

**COMUNICACIONES ZOOLOGICAS DEL MUSEO  
DE HISTORIA NATURAL DE MONTEVIDEO****Número 161****1986****Volumen XI****SYSTEMATICS OF SCAPHOPODA (MOLLUSCA), I. THREE  
NEW BATHYAL AND ABYSSAL TAXA OF THE  
ORDER GADILIDA FROM SOUTH AND NORTH  
ATLANTIC OCEAN****VICTOR SCARABINO \***

RESUMEN: *Sistemática de Scaphopoda (Mollusca), I. Tres nuevos taxa bathyales y abisales del Orden Gadilida, del océano Atlántico norte y sur.*— Se describe una nueva especie abisal del género *Costentalina* CHISTIKOV, 1982, y un nuevo género y especie de la familia Pulsellidae SCARABINO in Boss, 1982. La primera, proveniente de la cuenca Argentina, entre 5332 y 5495 m de profundidad, confirma al género como exclusivamente bathio-abisal, de amplia distribución geográfica. Los segundos fueron hallados en diversas localidades del Atlántico norte, en especial en el golfo de Gasconia, entre 1800 y 4220 m de profundidad. Presentan un tipo de escultura aún no descrita para la clase consistente en anillos de sección triangular todo a lo largo del caparazón.

**INTRODUCTION**

Under the main title, a series of papers will be submitted attempting to clarify the classification of this molluscan class upon which, several important contributions were presented in the last years showing its complexity. The advance of the research in deepwater benthic systems shows that the scaphopoda constitutes a very well represented group, in number and in diversity, most of the species living down 1000 m depth and having exclusive abyssal high taxa (SCARABINO, 1979). Several new species, identified from recently sorted samples will help to clarify the systematics of the class. Representatives of all recent genera so far described have been studied or are under study and the results will be presented in future papers.

\* Instituto Nacional de Pesca, Constituyente 1497, Montevideo, Uruguay. Colaborador Honorario de la Sección Malacología del Museo Nacional de Historia Natural, Montevideo.

This series is preceded by a recent publication (SCARABINO, 1986) dealing with a new abyssal family, determined from the same Atlantic samples.

In this note, a new Atlantic genus and two new species will be described in order to continue the taxonomic research.

ACKNOWLEDGEMENTS: A large number of friends have helped me in my work, I would wish to thank Drs. WILLIAM K. EMERSON & WALTER SAGE (AMNH); RUTH D. TURNER (MCZ); HOWARD L. SANDERS (WHOI); BERNARD MÉTIVIER (MNHN); PATRICK M. ARNAUD (SME); MICHEL SZEGONZAC (CENTOB) and Gareth Davis (HWU). The support of the collection and curating facilities of the Lamont Doherty Geological Observatory samples (R/V VEMA) was provided by the NSF (Grant OCE 76-18049 A01) and the Office of Naval Research (Grant N00014-75-C-0210, scope E).

ABBREVIATURES: AMNH (American Museum of Natural History, Living Invertebrates, New York, N.Y. USA), CENTOB (Centre National de Tri d'Océanographie Biologique, Brest, France), HWU (Herriot-Watt University, Edinburgh, Scotland); MCZ (Museum of Comparative Zoology, Malacology, Harvard University, Cambridge, Mass., USA), MNHN (Museo Nacional de Historia Natural, Malacologia, Montevideo, Uruguay), MNHN (Museum National d'Histoire Naturelle, Malacologie, Paris, France), SME (Station Marine d'Endoume, Marseille, France), WHOI (Woods Hole Oceanographic Institution, Woods Hole, Mass, USA), IFREMER (Institut Français de Recherche pour l'Exploitation de la Mer, Brest, France).

The new taxa are described as follows:

Class Scaphopoda

Order Gadilda

Family Entalinidae CHISTIKOV, 1979

Subfamily Heteroschismoidinae CHISTIKOV, 1982

Genus *Costentalina* CHISTIKOV, 1982

*Costentalina vema* n. sp.

(Figures 1-7)

**Diagnosis:** Shell about 6 mm long, moderately curved, round in section with 12-13 well developed smooth ribs throughout the shell. Intercostal spaces as wide as the ribs, smooth, without secondary ribs. Apex simple with a conspicuous pre-apical internal callus. White in colour and porcellanaceous texture. Oral aperture simple, slightly oblique. Radula: rachidial tooth small, delicate, 2 times higher than wide, with the anterior margin

complete. Lateral teeth strong with three major cusps as in all the Order, two of which are located antero ventrally (in the normal position of the organ) with four minor denticles between those and the third one, which is dorsally placed. Marginal teeth short, flat, sinusoidal in shape with a weakly defined lateral keel. Externally, a crown-like formation circles the oral muscular ring of the animal.

