# Two new and an existing species of *Tricoma* (Nematoda: Desmoscolecidae) from the shallow subtidal zone of South Andaman Island, India

# N. Mohammed Afnan, P.M. Mohan<sup>\*</sup>

Department of Ocean Studies and Marine Biology, Pondicherry University, Port Blair - 744 112, Andaman and Nicobar Islands, India.

N. Mohammed Afnan: afnan@outlook.in ORCID https://orcid.org/0000-0003-1162-0224 P.M. Mohan: pmmtu@yahoo.com ORCID https://orcid.org/0000-0001-6194-3772 \* Corresponding author

ABSTRACT: Two new marine nematode species, *Tricoma andamanensis* sp.n. and *Tricoma longisetosa* sp.n., were discovered and described from the subtidal sediments of South Andaman Island, India. A new distributional record of *Tricoma similis* was also made from India. The new species can be identified by their unique characteristics, including the annular ring number, head shape, tail ring number, spicule shape and length, and somatic setae count. A comparison of congeneric species was also carried out. The detailed morphological features, photos, and illustrations of the new species were provided with the help of a Differential Interference Contrast (DIC) microscope.

How to cite this article: Afnan N.M., Mohan P.M. 2025. Two new and an existing species of *Tricoma* (Nematoda: Desmoscolecidae) from the shallow subtidal zone of South Andaman Island, India // Invert. Zool. Vol.22. No.2. P.274–287. doi: 10.15298/invertzool.22.2.05

KEY WORDS: Andaman Sea, benthic fauna, free-living marine nematodes, meiobenthos, taxonomy.

# Два новых и один известный ранее вид рода *Tricoma* (Nematoda: Desmoscolecidae) из верхней сублиторали Южного Андамана, Индия

# Н.М. Афнан, П.М. Мохан\*

Department of Ocean Studies and Marine Biology, Pondicherry University, Port Blair - 744 112, Andaman and Nicobar Islands, India.

\* Ответственный за переписку: pmmtu@yahoo.com

РЕЗЮМЕ: Два новых для науки вида нематод *Tricoma andamanensis* sp.n. и *Tricoma longisetosa* sp.n. были описаны из проб грунта, взятых в верхней сублиторали у побережья Южного Андамана. Еще один ранее описанный вид этого рода, *Tricoma similis*, впервые был обнаружен в этой акватории. Новые виды характеризуются некоторыми уникальными чертами морфологии, среди которых число колец кутикулы на голове и на хвосте, форма головы, форма половых спикул у самцов и длина и количество соматических щетинок. Проведено сравнение с другими видами рода. В статье даны детальные морфологические описания, иллюстрированные рисунками фотографиями, сделанными при помощи оптического дифференциального контраста (DIC микроскопия).

Как цитировать эту статью: Afnan N.M., Mohan P.M. 2025. Two new and an existing species of *Tricoma* (Nematoda, Desmoscolecidae) from the shallow subtidal zone of South Andaman Island, India // Invert. Zool. Vol.22. No.2. P.274–287. doi: 10.15298/invertzool.22.2.05

KEY WORDS: Андаманское море, фауна бентоса, свободноживущие морские нематоды, мейобентос, таксономия.

## Introduction

The order Desmoscolecida Filipjev, 1929 constitutes less abundant yet easily distinguishable groups of nematodes since most possess thick annular rings and accumulate foreign materials in their matrix. The genus Tricoma Cobb, 1894 has the highest diversity compared to other genera of the family, with a total of 91 Tricoma sub-generic species and 24 Quadricoma sub-generic species (Nemys database, 2024). The last report of a Tricoma species was made from Korea with the discovery of four new species (Lee et al., 2023). Three species of Tricoma have been reported so far from India: Tricoma longirostris (Southern, 1914) and Tricoma brevirostris (Southern, 1914) from Tamil Nadu, and Tricoma polydesma (Southern, 1914) from Kerala (Datta et al., 2022). Though there are reports of Tricoma genera from the Islands (Rao, 1980), efforts have yet to be made for species-level identification. This study describes two novel species with distinct characteristics that differentiate them from other species. This study can also be marked as the first distributional record of Tricoma species from the Andaman archipelago.

