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NEW RECORDS OF FREE-LIVING MARINE NEMATODES FROM INDIA

G. CHINNADURAI* AND OLIVIA J. FERNANDO

*Centre of Advanced Study in Marine Biology, Annamalai University,
Parangipettai-608 502, Tamil Nadu, India.*

**Email: chinnacas@yahoo.com*

INTRODUCTION

Free-living marine nematodes are usually the most abundant metazoans inhabiting marine benthic ecosystems, often representing more than 90% of the benthic meiofauna. Their significance in terms of habitat energy fluxes in the food chain and degradation and mineralization of organic matter are high. An important feature of nematode populations is the large number of species present in any one habitat, often an order of magnitude higher than for any other taxon (Platt & Warwick, 1980).

Although the nematodes comprise a large fraction of marine benthic communities, only little information is available on its assemblage in India waters. Studies on marine meiofaunal taxonomy and ecology have increased considerably in the last 20 years and progress has been made in facilitating meiofaunal work by non-specialists. Significant contributions on nematode assemblage structure at the generic or specific level of the mangrove sediments from the world has been made (Hopper *et al.*, 1973, Vanhove *et al.*, 1992, Olafson, 1995, Olafsson *et al.*, 2000, Decraemer & Coomans, 1978, Hodda & Nicholas, 1985 & 1986, Alongi, 1987a & 1987b, 1990, Nicholas *et al.*, 1991, Nicholas & Stewart, 1993, Somerfield *et al.*, 1998), while there are only three such studies from India (Krishnamurthy *et al.*, 1984, Rao, 1986, Sinha *et al.*, 1987).

Pichavaram mangrove situated along the southeast coast of India (Lat. 11°27' N; Long. 79°47' E), lies about 200 km. south of Chennai, the capital of Tamilnadu state and about 10 km. south of Parangipettai (Portonovo). It is one of the typical mangrove swamps of India, with a cover of about 1,100 hectares.

Faunastic surveys of Pichavaram mangrove was conducted during 2002. During this study, six species (*Ptycholaimellus ponticus*, *Paracomesoma dubium*, *Desmodora* (*Desmodorella*))

tenuispiculum, *Camacolaimus barbatus*, *Haliplectus dorsalis* and *Thalassomonhystera parva*) and one genus (*Pseudolella* sp) were recorded for the first time from Indian waters from intertidal sediments. This paper deals with the systematic account of each species, materials collected (number of specimens and date of collection), brief description and its geographical distribution.

MATERIALS AND METHODS

The sediment samples were collected using a hand corer (3 cm. dia.) up to a depth of 10 cm. Sampling was made during low tide, mostly near the mid tide level. The sediment samples were anaesthetized with a solution of magnesium chloride isotonic with seawater and meiofauna were extracted by the standard decanting-sieving method, and were stored in 5% formalin. Nematodes were picked out and mounted on a drop of water free glycerin on a microscopic slide from a subsample. The cover slip was sealed using paraffin wax. Identification to species level was done under a high power microscope using the pictorial keys of Platt and Warwick (1983 & 1988) and Warwick *et al.* (1998). Drawings were made using a Camera Lucida. The measurements of species presented in this study are based on De Man's formula, as adopted by Jensen (1978 & 1979).

SYSTEMATIC ACCOUNT

Order CHROMADORID

Family CHROMADORIDAE Filipjev, 1917

1. *Ptycholaimellus ponticus* (Filipjev, 1922)

(Figs. 1-2)

Material examined : 7 females, Pichavaram mangrove, 28.01.02.

Description (Female) : Body slender and attenuating towards ends, 0.8-0.95 mm in length. Maximum diameter of body 25-30 μm . Cuticle annulated; lateral files raised with longitudinal rows of coarse dots; four longer cephalic setae 7-10 μm in length; four files of short setae down body length, each situated slightly median to the longitudinal files of cuticle dots. Amphids transverse slits immediately posterior to cephalic setae. Buccal cavity with large strongly cuticularised S-shaped dorsal tooth and a dorsal apophysis. Oesophagus swollen dorsally at anterior end around dorsal tooth with an elongate double posterior bulb. Tail tapering, 3.5-3.7 a.b.d., with distinct spinneret. Ovaries opposite, reflexed, anterior ovary to the right of intestine and posterior ovary to the left.

