

SCIENTIFIC REPORT  
ON THE BELGIAN EXPEDITION  
TO THE GREAT BARRIER REEF IN 1967

NEMATODES IV : *DESMOSCOLEX*-SPECIES  
(NEMATODA-DESMOSCOLECIDA)  
FROM YONGE REEF AND NYMPHE ISLAND  
WITH DETAILED STUDY OF  
*DESMOSCOLEX LONGISETOSUS* TIMM, 1970

by

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ABSTRACT. — Two new species are described: *Desmoscolex deconincki* n.sp., close to *D. max* Timm, 1970, characterized by the head-shape with narrow truncated anterior part, by the elongated, bipartite amphids with slightly elevated sclerotized internal pore, by the long and slender cephalic setae and by the absence of subventral setae on the 10th main ring; *D. timmi* n.sp. resembling *D. longisetosus* Timm, 1970 in head- and amphid-shape and in the presence of an elevated strongly sclerotized structure in connection with the amphidial pore, but different from the latter species by the presence of sexual dimorphism in the setal pattern and by the shape of the tail without subdivided terminal concretion ring and without phasmata.

The description of *Desmoscolex longisetosus* Timm, 1970 is amended after examination of the type-specimens. The variations found in the individuals studied, is discussed.

INTRODUCTION

The present paper is the fourth of a series dealing with nematodes from the Great Barrier Reef. Two new species, *D. deconincki* n. sp. and *D. timmi* n. sp., are described and one known species, *D. longisetosus* Timm, 1970 is redescribed.

On account of the recovery, among samples from Yonge Reef, of a female specimen resembling *D. longisetosus*, but showing some differences, a revision of all the type-slides of *D. longisetosus* Timm, 1970 was made. Among the type specimens deposited in the Nematode Collection of the University of California at Davis (slidenumbers 1134-1142), two new species were found; one of them i.e. *D. deconincki* n. sp. was also present in samples from Yonge Reef and Nymphe Island. The latter species is deposited in the collection of the Instituut voor Dierkunde, Rijksuniversiteit Gent, Belgium.

#### MATERIAL AND METHODS

The species described were collected at Yonge Reef, Nymphe Island, Port Jackson (Australia) and Darwin Bay, Isla Genovesa (Galapagos). Specimens were fixed either with cold formalin 5% or hot FA4: 1 (= formaldehyde 40% : 10 ml, glacial acetic acid: 1 ml; dist. water: 89 ml).

— *Explanation of abbreviations used:*

L = length of the body

hd = maximum head diameter (width  $\times$  length)

cs = length of the cephalic setae

sd<sub>1</sub> = length of the subdorsal setae on the first main ring

sl<sub>2</sub> = length of the sublateral setae on the 2nd main ring

sv<sub>4</sub> = 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 devoid of foreign material

spic = length of the spicules, measured along the inner median 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 devoid of foreing material

All measurements are in micrometers.

#### DESCRIPTIONS

*Desmoscolex deconincki* n. sp. (Fig. 1)

##### Measurements

Holotype ♀ : L = 185, hd = 11  $\times$  10, cs = 30, sd<sub>1</sub> = 16, sd<sub>3</sub> = 15, sd<sub>5</sub> = 15, sd<sub>13</sub> = 16, sd<sub>16</sub> = 23, sd<sub>17</sub> = 25, sl<sub>2</sub> = 17, sl<sub>4</sub> = 18, sv<sub>12</sub> = 13, sl<sub>15</sub> = 9.5, t = 25, tmr = 14, tmrw = 6, oes = 20, bd vulva = 21, mbd = 27.

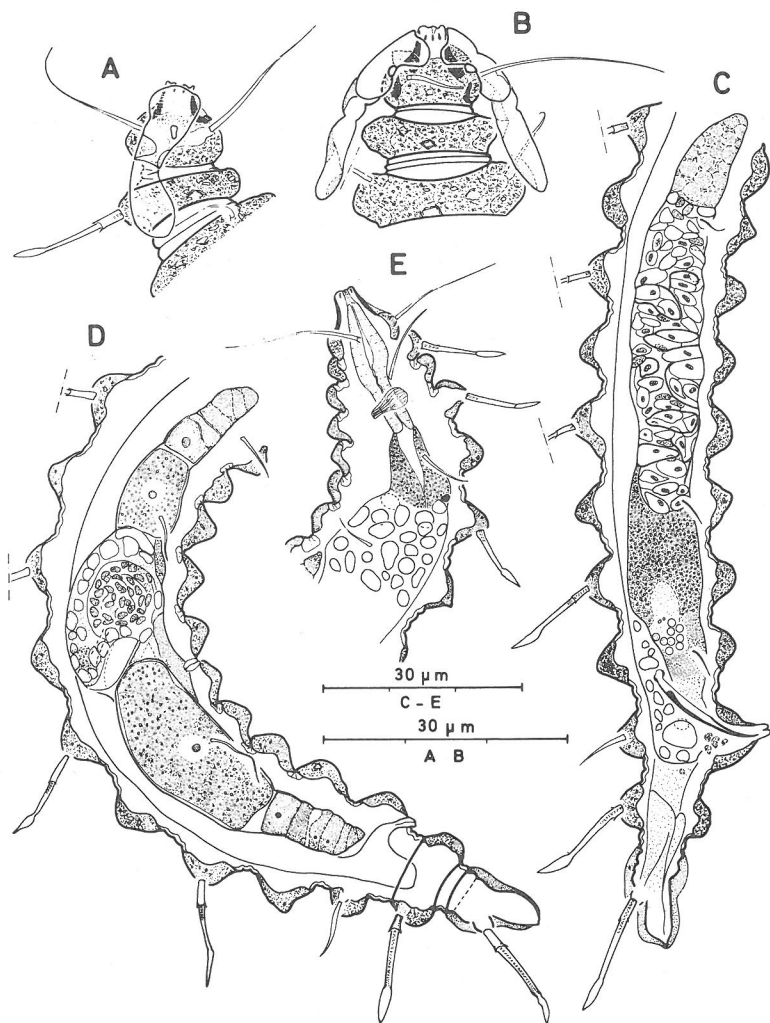


FIG. 1. — *Desmoscolex deconincki* n. sp.