The Andaman and Nicobar Islands, located in the northeast Indian Ocean (Fig. 1), are renowned for their rich and diverse marine life. However, the nematode fauna of this region remains largely underexplored. This work not only enhances the taxonomic knowledge of the genus but also highlights the importance of continued research in the field to reveal more undiscovered species from the Islands.

## **Materials and Methods**

Sediment samples were collected using a Van Veen grab of mouth opening 25 cm, from a depth of about 20 m from the subtidal area of Burmanala, South Andaman, India. From the grab, the top 5 cm (around 150–200 g) sediment was collected using a plastic corer of 3.5 cm diameter. The sediment was immediately transferred into a plastic bag. Duplicate sediment samples were collected, and animals were narcotized with MgCl, and preserved in 90% ethanol. The samples were then sieved separately through a series of sieves (1 mm, 500 µm, and 63 µm, respectively) to sort meiofaunal samples as well as to remove large sediments. The samples retrieved in a 63 µm sieve were decanted (Giere, 2009), and suspended organisms were collected and washed with distilled water, transferred into separate 100 mL beakers, and preserved in 98% ethanol. Samples were sorted under a stereo microscope (Leica M205C) with 50× magnification, and meiofaunal groups were transferred into separate vials containing a Glycerol-Ethanol-Distilled water mix (5% glycerol in 10% ethanol). Each specimen was mounted in a glycerol slide and sealed with paraffin wax. The nematodes were identified under an Olympus BX51 compound microscope equipped with Nomarski Differential Interference Contrast illumination. Photographs were taken using a ULTRACAM camera (Quasmo, India). Identification was carried out by comparing the publications and available taxonomic keys. The taxonomic identification key developed by Decraemer (1978) is limited in scope, as it excludes many species discovered and re-described after its publication.

Abbreviations: a — body length divided by maximum body diameter; b — body length divided by oesophagus length; c — body length divided by tail length; V (%) — vulva distance from the anterior end represented as a percentage of the total body length; DIC — Differential Interference Contrast Microscopy. Scale bars in the figures are provided in micrometers ( $\mu$ m).

#### Systematics

Order Desmoscolecida Filipjev, 1929 Family Desmoscolecidae Schepotieff, 1907 Subfamily Tricominae Lorenzen, 1969 Genus *Tricoma* Cobb, 1894

GENERIC DIAGNOSIS (Updated from Decraemer, Rho, 2013). Tricominae. Annulated cuticle with round or triangular outline, and annules separated by a narrow interzone of one annule. The cuticle may be covered with foreign particles. The rings do not show any abrupt inversion. The end ring appears cylindrical, with desmos covering anteriorly and tapering



Fig. 1. Map showing the study area (Sachithanandam et al., 2014).

posteriorly into a spinneret. The head is more or less triangular in shape. The labial region with or without separate lips, and one or two crowns of labial papillae are present. Four pedunculated cephalic setae are also present. The pharynx is cylindrical. Males possess two testes.

#### Subgenus Tricoma Cobb, 1894

SUB-GENERIC DIAGNOSIS. *Tricoma*. The shape of the main rings appears rounded in outline, not triangular. The head appears widely triangular, seldom narrow. The cephalic setae is positioned posterior to the head on a peduncular base. The shape of round cuticular outline and lack of inversion of orientation is the main differentiating trait from *Quadricoma*.

#### *Tricoma andamanensis* **sp.n.** Figs 2–3, Tables 1–2.

TYPE MATERIAL. The holotype specimen, two paratype males and a female paratype were mounted in glycerol on a glass slide and deposited in the museum collection of Pondicherry University Port Blair Campus, Andaman and Nicobar Islands, India (Inventory numbers of holotype male, two paratype males, and a paratype female are DOSMB08001, DOSMB08002, DOSMB08003 and DOSMB08004, respectively).

TYPE LOCALITY. The nematodes were collected from about 20 m deep subtidal sediments from Burmanala, Andaman, and Nicobar Islands, India, on March 25, 2020. The nematodes were extracted from the sediment collected using a Van Veen grab.

ETYMOLOGY. The species name "andamanensis" is given after their type locality, Andaman Islands.

