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SCIENTIFIC REPORT ON THE BELGIAN EXPEDITION
TO THE GREAT BARRIER REEF IN 1967.
NEMATODES III: FURTHER STUDY OF *DESMOSCOLEX*-
SPECIES (NEMATODA-DESMOSCOLECIDA)
FROM YONGE REEF, LIZARD ISLAND AND NYMPHE ISLAND.

by

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Résumé

Rapport scientifique sur l'expédition belge à La Grande Barrière d'Australie en 1967. Nématodes III: Nouvelles études d'espèces de *Desmoscolex* (Nematoda-Desmoscolecida) de Yonge Reef, Lizard Island et Nymphe Island.

Deux nouvelles espèces de *Desmoscolex*, respectivement de Lizard Island et de Yonge Reef, sont décrites: *D. asetosus* n.sp., caractérisé par l'absence de soies céphaliques et la présence d'amphides allongées; *D. paraleptus* n.sp., proche de *D. leptus* Steiner 1916 mais différent de celui-ci par la distribution typique des soies pour les espèces à 17 anneaux et par une filière allongée. Un spécimen différent, mais voisin de *D. asetosus* n.sp., a été trouvé; *D. leptus* Steiner 1916 et *D. nudus* Chitwood 1951 sont redécrites.

Introduction

The present paper, which is the third in a series, deals with two new species: *D. asetosus* n.sp., *D. paraleptus* n.sp. and two known species: *D. leptus* Steiner 1916 and *D. nudus* Chitwood, 1951 from Lizard Island, Yonge Reef and Nymphe Island (The Great Barrier Reef, Australia).

Material and methods

The species described were found in the following samples:

1. Yonge Reef: sandy bottom from channel, 1 km behind Yonge Reef at a depth of 35 m, collected on 28-9-67 (fixed with formalin 5. p. 100 and TAF: formaldehyde 40 p. 100 = 7 ml, triethanolamine = 2 ml, dist. water = 91 ml).

D. leptus: 2 females; *D. paraleptus* n. sp.: 1 female.

2. Lizard Island: 800 m westward from the island at — 21.5 m, sandy bottom covered with a layer of silt and rich in Foraminifera, collected on 12-9-67 (fixed with FA4:1 = formaldehyde 40 p. 100 = 10 ml, glacial acetic acid = 1 ml, dist. water = 89 ml).

D. asetosus n. sp.: 4 males + 1 female; *D. nudus*: 1 female.

Lizard Island: sand between *Halimeda*, at — 20 m, collected on 14-9-67 (fixed in toto with formalin 5 p. 100).

D. asetosus n. sp.: 1 female.

3. Nymphe Island: among fine coral debris around *Halimeda* (fixed with formalin 5 p. 100).

Desmoscolex spec. apud *D. asetosus* n. sp.: 1 female.

Altogether the species were represented by 11 specimens.

All the samples were collected by Prof. Dr. A. Coomans.

All the type material is deposited in the collection of the Instituut voor Dierkunde, Rijksuniversiteit Gent, Belgium.

Explanation of abbreviations used:

- L = length of the body
 hd = maximum head diameter (width × length)
 cs = length of the cephalic setae
 sd₁ = length of the subdorsal setae on the first main ring
 sl₂ = length of the sublateral setae on the 2nd main ring
 sv₄ = length of the subventral setae on the 4th main ring
 t = tail length
 tmr = length of the terminal main ring + naked end-part with spinneret
 tmrw = width of the terminal main ring devoided from foreign material
 spic = length of the spicules, measured along the submedian line
 gub = length of the gubernaculum
 oes = length of the oesophagus
 bd vulva = body diameter at the level of the vulva
 mbd = maximum body diameter
 (mbd) = maximum body diameter devoided from foreign material

All measurements are in microns.

DESCRIPTION OF THE SPECIES FOUND

DESMOSCOLEX ASETOSUS N. SP. (Fig. 1)

Measurements

Holotype ♂: L=250, hd=12×10, sd₁=16, sd₃=14, sd₅=14, sd₁₁=12, sd₁₃=15, sd₁₅=16, sd₁₇=28, sl₂=11, sv₄=13, sv₆=13, sv₈=14, sv₁₀=12, sv₁₂=12, sv₁₄=11, sv₁₅=11, t=52, tmr=34, tmrw=10, spic=25, gub=12, oes=28, mbd=37, (mbd)=29.

Allotype ♀: L=275, hd=14×14, sd₁=19, sd₅=12, sd₁₁=12, sd₁₃=16, sd₁₅=18, sd₁₇=28, sv₂=15, sv₄=15, sv₁₂=14, sv₁₄=13, sv₁₅=16, t=60, tmr=40, oes=30, bd vulva=54.

Paratype ♂♂ (n=3): L=225-250, hd=10-12×8-11, sd₁=18-20, sd₃=14, sd₅=13-14, sd₁₁=12-15, sd₁₃=16-17, sd₁₅=15-19, sd₁₇=29-33, sl₂=11-15, sv₄=11-13, sv₁₂=12-15, sv₁₄=10-13, sv₁₅=11-12, t=45-55, tmr=30-33, tmrw=10-12, spic=31-33, gub=12-13, oes=26-35, mbd=38-50, (mbd)=28-37.

Paratype ♀ (n=1): L=320, hd=14×11, sd₁=18, sd₃=13, sd₅=12, sd₁₁=12, sd₁₃=15, sd₁₅=18, sd₁₇=31, sl₂=13, sv₄=14, sv₁₂=14, sv₁₄=14, sv₁₅=14, t=60, tmr=40, oes=38, mbd=50, (mbd)=37.

