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DRACONEMATIDAE AND EPSILONEMATIDAE (NEMATODA)
FROM LAING ISLAND PAPUA NEW GUINEA,
WITH ONE NEW GENUS AND THREE NEW SPECIES

Léopold III Biological Station, Laing Island

Contribution n° 45

BY

W. DECRAEMER

(With 8 plates)

ABSTRACT

Two new *Epsilonema*-species are described: *E. parvospina* sp. nov., characterized by the ornamentation of the body cuticle and the single ventral row of 3 to 5 copulatory thorns in male and *E. longispicula* sp. nov., characterized by the ornamentation of the cuticular body rings, long spicules and two single ventral rows of copulatory thorns in male. A new genus *Triepsilonema* with a new species *T. tripapillata* gen. n., sp. n. is described. *Triepsilonema* gen. n. is mainly characterized by the six rows of ambulatory setae and the separate outlet for each of the three caudal glands. New information is given on *Apenodraconema spinicaudum* (GERLACH, 1958) ALLEN & NOFFSINGER, 1978 and *Paradraconema floridense* ALLEN & NOFFSINGER, 1978.

RESUME

Deux nouvelles espèces d'*Epsilonema* sont décrites: *E. parvospina* sp. nov., caractérisées par l'ornementation de la cuticule du corps et par la présence d'une rangée ventrale de 3 à 5 cornes copulatoires chez le mâle et *E. longispicula* sp. nov., caractérisée par l'ornementation des anneaux

cuticulaires du corps, de longs spicules et de deux rangées consécutives et ventrales de cornes copulatoires chez le mâle. Un nouveau genre *Triepsilonema* avec une nouvelle espèce *T. tripapillata* gen. n., sp. n. est décrit. *Triepsilonema* gen. n. est essentiellement caractérisé par six rangées de sètes ambulatoires et par l'embouchure séparée de chacune des trois glandes caudales. Une redescription ou des informations complémentaires sont données sur *Apenodraconema spinicaudum* (GERLACH, 1958) ALLEN & NOFFSINGER, 1978 and *Paradraconema floridense* ALLEN & NOFFSINGER, 1978.

I. INTRODUCTION

An investigation is started of the marine nematode fauna of Laing Island, Papua New Guinea. This paper gives information on the Draconematidae and the Epsilonematinae from eight samples, taken in a lagoon and in a reef flat. Four draconematid species were found; *Apenodraconema spinicaudum* (GERLACH, 1958) ALLEN & NOFFSINGER, 1978 is redescribed and additional information is given on the genital system and on the second-stage juvenile of *Paradraconema floridense* ALLEN & NOFFSINGER, 1978. Seven species of Epsilonematinae were observed, among them two new species of the genus *Epsilonema*: *E. longispicula* sp. n. and *E. parvospina* sp. n., and one new species *Triepsilonema tripapillata* gen. n., sp. n., belonging to the new genus *Triepsilonema*.

II. MATERIAL

All samples from Laing Island, situated in Hansa Bay (Madang Province, Papua New Guinea) were collected by Dr. J. VAN GOETHEM. The samples were fixed in 5% buffered formalin; in laboratory the specimens were mounted in glycerol. All type material is deposited in the collection of the Recent Invertebrate Section of the « Koninklijk Belgisch Instituut voor Natuurwetenschappen » I. G. 25681. The species studied were found at the locations listed in Table 1.

Samples 37, 62, 94, 95, 234, 404 were from between *Halimeda*; samples 61 and 233 were respectively from coral sand and sand.

Nominal species studied from other collections :

- *Apenodraconema spinicaudum*: paratype juvenile (fourth stage), Nematodensammlung des Instituts für Meeresforschung Bremerhaven (NSIMB) slide n° 180d.
- *Paradraconema floridense*: 2 ♂ paratype, 1 ♀ and 1 juv. paratype, slides n° 392-395, nematode collection of the Instituut voor Dierkunde, Laboratorium voor Morfologie en Systematiek der Dieren, Rijksuniversiteit, Gent, België.

TABEL 1

Location of species found.

Location	Date	Depth (m)	Species found
Laing Island lagoon			
sample 37	5-V-1977	6	<i>Paradraconema floridense</i> 5 ♂, 7 ♀, 1 juv. <i>Draconema haswelli</i> 3 ♂, 2 ♀ <i>Epsilonema parvospina</i> 2 ♂, 2 ♀, 3 juv. <i>E. longispicula</i> 1 ♀, 1 juv. <i>Epsilonema</i> sp. ₁ 1 juv. <i>Bathyepsilonema</i> sp. ₁ 1 ♀ <i>Triepsilonema tripapillata</i> 1 ♂, 1 ♀, 2 juv.
sample 61	8-V-1977	3	<i>P. floridense</i> 1 ♂
sample 62	8-V-1977	3	<i>Apenodraconema spinicaudum</i> 1 juv. <i>P. floridense</i> 7 ♂, 1 ♀, 9 juv. <i>E. parvospina</i> 6 ♂, 9 ♀, 8 juv. <i>Epsilonema</i> sp. ₂ 1 juv. <i>Bathyepsilonema</i> sp. ₁ 2 ♂, 1 ♀
sample 94	12-V-1977	3/4	<i>A. spinicaudum</i> 4 ♂, 3 ♀, 13 juv. <i>P. floridense</i> 11 ♂, 5 ♀, 8 juv. <i>D. haswelli</i> 1 ♀ <i>Dracograllus</i> sp. ₁ 1 ♀ <i>E. parvospina</i> 7 ♂, 3 ♀, 2 juv. <i>E. longispicula</i> 1 ♂
sample 95	12-V-1977	4	<i>A. spinicaudum</i> 1 ♂, 1 juv. <i>P. floridense</i> 19 ♂, 17 ♀, 16 juv. <i>D. haswelli</i> 1 ♂, 3 juv. <i>E. parvospina</i> 4 ♂, 2 ♀, 4 juv. <i>Bathyepsilonema</i> sp. ₁ 1 ♂, 1 ♀, 1 juv.
sample 233	29-V-1977	10	<i>P. floridense</i> 1 ♀
sample 234	29-V-1977	4	<i>A. spinicaudum</i> 2 juv. <i>P. floridense</i> 3 ♂, 2 ♀, 6 juv. <i>E. parvospina</i> 1 ♂, 2 ♀, 1 juv.
reef flat			
sample 404	20-VI-1977	intertidal	<i>A. spinicaudum</i> 2 ♂, 2 ♀, 3 juv. <i>P. floridense</i> 9 ♂, 8 ♀, 9 juv. <i>D. haswelli</i> 1 ♂, 2 ♀, 1 juv. <i>E. parvospina</i> 1 ♂, 1 juv. <i>E. longispicula</i> 5 ♂, 11 ♀, 42 juv. <i>Perepsilonema papulosum</i> 3 ♂, 2 ♀, 3 juv.

III. ABBREVIATIONS

L	: length of body.
hd	: head diameter (length \times width).
hl	: length of head.
hw	: head width.
c s	: length of cephalic setae.
w amph	: amphid diameter.
CAT	: cephalic adhesion tubes (dorsal side of rostrum). Number or length of CAT.
SIAT ₁	: length of most anterior sub-lateral adhesion tube.
SIAT ₂	: length of most posterior sub-lateral adhesion tube.
SvAT ₁	: length of most anterior sub-ventral adhesion tube.
SvAT ₂	: length of most posterior sub-ventral adhesion tube.
SS	: length of somatic setae.
SS _{oes}	: somatic setae in oesophageal region.
SS _{ro}	: setae on rostrum.
SS _t	: somatic setae on tail.
SS _{PAT}	: length of somatic setae between posterior adhesion tubes.
oes	: length of oesophagus.
mbd	: maximum body diameter.
(mbd)	: minimum body diameter.
t	: tail length.
Non-ann Term tail	: length of non-annulated tail region.
spic	: length of spicules, measured along the median line.
gub	: length of gubernaculum.
w amph/hd	: diameter amphid divided by head diameter.
T/ABD	: total tail length divided by anal body diameter.
b, c	: proportions of DE MAN (1880).
V	: position of the vulva as percentage of the body length.
(D)	: dorsal body side.
(V)	: ventral body side.

All measurements are in μm . The number of cuticular body rings is counted on the dorsal body side.

IV. DESCRIPTIONS

Superfamily DRACONEMATOIDEA FILIPJEV, 1918

Family PROCHAETOSOMATIDAE ALLEN & NOFFSINGER, 1978

Subfamily PROCHAETOSOMATINAE ALLEN & NOFFSINGER, 1978

Genus *Apenodraconema* ALLEN & NOFFSINGER, 1978

Apenodraconema spinicaudum

(GERLACH, 1958) ALLEN & NOFFSINGER, 1978

(Plate I, Fig. 1-11)

Syn. *Draconema spinicaudum* GERLACH, 1958, p. 243.

Material. — 7 ♂, 5 ♀, 20 juv. from Laing Island, Papua New Guinea.

Until now, the genus *Apenodraconema* ALLEN & NOFFSINGER, 1978 (Prochaetosomatidae, Draconematoidea) comprises two species: *A. chlidosis* ALLEN & NOFFSINGER, 1978 and *A. spinicaudum* (GERLACH, 1958) ALLEN & NOFFSINGER, 1978 described respectively on a single female (holotype) and on a female (holotype) and a fourth-stage juvenile specimen. For the first time males, second- and third-stage juveniles and juvenile males and — females of the fourth stage are found and described.

Measurements. — Specimens from Laing Island.

Females (n = 3): L = 740-795, CAT = 21-26, SIAT₁ = 36-39, SIAT₁ = 31, SvAT₁ = 32-36, SvAT₁ = 21-25, SS_{oes} = 3-3.5/10-13/30-33, SS_{ro} = 16-17, SS_t = 4-6/39-45, SS_{PAT} = 16-19, t = 99-105, Non-ann Term tail = 87-97, oes = 90-92, mbd = 43-49, b = 8.2-8.6, c = 7.0-8.0, T/ABD = 5.5-6.2, V = 47-49.

Males (n = 4): L = 655-730, CAT = 18-27, SIAT₁ = 27-31, SIAT₁ = 24-28, SvAT₁ = 24-27, SvAT₁ = 9-14, SS_{oes} = 3-4.5/9.5-10/22-33, SS_{ro} = 13-17, SS_{PAT} = 9-14/24-28, SS_t = 7-11/34, t = 93-103, Non-ann Term tail = 65-73, oes = 82-90, mbd = 42-43, mid-wart to tail tip = 12-24; b = 7.9-8.3, c = 7.0-7.4, T/ABD = 3.7-4.2.