DESCRIPTION. (Holotype male): Body relatively short, measuring 480 µm and with tapering ends. The body bends ventrally post-fixation to form a U-shaped. The body cuticle comprises 80 annular rings or desmen coated with foreign materials. The maximum body diameter is observed at the mid-body region at 39 µm. Head triangular, with anterior tapering in lateral view, and not elongated. The cephalic region is 27 µm wide and 18 µm long. Four cephalic setae, about 27 µm long, are positioned just anterior to the posterior border with prominent and enlarged peduncles. The setae also has a membrane coating, which makes it look like a leaf blade. The cuticle is sclerotised and thickened along the border except for the labial region. Amphid oval and almost covers the entire head. The stoma possesses dorsal and ventral teeth. The oesophagus is 67 µm long and extends from the anterior cephalic border to the 10th main ring. Two oval dark yellowish ocelli are



Fig. 2. DIC microphotographs of *Tricoma andamanensis* sp.n., holotype male (A–B), paratype female (C–D) and paratype female (E–F). A — anterior region; B — spicule and tail; C — anterior region in female; D — tail region of female; E — anterior region in paratype male; F — spicule and tail in paratype male. Scale bars: A–F — 20  $\mu$ m.

Abbreviations: DIC — Differential Interference Contrast Microscopy.



Fig. 3. *Tricoma andamanensis* sp.n. A — holotype male; B — head region in paratype female; C — copulatory region and tail in paratype male; D — vulvar region in paratype female. Scale bars:  $A-C = 20 \mu m$ ; D = 50  $\mu m$ .

positioned between the 12<sup>th</sup> and 13<sup>th</sup> body rings, after the oesophago-intestinal junction. The length and breadth of ocelli are 8  $\mu$ m and 5  $\mu$ m, respectively. The somatic setae comprise 18 subventral setae and 14 subdorsal setae on both sides. The subdorsal setae are 15–16  $\mu$ m long, while the subventral setae are 17–19  $\mu$ m. The somatic setal arrangement is as follows:

Subventral setae: 4, 7, 10, 16, 18, 21, 24, 27, 30, 34, 38, 42, 46, 50, 62, 66, 71, 75 = 18.

Subdorsal setae: 5, 9, 14, 18, 21, 25, 31, 39, 45, 51, 57, 63, 70, 75 = 14.

Spicules are 48  $\mu$ m long and slightly arched with spatulated tips. The gubernacular apophysis does not have a knob-like tip. The 49<sup>th</sup> cuticle ring elongated ventrally. The tail comprises 11 rings, measuring 78 µm in length. The width of the anal region is 31 µm. The non-annulated tail tip accounts for 21 µm.

Male (paratype 1): Body similar to the holotype, the difference observed only in the measurements and number of somatic setal patterns. The body is 510  $\mu$ m long, with a maximum diameter observed at mid-body (50  $\mu$ m). Cephalic setae is shorter than holotype (22  $\mu$ m). They possess 12 subdorsal somatic setae and 16 subventral somatic setae. The remaining characters and measurements are similar to the holotype.

Male (paratype 2): Body similar to holotype and paratype, difference observed only in the measurements and number of somatic setal patterns. The body

	Holotype Male	Paratype Male 1	Paratype Male 2	Allotype Female
Total body length	480 μm	510 µm	520 μm	525 μm
Number of body ring	80	80	80	80
a	12	12.4	10.4	11
b	7	7.2	6.9	7.8
c	6	6.7	6	6.25
Head length	18 µm	18.5 μm	21 µm	20 µm
Head diameter at the level of cephalic setae	27 µm	31 µm	31 µm	25 µm
Body diameter at level of cardia	36 µm	38 µm	41 µm	43 µm
Maximum body diameter	39 µm	41 µm	50 µm	47 µm
Minimum body diameter	29 µm	32 µm	35 µm	28 µm
Cephalic setae length	27 µm	22 µm	24 µm	24 µm
Ocelli width	5 µm	5 µm	5 µm	5.5 µm
Ocelli length	8 µm	7 μm	9 µm	4.8 µm
Anterior end to ocelli	70 µm	76 µm	76 µm	77 µm
Oesophagus length	67 µm	70 µm	75 μm	77 µm
Number of subventral setae	18	16	18	13
Length of longest subventral setae	20 µm	18.5 μm	17 µm	20 µm
Length of shortest subventral setae	12 µm	11 µm	10.2 µm	12 µm
Number of subdorsal setae	14	12	13	10
Length of longest subdorsal setae	23 µm	18 µm	18.7 μm	18.7 µm
Length of shortest subdorsal setae	13 µm	11 µm	12 µm	10 µm
Spicule length	48 µm	48 µm	51 µm	_
Gubernaculum length	30 µm	33 µm	35 µm	_
Anterior end to vulva	-	-	_	256 µm
Body diameter at level of vulva	-	-	—	45.5 μm
V (%)	-	-	_	46.5
Anal body diameter	31 µm	41 µm	41 µm	34 µm
Tail length	78 µm	76 µm	87 μm	75 µm
Number of tail rings	11	11	11	11
Terminal ring length	24 µm	26 µm	24 µm	32 µm
Terminal ring max width	11.8 µm	15 µm	14 µm	11.6 µm
Naked terminal ring	21 µm	20.5 µm	21 µm	26 µm

