1: *Thalassomonhystera* sp. from East Pacific Rise: 9°N, Tica; by M. Bright.

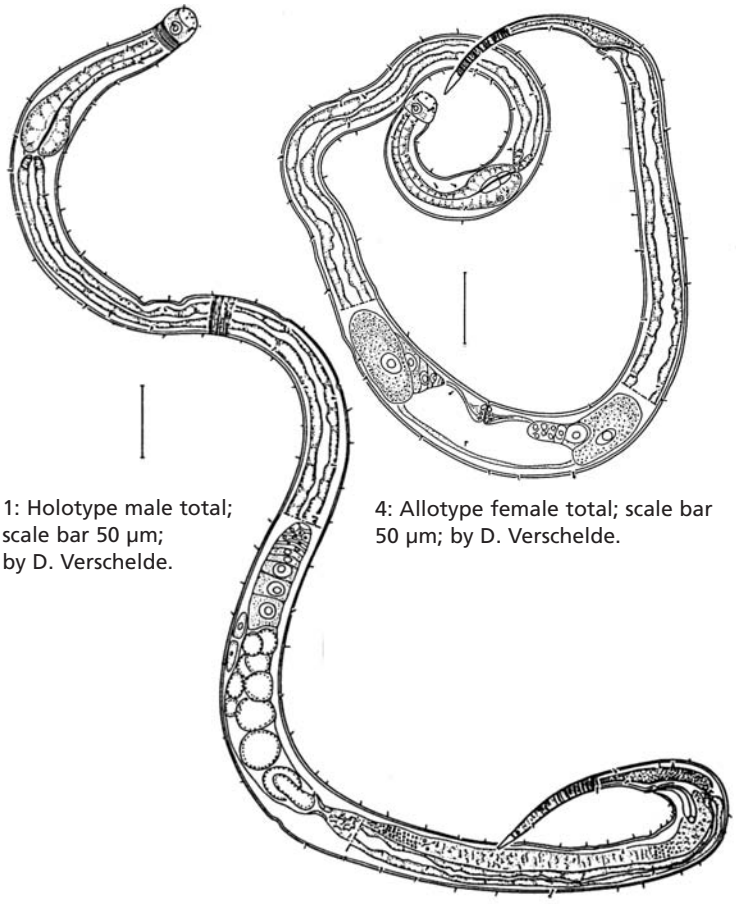
Desmodora alberti Verschelde, Gourbault & Vincx, 1998

Size: 750-1150 µm.

Morphology: Desmodorid with rounded head capsule and long, slender, conical tail. Fine somatic setae; absence of subcephalic setae. Body cuticle annulated. Amphid cryptospiral. Buccal cavity with large dorsal tooth, ventral teeth not observed. Cylindrical pharynx with muscular endbulb, bipartite cuticular valves in terminal bulb of pharynx. Large globular sperm cells and short bent spicule in males. Females with vulva at approximately 56% of body length.

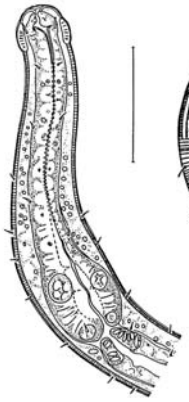
Biology: Living in heterogeneous sediment covered with bacteria. Specific structure of buccal cavity points to epistrate feeder.

Distribution: Guaymas Basin.

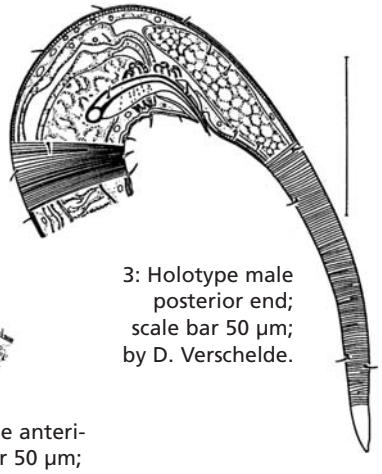


1: Holotype male total; scale bar 50 µm; by D. Verschelde.

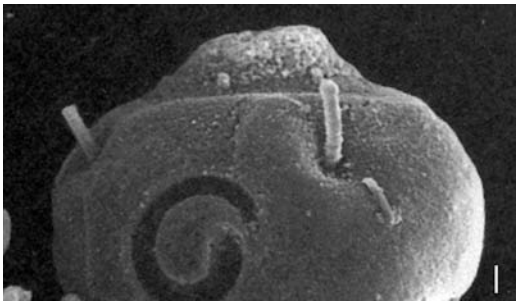
4: Allotype female total; scale bar 50 µm; by D. Verschelde.



2: Holotype male anterior end; scale bar 50 µm; by D. Verschelde.



3: Holotype male posterior end; scale bar 50 µm; by D. Verschelde.



5: Head capsule (SEM); scale bar 1 µm; by D. Verschelde.

Reference:

Verschelde D., Gourbault N. & M. Vincx (1998) J. Mar. Biol. Ass. U.K. **78**: 75-112.