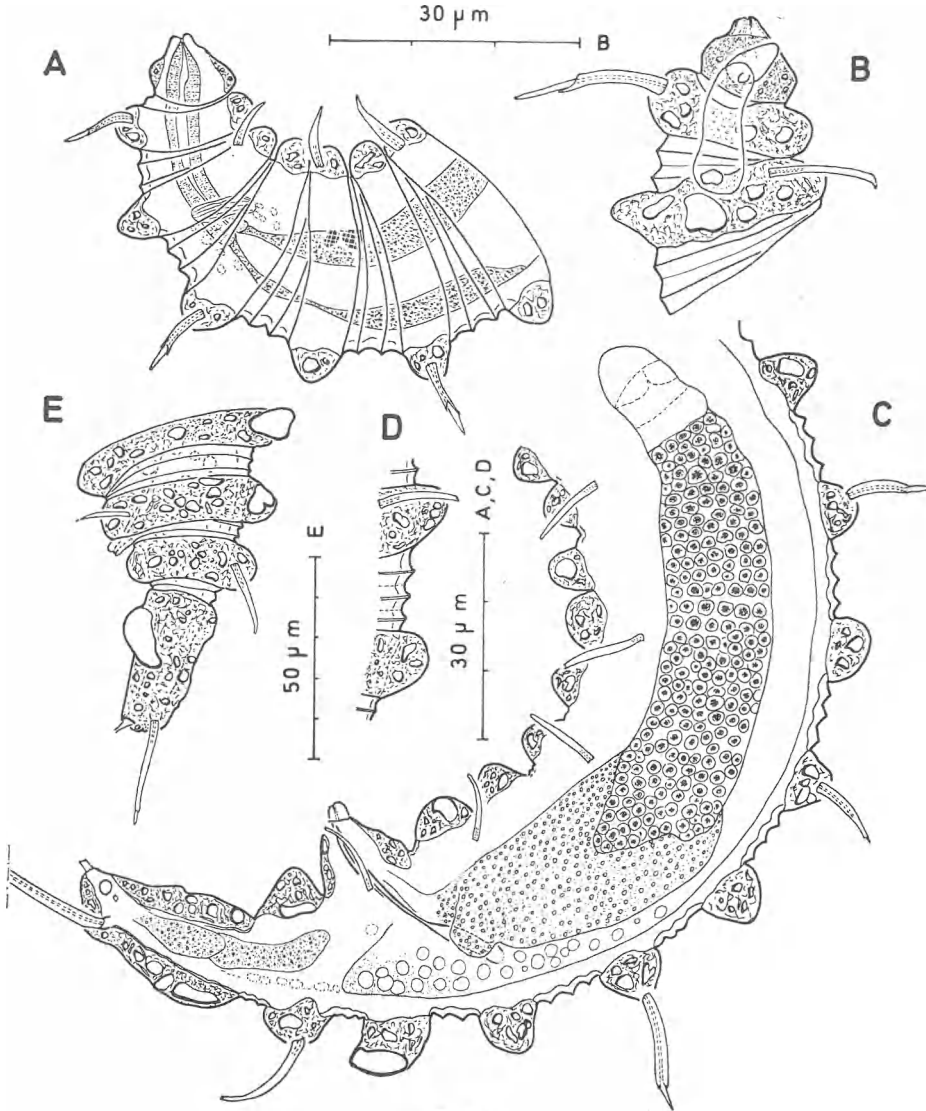


FIG. 1

Desmoscolex asetosus n.sp.

A: anterior region and oesophago-intestinal junction (holotype male); B: surface view of head (male); C: male reproductive system and tail region; D: surface view of part of cuticle (female); E: surface view of tail region (female).

Male:

Body with 17 concretion rings, tapering towards the extremities. The main rings consist of many coarse and large concretion particles lying on 2-3 somewhat deformed cuticular annules. In the anterior part of the body and in the tail, these main rings are separated from each other by narrower intermediate zones, composed of two secondary rings. Each secondary ring with sharp edge in the middle of the ring. On the rest of the body, the interzone can be maximally as broad as the main rings and is divided into three narrow annules.

The somatic setae are arranged according to the typical pattern of 17-ring species (Timm, 1970):

$$\text{subdorsal: } \frac{1, 3, 5, 7, 9, 11, 13, 16, 17=9}{1, 3, 5, 7, 9, 11, 13, 16, 17=9}$$

$$\text{subventral: } \frac{2, 4, 6, 8, 10, 12, 14, 15=8}{2, 4, 6, 8, 10, 12, 14, 15=8} \text{ with pair 2 and 15 slightly some-}$$

times, shifted laterally. The subdorsal setae consist of a broader basal shaft with a fine slightly bent border at the junction with the narrower lance-shaped tip. This lance-shaped tip varies in length, being minute in the setae on the 11th main ring and absent in the setae on the 16th main ring. The latter setae end on an open tip. The subdorsal setae on the first main ring are longer than the following subdorsal setae which are nearly equal in length until those of the 11th main ring. The subdorsal setae on the 13th and 16th main ring are somewhat elongated; the terminal setae are distinctly elongated. The subdorsal setae on the 11th, 16th and 17th concretion rings are slightly laterally shifted. The shorter subventral setae have a similar general structure as the subdorsal setae, i.e. a broader basal shaft but ending on a short minute distal part with acute tip. The setae on the 12th main ring are sometimes slightly longer than the other subventral setae which have all about the same length.

The head is asymmetrical, bending to the dorsal side. It has a broad, rounded posterior part covered by concretion particles and it tapers anteriorly forming a small, naked anteriorly truncated rostral part with four sclerotized bars.

Cephalic setae are absent.

The amphids are bipartite, consisting of (1) a shorter anteriorly and ventrally sloping part, tapering towards the ventral side and lying on naked cuticle and (2) an elongated posteriorly widened sac, lying on concretion particles and reaching up to the second main ring. The two parts meet at the level of the pyriform amphidial pore situated at the maximum headwidth.

The stoma is very small. The oesophagus extends to the very anterior end of the body. The triradial lumen is wide and distinct. The oesophago-intestinal junction is difficult to locate exactly; it lies opposite the beginning or the middle of the third concretion ring. Intestine of general type (Decraemer, 1974), overlaps the rectum and extends through the 16th main ring. A short thick-walled cloacal tube is situated in the middle of the 15th main ring.

Lightly coloured ocelli are situated mostly at the level of the 4th concretion ring but can occur up till the sixth ring.

The nerve ring, slightly sloping ventro-caudally, encircles the posterior part of the oesophagus in the end of the second main ring.

Male reproductive system with single outstretched testis, consisting of a short germinal zone and a long, broad differentiation zone, followed by the vas deferens.