Second-stage juveniles (n = 2): L = 270-290, CAT = 13-15, SIAT₁ = 25-26, SIAT₁ = 27-28, SS_{oes} = 9.5-10/28-29, SS_t = 4.5-7/31-37, t = 50-57, Non-ann Term tail = 27-28 (D), 32-36 (V), oes = 50-52, mbd = 23-28; b = 5.2-5.8, c = 5.1-5.4, T/ABD = 4.4-4.6.

Third-stage juveniles (n = 6): L = 375-525, CAT = 17-19, SIAT₁ = 27-30, SIAT₁ = 25-28, SS_{oes} = 4-5/10-15/37-41, SS_{ro} = 5.5-7, SS_t =

5.5-7/35-39, Non-ann Term tail = 54-61 (V), 46-57 (D), oes = 60-73, mbd = 33-39; b = 5.1-7.7, c = 4.9-7.0, T/ABD = 4.5-5.2.

Fourth-stage juveniles

Juvenile females (n = 5): L = 575-625, CAT = 19-22, SIAT₁ = 31-34, SIAT₁ = 25-28, SvAT₁ = 27-32, SvAT₁ = 18-22, SS_{oes} = 2.5-5/9.5-15/36-42, SS_{ro} = 7.5, SS_t = 5-6/9/40-42, t = 84-94, Non-ann Term tail = 69-79, oes = 74-81, mbd = 35-43; b = 7.2-8.4, c = 6.3-6.8, T/ABD = 4.9-5.5, V = 46-48 (2 juv ♀).

Juvenile males (n = 2): L = 570-640, CAT = 19-20, SIAT₁ = 30, SIAT₁ = 28-29, SvAT₁ = 23-31, SvAT₁ = 20, SS_{oes} = 14, SS_t = 4/42, t = 81-82, oes = 76-77, Non-ann Term tail = 65-68, mbd = 48-49, mid-wart to tail tip = 27-28; b = 7.4-8.4, c = 7.0-7.8, T/ABD = 3.9.

Description specimens of Laing Island

Rostrum broadly rounded anteriorly, setae present. Eight CAT, paired, in two transverse rows posterior to rostrum, with posterior row less than one rostral width or three annules posterior to rostrum. Buccal cavity with a small dorsal tooth. Margins of annular ridges with small spine-like projections, most numerous at mid-body. In the anal region these projections become dot-like, obscure and disappear in the tail region. Longest SS on non-annulated tail region. Eight rows of SS on oesophageal region and on mid-body, four sub-lateral rows on tail region. Some rows of SS with alternating long and short setae. Four longitudinal rows of PAT, two sub-lateral and two sub-ventral. Six long setae alternating with SIAT. Caudal glands extend anterior to anus; spinneret present. Digestive system typical of Prochaetosomatidae and reproductive system typical of Dracoenematidae (see ALLEN & NOFFSINGER, 1978).

Males. — Amphids loop-shaped. Tail with seven or eight annules. Five SIAT on each body side. Nine to eleven SvAT with last two tubes on both body sides distinctly shorter than the other SvAT. Two pairs of anal setae, one anterior and one posterior to the anus. Five pairs of setae on non-annulated tail region: one long sub-dorsal, two short sub-dorsal to dorso-lateral, one sub-ventral and one ventral pair. Posterior ventral pair of setae situated just anterior to an obvious ventral protuberance, ribbed, situated at one fourth tail length from the tail tip; opposite this cuticular projection the tail shows a slight dorsal bend.

Females. — Amphids about double spiral. Tail with three annules. Five or six SIAT on each body side. Ten SvAT, slightly shortening posteriorly. Four or five pairs of setae on non-annulated tail region, when four pairs, the ventral one is lacking (cf. males). Two female specimens were observed with two paravulvar setae: one female with one anterior and one posterior to the vulva on the left body side: the other female with

an anterior seta on the left body side, a posterior on the right side; the other specimens lacked paravulvar setae.

Juveniles. — No first-stage juveniles available.

Second-stage juveniles. — Similar to females. Widest part of the body in oesophageal region. Rostral setae present. Rostrum with vacuoles, most prominent just anterior to first body annule. Margins of annular ridges with spine-like projections in oesophageal region; posteriorly the projections become smaller (dot-like) and disappear. Tail with 13 complete annules, 14-15 annules on ventral body side and 22 on the dorsal side. Amphids conspicuous, dorso-lateral on rostrum, nearly double spiral. Single dorsal CAT posterior to rostrum. Buccal cavity weakly developed with a small dorsal tooth. SS in distinct rows, seven rows of SS in oesophageal region and five rows of SS in mid-body. One seta present on non-annulated tail region. Two pairs of SIAT in two longitudinal rows. Long anal flap.

Third-stage juveniles. — Similar to females. Widest part of the body in oesophageal region. Rostral setae present. Rostrum with vacuoles, most prominent just anterior to first body annule. Margins of annular ridges with prominent spine-like projections in anterior body region, become small and obscure in posterior body half. Tail with 5 complete annules, 5-7 annules on ventral body side and 8-10 on dorsal side. Amphids conspicuous, dorso-lateral on rostrum, about double spiral. Three CAT, two sub-dorsal and one dorsal, in one transverse row three annules posterior to rostrum. Buccal cavity weakly developed with a small dorsal tooth. SS in distinct rows, some rows with alternating long and short setae; seven rows of SS in oesophageal region and five rows of SS in mid-body. Three pairs of setae present on non-annulated tail region: one long and one short sub-dorsal and one short sub-ventral pair of setae. Three pairs of SIAT in two longitudinal rows. Long anal flap present.

Fourth-stage juveniles. — Widest part of body in oesophageal region. Rostral setae present. Rostrum with small vacuoles, most prominent just anterior to first body annule. Margins of annular ridges with prominent spine-like projections. Tail with four complete rings, four rings on ventral body side and five on dorsal side in juvenile males. Tail with three, four or five complete annules, three to five rings ventrally and three to six rings dorsally in juvenile females. Amphids conspicuous, dorso-lateral on rostrum, about double spiral. Four CAT in a single transverse row, three annules posterior to rostrum. SS in distinct rows, some rows with alternating long and short setae; eight rows of SS in oesophageal region, seven rows in mid-body. PAT in three longitudinal rows, two sub-lateral and one ventral: five SIAT and nine VAT. Long anal flap present. Three pairs of setae on non-annulated tail region: one long and one short pair of sub-dorsal setae, one short pair of ventro-lateral setae. In juvenile females formation of the vulva at 46 and 48 % of total body length in

two specimens. In juvenile males the tail forms a ribbed ventral protuberance, at one third tail length from the tail tip. Opposite this cuticular projection the tail shows a dorsal bend; posterior to this bend the body cuticle is pointed (Fig. 8).

Discussion. — The difference between *A. chlidosis* and *A. spinicaudum* are rather small. Both species are mainly distinguished respectively by a unispiral or a double coiled amphid and by V at 44 % or 49 %.

The specimens from Laing Island share characters with both species of *Apenodraconema*. They resemble *A. spinicaudum* in : 1. V-value 46-49 %, and in 2. the double spiral amphids in all stages (except males). They are comparable with *A. chlidosis* in 1. the posterior row of CAT being three annules posterior to the rostrum as in *A. chlidosis* instead of four annules as in *A. spinicaudum*; and 2. in females with three tail annules instead of four annules as in *A. spinicaudum*. The margins of the annular ridges have prominent spine-like projections in adults as in *A. chlidosis*, near the tail the projections become smaller and are lacking in the tail region as in *A. spinicaudum*; in the 2nd and 3rd-stage juveniles the spine-like projections become obscure in the posterior half of the body. Two sub-ventral pairs of paravulvar setae as in *A. chlidosis* were not observed, but two paravulvar setae on the left body side or one seta on each side are present in two specimens, the other specimens however, lack paravulvar setae as in *A. spinicaudum*.

Taking into account the low number of described specimens and the lack of information on variability, I consider the differences in the structure of the amphids and in the V-value of greater importance than the other differences. Therefore I consider the specimens of Laing Island to belong to *A. spinicaudum*.

Family DRACONEMATIDAE FILIPJEV, 1918

Subfamily DRACONEMATINAE FILIPJEV, 1918

Genus Paradraconema ALLEN & NOFFSINGER, 1978

Paradraconema floridense ALLEN & NOFFSINGER, 1978 (Plate II, Fig. 1-13)

Material. — 55 ♂, 41 ♀, 49 juv. from Laing Island, Papua New Guinea.

The specimens found, largely agree with the original description. A detailed study is given of the female reproductive system and the male gubernaculum. For the first time the second-stage juvenile is found and described.

Measurements

Females (n = 4) : L = 700-1120, CAT = 21-24, SIAT₁ = 40-46, SIAT₂ = 27-45, SvAT₁ = 36-40, SvAT₂ = 17-19, SS = 13-19/30-44, Non-ann Term tail = 39-45, t = 108-113, oes = 77-102, mbd = 40-57, V = 50-55 (1 exc. 38); b = 7.3-10.9, c = 6.4-9.9, T/ABD = 6.6-6.7.

Males (n = 8) : L = 645-845, CAT = 16-25, SIAT₁ = 37-44, SIAT₂ = 25-30, SvAT₁ = 33-38, SvAT₂ = 16-19, SS = 13-16/28-41, Non-ann Term tail = 32-34, t = 90-99, oes = 82-97, mbd = 38-51; b = 7.6-8.1, c = 7.1-8.5, T/ABD = 4.5-5.2; spic = 37-49, gub = 13-16.

Second-stage juvenile (n = 1) : L = 295, CAT = 11, SIAT₁ = 24, SIAT₂ = 25, SS_{oes} = 10/17/25, SS_{ro} = 8-9.5, SS_t = 8/—, Non-ann Term tail = 28, t = 55, oes = 53, labial setae = 3; b = 5.5, c = 5.3, T/ABD = 4.6.

Third-stage juveniles (n = 3) : L = 395-465, CAT = 13-17, SIAT₁ = 29, SIAT₂ = 22-24, SS_{oes} = 5-6/9-12/29-33, Non-ann Term tail = 31-34, t = 66-67, oes = 64-74, mbd = 31-37; b = 6.2-6.3, c = 5.8-6.0, T/ABD = 5.5-5.9.