Table 1. Morphometric analysis of specimens of *Tricoma andamanensis* sp.n. Таблица 1. Морфометрический анализ экземпляров вида *Tricoma andamanensis* sp.n.

Parameter	Species					
	<i>T. andama-</i> <i>nensis</i> sp.n.	T. similis	T. brevirostris	T. rostrata	T. hopperi	T. tertia
Total length (µm)	480–520	979–1110	465-755	475	575-1050	600
Annule number	80	77–84	78	81	77–81	76–80
Head Shape	Triangular	Triangular	Triangular	Strongly elongated	Triangular	Narrow trian- gular
Ocelli location	11 and 12	10 to 13	13 to 14	13 to 15	12 to 14	13 to 14
Subdorsal setae count	10 to 14	14 to 16	8 to 10	13	7 to 9	11
Subventral setae count	13 to 18	19 to 27	12 to 16	20	17 to 18	18-20
Tail length (µm)	78–87	124–140	30	80	125–150	85–137
Tail ring number	11	11 or 12	10	11	12	11
Spicule length (µm)	48–51	59–71	25–28	33	55	32
Vulva position (%)	46%	55%	_	_	56%	55%

Table 2. Character comparison among *Tricoma andamanensis* sp.n. and its allied congeneric species. Таблица 2. Характеристики дифференциального диагноза вида *Tricoma andamanensis* sp.n. и других близких видов рода.

is 520  $\mu$ m long, with the maximum body diameter observed as 41  $\mu$ m. Cephalic setae is slightly shorter than holotype (24  $\mu$ m). They possess 13 subdorsal somatic setae and 18 subventral somatic.

Female: In most cases, it resembles a male specimen but differs in its somatic setal number and some measurements. The body comprises 80 desmen ventrally, while the 69th desmen is split dorsally to make it 81. The total length is similar to males, 525 µm. The largest body diameter is observed at the mid-body region (47 µm). The head is triangular, 25 μm wide and 20 μm long. Cephalic setae is 24 μm long. The digestive system is similar to that of males. Ocelli present at the 12th ring, about 77 µm from the anterior end. Ocelli is smaller than males (5.5 um x 4.8 µm). The body consists of 13 subventral somatic setae and ten subdorsal somatic setae. The reproductive system is typical. Vulva observed just anterior to mid-body at 47% of body length at main ring 43. The setal arrangement is observed as follows:

Subventral setae: 5, 9, 15, 20, 25, 29, 35, 40, 47, 53, 58, 65, 75 = 13.

Subdorsal setae: 6, 11, 17, 23, 28, 36, 45, 49, 70, 73 = 10.

The tail has 11 rings and is  $84 \ \mu m$  in length. The anal body diameter is  $34 \ \mu m$ . The non-annulated tip of the tail is  $27 \ \mu m$  long.

DIAGNOSIS. This species can be distinguished from other species of the genus *Tricoma* by the following characteristic features: (1) possesses 80 main rings, (2) distinct triangular head with projected cephalic peduncles near the posterior border, (3) somatic setae consisting of 18 subventral setae and 13–14 subdorsal setae in males; 13 subventral and ten subdorsal setae in females, (4) tail with 11 annular rings, (5) arched spicule of about 50 µm long and a spatulated tip, (6) gubernaculum apophysis without knob-like tip.