Male : Not found.

Distribution : India (Tamil Nadu) : Pichavaram mangrove.

Elsewhere : North East England : Blyth estuary, South West England : Exe estuary, South West England : Tamar estuary, Essex : Skippers Island, North East coast of England, British Isles and North Wales.

Remarks : The specimens agree well with the earlier description (Platt & Warwick, 1988). This is the first record of the species from the Indian waters.

Family COMESOMATIDAE Filipjev, 1918

2. *Parcomesoma dubium* (Filipjev, 1918)

(Figs. 3-4)

Material examined : 3 males, Pichavaram mangrove, 28.01.02.

Description (Male) : Body length 1.3-1.4 mm. Maximum diameter of body 37-40 μm . Cuticle smooth, without punctation; six small labial papillae. Six anterior cephalic setae; four 5-6 μm posterior cephalic setae; four files of setae upto 3-4 μm long in oesophageal region and numerous short setae on tail but setae sparse in mid-body region. Amphids spiral, of 3 turns, 6-8 μm wide. Buccal cavity conical with three small pointed triangular teeth. Tail distal third cylindrical, 2.6-2.8 a.b.d. Spicules long, 170-180 μm in length slender, curved with delicate ventral ala. Gubernaculum small, in three pieces and without apophysis.

Female : Not found.

Distribution : India (Tamil Nadu) : Pichavaram mangrove.

Elsewhere : South West England : Tamar estuary, Island of Scilly and British Isles.

Remarks : The material examined conforms well with earlier description, except for the smaller body size. The total body length described was 2.8 mm and tail length varied between 4.8-5.0 a.b.d. (Platt & Warwick, 1988). The body length of the specimen studied at present is lesser being 1.3-1.4 mm and tail 2.6-2.8 a.b.d. This is the first record of the species from the Indian waters.

Family DESMODORIDAE Filipjev, 1922

3. *Desmodora (Desmodorella) tenuispiculum* Allgen, 1928

(Figs. 5-6)

Material examined : 7 males, Pichavaram mangrove, 28.01.02.

Description (Male) : Body length 0.8-0.9 mm. Maximum diameter of body 58-66 μm . Cuticle with coarse transverse striation and longitudinal files of ridges; posterior part of cephalic capsule with rounded punctations. Six slender 1 μm labial setae; six slender 3-4 μm and four stouter 3-5 μm cephalic setae, the lateral level with the anterior of the amphids; four short subcephalic setae on cephalic capsule posterior to amphids. Amphids spiral, of 2.5 turns, 10-12 μm wide. Buccal cavity

with weakly cuticularised dorsal tooth. Oesophagus with distinct posterior bulb. Tail conical with unstriated tip, 1.1-1.6 a.b.d. Spicules 1.0-1.1 a.b.d., slender, indistinct and precloacal supplements absent.

Female : Not found.

Distribution : India (Tamil Nadu) : Pichavaram mangrove.

Elsewhere : Northumberland coast, North East England and British Isles.

Remarks : The material examined conforms well with the earlier description, except for larger body size. The total body length described varied between 0.7-0.8 mm and tail 2.4-2.5 a.b.d. (Platt & Warwick, 1988). The body length of the present specimen is more being 0.8-0.9 mm, but tail was shorter 1.1-1.6 a.b.d. This is the first record of the species from the Indian waters.

Family LEPTOLAIMIDAE Orley, 1880

4. *Camacolaimus barbatus* Warwick, 1970

(Figs. 7-8)

Material examined : 5 females, Pichavaram mangrove, 29.01.02.

Description (Female) : Body length 0.4-0.58 mm. Maximum diameter 25-26 μm . Cuticle with widely spaced transverse striations. Six anterior cephalic sensilla minute, conical, papilliform; four short 2 μm cephalic setae. Amphids spiral, of 2.5 turns, 5 μm wide. Buccal cavity with a long style-like dorsal tooth 23-26 μm long, with a prominent shoulder near its distal tip. Oesophagus narrow cylindrical. Tail conical and pointed (3.1-3.3 a.b.d.), unstriated spinneret. Ovaries paired and reflexed.

Male : Not found.