Fourth-stage juveniles (n = 3) : L = 625-645, CAT = 17-22, SIAT₁ = 30-34, SIAT₂ = 24-26, SvAT₁ = 27-30, SvAT₂ = 15-17, SS_{oes} = 8.5-15/24-43, Non-ann Term tail = 36-45, t = 84-99, oes = 85-88, mbd = 44-50; V in 2 juv. ♀ = 52; b = 7.1-7.6, c = 6.5-7.4, T/ABD = 5.2-6.6.

Description

Female. — Genital apparatus didelphic-amphidelphic. The uterus is a large undifferentiated sac surrounded by a muscular sheath. Between the uterus and a unicellular sac-like structure (? spermatheca) lies a convoluted tube (Plate II Fig. 3). This tube has a triangular lumen (Plate II Fig. 4-5) surrounded by two muscular sheaths: the outer layer with circularly orientated fibres, the inner sheath with longitudinally orientated fibres (Plate II Fig. 5). Spermatozooids are found in the uterus or in both uterus and unicellular sac-like structure. The oviduct runs along the ovary. Whether the oviduct connects with the uterus or with the sac-like structure is difficult to observe: in some specimens I found rather obscure traces of a direct connection with the uterus. Where the oviduct joins the ovary is difficult to see, it seems to do so near the ripening top of the ovary. The ovary is always reflexed; at the end of the ripening zone a small cap is present. Both branches may be reflexed towards the same body side e.g. to the left side or they may be reflexed to opposite sides e.g. the anterior branch to the left body side, the posterior branch to the right side.

Male. — Gubernaculum consisting of two parts lying dorsocaudally along and parallel with the spicules (Plate II Fig. 8), in the distal half enveloping the spicules laterally; both parts join distally (Plate II Fig. 8-9).

Second-stage juvenile. — Similar to adult. Amphids elongate loop-shaped with longer dorsal arm. Single CAT dorsally on rostrum. Cephalic acanthiform seta minute, 5 μ m anterior to first body annule. Eyespots present, located as in adults. Annulation as in adults, but without ornamentation. Six rows of SS on swollen oesophageal region, four sub-lateral, one ventral and one dorsal; setae in four sub-lateral rows on remainder of body. Two pairs of SLAT in two longitudinal rows. Non-annulated tail region with one pair of setae.

Amphids in adult. — In males amphids large, elongate loop-shaped with slightly longer ventral arm. In females amphids usually elongate loop-shaped with both arms equally long or with a slightly longer dorsal arm (Plate II Fig. 1), or unispiral (somewhat longer than one coil) (Plate II Fig. 2).

Superfamily EPSILONEMATOIDEA STEINER, 1927

Family EPSILONEMATIDAE STEINER, 1927

Subfamily EPSILONEMATINAE STEINER, 1927

Genus *Epsilonema* STEINER, 1927

Epsilonema parvospina sp. nov.

(Plate III Fig. 1-7, Plate IV Fig. 1-4)

Material

Holotype: male slide RIT 8.

Paratypes: 5 σ , 2 φ , 2 juv., slides RIT 8 - RIT 11.

Type locality. — Laing Island, Hansa Bay (Madang Province, Papua New Guinea), in the lagoon between *Halimeda*, at a depth of $\frac{3}{4}$ th m (sample 94).

Other localities and specimens. — samples 37, 62, 95, 234 and 404 (see Table 1).

Measurements

Holotype male: L = 310, hd = 13 \times 11, cs = 8, w amph = 6.5, spic = 31, gub = 4.5, oes = 64, mbd = 23, (mbd) = 14, t = 42, Non-ann Term tail = 12(V).

Paratype males (n = 5): L = 295-350, hd = 10-13 \times 9-12, cs = 7-9, w amph = 4.5-6.5, spic = 31-35, gub = 4-7, oes = 55-65, mbd = 20-24, (mbd) = 14-19, t = 35-42, Non-ann Term tail = 12-17(V).

Paratype females ($n = 2$): $L = 325-335$, $hd = 11-12 \times 12$, $cs = 7.5-9$,
 $w\ amph = 5-5.5$, $oes = 62-66$, $mbd = 24-26$, $(mbd) = 19-20$,
 $t = 31-37$, Non-ann Term tail = 15(V), $V = 60-61$.

Paratype juveniles

— Fourth-stage juveniles ($n = 2$): $L = 290-305$, $hw = 10$, $cs = 8$,
 $w\ amph = 4-5$, $oes = 58$, $mbd = 24$, $(mbd) = 18-19$, $t = 28-29$,
 Non-ann Term tail = 13(V).

Juvenile specimens from other localities than type locality.

Third-stage juveniles ($n = 4$): $L = 210-245$, $hd = 8-9 \times 9-9.5$, $cs = 6-7.5$,
 $w\ amph = 3-3.5$, $oes = 50-60$, $mbd = 21-23$, $(mbd) = 15-17$,
 $t = 25-28$, $tmr = 10-11(V)$.

Third-stage juvenile, moulting specimen to fourth-stage juvenile: $L = 240$,
 $hd = 7-9.5$, $cs = 7$, $w\ amph = 4$, oes (4th stage) = 55, $mbd = 24$,
 $(mbd) = 18$, $t = 29$, Non-ann Term tail = 10(V).

Fourth-stage juvenile, moulting specimen to adult female: $L = 340$,
 $hd = 10 \times 10$, $cs = 8$, $w\ amph = 4$, $mbd = 29$, $(mbd) = 22$,
 $t = 31$, Non-ann Term tail = 12(V), $w\ amph$ (\varnothing) = 5, t (\varnothing) = 36,
 Non-ann Term tail (\varnothing) = 14(V), V (\varnothing) = 64, hd (\varnothing) = 11×12 .

Description

Body small, with 135-141 (138) rings. Body rings with hyaline outerlayer with anteriorly directed margins in anterior body region, and posteriorly directed margins in posterior body region; annules with a clearly cuticularized anterior and posterior border, the thin layer in between ornamented with longitudinal striae and sometimes with vacuoles in posterior body region. From mid-corpus onwards some of the striae result in about eight longitudinal rows of spines ($4\ \mu m$ long (Plate III Fig. 1-4), continuing dorsally almost to the anal region. The proportion minimum body width to maximum body width varies between 1 : 1.3 and 1 : 1.6 (mean 1 : 1.4).

Ambulatory setae with slightly bent tip, in four rows: two sub-ventral rows with 9-12 setae in males and 12-14 setae in females and two latero-ventral rows with 6-8 typical ambulatory setae in males and 11-12 setae in females, followed by 3 (σ) and 1 (\varnothing) supporting setae (?).

Head with four cephalic and eight subcephalic setae. Amphids dorso-laterally in posterior head region, about unispiral (with slightly more than one coil). In males, width of the amphids 42-59% of the corresponding head diameter; in females, the amphids are slightly smaller or equally wide: 38-46%. Lip region withdrawn in all specimens. Oesophagus with well developed terminal bulb.

Tail conical, ventrally curved in several specimens. Body annulation extending farther posteriorly on the dorsal body side than on the ventral body side, with 10-11 tail rings ventrally and 13-15 rings dorsally in males; 8-9 tail rings ventrally and 12-13 rings dorsally in females. Three caudal glands present.

Males. — One testis. A single ventral row of three to five small copulatory thorn-like structures (variable in length within a single specimen and between specimens) situated just posterior to the latero-ventral ambulatory setae: i.e. the anterior most thorn situated at the level of the last sub-ventral ambulatory seta, 26-31 rings anterior to the anus. Another thorn-like structure, paired, situated sub-ventrally in the oesophageal region on ring 10-12. Spicules 31-35 (33) μm long, strongly curved, with enlarged capitulum; gubernaculum small, bent, parallel to the spicules.

Females. — Reproductive system didelphic-amphidelphic with reflexed ovaries. Uterus with large cells with distinct nucleus. No spermathecae present. Spermatozooids observed in uterus, near the vagina. Vulva at 60-61 % of total body length; vagina with long cuticular distal part and an as long non-cuticularized inner part.

Juveniles. — First and second-stage juveniles not observed.

Third-stage juveniles from non-type locality. — General habit as in adults. Body annules with similar structure and ornamentation as in adults and other juvenile stages. Seven longitudinal rows of spines (3-4 μm long): one dorsal row and on each body side two sub-lateral and one sub-dorsal row in posterior body region. Number of body rings 155-159 i.e. slightly larger than in the fourth stage and clearly larger than in adults. Six subcephalic setae. Amphidial width 32-34 % of total head width. Lip region withdrawn in all specimens. Two rows of ambulatory setae, each with a series of six setae plus a pair of setae closer to the anus. Tail with 12 rings ventrally and 19 rings dorsally (one specimen with 11 tail rings ventrally and 16 rings dorsally).

Fourth-stage juveniles. — General habit as in adults; body annules with similar structure and ornamentation as in adults. Number of body rings slightly larger than in adults: 145-151 against 136-141 in adults. Four rows of ambulatory setae: two sub-ventral and two latero-ventral rows, each row with 5-7 ambulatory setae. Eight subcephalic setae. In a juvenile female (moulting) from non-type locality, the vulva being formed at 64 % of total body length. In the loosen body cuticle an indication of minute teeth (3?) was observed at the base of the stoma. In the other specimens no armature was observed since the labial region is always found withdrawn. Tail with 12-16 rings ventrally and 14-18 rings dorsally.

Diagnosis. — *Epsilonema parvospina* sp. nov. is characterized by the structure of the body annules with longitudinal striae and with longitudinal rows of spines from mid-body onwards. It is also characterized in males by the possession of a single ventral row of 3-5 copulatory thorns.

Differential diagnosis. — *E. parvospina* sp. nov. resembles *E. costeriatum* (MURPHY, 1963) LORENZEN, 1973, *E. fernandinae* CLASING, 1981 and *E. mangrovi* CLASING, 1981 in males by the small

number of copulatory thorns : three to five, lying in a single ventral row with the anterior thorn at the level of the posterior ambulatory seta or just posterior to it.

E. parvospina sp. nov. is closely related to *E. fernandinae* in general habit, in measurements, number and structure of the body rings, number of subcephalic setae, in the structure of the amphids and amphidial width in relation to head diameter (showing a slight sexual dimorphism), and in shape of the spicules.