Spicules nearly straight, with very slender distal part widening proximally and provided with a capitulum. They are 25 μm (31-33 μm) long. They are accompanied by a plate like accessory piece with 11 μm (12-13 μm) length, lying parallel to the spicules.

The tail comprises two main rings. The terminal ring is three to four times as long as the former ring and tapers slightly caudally. The subdorsal setae on the 17th main ring insert far backward on the tail. Posterior to the insertion place, the ring is bent ventrally and ends in a short naked spinneret. Caudal glands obscure. Small rounded phasmata are situated in the short ventrally bent end-part.

Female:

Similar to male in most details.

Reproductive system with short, outstretched ovaries. The vulva is situated in the interzone between the 10th and 11th main ring. A highly nucleated area is found opposite to the vulva.

A short anal tube is found in the end of the 15th main ring.

Type locality and habitat:

800 m westward from Lizard Island at —21.5 m, sandy bottom covered with a layer of silt and rich in Foraminifera, collected on 12-9-67.

Other locality and habitat:

Lizard Island, in sand around *Halimeda* at —20 m, collected on 14-9-67.

Type specimens:

Holotype ♂: Lizard Island, slide nr 141.

Allotype ♀: Lizard Island, slide nr 142.

Paratypes: 3 ♂♂ from Lizard Island.

1 ♀ from Lizard Island.

Differential diagnosis:

This species resembles *Desmoscolex rostratus* Timm 1970 in the absence of cephalic setae. It differs, however, from that species by the presence of 17 main rings instead of 31, by the elongated amphids, by the different shape of the head, lacking the prolonged rostrum, by the shorter oesophagus and a different setal pattern.

*DESMOSCOLEX SPEC. apud D. ASETOSUS N. SP. (Fig. 2)***Measurements**

Female (n=1): L=280, hd=11×12, sd₁=15, sd₃=10, sd₅=10, sd₆=10, sd₁₁=11, sd₁₃=11, sd₁₆=15, sd₁₇=17, sl₂=10, sv₄=10, sv₁₂=11, sv₁₆=12, t=46, tmr=27, bd vulva=37.

Female:

Body with 17 concretion rings, tapering towards the extremities. The main rings consist of a layer of fine granular substance and few but coarse concretion particles lying on 2-3 somewhat deformed cuticular annules. The concretion rings are separated from each other by the intermediate zones, maximally as broad as the corresponding prominent rings and composed of two secondary rings in the anterior region and in the tail, and of three rings in the rest of the body. Each main ring bears a transverse row of short pegs in the middle of the ring, visible after removal of the concretion particles.

The somatic setae have the following pattern:

subdorsal: $\frac{1, 3, 5, 7, 9, 11, 13, 16, 17=9}{1, 3, 5, 7, 9, 11, 13, 16, 17=9}$
 subventral: $\frac{2, 4, 6, 8, 10, 12, —, 15=7}{2, 4, 6, 8, 10, 12, —, 15=7}$ with pair 2 in sublateral position.

This arrangement differs from the typical pattern of 17-ring species (Timm, 1970) by the absence of a pair of subventral setae on the 14th main ring. The subdorsal setae are rather short, ending in a large spatulate tip. The subdorsal setae on the first main ring and on the tail are elongated; the other shorter subdorsal setae are about equal in length with the slenderer subventral setae.

The head is asymmetrical, bending to the dorsal side. It is wide prominently convex posteriorly and tapering strongly anteriorly towards a short snout or rostrum. Head cuticle relatively thin, covered by a layer of fine concretion particles, except in the rostral part.

Cephalic setae are absent.

The amphids are bipartite and consist posteriorly of a large sac-like part extending till the beginning of the first main ring; anteriorly, a rather obscure narrow prolongation is found. The small rounded amphidial pore lies at the level of the maximum headwidth.

The stoma was not observed, hence it must be extremely small. The oesophageal tissue extends nearly to the rostrum. The oesophagus and intestine are of the general type. The intestine proper begins at the fifth main ring and overhangs the rectum dorsally. The latter is prolonged as a short, pale thickwalled tube, which protudes from the body at the posterior end of the 15th main ring.

Small yellow coloured ocelli are situated at the level of the fourth main ring.

The nerve ring is obscure.

The reproductive system is didelphic-amphidelphic with outstretched ovaries. The obscure vulva is situated in the interzone between the 10th and 11th main ring. The posterior branch reaches till the anal tube; the anterior one contains a mature oocyte.

The tail possesses two main rings. The terminal ring is about three times as long as the former one and tapers posteriorly. The subdorsal setae insert nearly at the end of the 17th concretion ring. Posterior to this insertion place, the ring is rounded and bent to the ventral side having a very short spinneret. Phasmata are absent.

Male:

Not found.

Locality and habitat:

Nymphe Island, in shallow gully among fine coral debris around *Halimeda*, collected on 24-9-1967. Female specimen: Nymphe Island, slide nr 150.

Discussion:

This specimen is very close to *D. rostratus* Timm 1970 and *D. aetosus* n.sp. It differs from the former by the presence of 17 main rings instead of 31, by the elongated amphids, by the different shape of the head (lacking the prolonged rostrum), by the shorter oesophagus and by a different setal pattern.

It differs from the latter by the presence of a narrow elongated rostrum, by the absence of subventral setae on the 14th main ring, by the not elongated subdorsal setae on the terminal concretion ring and by the shorter amphidial sacs.

Because of the poor internal condition of the single specimen found, it is not described as a new species.

DESMOSCOLEX LEPTUS STEINER 1916 (Fig. 3)

Measurements

Females (n=2): L=260-265, hd=13-15×10-11, cs=10-12, sd₁=17, sd₃=14-17, sd₃₃=16-17, sd₁₀=16-17, sd₁₇=20-22, sl₂=10-14, sv₄=14, sv₁₀=14-15, sv₁₆=13-14, t=42-44, tmr₂₂₋₂₄, oes=26, mbd=30, (mbd)=24.