- A surface view of head (female holotype)
- B surface view of head male (ventral side)
- C male reproductive system and tail region
- D female reproductive system and tail region (holotype)
- E anterior region and oesophago-intestinal junction of ♀

Paratypes ♀ (n = 3): L = 160-210, hd = 10-12 × 10-12, cs = 18-24, sd<sub>1</sub> = 12-18, sd<sub>3</sub> = 11-15, sd<sub>5</sub> = 11-15, sd<sub>11</sub> = 11-14, sd<sub>13</sub> = 12-17, sd<sup>16</sup> = 20-23, sd<sub>17</sub> = 20-26, sl<sub>2</sub> = 14-22, sl<sub>4</sub> = 10-15, sv<sub>6</sub> = 7-10, sv<sub>12</sub> = 7-13, sl<sub>15</sub> = 8-10, t = 24-27, tmr = 14-18, tmrw = 6, oes = 18, mbd = 26-31, bd vulva = 21-26.

Paratype ♂ (n = 2): L = 190-200, hd = 12 × 12, cs = 23-24, sd<sub>1</sub> = 16, sd<sub>3</sub> = 13-14, sd<sub>5</sub> = 13, sd<sub>11</sub> = 15, sd<sub>13</sub> = 16-22, sd<sub>16</sub> = 21-23, sd<sub>17</sub> = 20-21, sl<sub>2</sub> = 14-17, sv<sub>4</sub> = 16-17, sv<sub>6</sub> = 11, sv<sub>12</sub> = 11-13, sv<sub>14</sub> = 10-13, sl<sub>15</sub> = 9.5-10, t = 32-33, tmr = 14-17, tmrw = 5-7.5, spic = 19-22, mbd = 23-27, (mbd) = 16-22.

*Female*: Body tapering towards the extremities; cuticle with 17 main rings, separated from each other by narrower interzones composed of 2 secondary rings except for the first and last interzone with only one annule. The main rings consist of few fine concretion particles lying on 3 somewhat deformed cuticular annules; especially the middle annule is enlarged.

The somatic setae are arranged as follows:

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

subventral:  $\frac{2,4,6,8,—,12,14,15 = 7}{2,4,6,8,—,12,14,15 = 7}$  with pair 4 in lateral position;

pairs 2,6,8,12,14 in sublateral and pair 15 in laterodorsal position. This pattern differs from the typical one of 17-ring species (Timm, 1970) by the absence of subventral setae on the 10th main ring. In one female from Nympe Island those of the 14th main ring were absent too. The subdorsal setae are longer and thicker than the subventral ones, with at their base a short sheath which curves outward terminally; in some individuals e.g. the holotype this sheath can be rather obscure. The subdorsal setae, inserted on the 1st and 13th main ring have the same length and are slightly longer than those situated in between. The subdorsal setae on the tail are distinctly elongated. The subventral setae are very slender, ending on an acute tip. Some variation is found in the position of the insertion, i.e. from lateral to sublateral. The subventral setae on the 2nd and 4th main ring are always elongated, especially the former ones. The other subventral setae have all about the same length.

The head is as long as wide. It can be divided in (1) a narrow, anteriorly tapering part with naked or almost naked sclerotized cuticle occupying  $\frac{1}{2}$  till  $\frac{2}{3}$ rd of the total headlength and ending with a truncate anterior border showing six very small papillae and (2) a broader, rounded posterior part covered with fine concretion particles. Two small sclerotized dots are visible on each lateral side close to the anterior end.

The cephalic setae are inserted on a small peduncle at  $\frac{1}{4}$ th or  $\frac{1}{3}$ rd from the posterior head-end. They are very slender and about twice as long as the maximum headwidth. In one female they were about 3 times as long.

The amphids consist apparently of two parts: (1) a shorter, rounded anterior part extending nearly till the anterior end of the head and (2) posteriorly, an elongated narrow sac-like part extending till the end of the 3rd main ring in the holotype or till the interzone between the 1st and 2nd concretion ring or the middle of the 2nd main ring, in paratypes, partly depending on the contraction state of the animal. The small amphidial pore with sclerotized border is situated at the level of the insertion of the cephalic setae.

The minute stoma is mostly very obscure. The oesophagus consists of a narrow anterior part extending nearly till the anterior extremity and followed by a broader muscular cylinder ending at the level of the middle of the 3rd main ring in the holotype. This extreme backward extension is due to the contracted anterior part of the body, indeed, in the other specimens the oesophago-intestinal junction occurs at the end of the 2nd main ring or the following interzone. The junction is obscured by the presence of many nuclei. The ventro-caudally sloping nerve ring surrounds the oesophagus at the level of the 2nd concretion ring. The intestine is typical (cf. Decraemer, 1974), with narrow fine granular anterior ventricular part, widening posteriorly and passing into the globular intestine at the level of the 5th concretion ring. The latter overlaps the rectum dorsally till the 16th main ring. The anal tube is very small and protudes from the body in the posterior end of the 15th main ring.

Oval-shaped ocelli are situated at the level of the 4th or at the interzone between the 5th and 6th main ring. In one female from Nympe Island the ocelli are lying on a highly granular structure.

Reproductive system didelphic-amphidelphic. Both branches with several immature and one ryping oöcyte. A large highly nucleated sac-like structure (the uteri?) lies close to the vulva. In the specimen from Nympe Island the wall of this sac-like structure is composed of large cells and contains in its centre a rounded highly nucleated area (with sperms?). The rather obscure vulva is situated between the 10th and 11th main ring.