It differs from *E. fernandinae* in possessing longitudinal rows of spines, and in having longer spicules 31-35 μm against 23-24 μm in *E. fernandinae*.

E. parvospina also resembles *E. mangrovi* in general habit, body annules with longitudinal striae, structure and measurements of the copulatory apparatus. It differs from *E. mangrovi* by its larger amphids and by possessing longitudinal rows of spines on the body annules.

Epsilonema longispicula sp. nov.

(Plate V, Fig. 1-6, Plate VI, Fig. 1-4)

Material

Holotype : male slide RIT 12.

Paratypes : 4 ♂, 9 ♀, 26 juv., slides RIT 13 - RIT 26.

Type locality. — Laing Island, Hansa Bay (Madang Province, Papua New Guinea), reef flat east, intertidal zone, between *Halimeda*; sample 404.

Other localities and specimens. — samples 37 and 94; 1 ♂, 1 ♀, 17 juv.

Measurements

Holotype male : L = 455, hd = 13 × 14, cs = 10, w amph = 5.5, oes = 86, mbd = 34, (mbd) = 23, t = 51, Non-ann Term tail = 16(D)-21(V), spic = 54, gub = 5.5, w amph/hd = 39 %.

Paratype males (n = 4) : L = 405-465, hd = 13-14 × 14-15, cs = 8.5-11, w amph = 5.5-6.5, oes = 69-85, mbd = 33-36, (mbd) = 22-24, t = 48-55, Non-ann Term tail = 15-17(D), 20-22(V), spic = 52-55, gub = 9.5-13, w amph/hd = 37-46 %.

Paratype females (n = 9) : L = 375-455, hd = 13-15 × 14-15, cs = 8-10, w amph = 4.5-6, oes = 79-88, t = 41-48, Non-ann Term tail = 19-22(V), 13-17(D), V = 59-63 %.

Paratype juveniles

Second-stage juveniles (n = 5) : L = 215-235, hd = 10 × 9.5-10, cs = 5.5-8.5, w amph = 3-4.5, oes = 60-65, mbd = 21-24, (mbd) = 17-20, t = 27-31, Non-ann Term tail = 8.5-9(D), 8.5-10(V).

- Third-stage juveniles ($n = 5$): $L = 240-290$, $hd = 10-12 \times 9.5-12$, $cs = 7-9.5$, $w\ amph = 3.5-5$, $oes = 52-73$, $mbd = 24-29$, $(mbd) = 18-23$, $t = 26-37$, Non-ann Term tail = 7-10(D), 9.5-13(V).
- Fourth-stage juvenile females ($n = 5$): $L = 335-355$, $hd = 12-13 \times 13-14$, $cs = 8-9.5$, $w\ amph = 4.5-5$, $oes = 70-72$, $mbd = 32-33$, $(mbd) = 25-26$, $t = 37-39$, Non-ann Term tail = 11-12(D), 15-16(V), $V = 62\%$ (1 juv. ♀ 65%).
- Fourth-stage juvenile males ($n = 2$): $L = 355-360$, $hd = 12-13 \times 13$, $cs = 9-10$, $w\ amph = 5$, $oes = 68-77$, $t = 37-38$, Non-ann Term tail = 11-13(D), 15-16(V).
- Third-stage juveniles moulting into fourth stage ($n = 4$): $L = 265-285$.
- Fourth-stage juveniles moulting into male adults ($n = 4$): $L = 360-400$, $spic = 48$ (two specimens), 56-57 (two specimens).
- Fourth-stage juvenile moulting into female adult ($n = 1$): $L = 370$, $V = 62\%$.
- Male specimen from sample 94 ($n = 1$): $L = 475$, $hd = 14 \times 15$, $cs = 10$, $w\ amph = 5.5$, $oes = 81$, $mbd = 33$, $(mbd) = 23$, $t = 54$, Non-ann Term tail = 15(D), 20(V), $spic = 56$, $gub = 10$, $w\ amph/hd = 37\%$.

Description

Body relative small, with 139-142 annules. Cuticular body rings vacuolated — with one transverse row of small to large vacuoles — and (or) striated, except for a few plain rings at both ends. Annules with hyaline outerlayer with anteriorly directed margin in anterior body region and posteriorly directed margin from mid-body on. From the level of the ambulatory setae, the body annules are laterally and dorsally provided with spines of varying length.

Ambulatory setae slightly bent at tip, arranged in four rows: two sub-ventral rows with 9 to 11 setae in males and 7 to 13 setae in females and two latero-ventral rows with 5 to 6 ambulatory setae in males and 8 to 11 setae in females; followed in both sexes by three fine supporting (?) setae.

Head with four cephalic setae and eighth subcephalic setae. Amphids dorso-lateral in posterior head region, about unispiral to a spiral with $1\frac{1}{4}$ th coil. Diameter amphids 37 to 46% of corresponding head diameter in males and 30 to 40% in females. Lip region withdrawn in all specimens. Oesophagus with well developed terminal bulb.

Tail conical, ventrally curved. Body annulation extending further posteriorly on dorsal body side than on ventral side, with 11 to 12 tail rings ventrally and 14 to 15 rings dorsally in males; 7 to 10 rings ventrally and 10 to 15 rings dorsally in females. Three caudal glands.

Males. — One testis. Vas deferens with large cells with distinct nucleus. Copulatory thorns in two single consecutive ventral rows: an anterior row — just behind the ambulatory setae — with three to five

large thorns and a posterior row of three to five small thorns; both rows separated by about ten annules. Spicules long, curved, with widened capitulum. Gubernaculum small consisting of a short single base and two apofyses parallel to the spicules and difficult to observe.

Females. — Reproductive system didelphic-amphidelphic with reflexed ovaries. Uterus with large cells with distinct nucleus. No spermathecae present. Vulva at 59 to 63 % of total body length. Vagina with long cuticular distal part.

Juveniles. — First-stage juveniles not observed.

Second-stage juveniles. — General habit as in adults. Body with 117-119 annules. Cuticular body rings not vacuolated, superficially with transverse striae; from mid-body striae arranged in longitudinal rows (four on each side) to anal region. No subcephalic setae. Lip region withdrawn in all specimens. Two rows of three ambulatory setae each. Tail with 11 to 12 rings ventrally and 18 to 19 rings dorsally; annulation extending further posteriorly on the dorsal body side than on the ventral side.

Third-stage juveniles. — General habit as in adults. Body with 154-161 annules. Cuticular body rings with transverse striae, resulting in about four longitudinal rows on each side from the level of the ambulatory setae to the anus; a few rings with a slight vacuolation in the middle of the ring. Six subcephalic setae. Lip region withdrawn in all specimens. Two rows of ambulatory setae, each with a series of four to six ambulatory setae with curved tip and one supporting (?) seta closer to the anus. Tail with 12 to 14 annules ventrally and 18-21 annules dorsally.

Fourth-stage juveniles. — General habit as in adults. Body with 142-153 (149) annules. Cuticular body rings with transverse striae; in front and hind body region annules slightly vacuolated. Eight subcephalic setae. Four rows of ambulatory setae: two sub-ventral rows with 4 to 7 setae and two latero-ventral rows with 4 to 6 ambulatory setae with bent tip; each row of ambulatory setae followed by a fine supporting (?) seta nearer to the anus. Tail with 9 to 14 (10) annules ventrally and 14-22 (16) annules dorsally. During the last moult the copulatory system is formed, the future copulatory thorns can be located. In a moulting juvenile female the vulva was observed at 62 % of the total body length.

Diagnosis. — *Epsilonema longispicula* sp. nov. is characterized by the ornamentation of the annulated body cuticle, with the annules vacuolated and provided with spines of varying length from mid-body on, and in males by the two single ventral rows of copulatory thorns and the long spicules.

Differential diagnosis. — *E. longispicula* sp. nov. resembles *E. parvospina* sp. nov. in general habit, shape of the amphids, shape of

the spicules and copulatory thorns. The adults differ from *E. parvospina* by the ornamentation of the annulated body cuticle with shorter spines, dispersed instead of arranged in longitudinal rows as in *E. parvospina*, by possessing two rows of copulatory thorns instead of one row in *E. parvospina* and by the longer spicules 52-56 μm against 31-35 in *E. parvospina*.

Genus *Triepsilonema* gen. n.

Diagnosis. — Epsilonematinae. Body clearly bent, about 200 cuticular body rings. Ambulatory setae in six rows, the two outer rows may reach the anal region; ambulatory setae with bent tip. Amphids rather small spiral structures with 1 $\frac{1}{4}$ th coil; no sexual dimorphism. Head with four cephalic and eight subcephalic setae in adult, two crowns of labial papillae. Oesophagus with gradually widened end-bulb. Three caudal glands, each gland with separate outlet. Tail completely annulated, ending on three papillae; each papilla with the outlet of a caudal gland. Second-stage juvenile with less body rings than adult and third-stage juvenile, two rows of three ambulatory setae; head with four cephalic and two subcephalic setae. Third-stage juvenile with more body rings than adult, two rows of six ambulatory setae; head with four cephalic and six subcephalic setae.

Genotype: *Triepsilonema tripapillata* gen. n., sp. n.

Triepsilonema tripapillata gen. n., sp. n.

(Plate VII, Fig. 1-5, Plate VIII, Fig. 1-5)

Material

Holotype: male slide RIT 27.

Paratypes: 1 ♀, 1 juv. (third stage) slide RIT 28, 1 juv. (second stage) slide RIT 29.

Type locality. — Laing Island, Hansa Bay (Madang Province, Papua New Guinea), in the lagoon, between *Halimeda*, (sample 37).

Measurements

Holotype male: L = 390, hd = 12×12 , cs = 5, w amph = 3.5, oes = 83, mbd = 37, (mbd) = 27, spic = 33, gub = 9, t = 53.

Paratype female: L = 360, hd = 11×12 , cs = 5.5, w amph = 4, oes = 83, mbd = 37, (mbd) = 27, t = 41; V = 59 %.

Paratype juveniles

Second-stage juvenile: L = 180, hd = 8.5×9 , cs = 4, w amph = 8.5, oes = 58, mbd = 17, (mbd) = 16, t = 25.

Third-stage juvenile : $L = 285$, $hd = 8.5 \times 11$, $cs = 4$, $w\ amph = 3.5$,
 $oes = 78$, $mbd = 31$, $(mbd) = 24$, $t = 33$.