Distribution : India (Tamil Nadu) : Pichavaram mangrove.

Elsewhere : Exe estuary, South West England and British Isles.

Remarks : The specimens examined agree well with the earlier description, except for the smaller body size. The total body length described varied between 1.8-2.0 mm and tail 3 a.b.d. (Platt & Warwick, 1988). The body length of the present specimen is very much lesser (0.4-0.58 mm), but tail was longer 3.1-3.3 a.b.d. This is the first record of the species from the Indian waters.

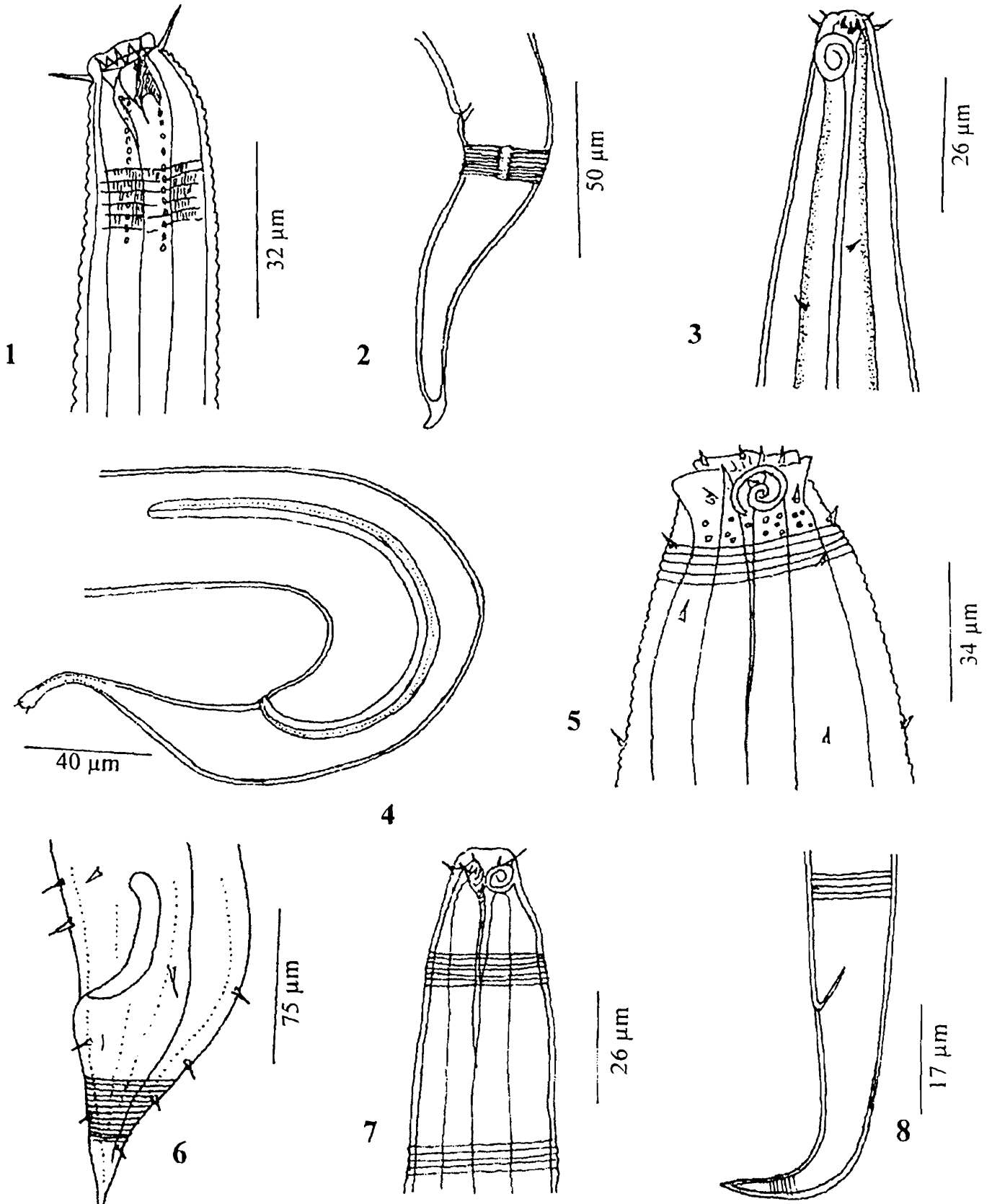
Family HALIPECTIDAE Chitwood, 1951

5. *Haliplectus dorsalis* Cobb in Chitwood, 1956

(Figs. 9-10)

Material examined : 2 males, Pichavaram mangrove, 29.01.02.

