

## A New Marine Nematode Species, *Metalinhomoeus ramsarensis* (Linhomoeidae Filipjev, 1922) from Kuching Wetland National Park, Sarawak, Malaysia

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### ABSTRACT

A new marine nematode species from the genus *Metalinhomoeus* (de Man, 1907) was found in Kuching Wetland National Park (KWNP). The total body size of *Metalinhomoeus ramsarensis* sp. nov. was extremely long. The head was recorded to be round with four cephalic setae followed by four sub cephalic setae. The inner and outer labial papillae were not clearly observed. An oesophageal bulb was present at the end of the oesophagus. Spicules were known to have central cuticularized strip. Tail of *Metalinhomoeus ramsarensis* sp. nov. was short and blunt.

Keywords: *Metalinhomoeus*, marine nematode, RAMSAR, Sarawak, Kuching Wetland National Park

### INTRODUCTION

Malaysia is renowned with the richness of biodiversity yet the documentations of free-living marine nematodes are still inadequate. Several efforts were carried out to document the diversity of free-living marine nematode in Malaysia: ecology (Chen *et al.*, 2012a & b; Sasekumar, 1994; Shabdin & Othman, 1999 & 2005) and taxonomy (Chen, 2015; Norliana *et al.*, 2013; Shabdin *et al.*, 2013). This is followed by the new genus *Pseudoplatycoma malaysianis*, which was lately described by Chen (2015) in Sabah, a new marine nematode species from the genus *Metalinhomoeus* was found in Kuching Wetland National Park (KWNP).

Genus *Metalinhomoeus* was erected by de Man in 1907 in order to separate *Metalinhomoeus typicus* from *Paralinhomoeus*. Both genera were generally known to have several similar characteristics such as small buccal cavity which were unarmed, presence of sub cephalic setae, amphid circular and gubernaculum with apophysis. The two genera (*Metalinhomoeus* and *Paralinhomoeus*) basically can be distinguished by the different numbers of cephalic setae and presence of posterior oesophageal bulb (number of cephalic

setae: 4 vs 10; bulb: present vs absent) (de Man, 1907; Platt & Warwick, 1983).

### MATERIALS & METHODS

Only one male specimen was collected from Loba Kilong (N 01°41.375' E110°12.572'), Kuching, Sarawak, Malaysia by the first author on April 2011. The present species was found in subtidal muddy samples during high tide.

A grab sampler was used to collect the subtidal samples. Samples were preserved in 5% formalin in the field and were brought back to the laboratory for further analysis and identification. Samples were sieved using a 500 µm mesh size sieve and rinsed with tap water to remove the formalin. Residues that retained on the sieve were transferred to a Petri dish and sorted under stereomicroscope. Then, they were mounted on slide using standard method as in Chen and Shabdin (2015).

The nematode morphology and characteristic were observed and drawn using compound microscope equipped with Camera Lucida (Model Olympus BX 51). The identifications were based on several keys of identification (Warwick *et al.*, 1998). The following abbreviations were used in the present study:

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a, b, c (de Man's ratios); c' (tail length/a.b.d.); a.b.d. (anal/cloacal body diameter); c.d. (corresponding diameter); Sa (length of spicule along the arc); and Sc (length of spicule along the chord).

Type sample (MAS.NEM.01) is deposited in the Museum of Aquatic Sciences of Universiti Malaysia Sarawak.

## TAXONOMY

Order Monhysterida

Family Linhomoeidae Filipjev, 1922

Genus *Metalinhomoeus* de Man, 1907

*Metalinhomoeus ramsarensis* sp. nov.

(Table 1; Figure 1–2)

## MALE (Holotype)

MAS.NEM.01 Habitat: Muddy. Specimen illustrated in ventral view. Total body length long 7475  $\mu\text{m}$  (a = 108.66; b = 28.94; c = 110.99). Head rounded. Inner and outer labial papillae not clearly observed. Four cephalic setae (4.74  $\mu\text{m}$ ) followed by four sub cephalic setae. Buccal cavity minute. Amphid round (11.08  $\mu\text{m}$  width) and located posterior to the sub cephalic setae. Oesophagus is cylindrical (length 258.28  $\mu\text{m}$ ). Oesophagus c.d. 25.19

$\mu\text{m}$ . Bulb present at the end of the oesophagus (39.78  $\mu\text{m}$  width). Nerve ring not observed. Spicules paired; curved; proximal end spicule bluntly rounded; distal end slightly pointed. Length of the spicule in arc, 72.51  $\mu\text{m}$  with central cuticularized strip. Gubernaculum length 22.26  $\mu\text{m}$  with cylindrical apophysis. No precloacal supplements were observed. Caudal setae absent. Tail short and blunt (67.35  $\mu\text{m}$  in length; c' = 1.47).