Description

Body rather small, with 198 annules in male, 195 annules in female. Cuticular body rings without ornamentation and with weaker middle zone. Annules with hyaline outerlayer with anteriorly directed margin in anterior body region and posteriorly directed margin in posterior body region; the change in direction occurs at the level of the first body curve on the ventral side and more backwards i.e. at the level of the second bent of the body on the dorsal side. Eight rows of somatic setae in anterior body region.

Ambulatory setae slender, with curved tip, arranged in six rows : — two outer latero-ventral rows with 6-7 ambulatory setae and 3 fine setae in male, 9 ambulatory setae and 3 fine setae in female; — and four sub-ventral rows lying close to one another : the two outer rows with 4-7 ambulatory setae in male, 8 ambulatory setae and two fine setae in female; and the two inner rows with 8-9 ambulatory setae in male and 4-6 ambulatory setae and two fine setae in female.

Head with four cephalic setae and eighth subcephalic setae. Male having fully extended lip region, two crowns of six labial papillae have been observed. In female, lip region partly withdrawn. Amphids situated dorso-lateral in posterior head region, spiral structures with $1\frac{1}{4}$ th coil. Diameter amphids 29 % of corresponding head width in male, 33 % in female. Stoma narrow. Oesophagus anteriorly with two sub-ventral tooth-like projections in lumen, opposite a corresponding indentation of the dorsal lumen wall. Oesophagus cylindrical, at the end gradually widening to a terminal bulb.

Tail completely annulated, ending on three smooth obvious papillae, 4-5 μ m long. Each papilla with spinneret, forming a separate outlet for one of the three caudal glands. Tail with 17 annules ventrally and 21 rings dorsally in male, 15 rings ventrally and 16 dorsally in female.

Male. — One testis. Front part of vas deferens with large cells with distinct nucleus. No copulatory thorns. Spicules curved, with widened offset capitulum. Gubernaculum narrow, slightly curved, with two narrow apofyses parallel to the spicules.

Female. — Reproductive system didelphic-amphidelphic with outstretched (?) ovaries thickened at the top. Apparently in posterior branch tip of ovary reflexed. Uterus with large cells with distinct nucleus. No spermathecae. Vulva at 59 % of total body length from anterior.

Juveniles. — First-stage and fourth-stage juveniles not observed.

Second-stage juveniles. — General habit as in adults, body about equally wide, tapered towards both ends. 164 cuticular body rings without ornamentation. Lip region extended, with apparently two rows

of labial sensillae. Four cephalic setae. Two dorso-lateral subcephalic setae at the border of the head just in front of the first complete body ring. Two rows of three ambulatory setae with bent tip. Tail annulated (12 rings ventrally, 19 rings dorsally), ending on three obvious papillae including the separate outlets of the caudal glands.

Third-stage juvenile. — General habit as in adults. Body with 201 annules. Lip region withdrawn. Four cephalic setae, six subcephalic setae. Two rows of six ambulatory setae with bent tip followed by a fine setae closer to the anus. Tail annulated (15 annules ventrally, 16 annules dorsally), ending on three obvious papillae bearing the separate outlet of the three caudal glands.

Diagnosis. — *Triepsilonema tripapillata* sp. n. is characterized by the three large caudal papillae, the cuticular body rings without ornamentation and shape copulatory apparatus.

Discussion. — *Triepsilonema* gen. n. is closely related to *Bathyepsilonema* STEINER, 1931 (see enlarged and emended diagnosis of CLASING, 1981), mainly in possessing six rows of ambulatory setae. *Triepsilonema* differs from *Bathyepsilonema* (definition CLASING, 1981) — by possessing a separate outlet for each of the three caudal glands, each gland ending in a large caudal papilla, — by the large number of cuticular body rings, about twice the number of *Bathyepsilonema*-species, — by the difference in number of body rings between different juvenile stages and adult e.g. second-stage juvenile with less body rings than the other stages in *Triepsilonema* instead of an equal as or a larger number of body rings than adults in *Bathyepsilonema*, — by the oesophagus without mid-bulb or thickening halfway its length as in *Bathyepsilonema*, — by the location of the ambulatory setae : more dispersed in comparison with most species of *Bathyepsilonema* where the ambulatory setae e.g. in female are grouped anterior to the vulva and — by the ovaries, apparently outstretched with thickened tip but more presumably with reflexed tip (see posterior branch in *T. tripapillata*) instead of ovaries clearly and largely reflexed with tip reaching close to the vulvar region in *Bathyepsilonema*.

A separate outlet for each of the caudal glands is only known from a few species of free-living nematodes : *Ixonema sordidum* LORENZEN, 1971 (Desmodoridae, Microlaiminae) with three caudal glands debouching separately, each one in a minute terminal tubercle (= « Höckern »); *Echinotheristus cimbricus* von THUN & RIEMANN, 1967 and *E. teutonicus* von THUN & RIEMANN, 1967 (Monhysteridae, Monhysterinae) both with two caudal glands ending separately on two small terminal tubercles and *Diplopeltula breviceps* GERLACH, 1950 and *Diplopeltula incisa* (SOUTHERN, 1914) GERLACH, 1962 (Axonolaimidae, Campylaiminae) both with three caudal glands each of them ending separately in a sub-terminal pore : one dorsal pore and two sub-ventral pores (see GERLACH, 1950, p. 148, Fig. 5e, p. 146, Fig. 3c, 3f), *Triepsilonema tripapillata* is the first representative of the family Epsilonematidae STEINER, 1927, pos-

sessing separate outlets for each of the caudal glands. It is also the only species known where the separate outlets of the caudal glands are so obvious, i.e. each gland ending in a large papilla.

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For reprints address to: Laboratorium voor Morfologie en Systematiek der Dieren, K. L. Ledeganckstraat 35, B-9000 Gent, Belgium.

EXPLANATION OF THE PLATES

PLATE I

Apenodraconema spinicaudum (GERLACH)

- Fig. 1. — Second-stage juvenile, surface view of head.
Fig. 2. — Second-stage juvenile, entire specimen.
Fig. 3. — Third-stage juvenile, surface view of head.
Fig. 4. — Third-stage juvenile, entire specimen.
Fig. 5. — Fourth-stage juvenile, young female, surface view of head.
Fig. 6. — Fourth-stage juvenile, young female, entire specimen.
Fig. 7. — Fourth-stage juvenile, young male, tail in surface view.
Fig. 8. — Fourth-stage juvenile, young male, detail ventral protuberance, surface view.
Fig. 9. — Male, surface view of head.
Fig. 10. — Male, head in longitudinal optical section.
Fig. 11. — Male, posterior body region.

PLATE II

Paradraconema floridense ALLEN & NOFFSINGER

- Fig. 1. — Female, surface view of head.
Fig. 2. — Female, surface view of head.
Fig. 3. — Female reproductive system.
Fig. 4. — Female, transverse optical section at level of convoluted tube.
Fig. 5. — Female, transverse optical section at level of convoluted tube.
Fig. 6. — Female reproductive system.
Fig. 7. — Male copulatory apparatus.
Fig. 8. — Male copulatory apparatus, partial ventral view.
Fig. 9. — Male copulatory apparatus.
Fig. 10. — Second-stage juvenile, entire specimen.
Fig. 11. — Second-stage juvenile, surface view of head.
Fig. 12. — Third-stage juvenile, surface view of head.
Fig. 13. — Fourth-stage juvenile, surface view of head.

PLATE III

Epsilonema parvospina sp. nov.

- Fig. 1. — Male holotype, entire specimen in surface view.
Fig. 2. — Male, anterior body region.

- Fig. 3. — Male, posterior body region.
Fig. 4. — Female, detail of body wall in surface view.
Fig. 5. — Female, reproductive system and tail in surface view.
Fig. 6. — Female, head in surface view.
Fig. 7. — Fourth-stage juvenile, surface view of head.

PLATE IV

Epsilonema parvospina sp. nov.

- Fig. 1. — Third-stage juvenile, moulting, entire specimen, showing levels at which the sections a - c were made representing a detail of the body wall in surface view.
Fig. 2. — Third-stage juvenile, surface view of head.
Fig. 3. — Fourth-stage juvenile, moulting into a female adult, entire specimen with indication of d, level at which a detail of the body wall is shown under d.
Fig. 4. — Fourth-stage juvenile, surface view of head.

PLATE V

Epsilonema longispicula sp. nov.

- Fig. 1. — Male surface view of head (paratype slide RIT 26).
Fig. 2. — Male, entire specimen with indication of the levels a-c, showing a detail of the body wall in surface view (paratype).
Fig. 3. — Female, head in surface view (paratype slide RIT 20).
Fig. 4. — Female reproductive system and tail (paratype slide RIT 25).
Fig. 5. — Male, holotype copulatory apparatus and thorns.
Fig. 6. — Female, partial ventral view of vulva (paratype slide RIT 16).

PLATE VI

Epsilonema longispicula sp. nov.

- Fig. 1. — Second-stage juvenile, head in surface view.
Fig. 2. — Third-stage juvenile, entire specimen in surface view.
Fig. 3. — Fourth-stage juvenile, young male, posterior body region in surface view.
Fig. 4. — Fourth-stage juvenile, young female, head in surface view.

PLATE VII

Triepsilonema tripapillata gen. n. sp. n.

