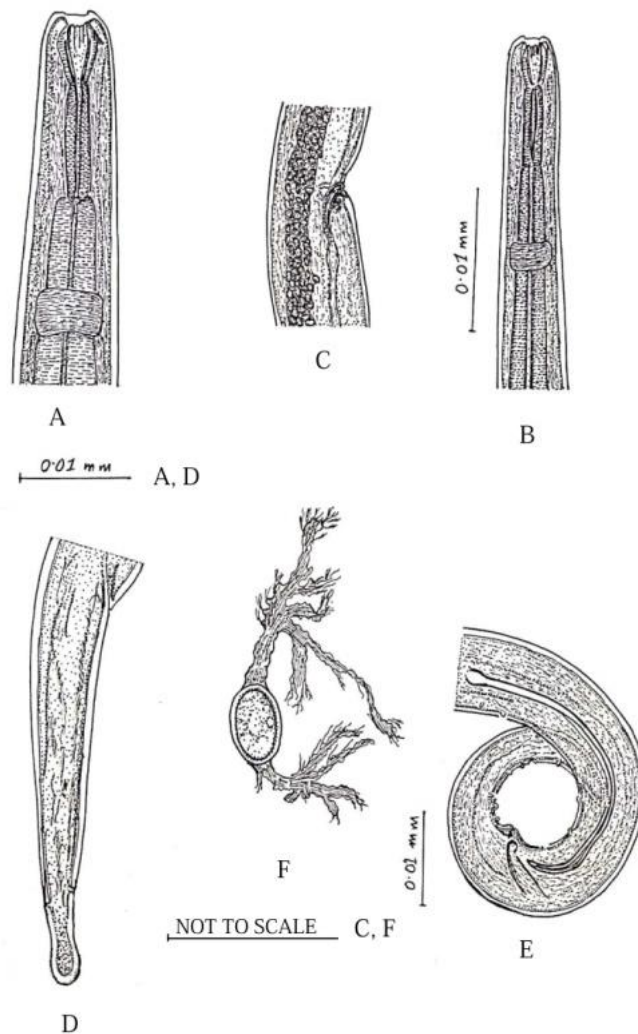


Fig. 1. *Rhabdochona dioctapapillum* n. sp.

A) Anterior end of female, B) Anterior end of male, C) Vulval region, D) Tail of female, E) Tail of male, F) Eggs outside body

Deposition: Museum of Parasitology Section, Department of Life Sciences, Manipur University and few paratypes will be deposited in the Zoological Survey of India, Kolkata.

4. DISCUSSION

Out of the above mentioned species, the present specimen comes very close to *R. glyptothoracis* Karve and Naik, 1951 in terms of general morphometric dimensions like the body lengths; muscular oesophagus, glandular oesophagus; 12 longitudinal ridges; cephalic papillae. The position of vulva in the female of both the species is same i.e. post equatorial and at 8.26-8.62 and 8.38-10.5 from posterior end. The eggs are of similar in dimensions both with bunch of filaments at each pole.

However, the present specimen differs from *R. glyptothoracis* in the number and arrangement of caudal papillae is $8+0+8=16$ in the present specimen and $10+0+7=17$ in *R. glyptothoracis*. The female tail of the present specimen is 0.27-0.38 long with a pair of lateral phasmid but phasmid is lacking in *R. glyptothoracis*.

The females of present specimen shows resembles with *R. hospeti* Thapar, 1950 in having 12 longitudinal ridges, postequatorial vulva, eggs with filaments but at the same time shows differences in the body length as well as the pattern of filaments in eggs. The male of both the species are somewhat equal in body length however, the caudal papillae arrangement and number are different i. e., $8+0+8=16$ and $7+0+5=12$ respectively.