Female:

Body spindle-shaped, tapering towards the extremities. Cuticle with 17 broad transparent concretion rings separated from each other by narro-

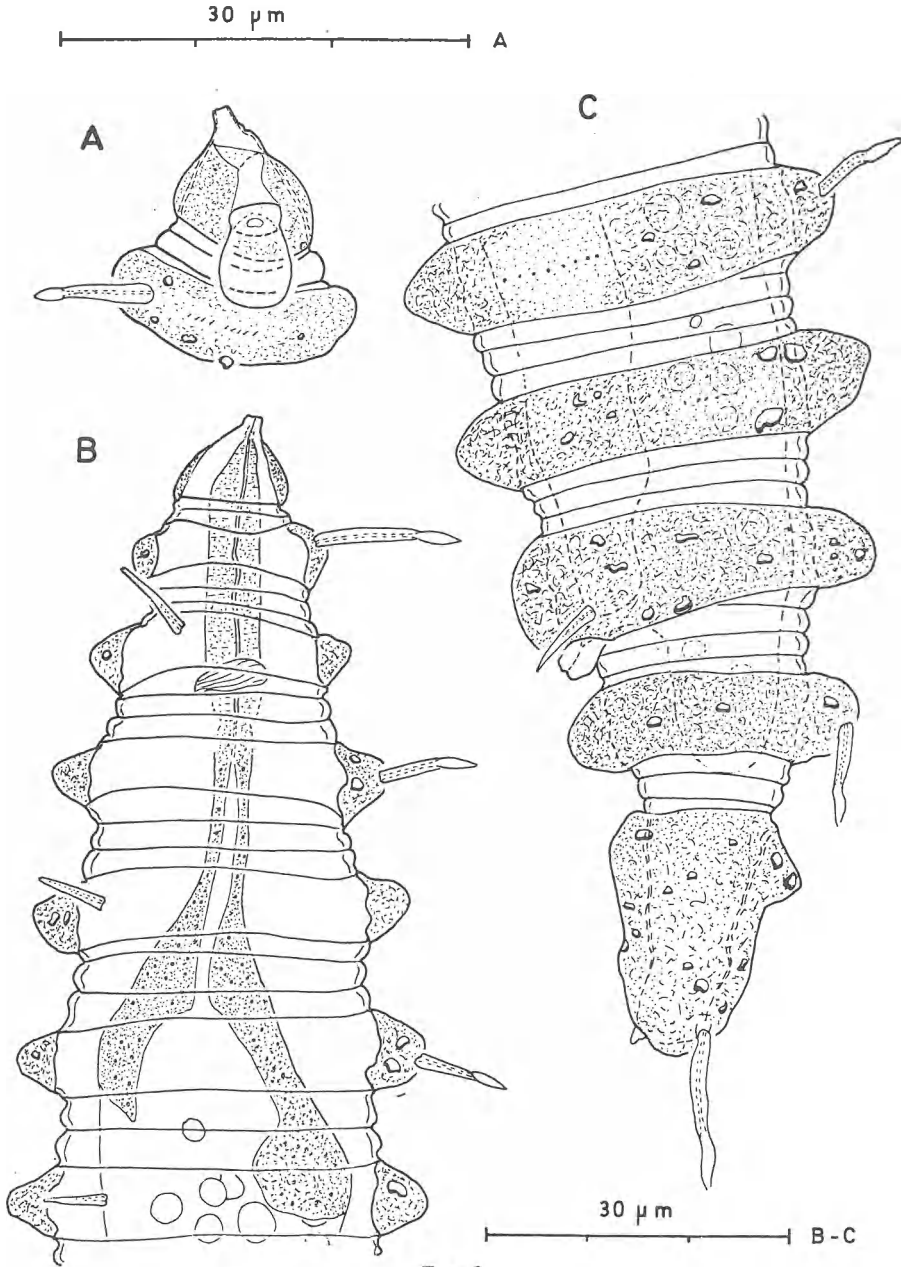


FIG. 2

Desmoscolex spec. apud D. asetosus n.sp.

A: surface view of head of female; B: anterior region and oesophago-intestinal junction of female; C: surface view of tail region of female.

wer interzones, composed of one or two secondary rings. The main rings become larger caudally and consist of a layer of fine granular material and few coarse concretion particles lying on two or three somewhat deformed cuticular annules.

The somatic setae have the following pattern:

subdorsal: $\frac{1, 3, 5, 7, 9, 11, 13, 16, 17=9}{1, 3, 5, 7, 9, 11, 13, 16, 17=9}$
 subventral: $\frac{2, 4, 6, 8, 10, 12, -, 15=7}{2, 4, 6, 8, 10, 12, -, 15=7}$ with pair 2 in sublateral position.

This arrangement differs from the typical pattern of 17-ring species (Timm, 1970) by the absence of a pair of subventral setae on the 14th main ring. The subdorsal setae end on an angular lance-shaped tip except for those inserted on the 16th main ring without such a tip and the terminal setae where the lance tip is not bent. The last pair of subdorsal setae are slightly elongated. The subventral setae are about as long as the shortest subdorsal ones.

Apart from these ambulatory setae, the concretion rings bear at their anterior and posterior border a transverse row of short threadlike spines. The latter have a length of $2 \mu\text{m}$ on the first ring, then become longer posteriorly ($4 \mu\text{m}$ on the 7th, $4.5 \mu\text{m}$ on the 13th, $6.5 \mu\text{m}$ on the 14th and shorter again further backward: $5 \mu\text{m}$ on the 15th, $3 \mu\text{m}$ on the 16th and $2 \mu\text{m}$ on the 17th main ring). The terminal concretion ring bears up to 10 rows of such spines. In a young female, the posterior border of the 14th ring bears about 30 spines. Similar spines were found in the interzones. They are mainly situated on the secondary ring anterior to the concretion rings 1 till 6, which are mostly narrower than the following rings. Posteriorly, the spines of the interzones become rare; they are never found on the tail.

The head is conoid; a little wider than long, with maximum width at $3/4$ th of its length; cuticle relatively thin, covered by a layer of fine concretion particles.

The four submedian cephalic setae are situated at the extreme anterior end. They are slender, with large base and acute tip; the length is about the same as the maximum head-width.

The large amphids are oval. They cover the main part of the head but do not extend to the anterior and posterior head extremities. The amphidial pore is large, circular and situated at the level of the maximum headwidth.