The tail bears two main rings. The terminal main ring is twice as long as the former one and consists of an anterior annulated part till the tubercle on which the subdorsal setae are inserted. Posteriorly, the ring is slightly swollen, tapering towards the spinneret. The terminal main ring is totally covered by fine concretion particles. Phasmata not observed.

*Male*: Similar to female for most characteristics.

The setal pattern is identical with that of the females. In a specimen from Nymphe Island an irregularity was found in the arrangement of the sub-ventral setae of the right body side i.e. with an additional seta on the main rings 10 and 11.

The somatic setae show the same pattern in length as in females, except for the specimen from Port Jackson where the subdorsal setae on the 13th main ring are elongated i.e. they are as long as the setae on the tail.

Dorso-ventral and lateral views of the head permitted more detailed study of the amphidial structure. The amphids are apparently bipartite, consisting of a shorter slightly broader anterior portion and a posterior elongated sac-like part extending till the 2nd main ring. The anterior part extends nearly till the extremity of the head, widening in the region with sclerotized cuticle, giving a small extension towards the dorsal and ventral side of the head. Both the amphids lie very close to each other on the dorsal and ventral side. Posteriorly, at the level of the posterior end of the head, the anterior part of the amphid crosses the posterior part which shows here a small constriction. The small sclerotized internal amphidial openings are slightly above the head cuticle.

Male reproductive system with single outstretched testis, consisting of a short germinal zone and large differentiation zone, passing in a finely granular vas deferens.

Spicules cephalated, with arcuate, stronger sclerotized distal part. Their length is 19-22  $\mu\text{m}$ . Gubernaculum not observed.

*Type locality and habitat* : Shallow gully between Cyanophyceae and Foraminifera from Nymphe Island (Great Barrier Reef), collected by A. Coomans on 25-9-67.

*Other localities and habitats* : sandy patch on reef flat of Yonge Reef (Great Barrier Reef) and Port Jackson (Australia), respectively collected by A. Coomans on 2-9-67 and P. Johnston on 1-10-72 and coral and shell beach from Darwin Bay, Isla Genovesa, Galapagos collected by Maxine Mc Ginty on 29-2-68.

*Type material* :

holotype ♀ : Nymphe Island, slide nr 144.

paratypes ♀ ♀ : 1 ♀ from reef flat Yonge Reef, Great Barrier Reef

1 ♀ from Galapagos, slide nr. 1142 UCNC.

♂ ♂ : 1 ♂ from Nymphe Island, Great Barrier Reef

1 ♂ from Port Jackson, Australia, slide UCNC.

*Differential diagnosis* :

The former described specimens with one of them found among the paratypes of *D. longisetosus* Timm, 1970, resemble *D. max* Timm, 1970 in

their comparable head-shape with narrow anterior part and truncate end, in the similar amphid-shape i.e. bipartite and elongated with slightly elevated sclerotized pore, in the long slender cephalic setae and in the presence of subventral setae on the 15th main ring shifted towards the dorsal side.

They differ, however, by their different setal pattern, due to the absence of subventral setae on main rings 1, 10, 17 and the absence of subdorsal setae in ventro-lateral position, by elongated subventral setae on the 4th main ring, by elongated subdorsal setae on the tail instead of those on the 13th and 16th ring and by the shape of the subdorsal setae with large lance-shaped distal end instead of only a slightly widened tip.

They are also clearly distinguishable from *D. max* by the tail-shape without narrow tapering elongated terminal main ring with naked endpart. Their body length and spicules are smaller; their head is as long as wide instead of somewhat longer than wide.

*Note*: In contradiction with Timm (1970), phasmata were found at the level of the 4th concretion ring in the allotype male and paratypes in *D. max*.

*Desmoscolex longisetosus* Timm, 1970

1. Type specimens (holotype, allotype and 2 ♀ paratypes on slides nrs 1134, 1135, 1136, 1141 UCNC) (Fig. 2):

The description of Timm (1970) agrees with the type specimens studied except for the presence of ocelli which he considers to be absent but which are situated at the level of the 4th main ring in the male holotype and at the 3rd main ring in a female paratype. The phasmata are mentioned to be located on a "clear area of the tail cone" but they are always surrounded by fine concretion particles. In contradiction with Timm's description no cheilorhabdia could be distinguished.

The following characters are not mentioned by Timm (1970):

The main rings, covered by rather coarse concretion particles are separated by interzones, consisting of 2-3 secondary rings. Each secondary ring bears a transverse row of very fine spines, less distinct in the anterior part of the body. Where concretion particles are absent, a transverse row of short pegs becomes visible in the middle of the main ring (cf. ♀ paratype, slide 1136).

The subventral setae are jointed, consisting of a broader base and very short fine distal part. Those inserted on the 2nd main ring are in lateral position and elongated. They are about as long as the subdorsal setae and have a slender distal part, half as long as the total setal length. The somatic setae on the 15th main ring are inserted latero-dorsally; they are also somewhat elongated compared with the other subventral setae but less than those on the 2nd concretion ring.

