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FIRST RECORD OF FREE-LIVING MARINE MEIOBENTHIC NEMATODE *ONCHOLAIMELLUS CALVADOSICUS* DE MAN 1890 (ENOPLIDA: ONCHOLAIMIDAE) FROM NORTHERN-EAST COAST OF INDIA

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INTRODUCTION

The taxonomic work on free-living marine Nematodes in Indian subcontinent is very scanty. Apart from the works by Timm (1956, 1961 & 1967) from the seas around the Indian waters, Gerlach (1962) from Maldives Islands and Warwick (1973) from Indian Ocean, not much published work were available on marine free-living nematode systematics. All together Timm (1956, 1961 & 1967), Gerlach (1962) and Warwick (1973) described more than 130 species from Indian Ocean around this country. Except the work of Timm (1961, 1967) the coastal part of West Bengal is almost untouched for marine free-living nematodes taxonomic work. There are ten valid species belonging to genus *Oncholaimellus* recorded worldwide (Deprez *et al.,* 2012) among which only two species i.e *Oncholaimellus calvadosicus* De Man 1890 and *Oncholaimellus carlbergi* Allgen 1947 (Sebastian 2003) were recorded from the Indian subcontinent. *Oncholaimellus calvadosicus* De Man 1890 was recorded previously from the southern part of India (Shivaji *et al.,* 2010; Ansari *et al.,* 2012). Till date no species of the genus *Oncholaimellus* De Man 1890 is reported from the intertidal zone of Northern East coast. The present paper deals with the first record of free-living meiobenthic nematode *Oncholaimellus calvadosicus* De Man 1890 from Northern-East coast of India.

MATERIALS AND METHODS

(a) Collection sites

The specimen were collected from the intertidal areas of Digha, West Bengal (Fig. 1) located from 21°37´ to 21°40´ N and 87°30´ to 87°33´ E.

(b) Sampling Protocol

Sediment samples were collected in three replicate from randomly selected intertidal stations around the coast. Each core sample was taken from 15 cm deep into the sediment with the help of a hand corer of 7 cm inner diameter.

Samples were collected during June 2011 to May 2012 in four quarters viz. Summer (March -May), Monsoon (June - August), Postmonsoon (September - November) and Winter (December - February). Samples were kept overnight with habitat water and then sediments were sieved with two brass sieves, upper one of 500 µ mesh and lower one of 63µ mesh size. The sieved samples were preserved in 5% neutral formalin solution in wide mouth Tarson plastic vials. Then the Nematodes were separated with the help of compound microscope and again put back into separate vials containing 5% neutral formalin solution. Permanent slides were prepared by anhydrous glycerin in paraffin wax. Olympus CH20i was used for morphometric measurements for identifying the specimens. Specimens were

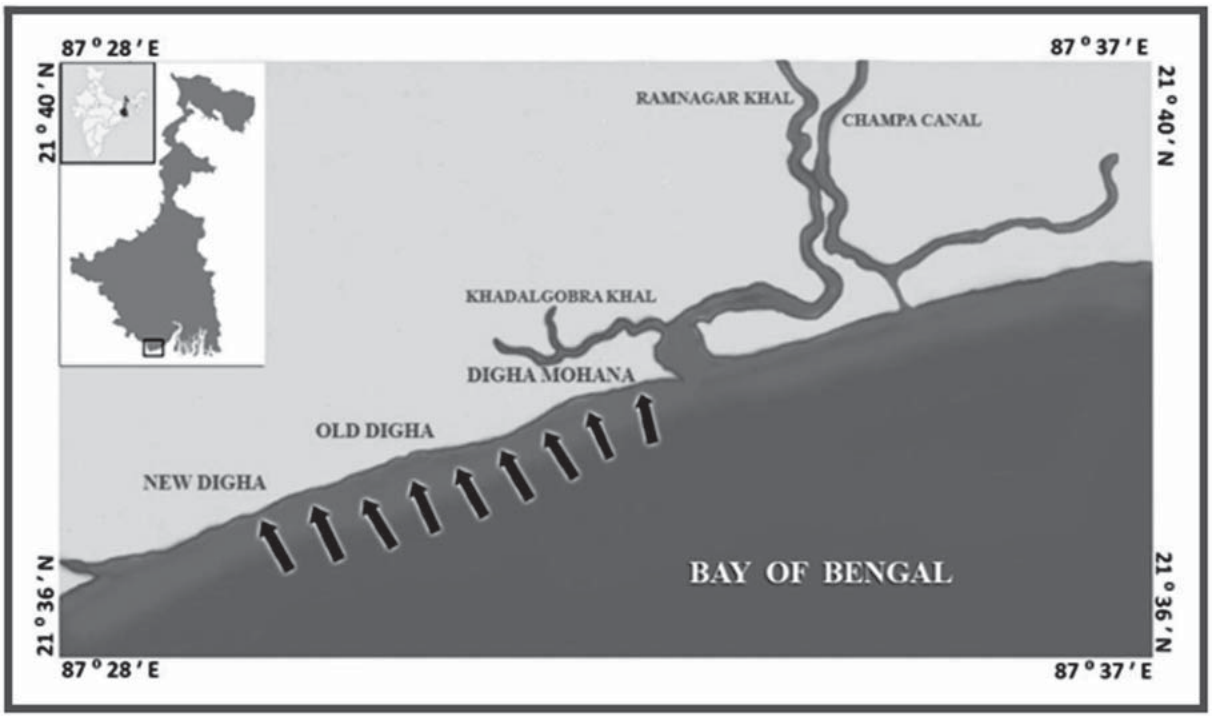

Fig. 1. Collection sites around the Digha coastal area. Arrows indicating the different collection sites (map not in scale)