The stoma is a short funnel. The oesophagus and intestine agree with the general type. The intestine overlaps the rectum which is prolonged as a pale thick-walled tube that protudes from the body at the posterior end of the 15th main ring.

The nerve ring, sloping ventro-caudally, encircles the oesophagus opposite the middle of the second main ring, just anterior to the oesophago-intestinal junction.

Ocelli are absent.

The small vulva is situated between the end of the 10th main ring and the following secondary ring. The ovaries are nearly equally developed. Each of them contains several immature and one fully developed oocytes. Adjacent to the ripe oocyte, in both genital tracts, lies a narrow sac-like extension connected with a highly nucleated structure opposite to the vulva.

The tail has two main rings. The terminal ring, twice as large as the former one, is cylindrical up to the insertion of the subdorsal setae; more posteriorly it becomes conoid, ending on a naked spinneret. The cone-shaped part of the ring bears at each side a small circular pore or phasma, surrounded by concretion particles.

Male:

Not found.

Locality and habitat:

Sandy bottom from channel, 1 km behind Yonge Reef at a depth of 35 m, collected on 28-9-1967.

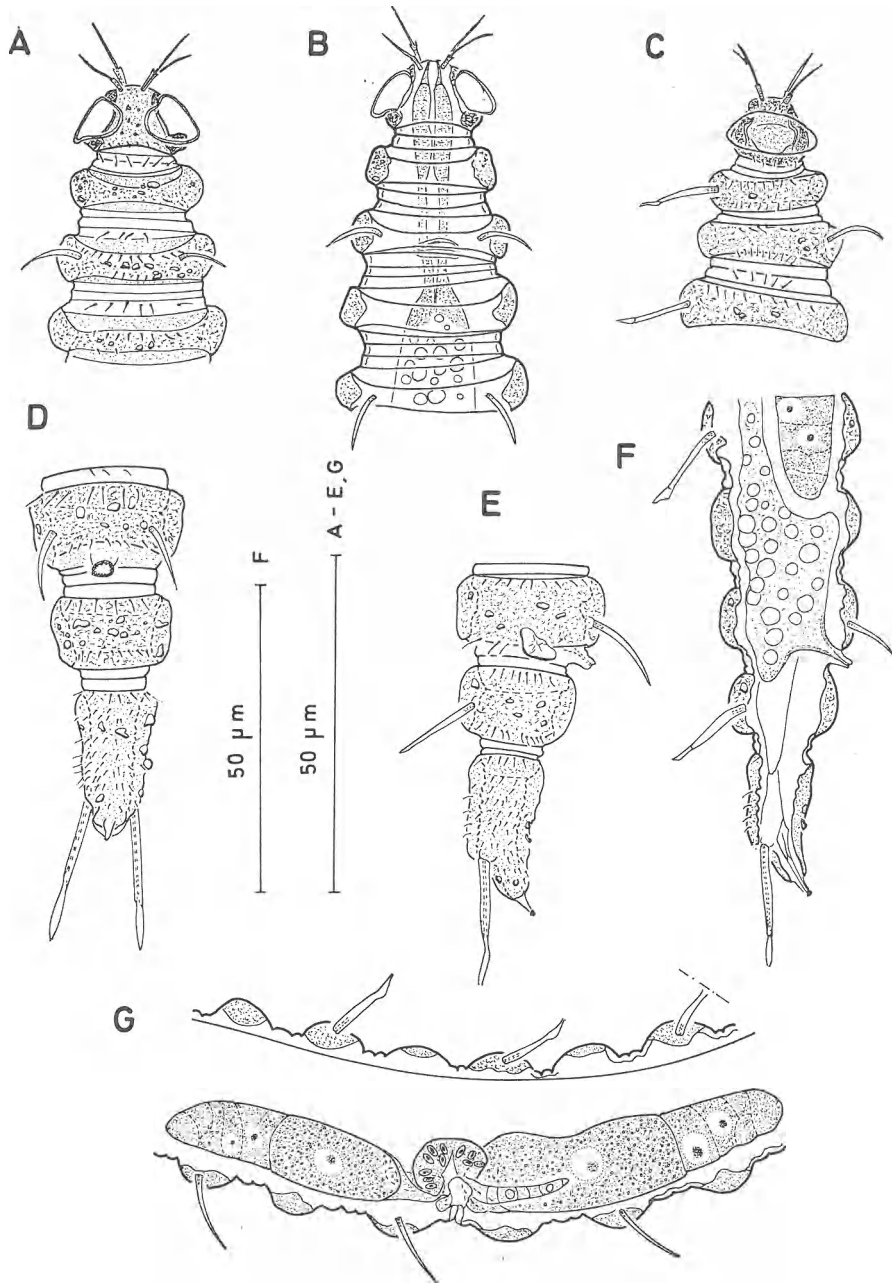


FIG. 3

Desmoscolex leptus Steiner, 1916.

A: anterior region: surface view of ventral side of female; B; anterior region and oesophago-intestinal junction: view of ventral side of female; C: surface view of head of female 2; D: tail region of female: ventral view; E: surface view of tail region of female 2; F: tail region of female 2; G: female 2: reproductive system.

Discussion

These specimens are very close to those from the Gold Coast described as *Desmoscolex leptus* Steiner 1916 and correspond with the original description for the main characteristics, such as tail form and position of the cephalic setae at the extreme anterior of the head.

Some differences were noted, e.g. the position of the oesophago-intestinal junction. According to Steiner, the oesophagus extends till the fourth main ring; this corresponds to the beginning of the intestine proper in our specimens. Probably, Steiner, as many other authors, has considered the ventricular part of the intestine as belonging to the oesophagus. This difference thus seems to be due to interpretation rather than to structure. A second difference concerns the terminal, elongated setae; instead of the last two pairs of subdorsal setae, only the setae on the terminal ring are slightly elongated in the individuals we found. Finally, there is a difference in the structure of the main rings, only surrounded by a thin membrane devoid of foreign material in Steiner's specimen, but with a layer of fine granular material and few coarse concretion particles in the Australian specimens. The interzones are smaller than the corresponding main rings instead of as large as in Steiner's specimen.