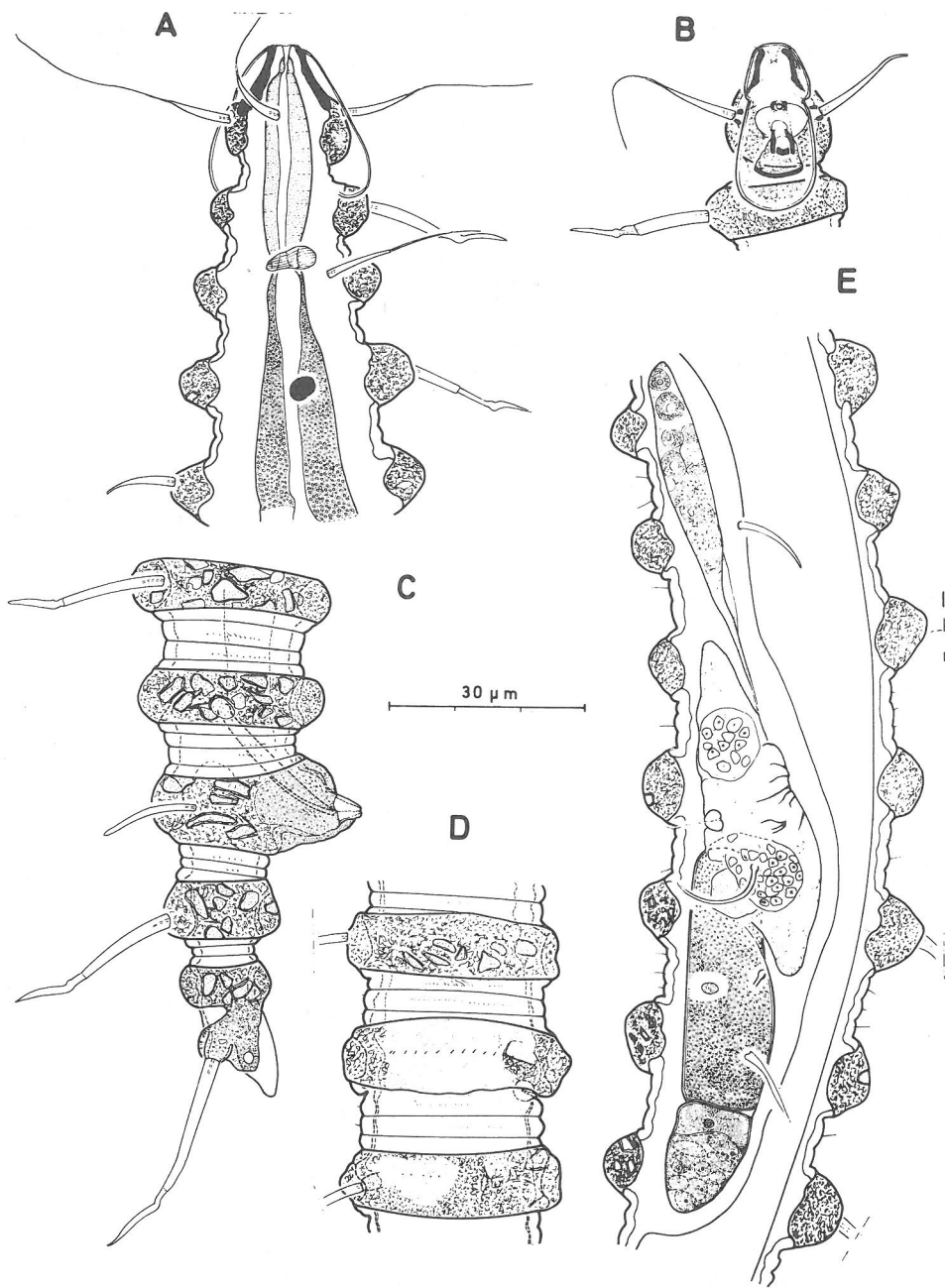


FIG. 2. — *Desmoscolex longisetosus* Timm, 1970 (type specimens)  
 A anterior region and oesophago-intestinal junction of ♀  
 B surface view of head (holotype male)  
 C surface view of tail region (holotype male)  
 D surface view cuticle by female (region of the vulva)  
 E female reproductive system



The female reproductive system is didelphic-amphidelphic. The vulva is situated at the posterior end of the 10th concretion ring. Close to the vulva lie two rounded nucleated sacs (spermathecae) in connection with the uteri. The latter are seen as two elongated structures partly lying along the oviduct. Both uteri join before entering the vagina.

*Remark*: According to the labels on the slides of the holotype, allotype and paratypes of *D. longisetosus*, the specimens have the following type locality and habitat: Darwin Bay, Isla Genovesa, Galapagos Island, coral and shell beach, collected by Maxine Mc Ginty on 29-2-1968. This type locality and habitat differs from the type locality and from all the other localities mentioned in Timm (1970).

2. Atypical form of *Desmoscolex longisetosus* Timm, 1970: Fig. 3

♀ (n = 9) L = 150-185, hd = 14-15 × 11-18, cs = 18-23, sd<sub>1</sub> = 14-17, sd<sub>3</sub> = 11-12, sd<sub>5</sub> = 11-13, sd<sub>11</sub> = 11-13, sd<sub>13</sub> = 17-21, sd<sub>16</sub> = 19-22, sd<sub>17</sub> = 20-24, l<sub>2</sub> = 13-16, sl<sub>15</sub> = 11-13, sv<sub>4</sub> = 5-11, sv<sub>6</sub> = 5.5-6.5, sv<sub>12</sub> = 6-7.5, t = 27-32, tnr = 15-17, tmrw = 8-9, mbd = 25-30, bd vulva = 20-25.

♂ (n = 2) L = 160-170, hd = 15-16 × 12, cs = 22-23, sd<sub>1</sub> = 16, sd<sub>3</sub> = 11-13, sd<sub>5</sub> = 11-12, sd<sub>11</sub> = 11-12, sd<sub>13</sub> = 20, sd<sub>16</sub> = 20-22, sd<sub>17</sub> = 21-25, l<sub>2</sub> = 16, sl<sub>15</sub> = 11-13, sv<sub>4</sub> = 6.5-7.5, sv<sub>6</sub> = 6.5, sv<sub>12</sub> = 8.5, t = 29, tnr = 15, tmrw = 8, spic = 19-22, gub = 11, mbd = 24-25, (mbd) = 17-20, oes = 22-24.