## ETYMOLOGY

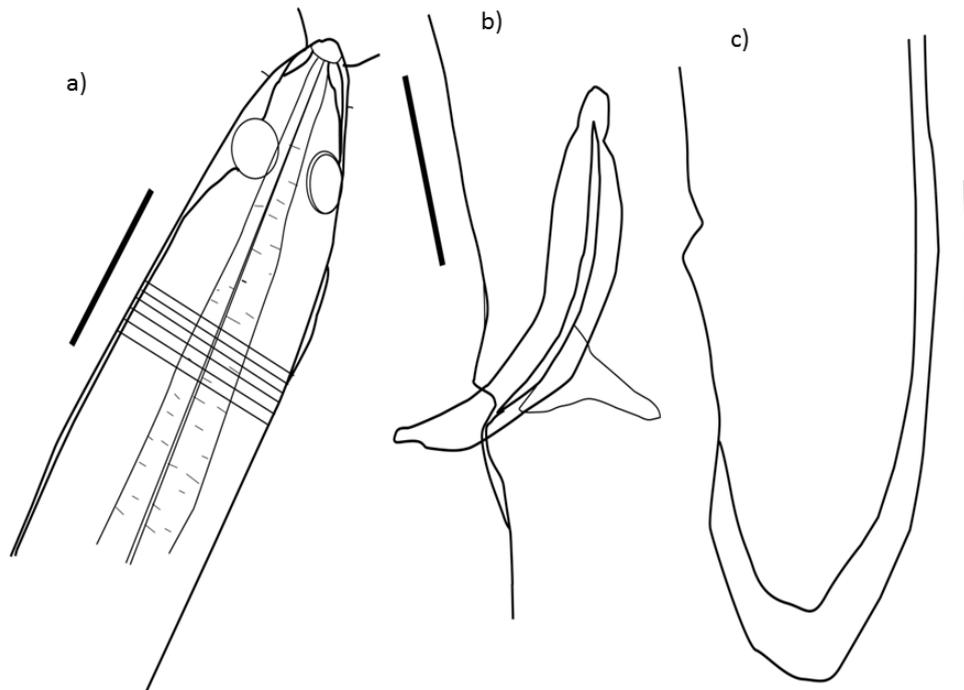
The species name refers to the location where the specimen was found which was gazette as a RAMSAR site.

## DISCUSSION

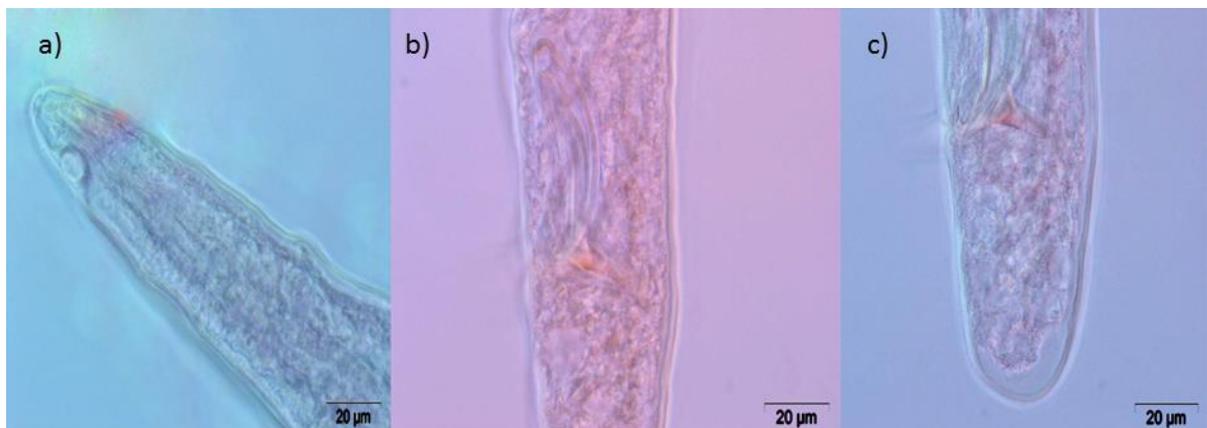
A total of 33 species had been described under genus *Metalinhomoeus*. Out of the 33 species, only *Metalinhomoeus karachiensis* Timm, 1962, *Metalinhomoeus insularis* Timm, 1967 and *Metalinhomoeus sunderbanae* Timm, 1967 were recorded from the tropical waters. The present species has central cuticularized strip together with short and blunted tail. Although several recorded species (*Metalinhomoeus filiformis* de Man, 1907; *Metalinhomoeus typicus* de Man, 1907; *Metalinhomoeus gracilis* Kreis, 1929; *Metalinhomoeus longiseta* Kreis,

**Table 1.** Measurements of *Metalinhomoeus ramsarensis* sp. nov.

Characteristics	Measurements ( $\mu\text{m}$ )
Total body length	7475
Head diameter	12.42
Length of cephalic setae	4.74
Amphid diameter	11.08
Amphid diameter / c.d %	48.88
Oesophagus length	258.28
Oesophagus c.d	25.19
Oesophagus end diameter	39.78
Maximum body diameter	68.79
Sc	63.75
Sa	72.51
Length of gubernaculum	22.26
Tail length	67.35
a.b.d.	45.8
a	108.66
b	28.94
c	110.98
c'	1.47



**Figure 1.** a) head, b) spicule and c) tail region of *Metalinhomoeus ramsarensis* sp. nov. Scale bar: 20  $\mu\text{m}$ .



**Figure 2.** a) head, b) spicule and c) tail of *Metalinhomoeus ramsarensis* sp. nov.

1929; *Metalinhomoeus breviseta* Schuurmans Stekhoven, 1950; *Metalinhomoeus musaecauda* Lorenzen, 1966; *Metalinhomoeus parvasetosus* Vitiello, 1969; *Metalinhomoeus torosus* Jensen & Gerlach, 1976; *Metalinhomoeus numidicus* Aissa & Vitiello, 1977) were known to have spicules with central cuticularized strip, yet the tail of these species were either conico-cylindrical or filiform. None was recorded with short and blunted tail. The size of *M. ramsarensis* sp. nov. is the longest long (7475

$\mu\text{m}$ ) among all the species ever described. Previously, *Metalinhomoeus trichosoma* Allgén, 1959 was the longest (4606  $\mu\text{m}$ ) but comparatively still 39% smaller in size. Besides that, the spicules of *M. trichosoma* were recorded with no central cuticularized strip and not to mention the absence of short and blunted tail. With all of the evidences provided above, we are here to validate the present species *M. ramsarensis* sp. nov. as a new member of the genus *Metalinhomoeus*.

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