There are also a few characteristics not mentioned by Steiner i.e. the presence of threadlike spines, difficult to observe, on both ends of the main rings and in the interzones. Steiner did not report on the position of the vulva, the nerve ring, the presence of secondary rings in the interzones, the prominent granulation of the intestine and its dorsal overlapping of the rectum.

By taking all this into account as well as the smaller size of the African specimen and in view of the absence of a figure of the head, we cannot be sure of dealing with the same species. Therefore the Australian specimens are only tentatively identified as *D. leptus* Steiner 1916, until new information based on topotypes becomes available.

DESMOSCOLEX NUDUS CHITWOOD 1951 (Fig. 4)

Measurements

Female (n=1): L=280, hd=19×12, cs=21, sd₁=17, sd₂=16, sd₃=16, sd₄=15, sd₅=23, sd₆=31, sl₂=12, sv₄=12, sv₁₄=12, t=60, tmr=39, tmrw=16, bd vulva=35, oes=27, mbd=41.

Female:

Body rather stout, ventrally curved; cuticle with 17 transparent main rings, separated from each other by interzones with two secondary rings. Posteriorly, the main rings become larger while the interzones are narrower. The cuticle continues in the main rings as two or three somewhat deformed annules, covered with a band of fine granular material and small concretion

particles, giving the main ring a regular outline. Just beneath the cuticle at the level of the main rings, many small granules are found (from epidermal glands?).

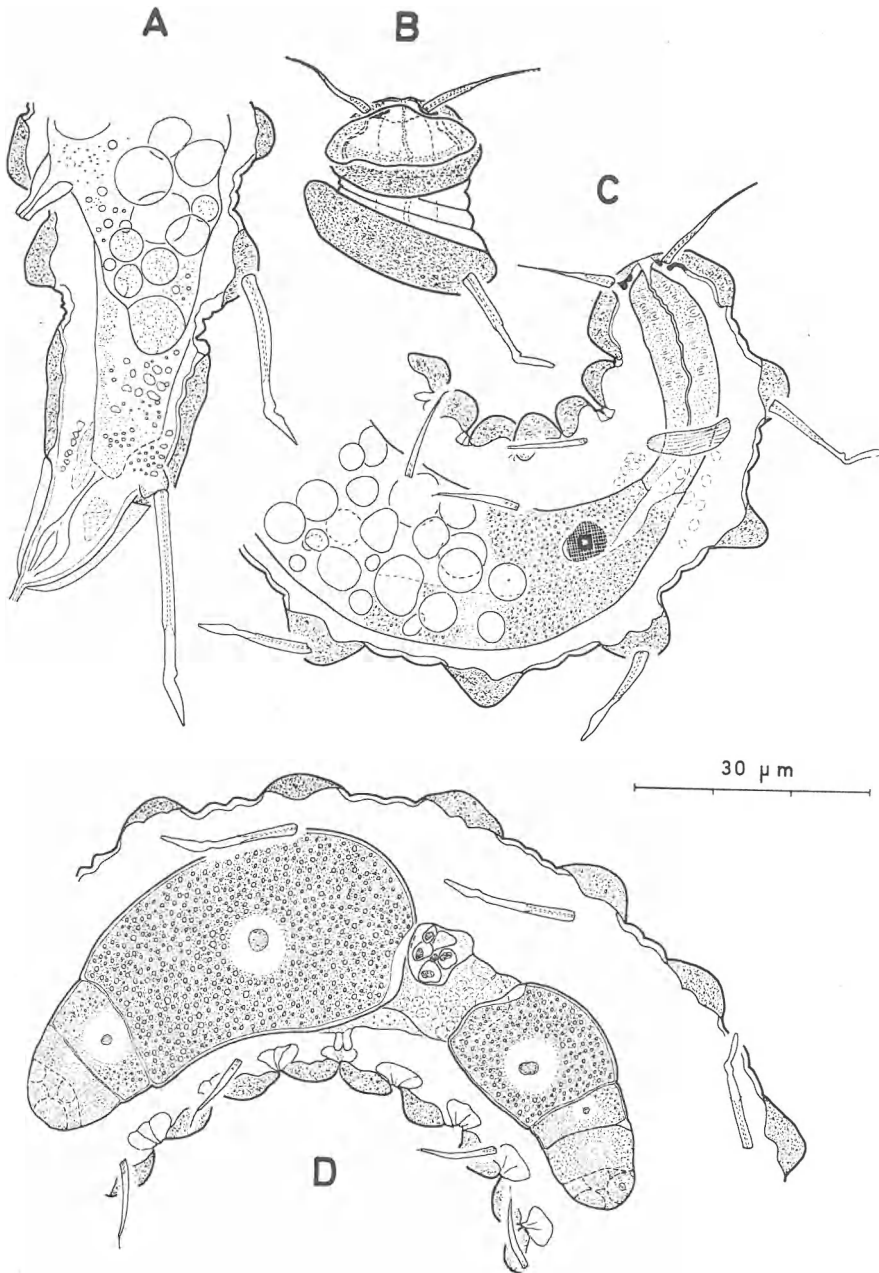


FIG. 4

Desmoscolex nudus Chitwood, 1951.

A: tail region of female; B: surface view of head of female; C: anterior region with oesophago-intestinal junction of female; D: female reproductive system.

The somatic setae are arranged as follows:

subdorsal:	1, 3, 5, 7, 9, 11, 13, 16, 17 = 9	
	1, 3, 5, 7, 9, 11, 13, 16, 17 = 9	
subventral:	2, 4, 6, 8, —, 12, 14, — = 6	with setae 2 in sublateral position
	2, 3-4, 5, 8, —, 12, 14, — = 6	

on the right side. On the left side of the specimen found, the second subventral seta is located on the secondary ring lying just anterior to the fourth main ring and is surrounded at its base by a small part of the cuticle covered by fine granular concretion. The setal pattern differs from the typical pattern of 17-ring species (Timm, 1970) by the absence of subventral setae on the 10th and 15th main ring. The subdorsal setae are longer than the slenderer subventral ones and end on an angular lance-shaped tip. The caudal subdorsal setae are elongated. The subventral setae are equal in length and consist of a larger basal shaft and a short fine distal end.