DIFFERENTIAL DIAGNOSIS. The new species is found to be similar to T. similis in their head shape, annule number, and subdorsal somatic setal number but differs in their total length (480-520 µm vs. 979-1110 µm), de Man ratio (a=12 vs. 18-23, b=7 vs. 8-9, c=6 vs. 8), number of subventral somatic setae (18 vs. 23-30), tail length (78-87 µm vs. 124-140 µm), vulva position (46% vs. 55%). The species is also similar to T. brevirostris in their length and tail ring number but differs in their number of main rings (80 vs. 78), subdorsal somatic setae number (14 vs. 8-10), subventral setae number (18 vs. 12-16), spicule length (48 µm vs. 25–28 µm) among others. The species also resembles T. rostrata but differs in their head shape (short triangular vs. strongly elongated), subventral setae number (18 vs. 20) and annule number (80 vs. 81). T. hopperi differs in their length (480–520 μm vs.



Fig. 4. DIC microphotographs of *Tricoma longisetosa* sp.n., holotype male. A — entire body; B — anterior body and ocelli; C — spicule. Scale bars: A —20 μm; B–C — 10 μm. Abbreviations: DIC — Differential Interference Contrast Microscopy.

835 µm), number of tail rings (11 vs. 12), and subdorsal somatic setae numbers (14 vs. 7–9). The species is also similar to *T. tertia* in their annule number and tail rings but differs in head shape, spicule, gubernaculum and other measurements.

#### *Tricoma longisetosa* **sp.n.** Figs 4–5, Tables 3–4.

TYPE MATERIAL. The holotype specimen is a male nematode mounted in glycerol on a glass slide and deposited in the Pondicherry University Port Blair Campus museum collection, Andaman and Nicobar Islands, India. (Inventory no: DOSMB08005).

TYPE LOCALITY. The nematodes were collected from subtidal sediments about 20 m deep from Burmanala, Andaman and Nicobar Islands, India, on March 25, 2020. The nematodes were extracted from the sediment collected using a Van Veen grab.

ETYMOLOGY. The species name "*longisetosa*" is given due to the presence of characteristic elongated somatic setae in the tail.

DESCRIPTION. (Holotype male): The body is short (300 µm), tapering at extremities. The maximum body diameter, 30 µm, is noticed at mid-body. The cuticle displays 58 tricomoid rings. Secretions and fine foreign materials cover the body annules. The head is triangular, with cephalic setae inserted near the posterior border of the head in a prominent peduncle. The head is wider (19 µm) than long (12.5  $\mu$ m). The cephalic setae (19.5  $\mu$ m) is covered by a thin sheath-like membrane entirely and is slightly longer than the cephalic diameter at the base of the cephalic setae. The cuticle is thickened along the border. Stoma is minute. Amphid is circular and covers almost half of the head. Ocelli positioned between the 10th and 11th annules is dark yellow and measures five µm in width and six µm long. Oesophagus 40 µm long. The somatic setae are arranged into ten subventral and 11 subdorsal setae, and the arrangement is as follows:

Subdorsal setae: 2, 5, 8, 12, 17, 23, 30, 37, 43, 51, 54 = 11.

Subventral setae: 2, 4, 8, 12, 17, 22, 27, 34, 49, 54 = 10.



Fig. 5. Tricoma longisetosa sp.n., holotype male. Scale bar: 25 µm.

Table 3. Morphometric analysis of *Tricoma longisetosa* sp.n. from Andaman and Nicobar Islands. Таблица 3. Морфометрический анализ представителей вида *Tricoma longisetosa* sp.n. с Андаманских и Никобарских островов.

	Holotype male
Total body length	300 µm
Number of body ring	58
a	10
b	7.5
c	4
Head length	12.5 μm
Head diameter at the level of cephalic setae	19 µm
Body diameter at the level of cardia	29 μm
Maximum body diameter	30 µm
Minimum body diameter	20 μm
Cephalic setae length	19.5 μm
Ocelli width	5 µm
Ocelli length	6 µm
Anterior end to ocelli	48.5 μm
Oesophagus length	40 µm
Number of subventral setae	10
Length of longest subventral setae	30.5 µm
Length of shortest subventral setae	12 μm
Number of subdorsal setae	11
Length of longest subdorsal setae	28 μm
Length of shortest subdorsal setae	13 μm
Spicule length	46 µm
Gubernaculum length	18 μm
Anal body diameter	21 μm
Tail length	75 μm
Number of tail rings	11
Terminal ring length	25 μm
Terminal ring max width	6.8 μm
Naked terminal ring	22.5 μm

The spicule is significantly extended (46  $\mu$ m), covering 15% of the total length, and possesses a knob-like capitulum at the tip. The distal portion of the gubernaculum is slightly bent towards the caudal side. The tail is made up of 11 main rings. The end ring measures 25  $\mu$ m long and covers almost 33% of the tail length. The naked tail tip covers only 10% of the terminal ring.