**TYPE DEPOSITORY:** American Museum of Natural History, Department of Living Invertebrates (New York), AMNH 202762 (Holotype); AMNH 202763 (Paratypes).

**TYPE LOCALITY:** latitude 44°35'S - longitude 44°19'W, 5332 m depth; R/V VEMA, 1961, cruise 17 station 81 (V- 17-81) (Two specimens, one without shell).

**OTHER LOCALITY:** latitude 47°35'S - longitude 43°21'W, 5495 m depth; R/V VEMA 1961, cruise 17 station 85 (V-17-85) (one specimen).

**GEOGRAPHIC DISTRIBUTION:** Argentine basin in 5495-5332 m depth.

**MEASURES (mm):** Holotype: L. 6.7; W. 1.1; apex w. 0.5; arc 0.65; 12 ribs.  
Paratype: L. 7.2; W. 1.2; apex w. 0.6; arc 0.48; 13 ribs.

**ETYMOLOGY:** this species is dedicated to the R/V VEMA (Lamont Doherty Geological Observatory, Palisades, New York).

**Comments:** CHISTIKOV, describes the genus in 1982 including 6 new species as follows: *Costentalina elegans* (the type species), *C. pacifica*, *C. tuscarorae*, *C. tuscarorae subcentralis*, *C. indica*, *C. leptococoncha* and *C. caymanica*. The first five were recorded from localities of the Pacific and Indian Oceans, whereas *C. caymanica* was reported from the Caribbean Sea (off Grand Cayman Island), all in depths of 2480 to 6780 m. My species differs from *C. caymanica*, the other Atlantic species by having stronger longitudinal ribs and a lesser number of intercuspal denticles on the lateral teeth of the radula (compared with CHISTIKOV'S plate 3, figs. 10-12). The recognition of the present species confirms *Costentalina* as a worldwide deep-water genus with most of the species living in the abyssal plain down to 5000 m depth.

The other taxa belong to the family Pulsellidae SCARABINO in BOSS, 1982. This family was described in a degree thesis (SCARABINO, 1979) and later in a general publication on classification of living organisms (PARKER, ed., 1982, p. 1166). In the given diagnosis, several new names were mentioned without description becoming *nomen nudum*. One of them is largely dis-

tributed in North Atlantic basins and presents undescribed sculpture for the class for which, even if a review of the family is intended in this moment, will be described formerly as follows:

Class Scaphopoda

Order Gadilida

Family Pulsellidae SCARABINO in BOSS, 1982

Genus *Annulipulsellum* n. gen.

*Annulipulsellum* SCARABINO in BOSS, 1982: 1166, *nomen nudum*

**Diagnosis:** Shell medium in size for the order. Arc pronounced. Maximum diameter at the oral aperture. Circular in section. Apex oblique, with highest portion at dorsal side. Sculpture consistent in triangular section rings located regularly throughout the shell. Pre-apical callous distinct with circular lumen. Radula: rachidial tooth high and narrow with sides almost parallel to each other and upper margin with a well defined central cusp. Lateral teeth high with three sharply pointed cusps and without intercusp denticles. Marginal teeth with lateral keel present.

**DISTRIBUTION:** Recent. North Atlantic Ocean, from 1840 to 4225 m depth.

**ETYMOLOGY:** annulated *Pulsellum*.

**TYPE SPECIES:** *Annulipulsellum euzkadii* n. sp., here described.

*Annulipulsellum euzkadii* n. sp.

(Figures 8 to 20)

**Diagnosis:** same of the genus

**TYPE DEPOSITORY:** Holotype: MCZ 293952; Paratypes: MCZ 293953, 293954, 293955, MNHN 14770; MNHN 14771; MNHN 14772; MNHNP w/n.

**TYPE LOCALITY:** 12°34.4' - 12°40.8' N - 58°59.3' - 59°09.2' W. R/V KNORR (WHOI) cruise 25, station 307, 3835-3862 m depth. 03.03.1972.