*Male*: Slender short body with 17 concretion rings and tapering towards the extremities. The main rings consist of a layer of fine to rather coarse concretion particles lying on 2-3 somewhat deformed cuticular annules. The concretion rings are separated from each other by intermediate zones as broad as or narrower than the corresponding prominent rings and composed of 2-3 smaller annules or secondary rings. On some secondary rings there is an indication of a transverse row of very small knobs.

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:  $\frac{2,4,6, \text{---}, \text{---}, 12, \text{---}, 15 = 5}{2,4,6, \text{---}, \text{---}, 12, \text{---}, 15 = 5}$  with pair 2 in lateral and pair 15

in latero-dorsal position. This arrangement differs from the typical pattern of 17-ring species (Timm, 1970) by the absence of subventral setae on the 8th, 10th and 14th main rings. The subdorsal setae consist of a larger basal shaft and a large angular lance-shaped end. The subdorsal setae on the 1st main ring are longer than the following ones, which have all about the same

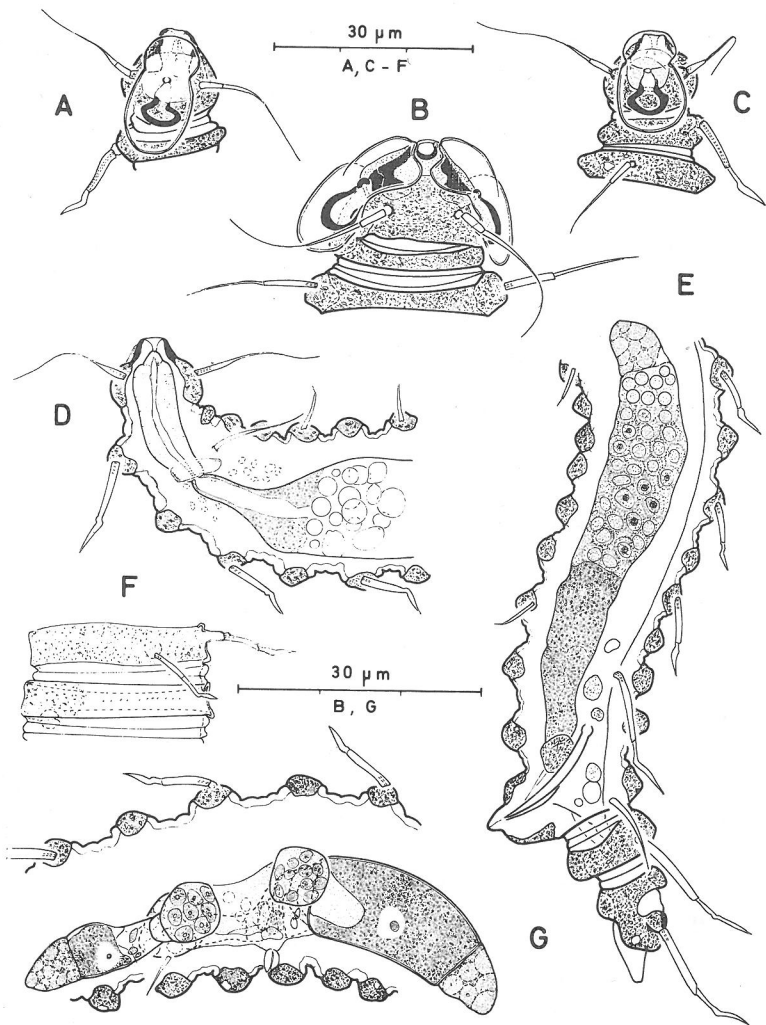


FIG. 3. — *Desmoscolex longisetosus* Timm, 1970 (atypical form)

- A surface view of head female
- B surface view of head female (ventral side)
- C surface view of head male
- D anterior region and oesophago-intestinal junction of ♀
- E male reproductive system and tail region
- F surface view of main rings
- G female reproductive system

length. Those inserted on the 13th, 16th and especially on the 17th concretion ring are elongated and shifted laterally. The somatic setae on the 2nd main ring are in lateral position and elongated. They have the same length as the subdorsal setae on the 1st concretion ring and consist besides a broader basal shaft of a slender distal part, half as long as its total setal length. The setae located on the 15th main ring are in latero-dorsal position; they have a similar structure as the other subventral setae with very short fine end, but they are somewhat elongated i.e. as long as the shortest subdorsal setae.

The head is broad, rounded, tapering anteriorly towards a truncate end. It is mainly as broad as long. In the narrower anterior third of the head, the cuticle is sclerotized and partly covered by few fine concretion particles. The rest of the head is completely covered by a layer of small concretion particles which extend further backward on the lateral sides than on the dorsal and ventral sides, so that the head appears longer in lateral view.

The four cephalic setae insert halfway the headlength. They are 22-23  $\mu\text{m}$  long and very slender, with a 4  $\mu\text{m}$  long broader basal part.

The amphids are bipartite and consist posteriorly of a large sac-like part till the middle of the 1st main ring; the anterior portion is smaller and semi-circular. Both parts meet at the level of the amphidial pore situated just anterior to the insertion of the cephalic setae. The very small amphidial pore is posteriorly connected with an elevated more or less triangular, strongly sclerotized structure extending over concretion particles till the head-end.

The mouth opening leads into a short stoma. The cylindrical oesophagus becomes narrower at the level of the 2nd main ring, where it is surrounded by the nerve ring. The oesophago-intestinal junction occurs at the end of the 2nd main ring. The anterior part of the ventricular intestine is narrow and cylindrical till the middle of the 3rd concretion ring where it becomes wider. The globular intestine begins at the end of the 4th main ring and continues till the beginning of the 16th ring, overlapping dorsally the rectum. The latter protudes from the body as a short tube in the middle of the conically swollen ventral side of the 15th main ring.

The ocelli are very obscure, possibly lying at the level of the 4th concretion ring.

The reproductive system consist of a single testis with large differentiation zone.