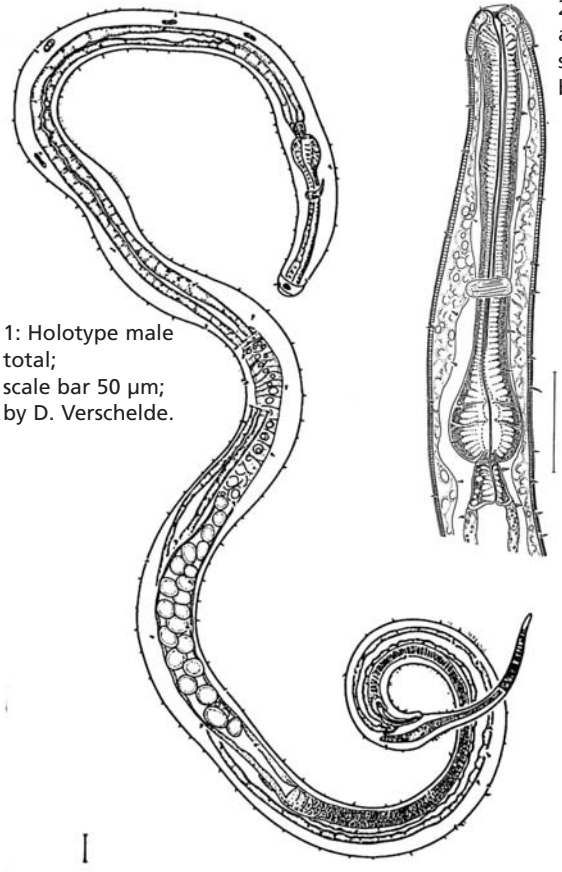
Desmodora marci Verschelde, Gourbault & Vincx, 1998

Size: 2110-2760 µm.

Morphology: Desmodorid with long slender body. Head capsule. Slender conico-cylindrical tail. Fine somatic setae. Body cuticle annulated. Amphid cryptospiral. Buccal cavity with large dorsal tooth and one or two ventral teeth hard to distinguish. Cylindrical pharynx with muscular endbulb. Spicules of males with complex capitulum. Vulva of females located at 50-55% of body length.

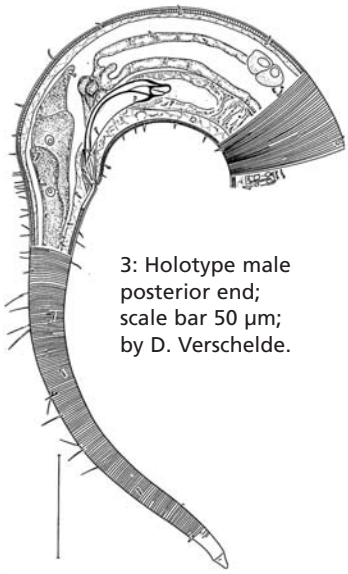
Biology: Colleted with mussels and Solenidae. Maximal temperature below 20°C. Specific structure of buccal cavity points to epistrate feeder.

Distribution: Lau Back-arc Basin, Hine Hina site.



1: Holotype male total; scale bar 50 µm; by D. Verschelde.

2: Paratype male anterior end; scale bar 50 µm; by D. Verschelde.



3: Holotype male posterior end; scale bar 50 µm; by D. Verschelde.

4: Allotype female total; scale bar 50 µm; by D. Verschelde.

Reference:

Verschelde D., Gourbault N. & M. Vincx (1998) J. Mar. Biol. Ass. U.K. **78**: 75-112.

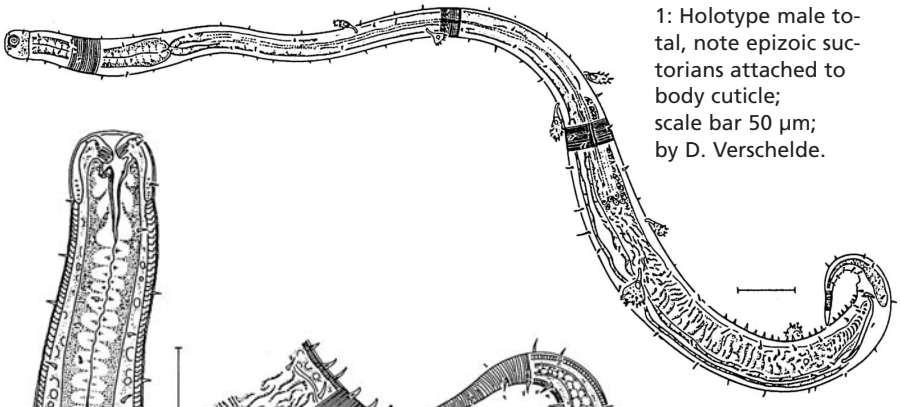
Desmodorella balteata Verschelde, Gourbault & Vincx, 1998

Size: 870-1080 µm.

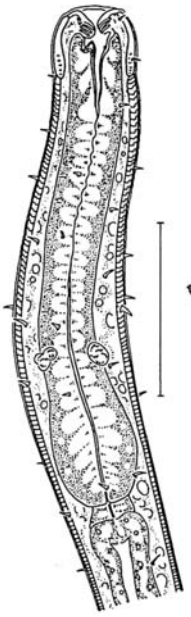
Morphology: Desmodorid with long head capsule and short, conical tail approximately 10% of total body length. Slender body annuli. Two pairs of lateral rows of distinct spines among other longitudinal rows of spines. Absence of subcephalic setae. Amphid multispiral, buccal cavity with cheilorhabdia in cheilostome, large dorsal tooth and two subventral teeth. Cylindrical pharynx with muscular endbulb. Males with strongly built precloacal setae. Vulva in females at 68% of body length.

Biology: Living in heterogeneous sediment covered with bacteria. Specific structure of buccal cavity points to epistrate feeder.

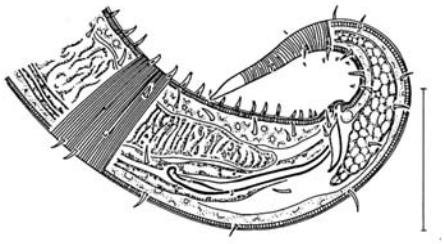
Distribution: Guaymas Basin.