deposited to Marine Aquarium and Regional Centre, Zoological Survey of India, Digha with registration number N2847 (i-vi).

Identification and classification of the specimen is as per Hodda (2011), Keppner & Tarjan (1989) and Wieser (1953).

Phylum NEMATODA Cobb, 1932

Class ENOPLEA Inglis, 1983

Subclass ENOPLIA Pearse, 1942

Order ENOPLIDA Filipjev, 1929

Suborder ENOPLINA Chitwood & Chitwood, 1937

Superfamily ONCHOLAIMOIDEA Filipjev, 1916

Family ONCHOLAIMIDAE Filipjev, 1916

Subfamily ONCHOLAIMELLINAE Filipjev, 1916

Genus ***Oncholaimellus*** De Man, 1890

Oncholaimellus calvadosicus De Man, 1890

1890. *Oncholaimellus calvadosicus* De Man, *Soc. Zool. Fr*, **3**: 169-194.

1929. *Oncholaimellus littoralis* Allgén, *Abteilung Fuer Systematic Oekologie und Geographie Dek Tiere*, **57**: 431–496.

Description: Identification was done on the basis of six specimens (3-males and 3-females). The whole body of the specimen is slender. One whole mounted specimen is given in Fig. 2a. Cuticle is smooth and simple without any striation. Males are smaller and thinner than females (Table.1). Amphids indistinct. Six low rounded lips each with a papilliform sensillum. Male with six long and four short cephalic setae. In case of females all ten setae are equal in size. A few short setae in anterior oesophageal region but otherwise somatic setae are absent. Head is constricted just behind cephalic setae. The genus is characterized by a massive right subventrolateral tooth (Fig. 2 b) and a transverse band dividing the buccal cavity into two halves. Buccal cavity in two parts, seperated by cuticularised band; three teeth are present in posterior part whereas the right subventrolateral being the biggest. Oesophagus cylindrical. Tail is conico-cylindrical with swollen tip or clavate type. In case of female the tip is less swollen than male (Fig. 2 c, d). Caudal glands

Table 1. Measurements (in μm) of three males and three females of *Oncholaimellus calvadosicus* De Man 1890 are given. Mean and Standard deviation of each criterion is given in bracket with its minimum and maximum values.

Abbreviations used for De Man's ratio in the table:

a: total body length / maximum body diameter ; **b:** total body length / oesophagus length ; **c:** total body length / tail length ; **c':** tail length / anal body diameter ; **v :** position of vulva as a percentage of the body length from the anterior body end.

Measurements / Proportions	3 Males	3 Females
total body length	1121-1515 (1261.8±219.7)	1212-1616 (1432.7±204.6)
maximum body diameter	23-33 (27.1±5.5)	28-38 (32.9±5.1)
oesophagus length	238-304 (268.2±33.2)	253-278 (269.9±14.6)
tail length	46-66 (58.2±11)	46-61 (52.3±7.7)
anal body diameter	13-16 (13.7±1.8)	13-23 (16±5.8)
head length	20-25 (21.9±2.9)	18-28 (23.6±5.3)
head diameter	15 (15.1±0.1)	13-19 (15.6±3.2)
mouth opening diameter	8 (7.6±0.1)	8-13 (9.8±2.5)
right subventrolateral tooth length	13-19 (14.8±3.6)	10-22 (17.3±6.2)
right spicule length	33-68 (47±18.2)	_
Left spicule length	25-62 (40.3±19.5)	_
a	44-50 (46.8±3.3)	43-45 (43.6±1.1)
b	4-6 (4.8±1.0)	4-6 (5.3±0.8)
c	18-25 (22±3.9)	27-29 (27.4±1.4)
c'	4-5 (4.3±0.7)	3-4 (3.4±0.7)
v	_	44-47 (45 ± 1.4)

extends well anterior to anus. Spicules are two in numbers and present only in males. Spicules unequal in length. The right one is longer than the left (Fig. 2. e-g). Right spicule about 3-5 of anal body diameter whereas left spicule about 3 times of anal body diameter (Table 1). Gubernaculum absent. Copulatory bursa present consisting of two longitudinal wings of cuticle occupying anterior third of tail. Paired setae present at both ends of bursa and a pair of supporting rods about one-third of its length from cloaca. Vulva (Fig. 2. h) present almost half of the body length of female. Two opposed, reflexed ovaries in females.

