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## *PROTOPELAGONEMERTES JOCULATORI* N.SP., A PELAGIC NEMERTEAN FROM INDONESIAN WATERS

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### ABSTRACT

From the Banda Sea a new nemertean, *Protopelagonemertes joculatori* n.sp., is described. Although collected from rather shallow depths of 400-500 m, it may appear to be a bathypelagic form.

### MATERIAL

The collection studied consists of 180 samples taken with a combined rectangular mid-water trawl RMT 1 + 8 between depths of 0 and 500 m in the Banda and Aru Seas during the SE monsoon in August 1984 and during the NW monsoon in February 1985 (Schalk, 1988). The combined trawl consisted of two nets, one with fine mesh (0.32 mm in diameter) and one with coarse mesh (4.5 mm in diameter).

As all samples were from shallow depth no bathypelagic nemerteans were expected. However, large numbers of the deep sea medusae *Periphylla* and *Atolla* and of deep sea fishes in the samples showed that the normal vertical distribution of the faunas was disturbed in the area (Van der Spoel & Schalk, 1988). Careful sorting of the material provided one nemertean that could not be identified as a known species. It was collected in the 4.5 mm net, preserved in formalin, sectioned histologically at 5µm and stained with eosin/haematoxylin.

### TAXONOMY

The specimen shows the characters of the genus *Protopelagonemertes*: mouth and proboscis united, proboscis sheath, with interlacing muscles, extends far posterior; no fins, no tentacles, dorsal blood vessel through entire body length (cf. Coe, 1945), but the new species differs in the number of proboscis nerves, the body shape and size and in the number of ovaries. The classification by Coe (1954) is followed.

Family Protopelagonemertidae Brinkmann, 1917

Genus *Protopelagonemertes* Brinkmann, 1917

***Protopelagonemertes joculatori* n.sp.**

(Figs 1-5)

Description: The single female (Figs 1-2) collected was 45 mm in length and 13 mm in width after two years of preservation in formalin. It is massive, not transparent. The body is oval in cross section with only small dorso-ventral com-

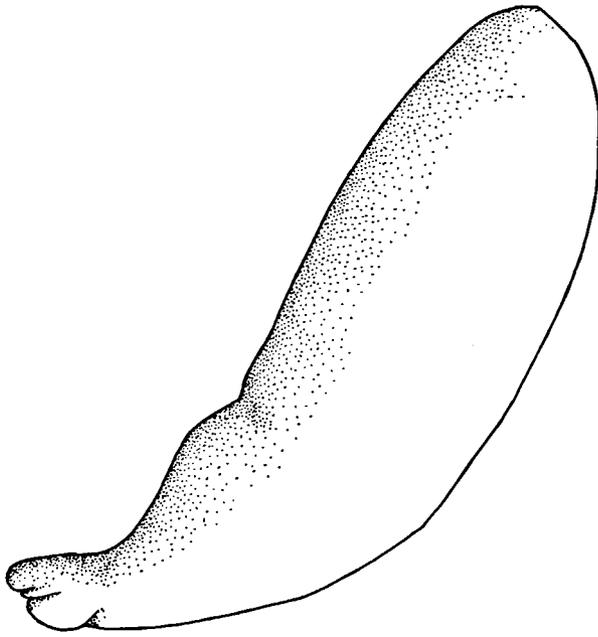


Fig. 1. *Protopelagonemertes joculatori* holotype, dorsal aspect.

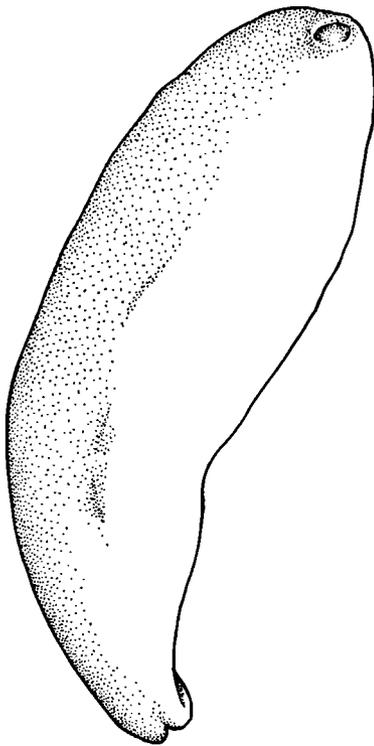
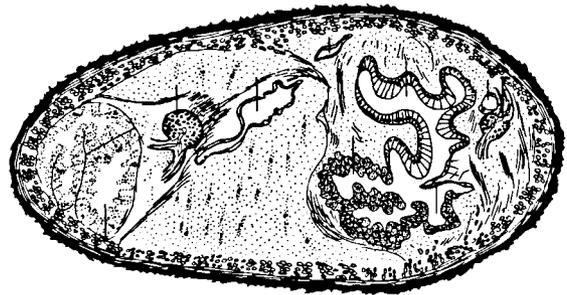