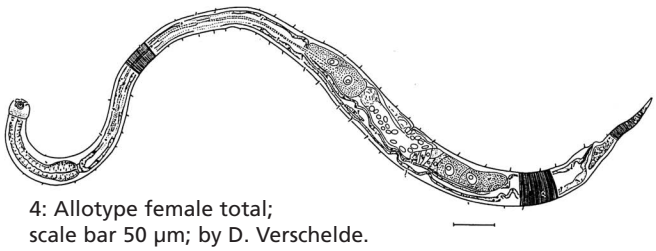
1: Holotype male total, note epizoic suctorians attached to body cuticle; scale bar 50 µm; by D. Verschelde.



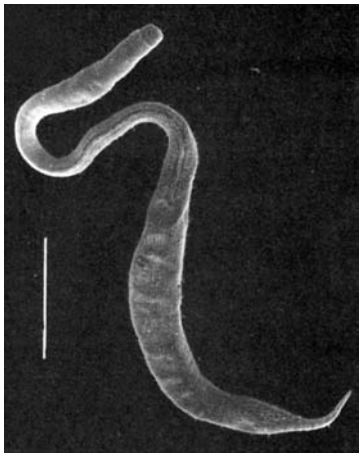
2: Holotype male anterior end; scale bar 50 µm; by D. Verschelde.



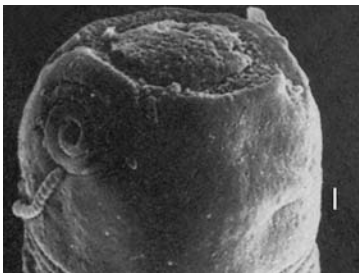
3: Holotype male posterior end; scale bar 50 µm; by D. Verschelde.



4: Allotype female total; scale bar 50 µm; by D. Verschelde.



5: Total view female (SEM); scale bar 100 µm; by D. Verschelde.



6: Head capsule male (SEM); scale bar 1 µm; by D. Verschelde.

Reference:

Verschelde D., Gourbault N. & M. Vincx (1998) J. Mar. Biol. Ass. U.K. **78**: 75-112.

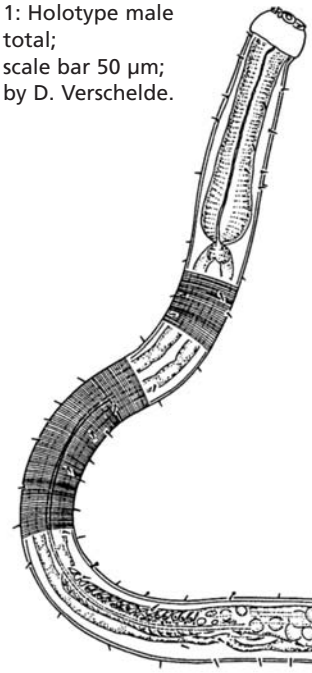
Desmodorella spineacaudata Verschelde, Gourbault & Vincx, 1998

Size: 745-956 µm.

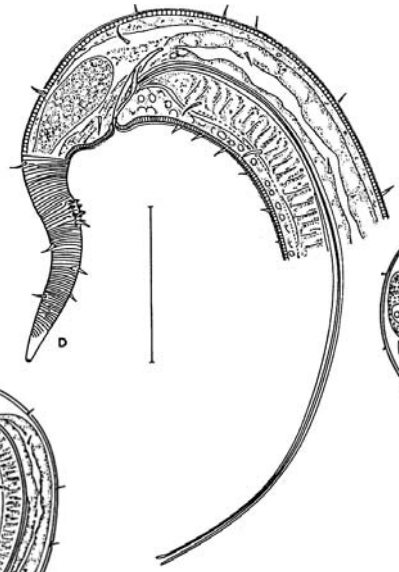
Morphology: Desmodorid with smooth three-part rounded head capsule and short, conical tail. Slender body annuli. Two pairs of lateral rows of distinct spines among other longitudinal rows of spines. Extreme anterior position of multispiral amphid. Subcephalic setae at posterior edge of head capsule. Buccal cavity with large dorsal tooth and two subventral teeth. Cylindrical pharynx with muscular endbulb. Males with long filiform spicules and postcloacal thorns on the tail. Vulva in females at approximately 62% of body length.

Biology: Living in heterogeneous sediment covered with bacteria. Specific structure of buccal cavity points to epistrate feeder.

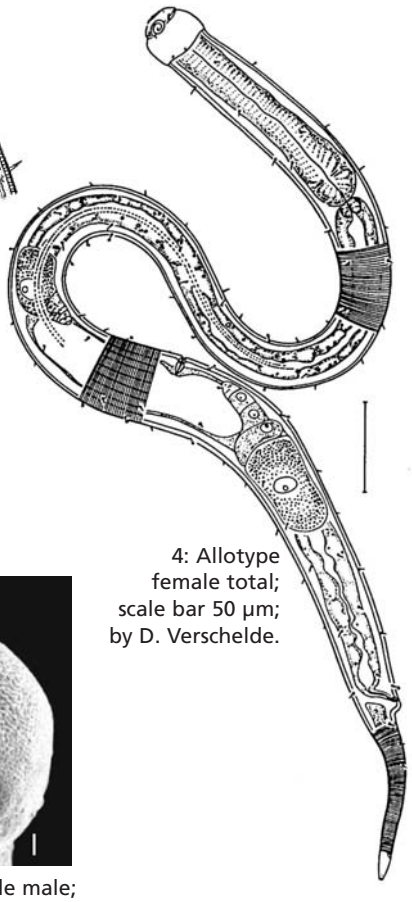
Distribution: Guaymas Basin.