These specimens were found in all sampling seasons and generally associated with upper sediment layer. Their availability lowers with the depth.

Distribution: India: Chennai, Tamil Nadu; *Elsewhere*: Panama, Chile, Ireland, England, Belgium, France, Norway, Western Scheldt, North Sea, European waters, North Atlantic, Adriatic Sea, Kara sea (Deprez *et al.*, 2012).

Remarks: The present species differs from the other species of the same genus *Oncholaimellus carlbergi* Allgen 1947 reported from Indian coast by the appearance of amphid, comparatively smaller tail and by the length of cephalic seta. In the present study it was found that length of right spicule varies significantly from the length of left spicule within the population in males.

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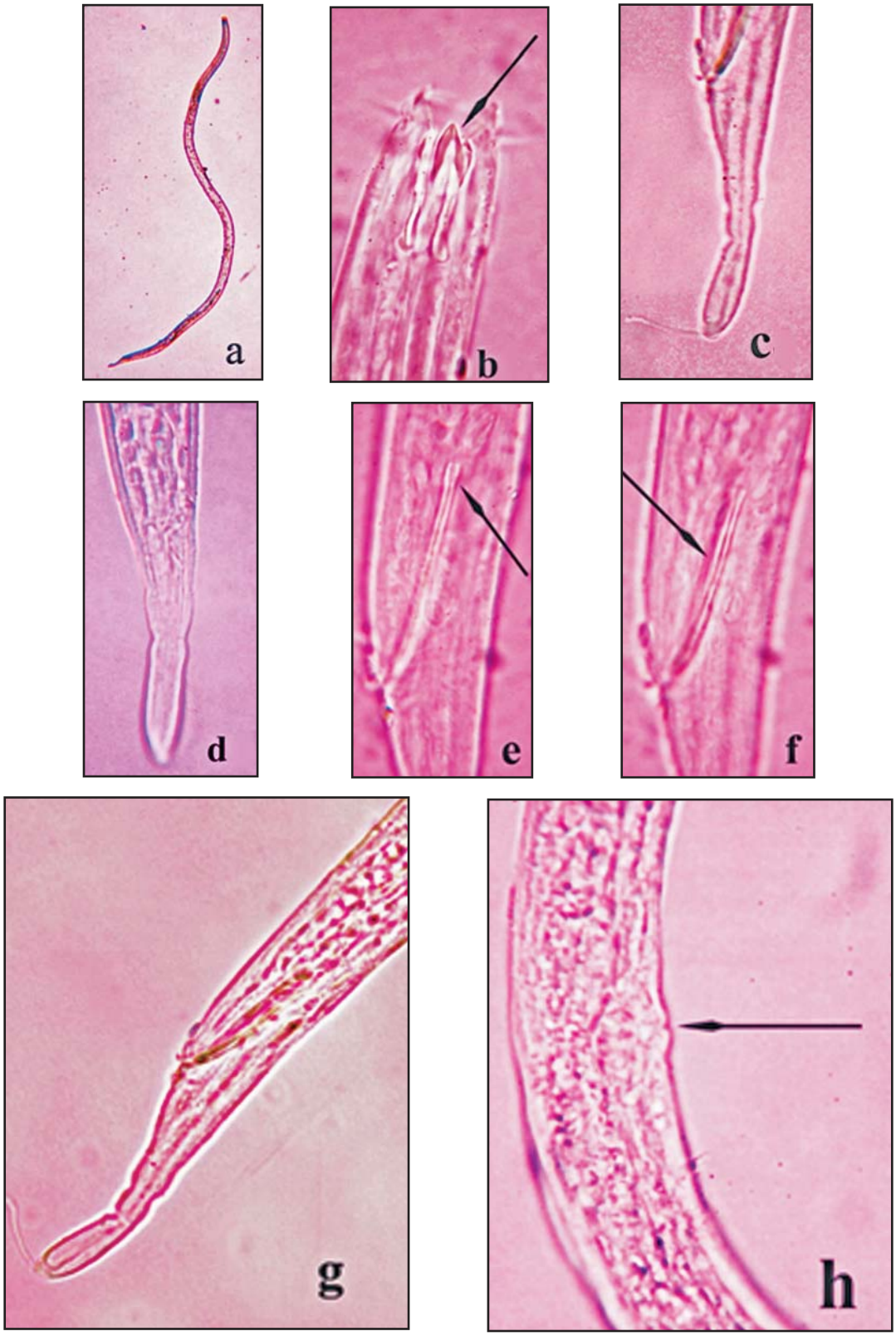

Fig. 2. Different body parts of Oncholaimellus calvadosicus De Man 1890; a. complete stretched specimen (male); b. massive subventral tooth; c. tail end with swollen tip (male); d. tail end of female showing less swollen tip.; e. position of right spicule (separate focusing); f. position of left spicule (separate focusing); g. typical male tail end with focusing two spicules; h. vulva of female