Fig. 2. *Protopelagonemertes joculatori* holotype, ventrolateral aspect.

pression; it tapers anteriorly and posteriorly. At the posterior end a slight indication of fins is seen, but a demarcation between body and fins is absent. The preserved specimen was white.

Mouth and proboscis sheath share the same opening (Fig. 3). An oesophagus is absent, the aperture of the gut into the rhynchodaeum is provided with a small lip. This opening is found so far caudally in the rhynchodaeum that it directly borders the rhynchocoel. The gut has a heavily folded glandular wall. The gut opens into the intestine at slightly less than 1/3 of the body length. The folds of the wall of this pylorus are lined with conspicuous glandular cells probably secreting an albumen-like secrete.

G        B        C I        D        LVLN  
 |        |        ||        |        ||



|        |  
 H        L

Fig. 3. Diagrammatic cross section through the cephalic region of the body, constructed from 10 microscopical slides A = opening of ovary, B = anastomosis between lateral blood vessels, C = lateral blood vessel near anastomosis, D = proboscis sheath, DN = dorsal nerve, E = bladder in oviduct, G = ganglion with part of lateral nerve and part of ventral commissure, H = most anterior intestine diverticulum, I = stomach with glandular wall, L = lip in the entrance of gut into rhynchodaeum, LN = lateral nerve, LV = lateral blood vessel, M = mucus concentration below stylets, MU = muscles of proboscis, N = proboscis nerves, O = ovary, P = proboscis, PC = middle chamber of proboscis, PE = epithelium of outer proboscis wall, PF = epithelium of inner proboscis wall, S = interlacing muscles of proboscis sheath, SD = subdorsal blood vessel, ST = stylet with underlying mucus basis, V = dorsal blood vessel

The proboscis sheath goes as far as the posterior tip of the animal; the proboscis is thick, muscle rich, provided with 36 primary nerves, and as long as the body (Fig. 4). The proboscis

papillae are few in number, about three are seen in one histological cross section, they are connected by a small nerve with the proboscis nerves. The proboscis sheath consists of a layer