Description (Male) : Body length 0.75-0.86 mm. Cephalic sensilla absent. Amphids circular, 2.5-3 μm wide. Buccal cavity narrow, tubular. Oesophagus only weakly muscular in anterior part,



Figs. 1-8. : *Ptycholaimellus ponticus* (Female); 1. Anterior region, 2. Posterior region; 3-4. *Paracomesoma dubium* (Male); 3. Anterior region, 4. Posterior region; 5-6. *Desmodora (Desmodorella) tenuispiculum* (Male); 5. Anterior region, 6. Posterior region; 7-8. *Camacolaimus barbatus* (Female); 7. Anterior region, 8. Posterior region.

but with a small bulb in the middle and a large posterior bulb with a well cuticularized lining. Cuticle striated without lateral differentiation. Tail conical, 2.1-2.3 a.b.d. Spicules short, 1.5 a.b.d.

Female : Not found.

Distribution : India (Tamil Nadu) : Pichavaram mangrove.

Elsewhere : Skippers Island; Essex and British Isles.

Remarks : The specimens examined agree well with the earlier description, except for the larger body size. The total body length described was 0.7 mm and tail 1.8 a.b.d. (Platt & Warwick, 1988). The body length of the present specimen is 0.75-0.86 mm and tail 2.1-2.3 a.b.d. This is the first record of the species from the Indian waters.

Order MONHYSTERIDA

Family MONHYSTERIDAE De Man, 1876

6. *Thalassomonhystera parva* (Bastian, 1865)

(Figs. 11-12)

Material examined : 2 females, Pichavaram mangrove, 29.01.02.

Description (Female) : Body length 0.9-1.3 mm. Maximum diameter of body 28-30 μm . Cuticle smooth, cephalic setae 3 μm . Amphids circular, 4.5-5 μm in diameter. Buccal cavity simple conical. Oesophagus without posterior bulb. Tail evenly tapering, without terminal setae, 8.1-8.4 a.b.d.

Male : Not found.

Distribution : India (Tamil Nadu) : Pichavaram mangrove.

Elsewhere : South West England : Falmouth and Plymouth, Isles of Scilly, Rockall, off West Ireland, South West England : Exe and Fal estuary, British Isles.

Remarks : The present specimens had a larger body size. The body length being 0.9-1.3 mm and tail 8.1-8.4 a.b.d. The total body length described earlier varied between 0.6-0.7 mm and tail 7.7 a.b.d. (Warwick *et al.*, 1998). This is the first record of the species from the Indian waters.