The spicules are slightly arcuate, provided with a capitulum. The gubernaculum is half as long as the spicules and lies parallel to them.

The tail bears two main rings. The terminal main ring is partly sub-

divided by the absence of concretion particles dorsally just anterior to the peduncle of insertion of the terminal setae. Posterior to this protuberance the ring tapers to a naked spinneret. Small circular phasmata, always surrounded by concretion particles are situated in this terminal part.

*Female*: Similar to male for most characteristics.

Where concretion particles are absent on the main rings, a transverse row of short pegs becomes visible in the middle of the ring. In one female specimen (slide nr. 1142) each secondary ring bears in its middle a transverse row of short fine spines. That same individual possesses a pair of subventral setae inserted on the 8th concretion ring.

The small ocelli, mostly obscure, are situated at the level of the 3rd or 4th main ring.

The large anal tube protudes from the body in the posterior half of the enlarged ventral side of the 15th concretion ring.

Reproductive system didelphic-amphidelphic. The small vulva is situated at the posterior border of the 10th main ring. Posterior or anterior branch with a mature oöcyte. Each branch has a spermatheca lying close to the vulva, but alternating in both branches in relation to the uterus.

*Locality and habitat*: Coral and shell beach of Darwin Bay, Isla Genovesa, Galapagos Island, collected by Maxine Mc Ginty on 29-2-68.

3. Australian specimen from sandy patch on reef flat of Yonge Reef:

♀ (n = 1): L = 220, hd = 13 × 14, cs = 33, sd<sub>1</sub> = 22, sd<sub>3</sub> = 19, sd<sub>5</sub> = 18, sd<sub>13</sub> = 27, sd<sub>16</sub> = 27, sd<sub>17</sub> = 28, l<sub>2</sub> = 17, sl<sub>15</sub> = 16, sv<sub>4</sub> = 13, sv<sub>12</sub> = 8, t = 38, tmr = 21, mbd = 40, bd vulva = 38, oes = 20.

The Australian specimen is close to the atypical form of *D. longisetosus* Timm, 1970, but shows some variations. Its bodylength is somewhat longer.

The slightly subdorsally turned head shows a difference in length between the shorter dorsal and ventral sides (9 µm long) and the longer lateral sides (14 µm long), due to a further backward extension of concretion particles. This extension is presumably due to the presence of an elevated sclerotized structure completely lying above the covered posterior head-region.

The head has a broader anterior border. In the anterior half, the cuticle is more strongly sclerotized than in the atypical form, especially at the base of the peduncle of insertion of the cephalic setae.

The Australian specimen possesses secondary rings with a transverse row of fine short spines (or membrane?) in their middle.

The subventral setae on the 6th and 8th main rings were broken off, but their insertions are still visible. Consequently the setal pattern is similar to that of one of the females of the atypical form.

Dark yellow ocelli are situated at the level of the 4th main ring.

The tail bears two main rings. The terminal main ring consists anteriorly of a concretion ring comparable in length (4.5  $\mu\text{m}$ ) with the former main rings and clearly separated from the naked posterior tapering part which bears distinct round phasmata. The concretion particles adhering to the peduncle of the terminal setae point to a similarity with the partly divided terminal ring in the atypical form. The terminal cone has the same length as in the holotype male i.e. somewhat longer than in the atypical form.

*Locality and habitat*: sandy patch on reef flat of Yonge Reef, collected on 2-9-67 by A. Coomans.

### *Discussion*

The atypical form and the Australian specimen resemble the type specimens in many characteristics, but show some variations.

Their bodylength is much smaller; the smallest individuals are only half as long as the type specimens.

Their head is broader i.e. mainly broader than or as broad as long instead of elongated; especially the anterior third of the head with sclerotized cuticle is shorter.

In relation with the shorter head, the amphids are not as elongated as in the type specimens. The small amphidal pore, located halfway the headlength is posteriorly connected with an elevated more or less triangular structure which is more heavily sclerotized than in the type specimens.

The slender cephalic setae are shorter i.e. 18-23  $\mu\text{m}$  instead of 32-36  $\mu\text{m}$  long. In the Australian specimen on the contrary, they are as long as in the type specimens.

The secondary rings are smooth or show only an indication of a transverse row of very small knobs instead of bearing a transverse row of fine spines.

The somatic setae are shorter than those of the type specimens but they have a similar relation in length to one another. Their setal pattern differs from that of the type specimens by the absence of subventral setae on the 8th main ring.

The atypical form was found among the paratypes of *Desmoscolex longisetosus* Timm, 1970 from the type slides of Timm. According to the labels on the slides, they were found in the same locality and habitat as the holotype.

One female of the atypical form and the Australian female have secondary rings bearing a transverse row of fine short spines and a pair of subventral setae inserted on the 8th main ring as present in the typical specimens.

Timm (1970) mentioned in his diagnosis: "The specimens from other localities than the type locality all have red pigment spots in ring 3 for Galapagos and Australian specimens and ring 4 for specimens from Italy. The amphids, head and cephalic setae are also shorter, but the setal patterns and types are the same and the amphids have a similar structure".

The differences found between the type specimens and the atypical form cannot be explained by referring to Timm's statement since apart from the Australian specimen, the other individuals were collected from the same locality and on the same date.

Considering the large similarities between both types and the presence of two female specimens with the general habitus of the atypical form, but with some characteristics of the typical such as the presence of subventral setae on main ring 8 and fine spines on the secondary rings, the deviating form is also regarded as *Desmoscolex longisetosus* Timm, 1970.