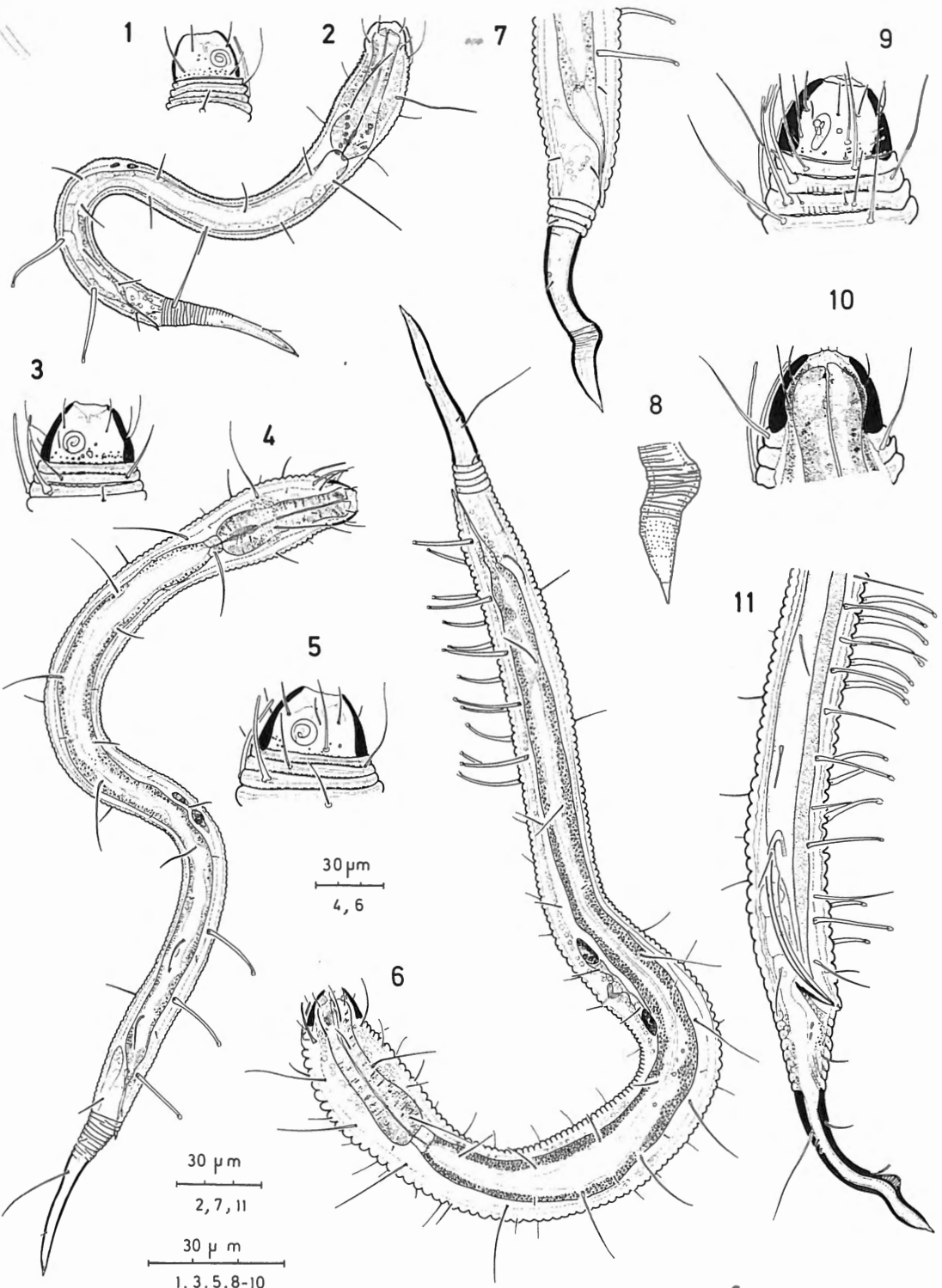
- Fig. 1. — Second-stage juvenile, head in surface view (paratype).
Fig. 2. — Third-stage juvenile, head in surface view (paratype).

- Fig. 3. — Male, holotype, head in surface view.
Fig. 4. — Male, head in longitudinal optical section.
Fig. 5. — Female, head in surface view (paratype).

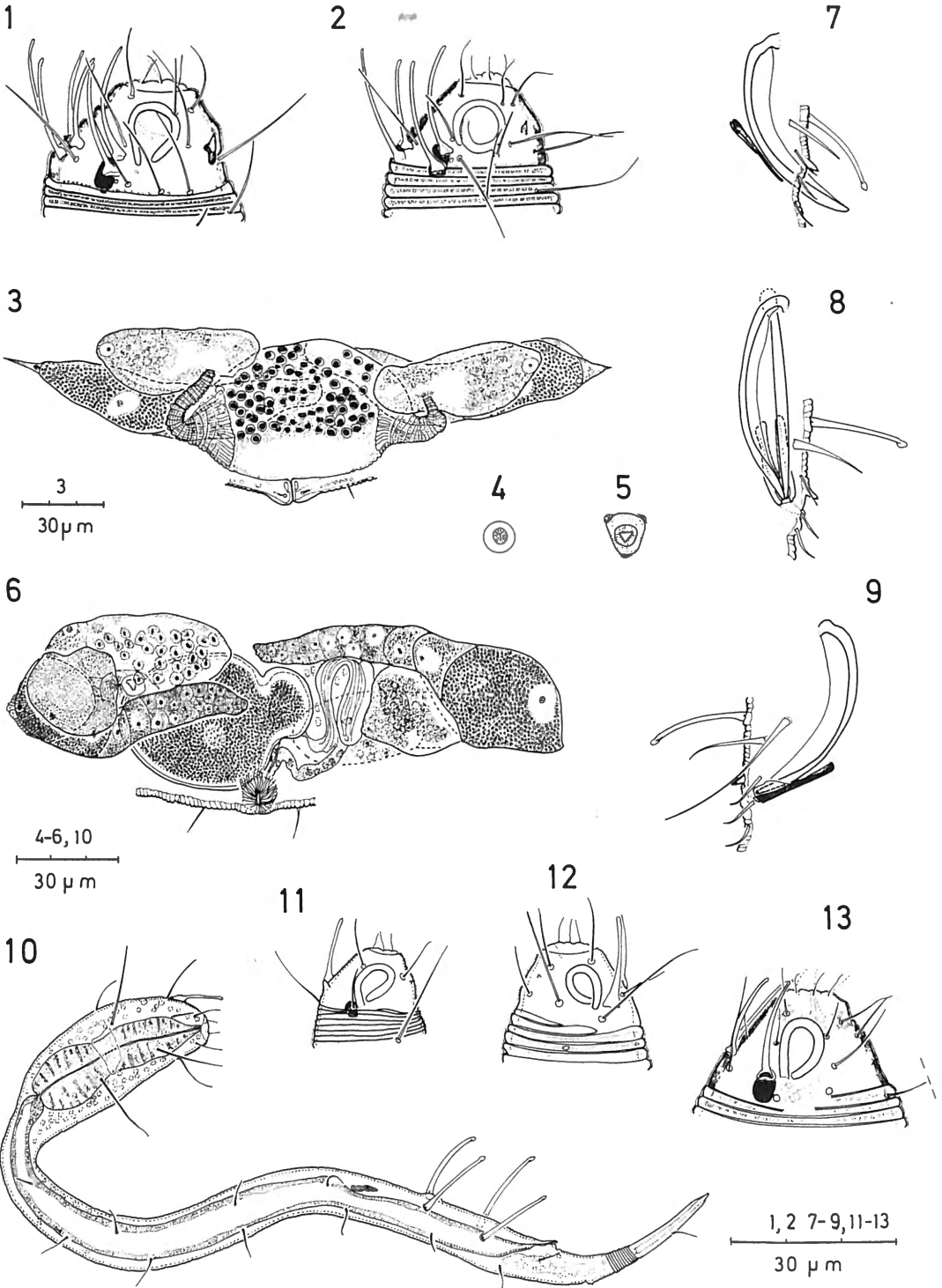
PLATE VIII

Triepsilonema tripapillata gen. n. sp. n.

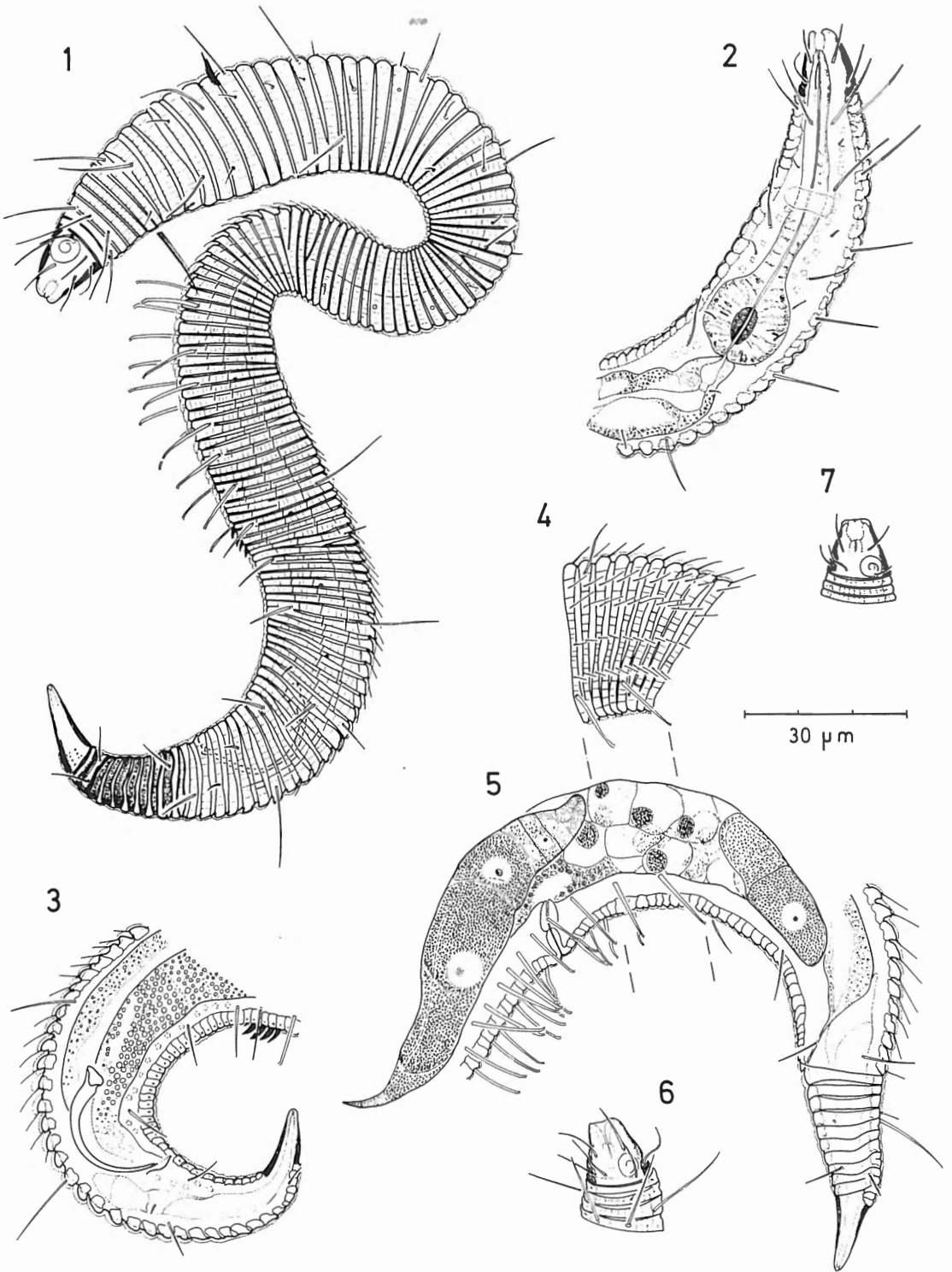
- Fig. 1. — Second-stage juvenile, entire specimen (paratype).
Fig. 2. — Third-stage juvenile, entire specimen (paratype).
Fig. 3. — Male holotype, entire specimen with indication of level a, showing a detail of the body wall in surface view.
Fig. 4. — Male, posterior body region with part of tail in surface view.
Fig. 5. — Female, entire specimen (paratype).