**OTHER LOCALITIES:** see Table I

**GEOGRAPHIC DISTRIBUTION:** same of the genus. See Map 1.

**MEASURES** (mm), Holotype: L. 8.7; W. 0.9; apex 3.7; arc 0.6.

**ETYMOLOGY:** this species is dedicated to the basque country.

*Annulipulsellum euzkadii* n. sp.: lan-sail hau Euskal Herria'ri eskeintzen diot, beragandik gureganatutako gizadiak gure jaiotz aberriaren egikera ta haunditasunean hain sendo eta ugari lagundu digulako.

(*Annulipulsellum euzkadii* n. sp., es dedicada al pueblo vasco cuyo aporte migratorio y trabajo contribuyeron firmemente a la formación y engrandecimiento de mi país).

**Comments:** *Annulipulsellum euzkadii*, presents peculiar characters compared with the other members of the family, specially the type of sculpture, the apex oblique and the form of the lateral teeth, higher and without intercusps denticles. Its wide geographic distribution define it as a very succesful species in deep-water ranging from 1840 to 4225 m depth, with deeper distribution in the Western North Atlantic bassins.

#### REFERENCES

- BOSS, K. — 1932. Scaphopoda in S. P. PARKER ed. Synopsis and classification of living organisms. vol. I. McGraw-Hill Co. New York, pages 1164-1166.
- CHISTIKOV, S. — 1979. (Phylogenetic relations of the Scaphopoda) in I. M. LIKHAREV ed., Molluscs, main results of their study. Abstr. VI Com. Meet. Inv. Moll., pages 20-20. Leningrad (in Russian).
- CHISTIKOV, S. — 1982. (Modern molluscs of the family Entalinidae (Scaphopoda Gadilida), 2. Subfamily Heteroschismoidinae, 2.) Zoologicheskii Zhurnal, 61(9): 1309-1321 (in Russian).
- PARKER, S. P., ed. 1932. Synopsis and classification of living organisms, 1125 pp McGraw-Hill Book Co. New York.
- SCARABINO, V. — 1979. Les Scaphopodes bathyaux et abyssaux de l'Atlantique sudoccidental (Systématique, distribution, adaptations). Nouvelle classification pour l'ensemble de la Classe. These de Doctorat en Océanologie. Université d'Aix-Marseille II, pages 1-154, figs. Marseille, France (not published).
- SCARABINO, V. — 1986. Nuevos taxa abisales de la clase Scaphopoda (Mollusca). Com. Mus. Nac. Hist. Nat. Zool. 11 (155): 1-20, 24 figs., Montevideo.

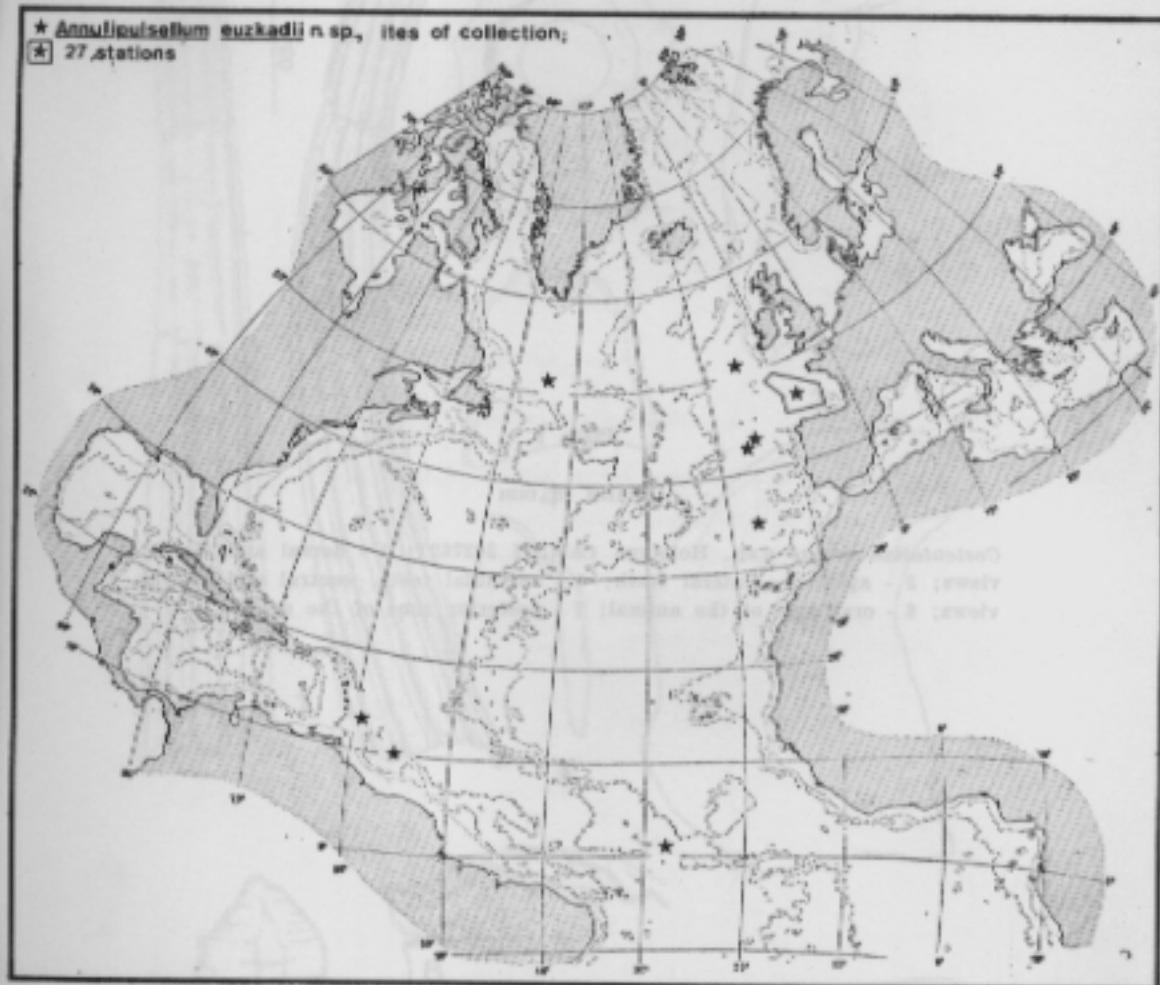
Table 1. — List of stations for *Annulipulsellum euzkadii* n. sp.; ATLANTIS II, KNORR and CHAIN: WHOI; Biogas, Polygas, Abyplaine, Noratlante, THALASSA: IFREMER. N= N° specimens.