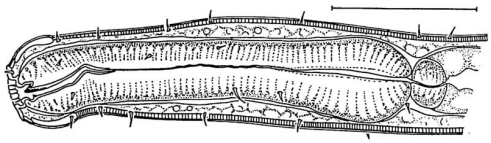
1: Holotype male total; scale bar 50 µm; by D. Verschelde.



3: Holotype male posterior end; scale bar 50 µm; by D. Verschelde.



4: Allotype female total; scale bar 50 µm; by D. Verschelde.



2: Holotype male anterior end; scale bar 50 µm; by D. Verschelde.

5: SEM micrograph head capsule male; scale bar 1 µm; by D. Verschelde.

Reference:

Verschelde D., Gourbault N. & M. Vincx (1998) J. Mar. Biol. Ass. U.K. **78**: 75-112.

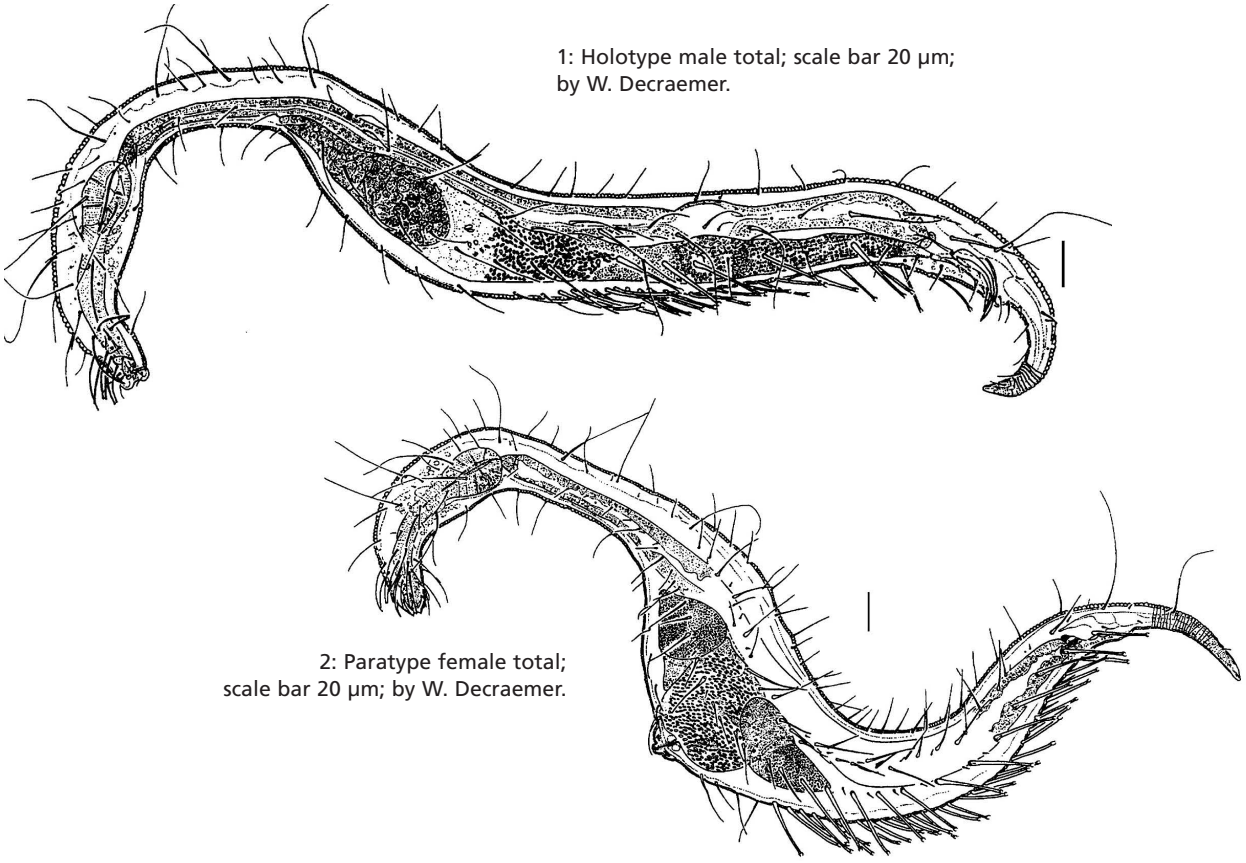
Cephalochaetosoma pacificum notium Decraemer & Gourbault, 1997

Size: 575-850 µm.

Morphology: Draconematid with coarsely striated cuticle except in head region. Helmet present. Amphid spiral. Buccal cavity well developed, with a dorsal tooth and two small subventral teeth. Pharynx with terminal bulb. Numerous cephalic adhesion tubes with non-swollen base and open tip located posterior head region and extending to about two head diamters along the cervical region; posterior adhesion tubes with bell-shaped end, all located anterior to cloacal opening/anus. Tail cylindro-conoid with numerous annules. Four pairs of cloacal setae. Females with vulva at about 48% of body length. Males with spicule length 40-50 µm.

Biology: Hard substrate with oxide deposits and bacterial mats. Temperature 5-17°C. Specific structure of buccal cavity points to epistrate feeder.

Distribution: Lau Back-Arc Basin.



1: Holotype male total; scale bar 20 µm; by W. Decraemer.

2: Paratype female total; scale bar 20 µm; by W. Decraemer.