*Desmoscolex timmi* n. sp. (Fig. 4)

#### Measurements

Holotype ♂ : L = 175, hd = 12 × 11, cs = 13, sd<sub>1</sub> = 12, sd<sub>3</sub> = 8.5, sd<sub>5</sub> = 9 ;  
sd<sub>11</sub> = 9, sd<sub>13</sub> = 16, sd<sub>16</sub> = 19, sd<sub>17</sub> = 21, l<sub>2</sub> = 8, sv<sub>4</sub> = 6, sv<sub>6</sub> = 6.5,  
sv<sub>12</sub> = 7, sv<sub>14</sub> = 7, sv<sub>15</sub> = 4, t = 34, tmr = 19, spic = 19, gub = 6,  
mbd = 21, (mbd) = 17, oes = 21.

Allotype ♀ : L = 190, hd = 10 × 11, cs = 14, sd<sub>1</sub> = 12, sd<sub>3</sub> = 9.5, sd<sub>5</sub> = 9.5,  
sd<sub>11</sub> = 9.5, sd<sub>13</sub> = 17, sd<sub>16</sub> = 20, sd<sub>17</sub> = 22, sl<sub>2</sub> = 8, sv<sub>4</sub> = 5, sv<sub>6</sub> = 6,  
sv<sub>12</sub> = 5.5, sv<sub>15</sub> = 4.5, t = 36, tmr = 20, mbd = 29, bd vulva = 27,  
oes = 23.

Paratype ♂ (n = 1) : L = 180, hd = 13 × 12, cs = 13, sd<sub>1</sub> = 12, sd<sub>3</sub> = 10,  
sd<sub>5</sub> = 9, sd<sub>11</sub> = 9, sd<sub>13</sub> = 15, sd<sub>16</sub> = 17, sd<sub>17</sub> = 21, sl<sub>2</sub> = 8.5, sv<sub>4</sub> = 7 ;  
sv<sub>6</sub> = 6.5, sv<sub>12</sub> = 7.5, sv<sub>14</sub> = 7.5, sv<sub>15</sub> = 5, t = 33, tmr = 20, spic = 19,  
gub = 6, mbd = 24, (mbd) = 20, oes = 23.

Paratype ♀ ♀ (n = 2) : L = 160-195, hd = 11 × 11, cs = 12, sd<sub>1</sub> = 10-11,  
sd<sub>3</sub> = 9-9.5, sd<sub>5</sub> = 9.5, sd<sub>11</sub> = 8.5-10, sd<sub>13</sub> = 16-17, sd<sub>16</sub> = 19,  
sd<sub>17</sub> = 21-23, sl<sub>2</sub> = 6-7.5, sv<sub>4</sub> = 5.5, sv<sub>12</sub> = 5.5, sv<sub>15</sub> = 4-6.5, t = 32-  
33, tmr = 18-21, mbd = 25-29, bd vulva = 22-23, oes = 18.

*Male* : Body small and slender ; cuticle with 17 main rings, consisting of fine granular material lying on 2-3 somewhat deformed cuticular annules. The main rings are separated from each other by interzones, being narrower

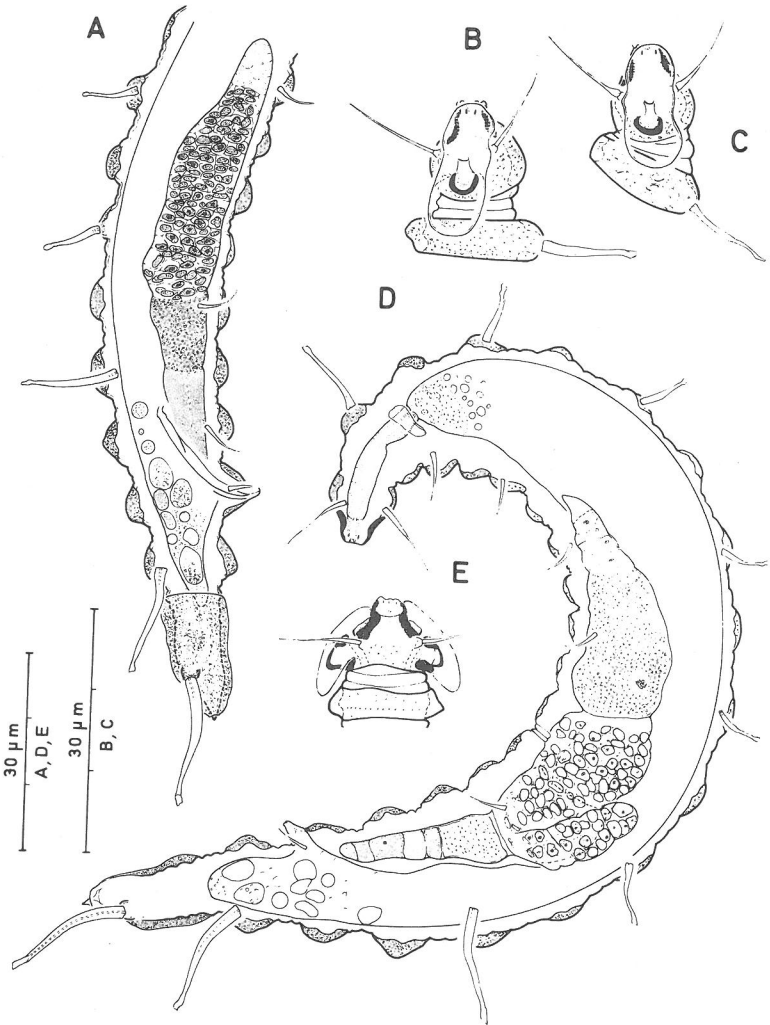


FIG. 4. — *Desmoscolex timmi* n. sp.

- A male reproductive system and tail region
- B surface view of head of male holotype
- C surface view of head female allotype
- D female allotype: general view
- E surface view of head female (ventral side)

than the corresponding concretion rings and composed of 2 or 3 secondary rings. By absence of concretion material a transverse row of short pegs becomes visible in the middle of the main ring.