Ship campaign	Station	Lat (N)	Long (W)	Depth (m)	Date	N
ATLANTIS II 31	155	00°03.0'	27°48.0'	3730-3783	13/II/67	2
KNORR 25	306	09°31.1'	56°20.6'	3392-3429	02/III/72	15
CHAIN 106	326	50°27.3'	14°23.8'	3859	22/VIII/72	3
		50°05.3'	14°24.8'			
Biogas I	DS 13	47°33.7'	08°39.9'	2165	09/IX/72	3
Biogas II	DS 32	47°32.2'	08°05.5'	2138	19/IV/73	
Biogas IV	DS 52	44°06.3'	04°22.4'	2006	18/II/74	20
" " "	DS 61	47°34.7'	08°38.8'	2250	25/II/74	14
" " "	DS 62	47°32.8'	08°40.0'	2175	26/II/74	12
" " "	DS 63	47°32.8'	08°35.0'	2126	26/II/74	36
" " "	DS 64	47°29.2'	08°30.7'	2156	26/II/74	23
Biogas V	DS 65	47°36.1'	08°40.5'	2360	15/VI/74	16
Biogas VI	DS 71	47°34.3'	08°33.8'	2194	20/X/74	20
" " "	DS 74	47°33.0'	09°07.8'	2777	21/II/74	2
" " "	DS 86	44°04.8'	04°18.7'	1950	01/XI/74	55
" " "	DS 87	44°05.2'	04°19.4'	1913	01/XI/74	
" " "	DS 88	44°05.2'	04°15.7'	1894	01/VI/74	1
" " "	CP 08	44°33.2'	08°38.5'	2177	20/X/74	11
" " "	CP 09	47°33.0'	08°44.1'	2171	20/X/74	34
" " "	CP 24	44°08.1'	04°16.2'	1995	31/X/74	
" " "	CP 25	44°05.0'	04°17.0'	1894	01/XI/74	
Biogas VII	CP 37	47°33.8'	08°39.2'	2175	11/X/78	
		47°34.2'	08°41.5'			
Biogas VIII	KG 147	47°33.4'	08°40.7'	2190		
" " "	KG 148	47°33.0'	08°40.3'	2170		
" " "	KG 158	47°32.8'	08°39.6'	2167		
Biogas IX	KG 177	47°31.8'	09°04.8'	2738	15/V/80	
" " "	CP 34	47°31.7'	08°23.3'	1970	14/V/80	
Polygas	KR 05	47°29.3'	09°44.3'	4225		
Noratlante	819E3	52°10.4'	45°32.2'	4100-4120	02/VIII/69	
		45°32.2'	45°33.4'			
" " "	48126	47°32.4'	08°30.9'	1970	01/XI/69	
		47°33.2'	08°31.5'			
Abyplaine	DS 07	34°06.0'	17°04.0'	4270	30/V/81	
" "	DS 10	42°51.2'	15°05.4'	4360-4270	11/VI/81	
" "	CP 18	42°52.3'	15°53.1'	4330	11/VI/81	
THALASSA	Z-453	48°34.0'	10°51.6'	1975-2070	27/X/73	
		48°32.9'	10°49.0'			

PLATES

Map 1. *Annulipulsellum euzkadii* n. sp. Sites of collection.