Reference:

Decraemer W. & N. Gourbault (1997) Zool. Scr. **26**: 1-12.

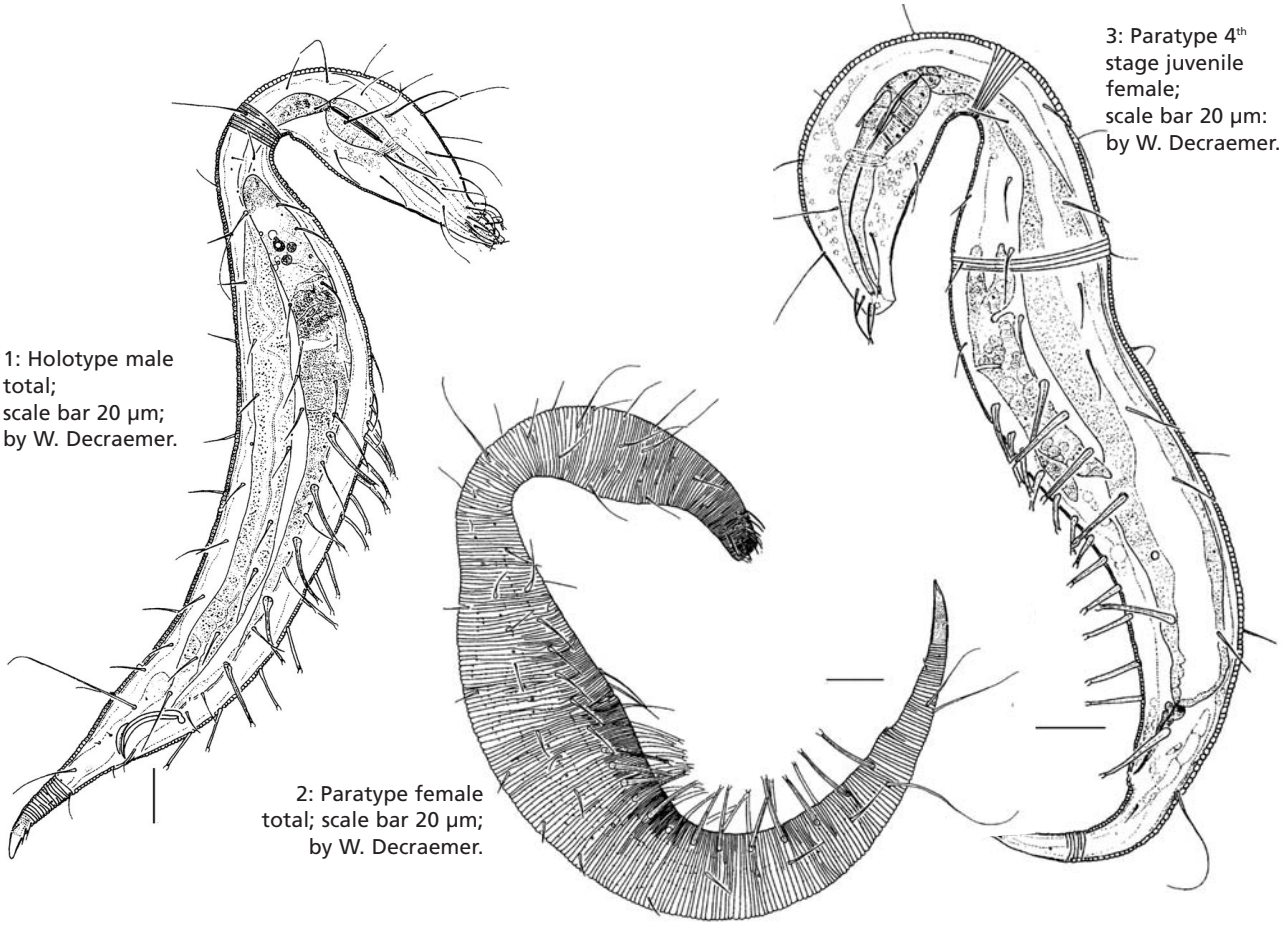
Dinetia nycterobia Decraemer & Gourbault, 1997

Size: 320-490 µm.

Morphology: Draconematid with short, stout and sigmoid to epsilonematoid habitus. Body annulation reaching the lip region and surrounding the small, spiral amphid. Cuticle not thickend in head region. Buccal cavity narrow and unarmed. Pharynx with terminal bulb with thickend cuticle. Cephalic adhesion tubes without expanded base located in cervical region; posterior tubes with bell-shaped end. In females vulva at 45% of body length.

Biology: Sedimented vent site. Specific structure of buccal cavity points to deposit feeder.

Distribution: East Pacific Rise: 21°N.



1: Holotype male total; scale bar 20 µm; by W. Decraemer.

2: Paratype female total; scale bar 20 µm; by W. Decraemer.

3: Paratype 4th stage juvenile female; scale bar 20 µm: by W. Decraemer.

Reference:

Decraemer W. & N. Gourbault (1997) Zool. Scr. **26**: 1-12.