DIAGNOSIS. The characteristic features of the species are: (1) possess 58 main rings, (2) last so-

matic setae elongated, (3) tail with 11 annular rings, (4) significantly elongated spicule of about 15% of total length with a bulbous tip, (5) gubernaculum apophysis without knob-like tip.

DIFFERENTIAL DIAGNOSIS. There are nine species of *Tricoma* having 50–60 annular rings. This species belongs to the same category but can be differentiated from other species of the genus *Tricoma* as follows: The presence of elongated somatic setae (1.4 times anal body diameter) in their tail is not seen in

	Species					
Parameter	<i>T. longisetosa</i> sp.n.	T. absidata	T. ulleungensis	T. coralicolla	T. goldeni	
Total length (µm)	300	480–550	409–567	185-220	310-320	
Annule number	58	57–60	54–57	56–58	55–59	
Subdorsal setae count	11	11	6 or 7	9	12	
Subventral setae count	10	19	10 to 12	11 or 12	17	
Tail ring number	11	10	8 or 9	8	11 or 12	
Spicule length (µm)	46	42–45	22–24	14	21 or 22	
Posterior ring shape	Tricomoid	Tricomoid	Tricomoid	Tricomoid	Quadricomoid	

 Table 4. Character comparison among *Tricoma longisetosa* sp.n. and its allied congeneric species.

 Таблица 4. Характеристики дифференциального диагноза вида *Tricoma longisetosa* sp.n. и других близких видов рода.

any other Tricoma species. This species is similar to T. absidata in the annular ring number (58 vs. 57-60) and spicule length (46 µm vs. 42-45 µm), but differs in the tail ring number (11 vs. 10), total length (300  $\mu$ m vs. 480–550  $\mu$ m), and subventral setae (10 vs. 19). This species is also similar to T. ulleungensis due to their head shape but clearly differs by their body shape, total length (300 µm vs. 409-567), tail rings (11 vs. 8-9), and desmen coverage of last segment (10% vs. 20-30%). The T. longisetosa sp.n. also differs from T. coralicolla in their body length (300 µm vs. 185-220 μm), somatic setal arrangement (10 subventral setae and 11 subdorsal setae vs. 11-12 subventral setae and nine subdorsal setae) and dorso caudal apophysis of gubernaculum (single vs. double). It differs from T. goldeni by spicule length (46 vs. 21-22) and posterior rings (tricomoid vs. quadricomoid).

#### *Tricoma similis* Cobb, 1912 Figs 6–7, Table 5.

LOCALITY. The sample was collected from benthic sediments in the subtidal area of Burmanala, Andaman and Nicobar Islands, India, at a depth of 20 m, using a Van Veen grab.

DISTRIBUTION ELSEWHERE. East Indies (Cobb, 1912); Bermuda (Timm, 1970); Great Barrier Reef (Decraemer, 1978); Mozambique Channel (Decraemer, 1984); White Sea (Decraemer, Tchesunov, 1996); East Sea (Lee *et al.*, 2023).

MATERIAL EXAMINED. One male was mounted in glycerine on a glass slide and deposited in the Pondicherry University Port Blair Campus museum collection, Andaman and Nicobar Islands, India. (Inventory no: DOSMB08006)

DESCRIPTION. (Male): Body elongate (790 µm) and tapering at both ends. The cuticle is made up of 83 rings and covered with secretion. The maximum body diameter is observed at the mid-body region at 53 µm. The head is triangular with heavy sclerotisation along the border and tapering towards the anterior end. Six lips decorated by small papillae are present at the labial region. Four cephalic setae (25-28 µm) with peduncles and a membrane coating are present near the posterior border of the head. Amphid is round and large and covers the entire head. The stoma is small. The oesophagus measures 90 µm in length. The ocelli was positioned between the 10th and 11th body rings. The body possesses 13 sub dorsal setae and 24 sub ventral setae. The longest subdorsal setae and subventral setae were 18 µm long. The arrangement of setae is as follows:

Subventral setae: 1, 8, 10, 14, 17, 20, 22, 24, 27, 29, 32, 36, 39, 43, 46, 50, 53, 56, 59, 62, 65, 69, 72, 76 = 24.