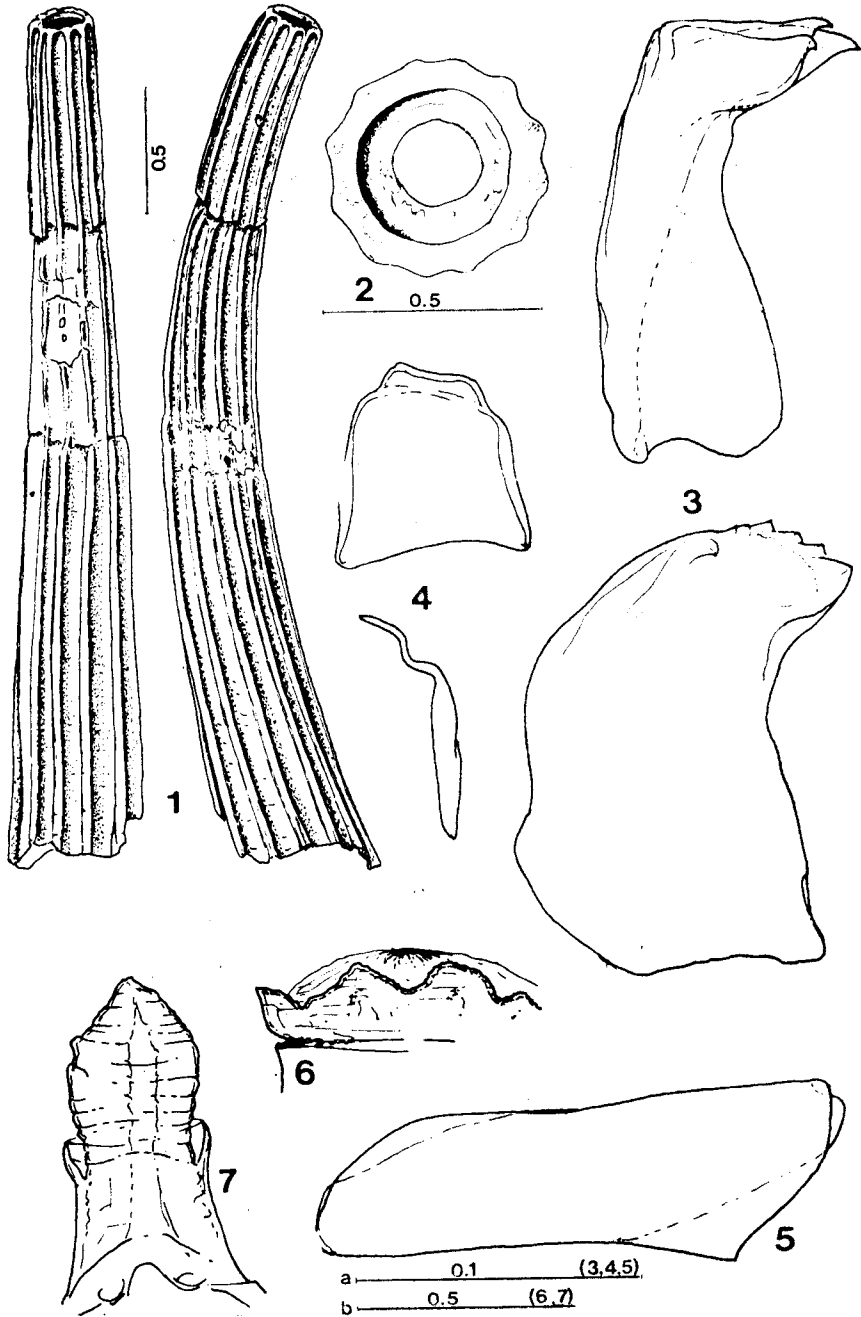




## Plate 1

Scales in mm

*Costentalina vemae* n.sp., Holotype (AMNH 202762): 1 - dorsal and lateral views; 2 - apex; 3 - lateral teeth; 4 - rachidial teeth, ventral and lateral views; 6 - oral area of the animal; 7 - posterior zone of the animal.