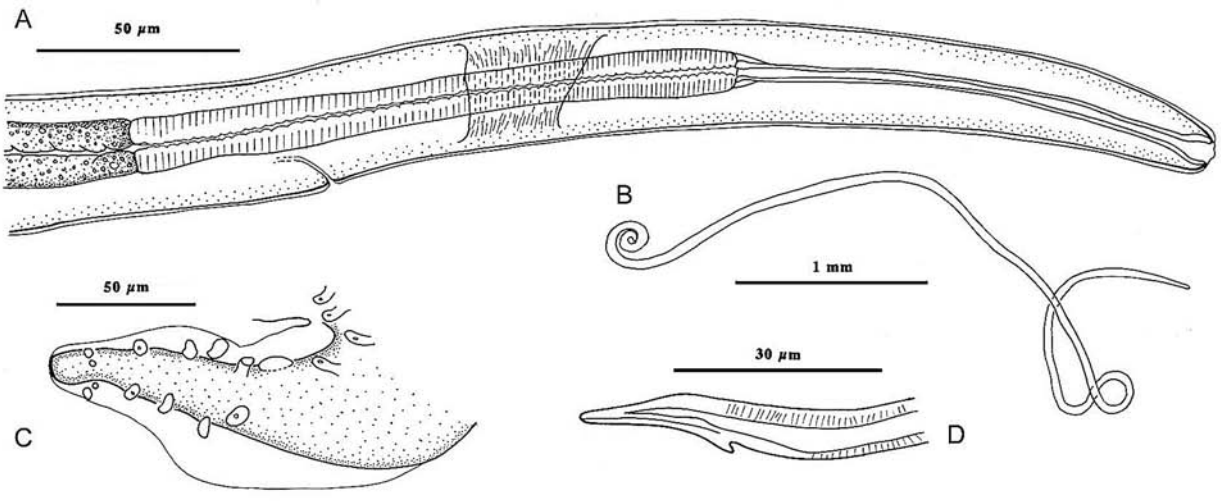
Moravecnema segonzaci JUSTINE, CASSONE & PETTER, 2002

Size: Male, 5 mm long, female, 4-10 mm long.

Morphology: Body filiform. Oral opening dorsoventrally elongated, hexagonal in shape. Pseudolabia rudimentary. Four submedian buccal processes on margin of oral opening. Four submedian papillae and two lateral amphids. Buccal cavity long, dilated dorsoventrally at anterior extremity. Oesophagus divided into short anterior muscular and long posterior glandular parts. Deirids tiny, spine-like, located just anterior to posterior end of buccal cavity. Nerve ring and excretory pore located at anterior and posterior thirds, respectively, of muscular oesophagus. Tail rounded in both sexes. Male: Caudal alae present. Area rugosa absent. Spicules unequal: short spicule arcuate, rounded at distal extremity, 80-100 µm long; long spicule 260-360 µm long, distal extremity pointed with a cuticular spur at 23 µm from end. Gubernaculum absent. Four pairs of precloacal pedunculate papillae arranged in two groups, Six pairs of postcloacal pedunculate papillae. Female: amphidelphic. Vulva at about two thirds from cephalic apex. Eggs larvated in vagina, 37-42 x 25 µm with 1-5 thin filaments, 40-140 µm long, arising from a small plug at each pole. Tail 65-95 µm long.

Biology: Parasitic in the intestine of the zoarcid fish *Pachycara thermophilum* GEISTDOERFER, 1994.

Distribution: Mid-Atlantic Ridge: Logatchev; Snake Pit-Moose.



1: Holotype male (A, B, D), paratype (C); A: Anterior end, lateral view; B: General body shape; C: Posterior end, ventral view (protruding spicules not drawn); D: Distal end of long spicule; from JUSTINE et al. (2002).

Reference:

JUSTINE J.-L., CASSONE J. & A. PETTER (2002) Folia Parasitol. **49**: 299-303.

Hypoechinorhynchus thermaceri Buron, 1988

Size: 3.5 to 5 mm long by 0.4 to 0.7 mm wide.

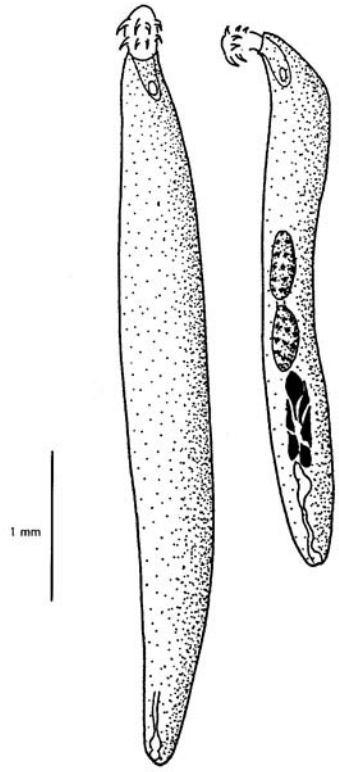
Color: White, or sometimes yellowish.

Morphology: Globular proboscis armed with ~2 rows of 2-3 hooks each. Trunk unarmed. Testis arranged in tandem. Six cement glands. Female genital pore subterminal.

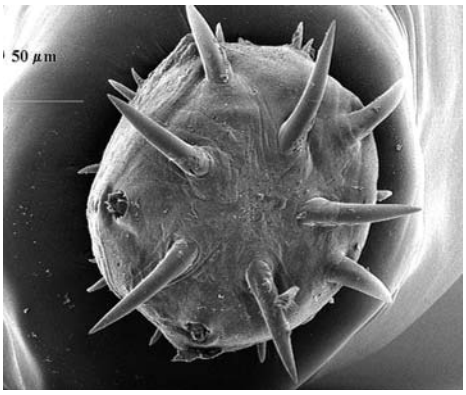
Remarks: Needs to be carefully isolated from the mucosa by dissecting the intestine around the proboscis. For morphological studies, worms should be placed in distilled water for about one hour in order to ensure optimal evagination of the proboscis and fixed in AFA. For molecular studies, fix the worms directly in 70% alcohol.