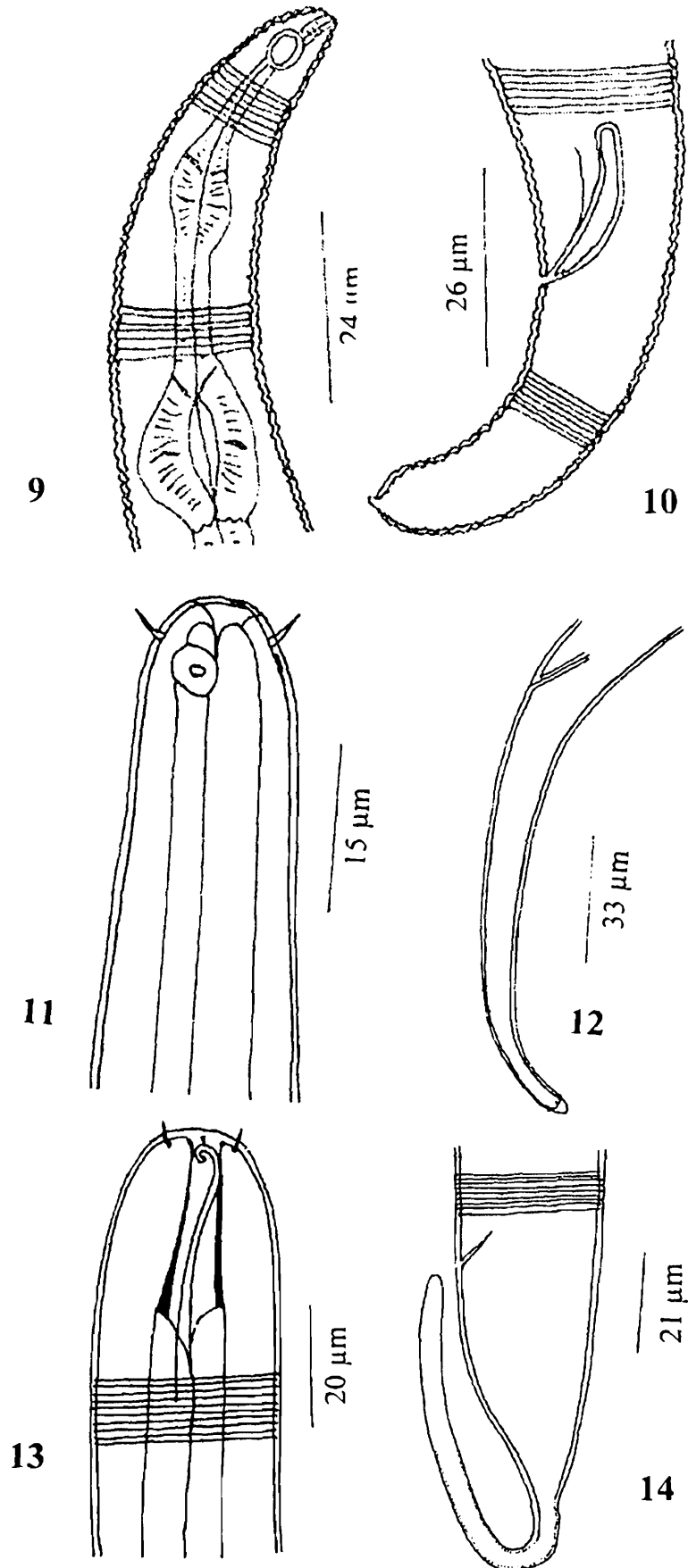
Family AXONOLAIMIDAE Filipjev, 1918

7. *Pseudolella* sp Cobb, 1920

(Figs. 13-14)

Material examined : 2 females, Pichavaram mangrove, 29.01.02.

Description (Female) : Body length 0.6-0.8 mm. Maximum width of body 33-34 μm . Cuticle striated. Six smaller and four longer cephalic setae. Buccal cavity large, 32-34 μm in length. Ventral



Figs. 9-14. : 9-10. *Haliplectus dorsalis* (Male); 11-12. *Thalassomonhystera parva* (Female); 13-14. *Pseudolella* sp (Female); 9, 11,13. Anterior region; 10, 12,14. Posterior region.

limp of amphids elongated, 44 μm in length. Oesophagus small bulb in posterior portion. Tail conical, 4.6 a.b.d. Ovaries paired.

Male : Not found.

Distribution : India (Tamil Nadu) : Pichavaram mangrove.

Elsewhere : British Isles.

Remarks : The specimens agree well with the earlier description of the genus. It was difficult to identify the species of the present specimen. This is the first record of the genus from Indian waters.

SUMMARY

In the present study 6 species (*Ptycholaimellus ponticus*, *Paracomesoma dubium*, *Desmodora* (*Desmodorella*) *tenuispiculum*, *Camacolaimus barbatus*, *Haliplectus dorsalis* and *Thalassomonhystera parva*) and 1 genus (*Pseudolella* sp) of free-living marine nematodes belonging to 2 orders and 7 families are recorded for the first time from Indian waters from intertidal sediments of Pichavaram mangroves, Southeast coast of India. Krishnamurthy *et al.* (1984) recorded 27 genera and 4 species from the same study area. Rao (1986) recorded 15 genera and 14 species from south Andaman Islands. Sinha *et al.* (1987) has recorded a new species of nematode *Anoplostoma macrospiculum* from the mangrove environment of deltaic Sundarbans, West Bengal, India, however none of them had been recorded earlier.

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