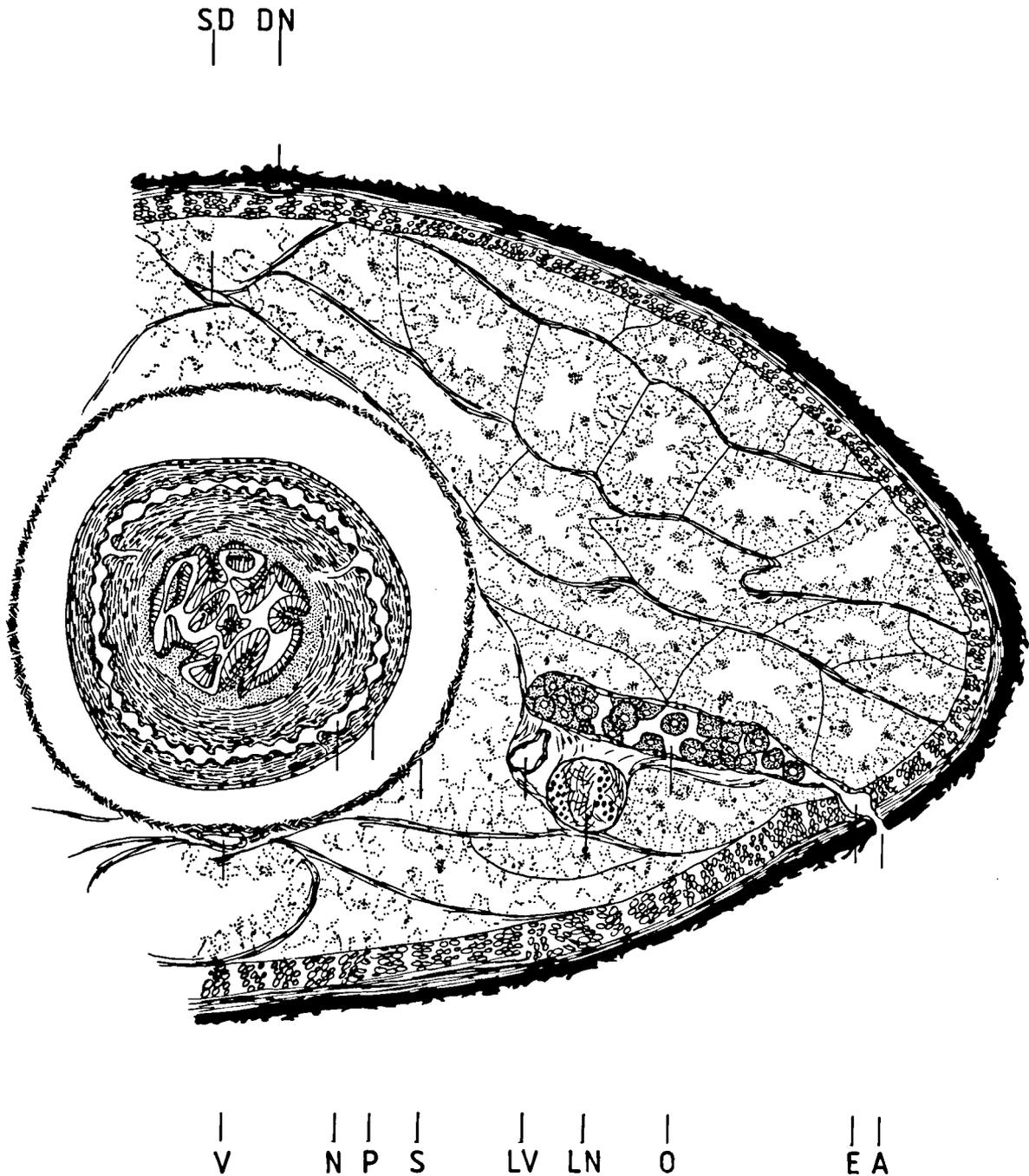


Fig. 4. Diagrammatic cross section through the middle of the body, constructed from 30 microscopical slides (for legenda see Fig. 3).

of interlacing longitudinal and circular muscles, there is no trace of a two layered structure. A small middle chamber of the proboscis shows a spoon-shaped (triangular in cross section) stylet basis supported by a thick glandular cushion. There are 8 hollow stylets counted in the histological series (Fig. 5) but counting in the slide series may be inaccurate. The mucus substance under the stylets seems identical to that of the proboscis epithelium. The dorsal blood vessel penetrates the proboscis sheath over a short distance.

Anastomosis of lateral and dorsal blood vessels is found just before the anus, the dorsal blood vessel does not continue beyond this point. Slightly more anteriorly the lateral nerves come together, there are no accessory lateral nerves. Submuscular glands are not

found. In the cephalic region 18 small longitudinal nerves run directly under the body wall muscles.

The muscles of the body wall are moderately developed with a typical enoplan sequence. The dorsoventral muscles are only prominent in the anterior 1/8th of the body; elsewhere they form very thin bands between the intestinal diverticula. Diagonal musculature is absent and the whole muscle system shows reduction in favour to the development of intestinal cavities as described for this group by Brinkmann (1917b). The surface epithelium is lost, only a thick basal membrane is left. Cephalic glands are absent.

There are 41 pairs of ovaries of which 14 contain fully developed ova, 24 incompletely developed eggs, and 3 with no contents. All ovaries and oviducts are in oblique positions; the blind side of the ovary lies anteriorly from the oviduct opening. In most oviducts a small bladder is formed just before the opening. The ovaries contain many eggs. The number of intestinal diverticula is more than 40.

Holotype: one female mounted in 250 histological slides from Snellius II Expedition stat. C haul 9, ZMA.VNE.499

Type locality: Banda Sea: 27 august 1984, 03<sup>20</sup>-04<sup>19</sup>hr. 5°22.7'S 129°54.2'E, 400-500 m depth, 8.8-7.2°C.