Biology: Intestinal parasite of zoarcid fish *Thermarces cerberus*. No intermediate host was identified but other species from the same family have amphipods for intermediate hosts. Gonochoric with a slight sexual dimorphism. Attaches to intestinal mucosa using the proboscis.

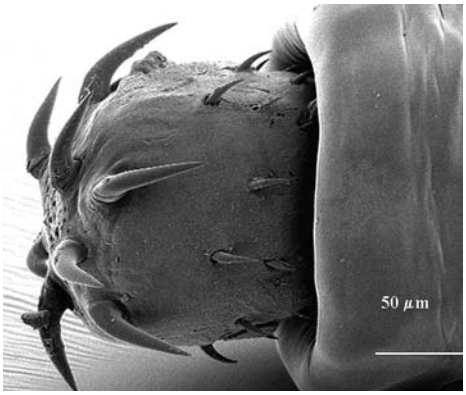
Distribution: East Pacific Rise: 13°N.



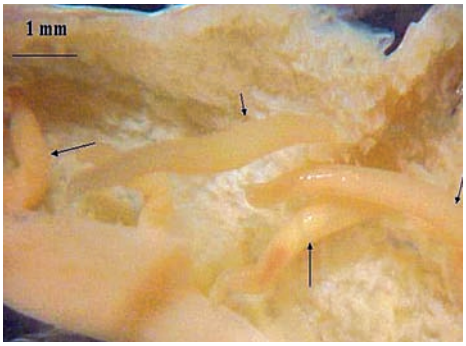
1: Female (left) and male (right); by I. de Buron.



2: Proboscis, face view (SEM); by I. de Buron.



3: Proboscis, lateral view (SEM); by I. de Buron.



4: In situ specimens in the gut of a zoarcid fish *Thermarces cerberus*; by I. de Buron.

5: In situ specimen of a digenean in the intestine of a zoarcid fish *Thermarces cerberus*, among specimens of *Hypoechinorhynchus thermaceri*; by I. de Buron.

References:

Buron I. de (1988) J. Parasitol. **74**: 339-342.
Buron I. de, Hundley J.L. & M. Segonzac (2000) InterRidge News **9**(2): 14-15.

Thermonemertes valens Rogers, Gibson & Tunnicliffe, 1996

Size: 5 cm.

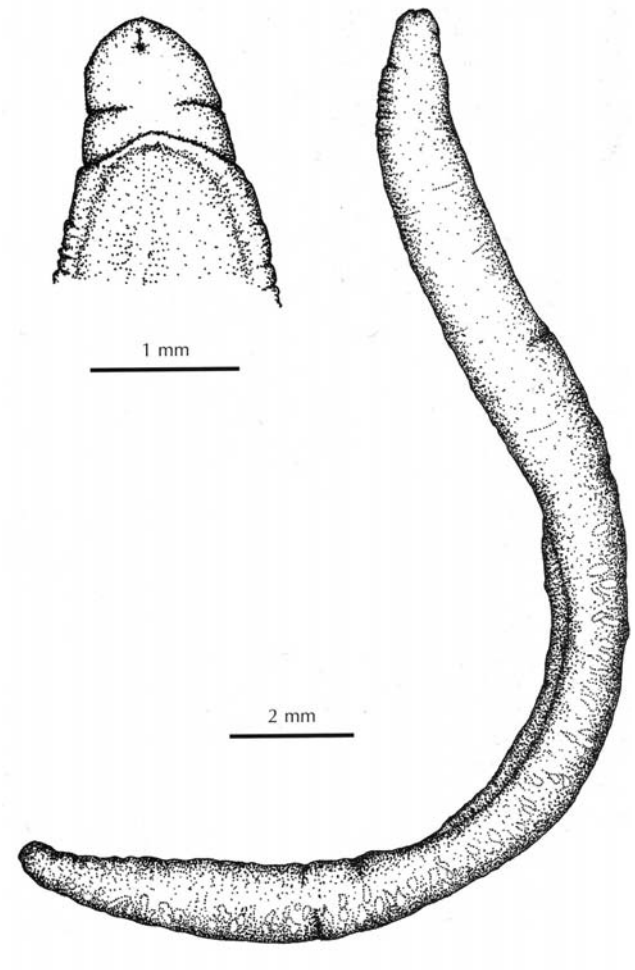
Color: Bright red; after fixation uniformly flesh colored.

Morphology: The head is spatuloate and dorsoventrally flattened. A single cephalic furrow on the ventral surface towards the rear of the head. Mouth and rhynchodeum open into a single opening behind the tip of the head. The body is slender and dorsoventrally compressed. In the posterior half the ventral surface appears distinctly concave.

Remarks: Another yet undescribed species of *Thermonemertes* was found at East Pacific Rise: 9°N from inactive sulfide chimneys and at 13°N from *Riftia pachyptila* aggregations.

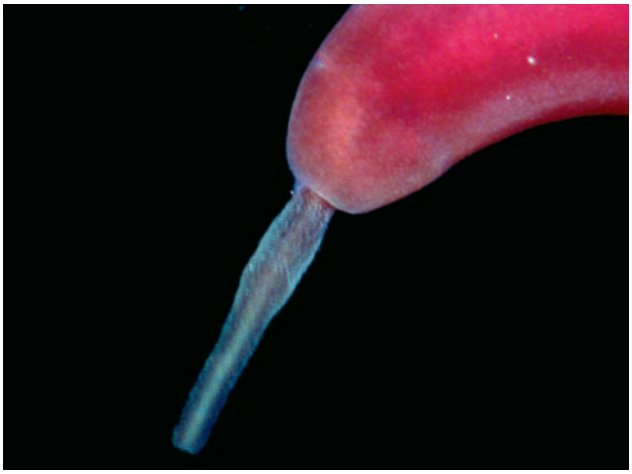
Biology: Lives on rocks and bacterial mats; not associated with vestimentiferan tubeworms. The diet remains unknown. Might be able to swim. It has been suggested that this species is an early colonizer of vent communities, but is displaced in aging communities.