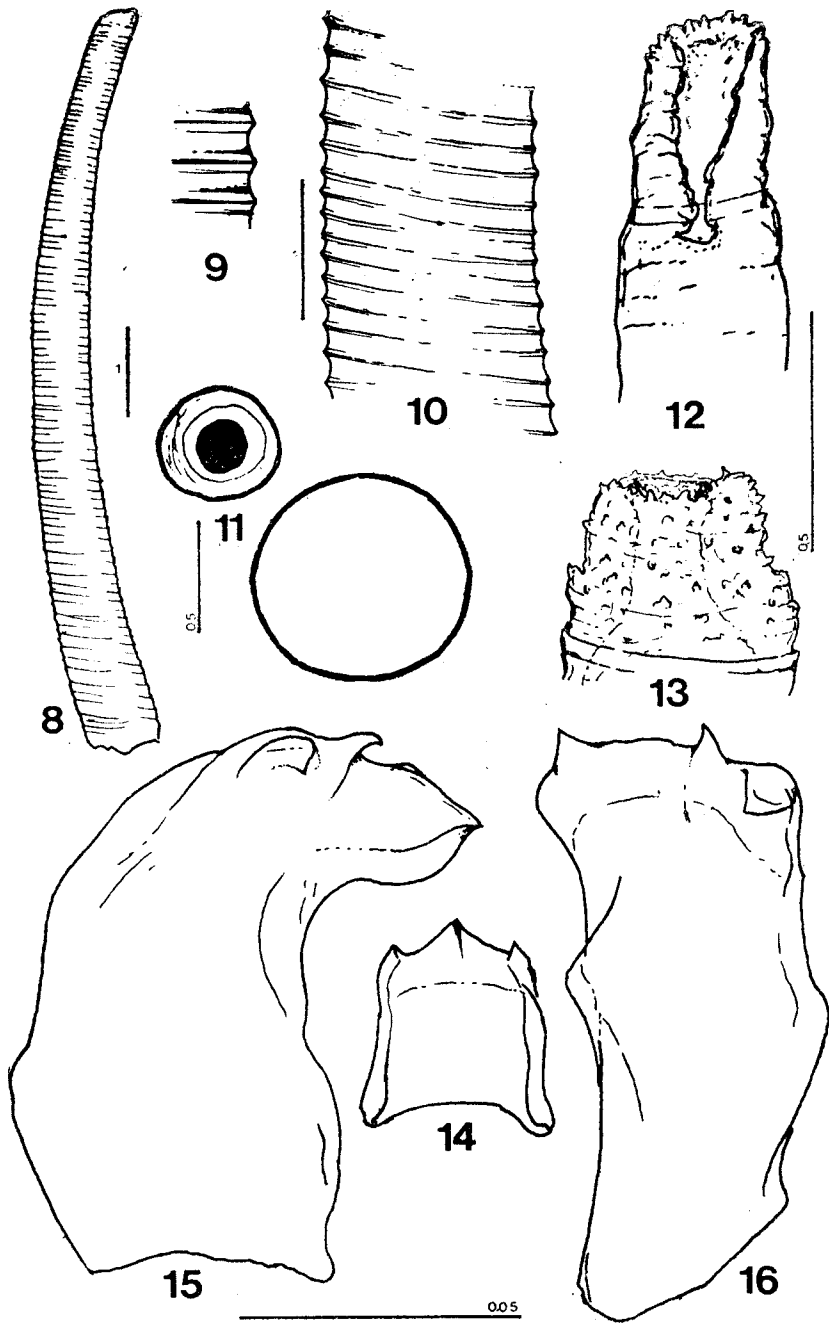


## Plate 2

Scales in mm

*Annulipulsellum euzkadii* n. sp.

- 8 - Holotype (MCZ 293952), lateral view
- 9, 10 - details of sculpture
- 11 - apical and oral sections
- 12 - apical area of the animal
- 13 - oral valve
- 14 - rachidial tooth
- 15, 16 - lateral teeth



## Plate 3

Scales: 17, 18= 1 mm

19, 20= 0.25 mm

*Annulipulsellum euzkadii* n. sp.

17 - lateral view

18 - dorsal view

19 - detail of sculpture

20 - detail of the apex

SEM photographs: CNRS, Université de Paris VI, Paris (France)