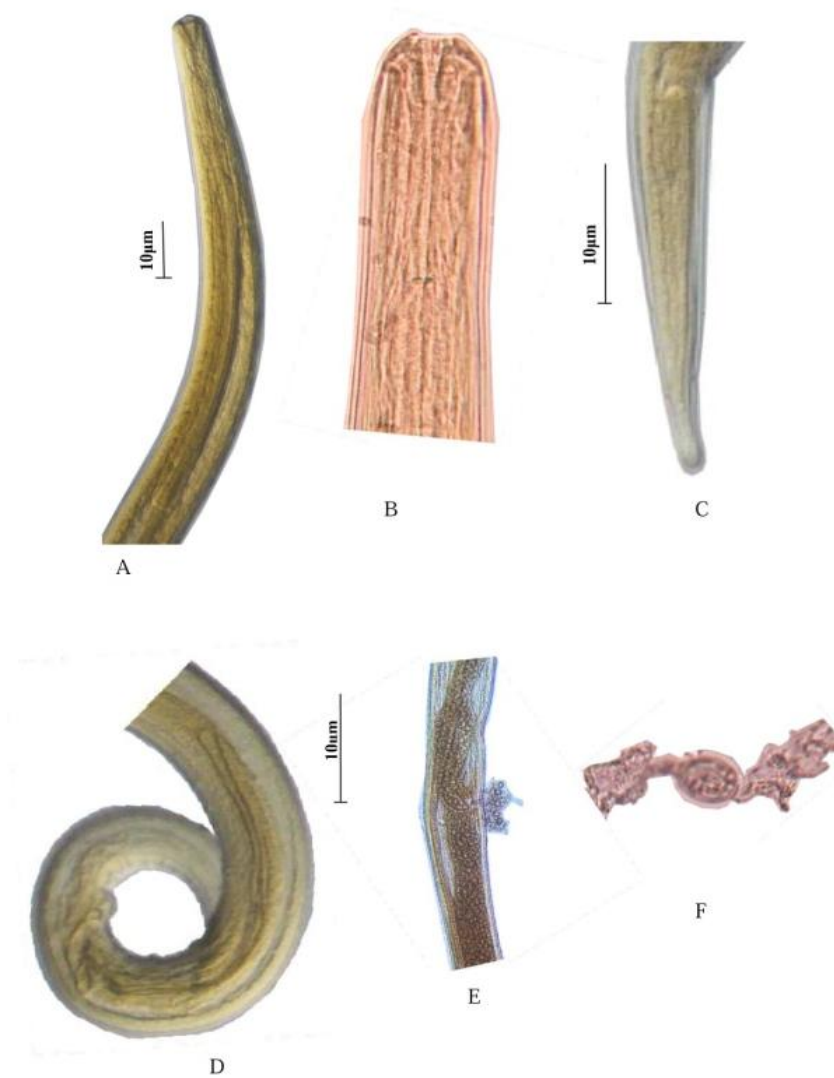


Fig. 2. Photomicrograph of *Rhabdochona dioctapapillum* n. sp.

A) Anterior end of female, B) Anterior end of male, C) Tail of female, D) Tail of male, E) Vulval region of female of another female, F) Eggs outside body

The present specimen and *R. charsaddiensis* Siddiqi and Khattak, 1954 resembles in having 12 longitudinal ridges and the females of both specimen have postequatorial vulva while the males differ in having tail with blunt spine at tip in the latter species and also differs arrangement of caudal papillae.

5. CONCLUSION

After considering the variations and differences, the present specimen cannot be placed under any known species of the subgenus *Rhabdochona*; therefore, it becomes necessary to erect a new species. Hence, a new name is proposed as *Rhabdochona*

(*Rhabdochona*) *dioctapapillum* n. sp., name based on the presence of eight pre- anal and eight post- anal caudal papillae. The variations in the species may be due to the difference in the zoo-geographic distribution or type of habitats.

ETHICAL APPROVAL

The authors also declare that the procedures and protocols performed in the research work using animal specimen i.e., fishes were in accordance with the animal ethical standards of the Institutional Animal Ethics Committee of Manipur University (MU/ D. L. Sc./IAEC/1/19).

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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