Distribution: Juan de Fuca Ridge.



1: *T. valens* (preserved specimen); left anterior end, right total; from Rogers et al. (1996).

2: *Thermonemertes* sp.; live specimen from East Pacific Rise: 9°N; by M. Bright.



3: *Thermonemertes* sp.; live specimen anterior end with partially extruded proboscis; from East Pacific Rise: 13°N; by M. Bright

Reference:

Rogers A.D., Gibson R. & V. Tunnicliffe (1996) Deep-Sea Res. I **43**(10): 1581-1599.

Annelida, Polychaeta[1]

According to different countings, the polychaete worms, with 111 presently described species, constitute 18-20% of the total number of species fully identified from vent samples. 30% of these bristle worms are belonging to scale worms (Polynoidae), 10% to alvinellids, 9% to siboglinids, 6% to spionids, 5% to hesionids and dorvilleids. Other families account for less than 5% of described annelid species. The present recorded species are largely (94%) considered as 'endemic' of the deep-sea hydrothermal vent environment (or according to Andrey Gebruk, vent 'obligate'), less than 4% are shared with other deep-sea reduced environments and ca. 2% are 'regular' deep-sea species. However this high ratio of endemism will probably be revised downward when the sampling of the peripheral areas will make progress accounting for opportunistic groups as dorvilleids or spionids which could be thriving in adjacent disturbed habitats.

Because of their odd biology and ecology, two species of annelids *Riftia pachyptila* ('the giant tube worm') and *Alvinella pompejana* ('the Pompeii worm') became emblematic of the vent research and are still considered as 'biological models'. Numerous research projects dealing with the functioning of endosymbiosis in *Riftia pachyptila* and the physiological adaptation of *Alvinella pompejana* to its extreme habitat are presently underway.

Nevertheless, the basic taxonomy of vent annelids is far to be completed. Recent cruises which occurred in the Western Pacific (Lau Basin, Kermadec and Mariana Arcs) and on southern East Pacific Rise brought back a lot of new interesting specimens presently under study. For example, five new species of scale-worms from Lau Basin are being described belonging to *Levensteiniella*, *Branchinotogluma*, *Lepidonotopodium* and *Harmothoe* as well as one species of ampharetid, one sigalionid, one alvinellid (*Paralvinella* n. sp.), a new species of dorvilleid belonging to *Parougia* and one terebellid (cf. *Polycirrus*). From southern East Pacific Rise, several species of scale worms, one species of alvinellid and one surprising new genus of spionid are currently under description. New families for this environment were found and the description of new species of flabelligerid and sphaerodorid are under wording. Former collections of worms from Mid-Atlantic Ridge and East Pacific Rise are still not exhaustively studied and several families (e.g. dorvilleid, spionid, capitellid, cirratulid) need further taxonomic work.

The molecular identification of sibling species among widespread morphotypes (e.g. *Amphisamytha galapagensis* or *Archinome rosacea*) lead 'classical' taxonomists to dig back throughout former collections looking for new diagnostic characters. For example, a joint work between morphologists and molecular taxonomists allows recognizing three different new species of *Archinome* and one new genus of Amphinomidae among specimens previously identified as *A. rosacea* (J. Kudenov, pers. comm.) Conversely, new records of previously described species from new locations (e.g. *Hesiolyra bergi* on Mid-Atlantic Ridge vents or *Hesiospina vestimentifera* from Lau Basin) question the dispersal and allopatric speciation in response to major vicariance events. Because of the influence of joint occurrences in biogeographic analyses, the solution of these taxonomic riddle must be seriously considered and we urge scientists working at sea to focus on these widespread morphotypes and to build up parallel samples for classical and molecular taxonomy.

Polychaetes are delicate and fragile animals, and special care should be taken when handling them. To be described, the specimens must be unfragmented and as intact as possible and damaged specimens may be misidentified. Thus a gentle sorting is desirable as soon as possible after recovery of the samples, using soft pliers for macroscopic individuals and gentle sieving for others (avoid stack of sieves and split the samples before sieving). Specimens may be relaxed prior to preservation (7.5% of magnesium chloride) and tubes of tubicolous annelids must be opened; fixation is best in buffered formalin 5-10%. After a suitable time of fixation, depending of the size (in general < 24 hours), the worms may be transferred to 80% ethyl or isopropyl alcohol (formaldehyde even buffered, is a very poor preservative).

1: *Laminatubus alvini*; by courtesy of R. A. Lutz.

[1] Even if the question is still strongly debated and the molecular information is not consistent, we chose herein, following Rouse & Fauchald (1997) to include the Pogonophora (Perviata and Vestimentifera) within the family Siboglinidae (Polychaeta: Sabellida). Contrarily Southward et al. (2005) chose a more conservative standpoint and retain the class 'Pogonophora' within Annelida, waiting for more conclusive information (Halanych 2005).

References:

Halanych K.M. (2005) Hydrobiologia **535/536**: 297-307.
Rouse G.W. & K. Fauchald (1997) Zool. Scr. **26**: 139-204.
Southward E.C, Schulze A. & S.L. Gardiner (2005) Hydrobiologia **535/536**: 225-249.