Subdorsal setae: 1, 6, 10, 15, 21, 26, 34, 44, 52, 60, 68, 75, 77, 80, 82 = 15.

Spicules are 40  $\mu$ m long, with spatulated tips. The gubernaculum apophysis is posteriorly directed. The tail comprises ten rings and is 99  $\mu$ m long. The anal body diameter is 40  $\mu$ m. The non-annulated tail tip is 35  $\mu$ m long.

### Discussion

The genus has undergone several revisions from its original description by Cobb (1894) to rectify the taxonomic errors in the past (Filipjev, 1922; Timm, 1970; Gerlach, Rieman, 1973;



Fig. 6. DIC microphotographs of *Tricoma similis*. A—head and tail region; B—spicule and gubernaculum. Scale bars: A $-20 \mu$ m; B $-10 \mu$ m.

Abbreviations: DIC — Differential Interference Contrast Microscopy.



Fig. 7. *Tricoma similis*. A — holotype male; B — head region in holotype male; C — spicule and gubernaculum. Scale bars: A  $-50 \mu m$ ; B-C  $-20 \mu m$ .

	Male
Total body length	790 μm
Number of body ring	83
a	16
b	9
c	8
Head length	23 µm
Head diameter at the level of cephalic setae	34 µm
Body diameter at level of cardia	46 μm
Maximum body diameter	50 µm
Minimum body diameter	40 µm
Cephalic setae length	28 μm
Ocelli width	4.5 μm
Ocelli length	8.5 µm
Anterior end to ocelli	91 µm
Oesophagus length	90 µm
Number of subventral setae	24
Length of longest subventral setae	18 μm
Length of shortest subventral setae	10 µm
Number of subdorsal setae	15
Length of longest subdorsal setae	18 µm
Length of shortest subdorsal setae	13 μm
Spicule length	40 µm
Gubernaculum length	30 µm
Anal body diameter	40 µm
Tail length	99 µm
Number of tail rings	10
Terminal ring length	35 µm
Terminal ring max width	19 µm
Naked terminal ring	28 µm

Table 5. Morphometric analysis of *Tricoma similis* from Andaman and Nicobar Islands. Таблица 5. Морфометрический анализ представителей вида *Tricoma similis* Андаманских и Никобарских островов.

Freudenhammer, 1975; Decraemer, 1978). Even their name was given from the misunderstanding that they had three cephalic setae. Decraemer (1985) divided the genera into two subgenera due to the differences in their cuticular ring structure and other characters. To date, 91 species belong to the subgenera *Tricoma*. Many older descriptions were made from a single specimen with no detailed description, making differentiation of the species more challenging.

In India, only three species of *Tricoma* were reported: *T. longirostris*, *T. brevirostris*, and *T. polydesma*. Several challenges in the taxonomy of *Tricoma* species may have contributed to the low number of reports. One primary challenge is their low abundance. Although *Tricoma* species are known for their high diversity, their abundance is very low. Understanding the characteristics of a species from a single specimen is challenging, considering their interspecific variability. Additionally, several species were described from single specimens or with minimal descriptions, complicating comparisons between species. Another possible reason for the low number of reports is the lack of meiofaunal studies on offshore habitats. Approximately onefourth of Tricoma species have been reported from deep-sea environments beyond 200 m (Decraemer, Rho, 2013). It is anticipated that, despite these taxonomic challenges, numerous Tricoma species could be discovered if exclusive studies on nematodes from offshore habitats were conducted. The species Tricoma andamanensis sp.n. and Tricoma longisetosa sp.n. have clear morphological differences from their close relatives and are significant in being identified as a new species.

Acknowledgements. The authors would like to thank the Department of Ocean Studies and Marine Biology, Pondicherry University, for providing the necessary facilities for this research. The authors also would like to thank the Ministry of Minority Affairs, Govt. of India, for providing the funds required for the research.