The oval head, distinctly broader than long, tapers anteriorly and ends on a slightly flattened frontal border. The cuticle is completely covered by fine granular material; it is sclerotized at the insertion of the cephalic setae.

The four cephalic setae are situated at the extreme anterior end. They are slender, with larger base and fine distal part tapering to an acute tip; the length is about the same as the maximum headwidth.

The large amphids are broadly oval; they cover the main part of the head and extend anteriorly till the base of the cephalic setae. They are mainly lying on naked cuticle. An amphidial pore was not observed.

The mouth opening leads into a minute stoma. The short oesophagus extends nearly till the extreme anterior end and posteriorly until the middle of the second main ring. Its lumen is distinct till the ventro-caudally sloping nerve ring, encircling the oesophagus at the level of the interzone between the first and second main ring. The intestine is of general type with its globular part beginning at the end of the third concretion ring. It overlaps the rectum and continues till the beginning of the terminal main ring. The pale anal tube protrudes from the body at the posterior border of the 15th concretion ring.

The dark yellow ocelli are situated opposite the third main ring; they are oval in shape and $7 \times 3.5 \mu\text{m}$ in diameter.

Reproductive system didelphic-amphidelphic. Each branch contains some immature oocytes; the posterior genital tract with a large mature oocyte, slightly shifted beyond the vulva. At the right side of the uterus, a sac-like structure ($7 \mu\text{m}$ diameter) containing some large globules lies close to the mature oocyte. The vulva is obscure, situated in the interzone between the 10th and 11th main ring.

The tail bears two main rings. The terminal, anteriorly annulated, concretion ring is 1.6 times as long as the former one. The tail cone is subdivided in an anterior concretion ring ($21 \mu\text{m}$ long), including the insertion of the subdorsal setae, covered with fine particles and a terminal portion ($15 \mu\text{m}$ long), surrounded by a thin layer of a very transparent substance (secretion?). The tail ends on a spinneret of $3 \mu\text{m}$ long. Phasmata not observed.

Male:

Not found.

Locality and habitat:

Lizard Island, 800 m westward from the Island, at -21.5 m, sandy bottom covered by a layer of silt and rich in Foraminifera, collected on 12-9-1967.

Discussion

The specimen found corresponds with the original description and drawing of Chitwood (1951). It differs, however, by the presence of subventral setae on the 4th main ring, by the broad oval-shaped amphids instead of nearly circular ones, by the intestine which overlaps the rectum and by the subdivided tail cone due to a different covering of the cuticle.

DESMOSCOLEX PARALEPTUS N. SP. (Fig. 5)

Measurements

Holotype ♀: L=345, hd=16×15, cs=11, sd₁=20, sd₂=17, sd₃=18, sd₁₁=19, sd₁₂=21, sd₁₃=21, sd₁₇=26, sl₂=17, sv₄=20, sv₁₀=20, sv₁₆=20, t=72, tmr=41, tmrw=7.5, oes=39, bd vulva=32.

Female:

Body spindle-shaped, tapering towards the extremities. Cuticle with 17 distinct, raised rings composed of lightly coloured fine granular and coarse concretion particles. These main rings are separated from each other by interzones with one or two secondary rings. The interzones are as broad as the adjacent concretion rings or a little narrower. The main rings bear in the middle a transverse row of short pegs, possibly connected with adhesive glands.

The arrangement of the somatic setae follows the typical pattern of 17-ring species (Timm, 1970):

subdorsal: $\frac{1, 3, 5, 7, 9, 11, 13, 16, 17=9}{1, 3, 5, 7, 9, 11, 13, 16, 17=9}$

subventral: $\frac{2, 4, 6, 8, 10, 12, 14, 15=8}{2, 4, 6, 8, 10, 12, 14, 15=8}$ pair 2 in sublateral position. The

subventral setae are about as long as the subdorsal ones, ending on an acute open tip. The spatulate tip of the subdorsal setae joins obliquely with the remainder and there is no narrow neck-part. The subdorsal setae on the third main ring are the shortest, those on the first main ring are longer than the former, these posteriorly situated increase gradually in length. The setae on the terminal concretion ring are distinctly longer than the others.

The head is rounded, tapering anteriorly towards a truncate end. It is nearly as broad as long. Its cuticle is completely covered by fine and rather coarse concretion particles.

The four submedian cephalic setae are situated at the extreme anterior end. They are very slender, 11 μm long, shorter than the maximum headwidth.

The large swollen amphids are dome-shaped, mainly lying on naked cuticle. They cover nearly completely the head. The large amphidial pore is rather obscure, not surrounded by thickened cuticle.

The stoma is a short funnel. The oesophageal tissue extends almost to the very anterior end of the body. The oesophagus and intestine are typical. It is difficult to situate the oesophago-intestinal junction exactly because of the presence of many nuclei in this region. The very short and narrow anal tube is situated at the posterior end of the 15th main ring. The intestine overlaps the rectum and continues in the 16th main ring.

The nerve ring, sloping ventro-caudally, encircles the oesophagus in the anterior part of the second main ring, just anterior to the oesophago-intestinal junction. It is surrounded by many nuclei.