Etymology: the species is named after Dr. P. H. Schalk (= jocular) and the name is chosen as it also expresses the unusual fact that the holotype is collected at depths in which members of this family are not expected to live normally.

The differences with other representatives of the family and the genus (cf. Coe, 1945, 1954) are:

*Calonemertes* Coe, 1945. Mouth and proboscis opening separated. Body length < 110 mm.

*Plotonemertes* Brinkmann, 1917. Mouth and proboscis opening separated, proboscis sheath only 2/3-7/8 of body length, pair of convolute glandular organs present in males. Body length < 30 mm

*Pendonemertes* Brinkmann, 1917. Mouth and proboscis opening not united, proboscis sheath

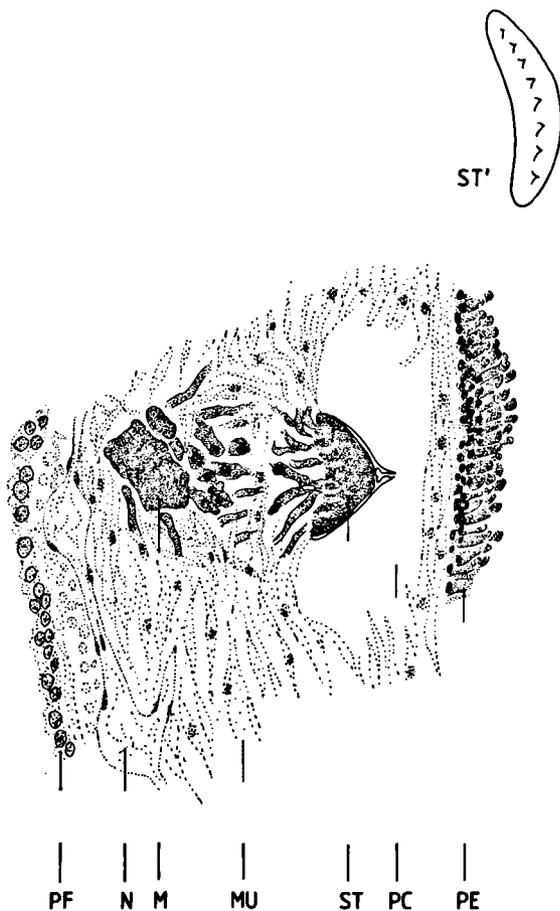


Fig. 5. Cross section through stylet and reconstruction of stylet apparatus (ST')(for legenda see Fig. 3).

about half as long as body. Body length <30 mm.

*Protopelagonemertes hubrechtii* Brinkmann, 1917. Body length <40 mm, slender, 29 proboscis nerves. This species is only found in the Atlantic Ocean at depths greater than 1200 m and in the North Pacific Ocean at depths greater than 4400 m (Coe, 1954).

*Protopelagonemertes beebei* Coe, 1936. Body length <30 mm, slender, 31 ovaries, proboscis sheath does not completely reach the posterior body pole. This species was only found in the Atlantic Ocean at depths greater than 1600 m and in the North Pacific Ocean at depths greater than 3000 m (Coe, 1954).

The species described as new to science is close to the known species, however, besides body shape, morphological and anatomical differences it also occurs in an area, the Banda Sea, where the other species are not found which points also to its separate taxonomic status.

In the family Planktonemertidae the following species resembles the newly described one but differences are evident:

*Mononemertes scarlata* Coe, 1945. Body length <20 mm, 17-20 proboscis nerves, distinct caudal fin.

## DISTRIBUTION

The shallow occurrence of the present specimen does not tell anything about its normal vertical distribution in the water column. It is presumed that this species is a real bathypelagic species like all the other pelagic nemerteans are. In the series of samples made during the Snellius II cruises, in depth shallower than 500 m, a multitude of bathypelagic and mesopelagic species belonging to different taxonomic groups are collected, sometimes even in hauls as shallow as 0-100 m. The abnormal vertical distribution found in the area is described and

explained as due to vertical mixing and high temperatures in the bathypelagic realm (Van der Spoel & Schalk, 1988).

That the new species is only represented by one specimen is not surprising as the pelagic nemerteans are living exclusively solitary also in their normal habitat. No other nemerteans were found in the samples.

## ACKNOWLEDGEMENTS

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