**Funding Information.** This work was supported by the Ministry of Minority Affairs, Govt. of India, under the Maulana Azad National Fellowship for Minority Students scheme (UGC Ref. No. 210510364364).

## References

- Cobb N.A. 1894. *Tricoma* and other new nematode genera // Proceedings of Linnaean Society. N.S.W. Vol.8. P.389–421.
- Cobb N.A. 1912. Further notes on *Tricoma //* Journal of the Washington Academy of Sciences. Vol.2. P.480–484.
- Datta R., Maity P., Bhadury P., Rizvi A.N., Raghunathan C. 2022. An Updated Checklist of Free-living Marine Nematodes from Coastal India // Zootaxa. Vol.5196. No.2. P.151–196.
- Decraemer W. 1978. Morphological and taxonomic study of the genus *Tricoma* Cobb (Nematoda: Desmoscolecida), with the description of new species from the Great Bar-

rier Reef of Australia // Australian Journal of Zoology Supplementary Series. Vol.26. P.1–121. https://doi. org/10.1071/AJZS055.

- Decraemer W. 1984. Desmoscolecinae from the northern part of the Moçambique channel (Nematoda, Desmoscolecida)// Bulletin du Muséum national d'histoire naturelle. Vol.2. P.295–321.
- Decraemer W. 1985. Revision and phylogenetic systematics of the Desmoscolecida (Nematoda) // Hydrobiologia. Vol.120. P.259–283. https://doi.org/10.1007/ BF00045169.
- Decraemer W., Tchesunov A.V. 1996. Some desmoscolecids from the White Sea // Russian Journal of Nematology. Vol.4. P.15–130.
- Decraemer W., Rho H.S. 2013. Order Desmoscolecida // A.Schmidt-Rhaesa (ed.). Handbook of Zoology: Gastrotricha, Cycloneuralia and Gnathifera. Vol.2. Nematoda. Berlin, Germany: De Gruyter. P.351–372. https://doi. org/10.1515/9783110274257.
- Filipjev I.N. 1922. [Encore sur les nématodes libres de la mer Noire] // Trudy Stavropolsk. Selskokhoz. Inst. Vol.1. Zool. No.16. P.83–184 [in Russian and French].
- Freudenhammer I. 1975. Desmoscolecida aus der Iberischen Tiefsee, zugleich eine Revision dieser Nematoden-Ordnung//Meteor Forsch. Ergebn. Reihe. Bd.20. S.1–65.
- Giere O. 2009. Meiobenthology: The Microscopic Motile Fauna of Aquatic Sediments. Second Edition. Springer-Verlag. Berlin Heidelberg. 527p.
- Gerlach S.A., Riemann F. 1973. The bremerhaven checklist of aquatic nematodes. A catalogue of nematoda Adenophorea excluding the Dorylaimida // Veröff. Inst. Meeresforsch. Bremerh. Vol.4. P.1–736.
- Lee H.J., Lee H., Rho H.S. 2023. Six species of *Tricoma* (Nematoda, Desmoscolecida, Desmoscolecidae) from the East Sea, Korea, with a bibliographic catalog and geographic information // Korean Journal of Environmental Biology. Vol.41. No.4. P.570–607. https://doi. org/10.11626/KJEB.2023.41.4.570.
- Nemys eds. 2024. Nemys: World Database of Nematodes. Tricoma Cobb, 1894. Accessed through: World Register of Marine Species at: https://www.marinespecies.org/ aphia.php?p=taxdetails&id=2379 on 2024-07-10.
- Rao G.C. 1980. On the zoogeography of the interstitial meiofauna of the Andaman and Nicobar Islands, Indian Ocean // Records Zoological Survey of India. Vol.77. P.153–178.
- Sachithanandam V., Mageswaran T., Ragavan P., Mahapatra M., Sridhar R., Ramesh R., Mohan P.M. 2014. Mangrove regeneration in tsunami affected area of north and south Andaman using insitu and remote sensing techniques // Indian Journal of Geo Marine Sciences. Vol.43. P.1055–1061.
- Timm R.W. 1970. A revision of the nematoda order Desmoscolecida Filipjev, 1929 // University of California publications in Zoology. Vol.93. P.1–115.

Responsible editor E.N. Temereva