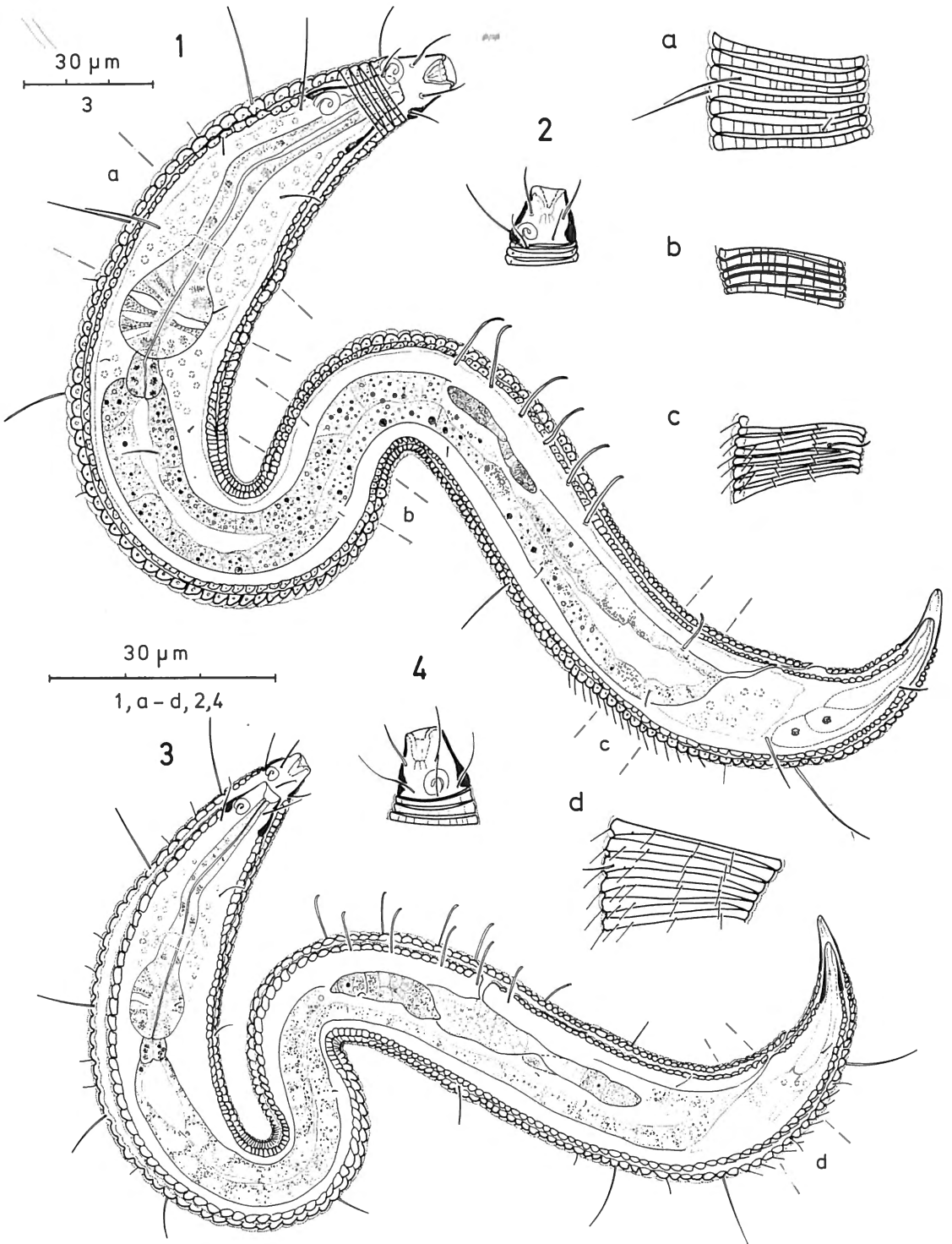
W. DECRAEMER. — Draconematidae and Epsilonematidae (Nematoda)
 from Laing Island Papua New Guinea,
 with one new genus and three new species.



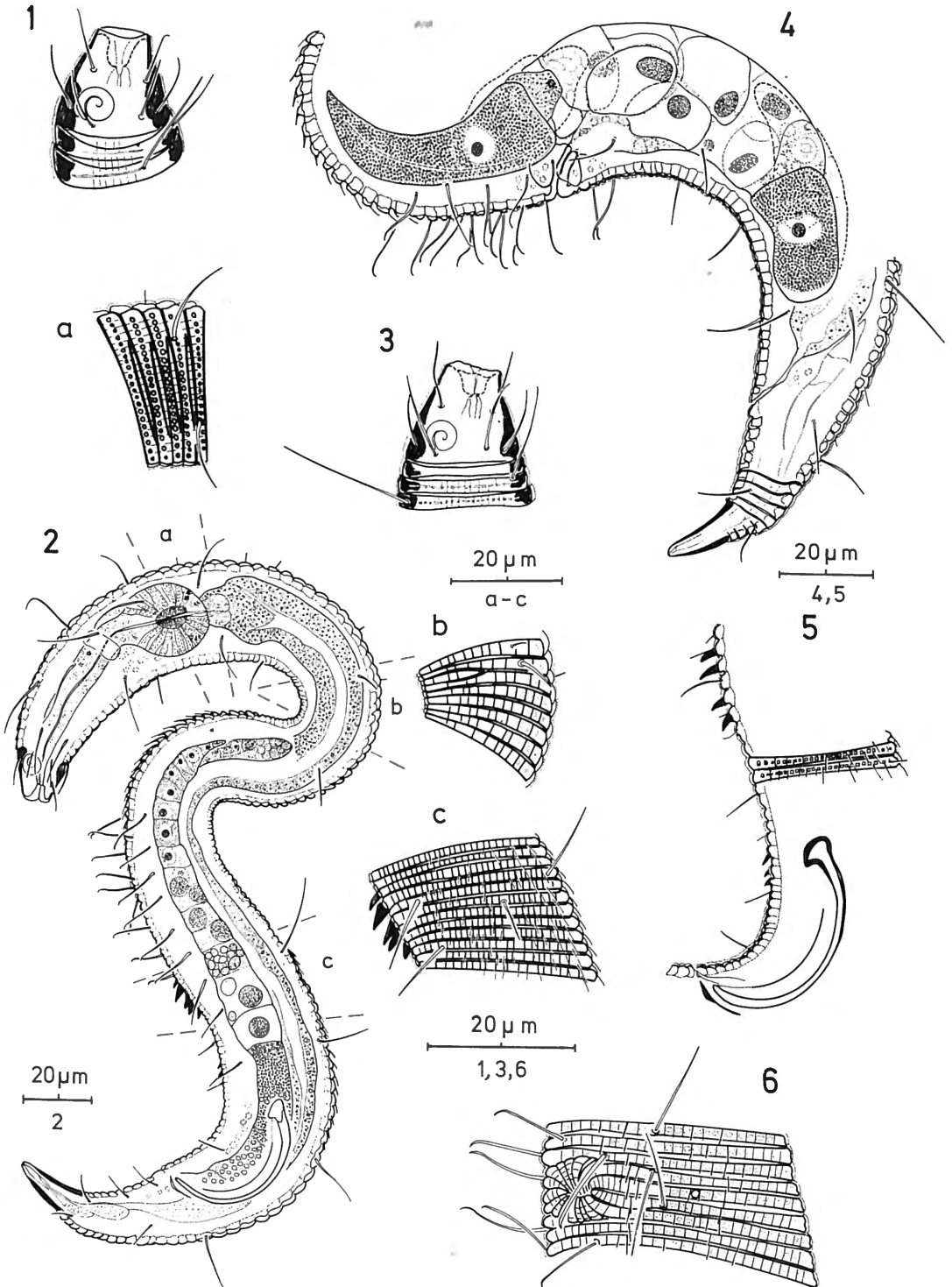
W. DECRAEMER. — Draconematidae and Epsilonematidae (Nematoda)
from Laing Island Papua New Guinea,
with one new genus and three new species.