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

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

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

The subdorsal setae are rather short, ending on a slightly expanded tip. The subdorsal setae on the 1st main ring are somewhat longer than the following ones, which have all about the same length. The subdorsal setae on the 13th main ring and on the tail are elongated. The slenderer subventral setae are about equal in length, except for the sublaterally inserted ones on the 2nd main ring which are slightly longer and the subventral setae on the 15th main ring which are somewhat shorter.

The head is about as long as wide. Posteriorly, it is relatively broad and rounded, tapering anteriorly towards a truncate border. In the frontal half, the cuticle is sclerotized and covered by a thin layer of few particles; in the rest of the head a rather thick layer of fine concretion particles adhere on the cuticle. The naked anterior border bears 6 lips with 6 papillae; on both lateral sides of the head two small sclerotized dots are visible close to the anterior end.

Four slender cephalic setae, tapering towards an acute tip, are inserted halfway the headlength. They have about the same length as the maximum head-width.

The large amphids consist of two parts: (1) posteriorly, a more or less pyriform portion extending till the beginning of the 1st main ring and (2) an anterior part, covering the frontal half of the head nearly till the extreme border. The two parts meet opposite the middle of a strongly sclerotized structure. The small oval amphidial pore is in connection with an elevated strongly sclerotized U-shaped structure partly lying on concretion particles which cover the posterior part of the head.

The mouth opening leads into a narrow, slightly off set anterior stomal part. The oesophagus is short, extending till the beginning of the 2nd main ring. The nerve ring surrounds the oesophagus just anterior to the oesophago-intestinal junction, i.e. at the level of the interzone between the 1st and 2nd concretion ring. The short ventricular part is rather obscure, due to the presence of many nuclei in this region. The globular intestine overlaps the rectum dorsally and continues till the beginning of the terminal



main ring. The cloacal tube protudes from the body in the middle of the conically expanded ventral side of the 15th main ring.

Male reproductive system with single testis, consisting of a short germinal and a large differentiation zone.

Spicules, 19µm long, nearly straight, provided with a capitulum. Gubernaculum only 6 µm long, lying parallel to the spicules.

The tail bears two main rings. The terminal ring, 3 times as long as the former one, is an anteriorly slightly annulated cylinder till the insertion of the subdorsal setae; posteriorly the ring tapers, ending on a minute naked spinneret. Phasmata not observed.

*Female*: Similar to male for many characteristics.

It differs, however, by the presence of a different setal pattern. The somatic setae are arranged as follows:

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

$$\text{subventral: } \frac{2,4,6,8, \text{---}, 12, \text{---}, 15 = 6}{2,4,6,8, \text{---}, 12, \text{---}, 15 = 6} \text{ with pair 2 in sublateral position.}$$

This pattern differs from the typical pattern of 17-ring species (Timm, 1970) and consequently from the male, by the absence of subventral setae on the 10th and 14th main ring. All the other somatic setae i.e. subdorsal and subventral ones are comparable in shape and length with those of the male, except for the subventral setae on the 15th concretion ring, not distinctly shorter than the anteriorly inserted subventral setae as is the case in the male specimens.

In ventral view, the internal amphidial canals, running posteriorly, could be followed from the amphidial pore till the posterior head-end.

Reproductive system didelphic-amphidelphic, only distinct in one female. Both ovaries with several immature oöcytes and one mature oöcyte in the anterior branch. The vulva is located in the interzone between the 10th and 11th main ring. At the level of the vulva lies a large sac-like structure (both uteri?) with many distinct cells.

*Type locality and habitat*: Coral and shell beach, Darwin Bay, Isla Genovesa, Galapagos Island, collected by Maxine Mc Ginty on 29-2-68.

#### *Type material*

Holotype ♂: slide nr 1140, UCNC, Davis California

Allotype ♀: slide nr 1140, UCNC, Davis California

Paratypes 1 ♂: slide nr 1142 UCNC, Davis California

♀ ♀: 1 ♀ slide nr 1137 UCNC, Davis California

1 ♀ slide nr 1139 UCNC, Davis California.

*Differential diagnosis :*

These specimens, found among the paratypes (slides nrs 1136-1142 UCNC, Davis) of *D. longisetosus* Timm, 1970, resemble the latter species in their head- and amphid-shape and in the presence of an elevated strongly sclerotized structure in connection with the amphidial pore.

They differ, however, (1) by the presence of sexual dimorphism in their setal pattern : similar to that of *D. longisetosus* in female i.e. without subventral setae on the 10th and 14th main ring, but typical pattern of 17-ring species in males ; (2) by the length and position of the subventral setae on the 2nd and 15th main ring, both not distinctly elongated and the latter setae inserted in subventral position instead of latero-dorsally as in *D. longisetosus* ; (3) by the shape of the subdorsal setae with slightly expanded tip instead of ending on a large angular lance-shaped part ; (4) by the different shape of the tail without divided terminal main ring and without phasmata ; (5) by the shorter bodylength, the shorter head and the shorter cephalic setae with similar length as the head-width instead of being twice as long as the latter ; (6) by the anal tube protruding from the body in the posterior border of the 15th main ring in females instead of in the middle of this ring as in *D. longisetosus* ; (7) by the absence of a distinct long, narrow ventricular intestine and (8) by the absence of 2 distinctly nucleated sacs (spermathecae) in the female reproductive system.

Because of these differences the specimens are considered to represent a new species.

#### CONCLUSIONS

The study of the type-material of *D. longisetosus* Timm, 1970 revealed the occurrence of intraspecific variations in some characteristics as the setal pattern. Since little is known about intraspecific variability, the setal pattern (which seems to provide the most important diagnostic feature in *Desmoscolex*), should not be used on its own, but together with other characters. For the same reason new species should not be described from a single individual only.

Apart from the type-specimens and atypical form of *D. longisetosus* Timm, 1970, two new species *D. deconincki* n. sp. and *D. timmi* n. sp. were found among the paratypes. Timm (1970) considered all of them as belonging to *D. longisetosus*.

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