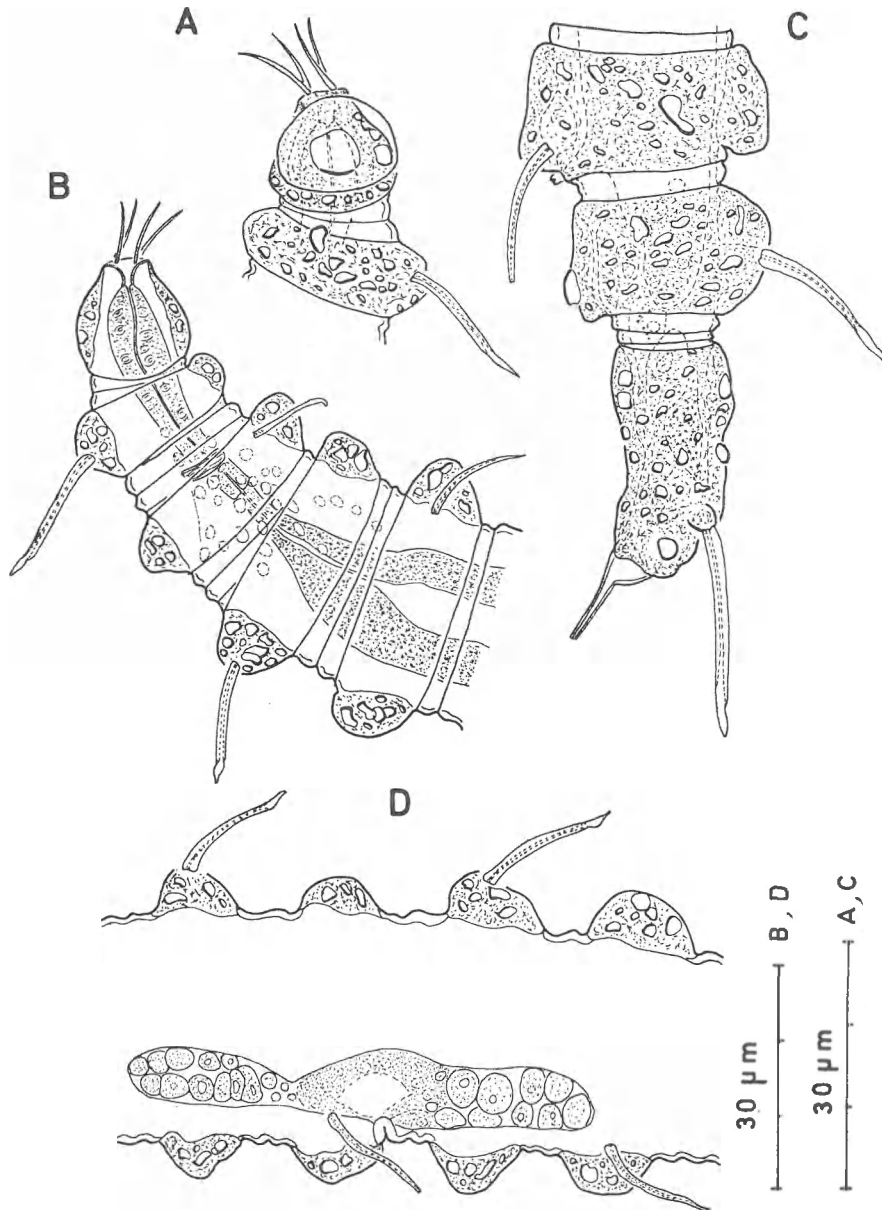


FIG. 5

Desmoscolex paraleptus n.sp.

A: surface view of head of female (holotype); B: anterior region with oesophago-intestinal junction female (holotype); C: surface view of tail region of female (holotype); D: female reproductive system (holotype).

Ocelli are absent.

The reproductive system is didelphic-amphidelphic. The vulva is situated between the end of the 10th concretion ring and the following secondary ring of the interzone. Both ovaries contain several immature oocytes. No sperm seen in genital tract.

The tail comprises two prominent rings. The terminal ring with slight annulation anteriorly is twice as long as the former one and ends in a cone-shaped, ventrally curved portion. Striking is the presence of a naked elongated spinneret (9 μ m long). Caudal glands are obscure; circular phasmata are located just opposite the insertion of the terminal subdorsal setae.

Male:

Not found.

Type locality and habitat:

Sandy bottom from channel, 1 km behind Yonge Reef at —35 m, collected on 28-9-1967.

Holotype ♀: Yonge Reef, slide nr 147.

Differential diagnosis:

This new species comes close to *Desmoscolex leptus* Steiner 1916, also characterized by the 17 concretion rings, the presence of four cephalic setae at the extreme anterior and by the same relation in length of the subdorsal somatic setae.

It differs, however, by its body-length (twice that of *D. leptus*), the presence of subventral setae on the 14th main ring (absent in *D. leptus*) and the elongated tubular spinneret.

CONCLUSION

The species can be separated into two groups:

1. *D. asetosus* n. sp. and *Desmoscolex* spec. apud *D. asetosus* both characterized by the absence of cephalic setae;

2. *D. leptus*, *D. nudus* and *D. paraleptus* n. sp. are distinguished from the other species by the insertion of the cephalic setae at the extreme anterior head end.

From all the species known today, a few of them can be placed in one of these two groups. Apart from the two species mentioned above, only one other species i.e. *D. rostratus* Timm 1970 is characterized by the absence of cephalic setae.

A larger number of species have the cephalic setae inserted at the extreme anterior border: *D. aquaedulcis* Stammer 1935, *D. bathybius* Timm 1970, *D. dussarti* Juget 1969, *D. frontalis* Gerlach 1952, *D. gladisetosus* Timm 1970, *D. petalodes* Lorenzen 1972, *D. remifer* Timm 1970, *D. velifer* Timm 1970, *D. vittatus* Lorenzen 1969.

Acknowledgements

I am very grateful to Prof. Dr. A. Coomans for his help and for critical reading of the manuscript. I wish to thank Prof. Dr. L. De Coninck for his interest.

Summary

Two new species of *Desmoscolex* respectively from Lizard Island and Yonge Reef are described: *D. asetosus* n.sp. characterized by the absence of cephalic setae and by the presence of elongated amphids; *D. paraleptus* n.sp. close to *D. leptus* Steiner, 1916 but different from it by the presence of the typical setal pattern of 17-ring species and by the elongated spinneret. One aberrant specimen near to *D. asetosus* n.sp. was found.

D. leptus Steiner, 1916 and *D. nudus* Chitwood, 1951 are redescribed.

Samenvatting

Twee nieuwe soorten behorende tot het genus *Desmoscolex*, respectievelijk van Lizard Island en Yonge Reef worden beschreven: *D. asetosus* n.sp. gekenmerkt door het ontbreken van kopsetae en door de aanwezigheid van verlengde amphiden; *D. paraleptus* n.sp. nauw verwant met *D. leptus* Steiner 1916 maar ervan te onderscheiden door het bezit van het typische borstelpatroon van soorten met 17 hoofdringen en door een verlengd spinneret. Een afwijkend specimen, gelijkend op *D. asetosus* n.sp. werd gevonden.

D. leptus Steiner 1916 en *D. nudus* Chitwood 1951 worden herbeschreven.

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