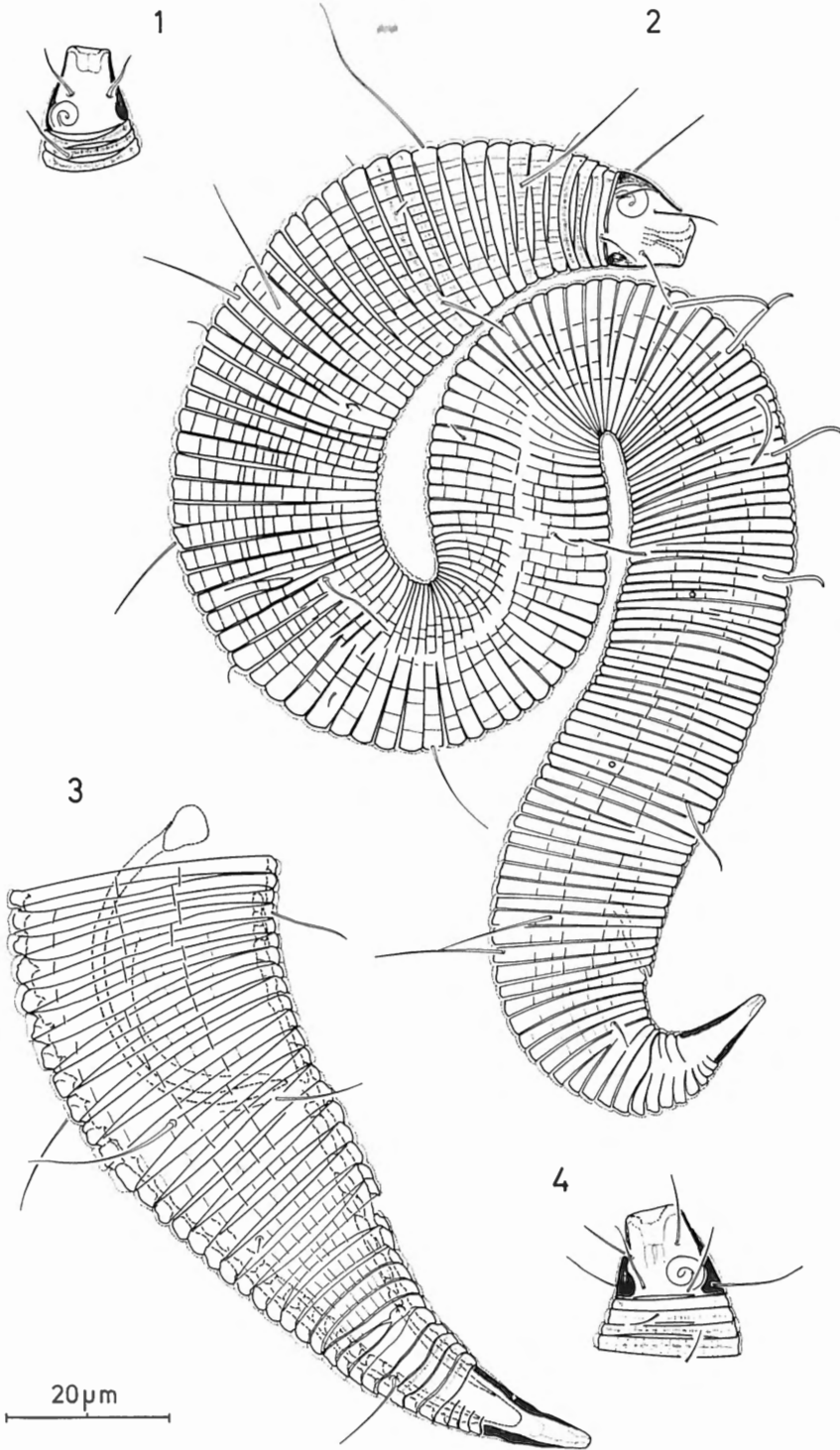
W. DECRAEMER. — Draconematidae and Epsilonematidae (Nematoda)
from Laing Island Papua New Guinea,
with one new genus and three new species.



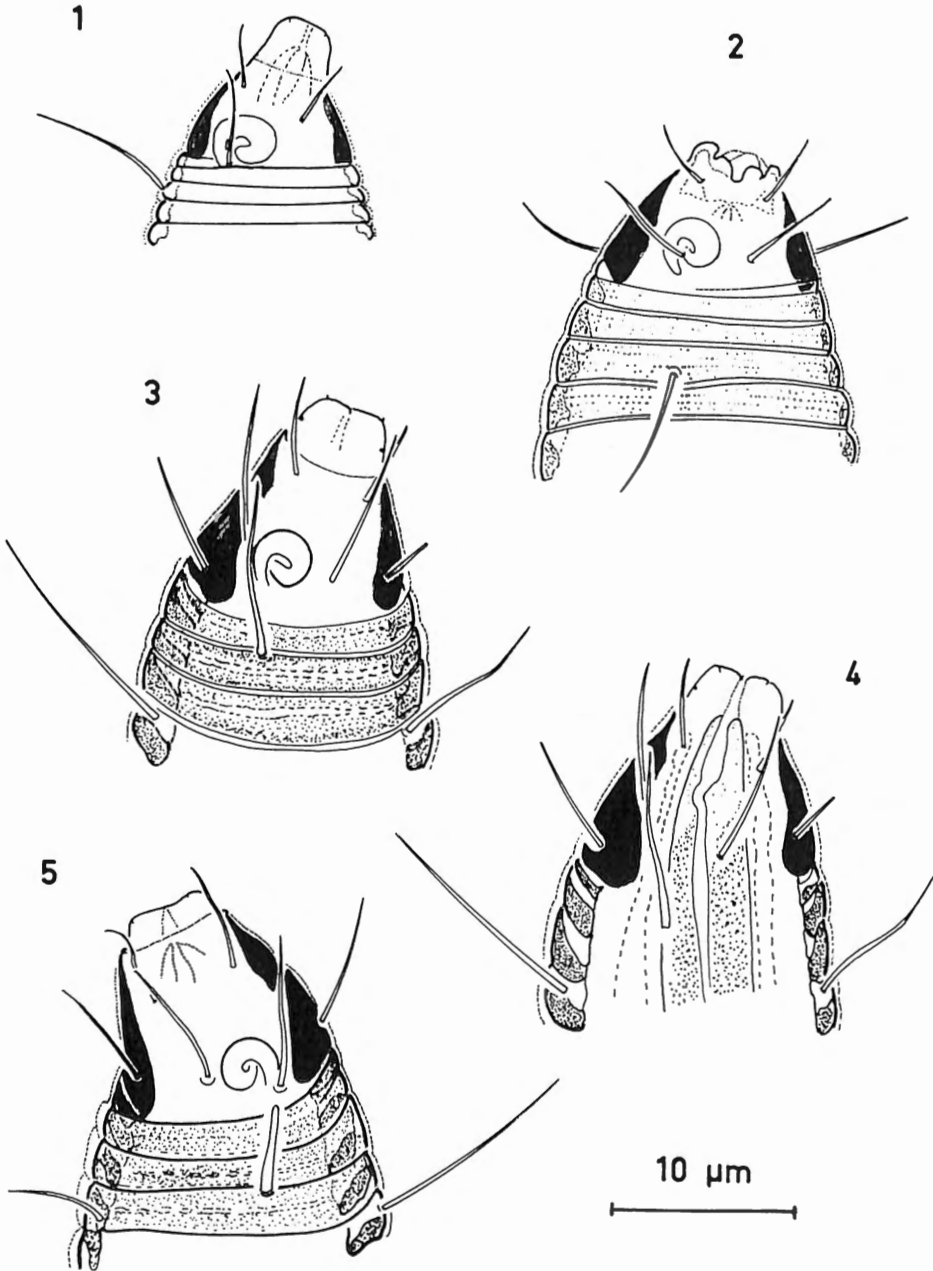
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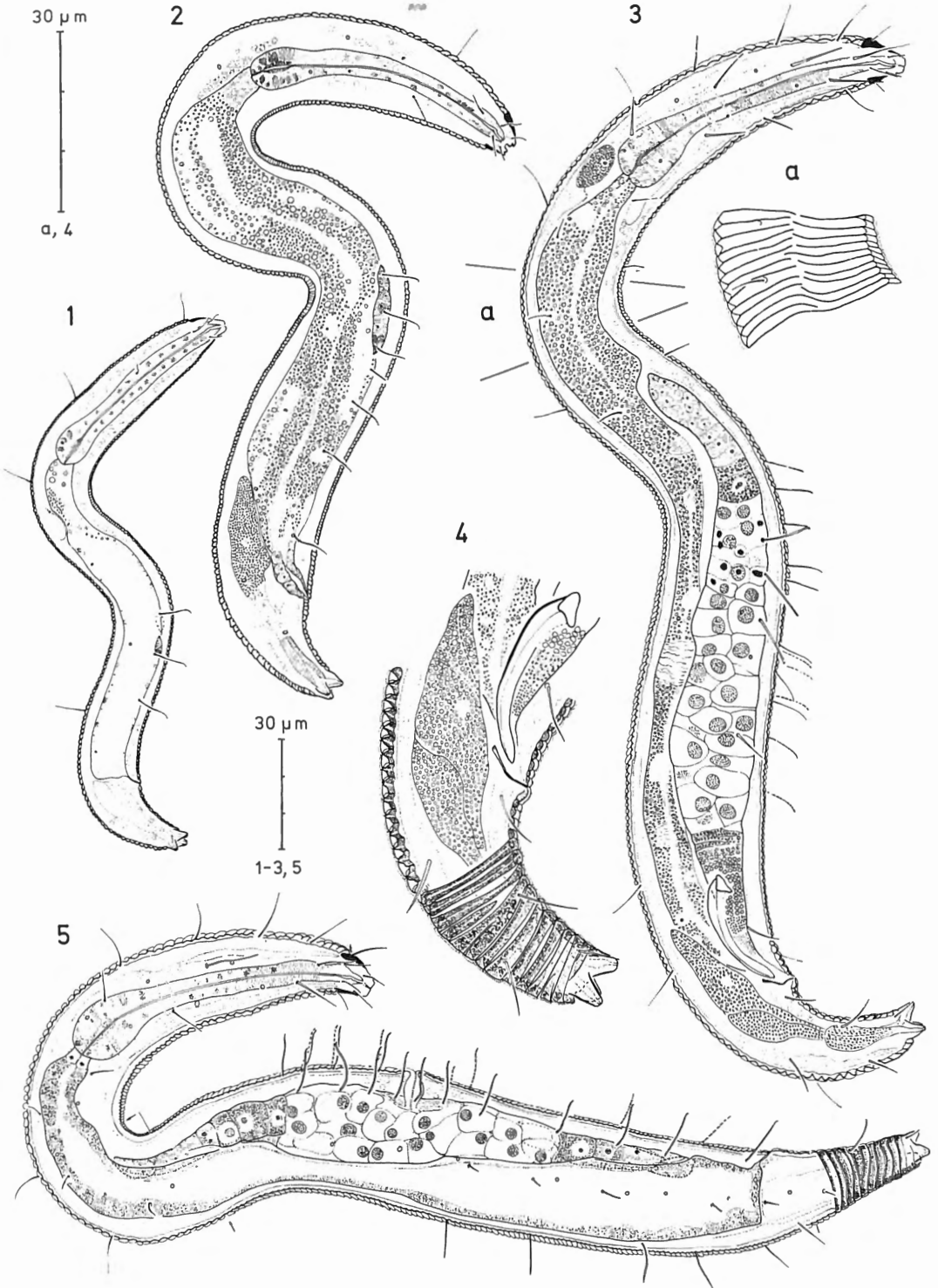
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