

# Redescription of *Sigambra tentaculata* and re-establishment of *S. parva* (Polychaeta, Pilargidae) based upon type material

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**Abstract:** The pilargid polychaetes *Sigambra tentaculata* and *S. parva*, to date considered synonyms, are redescribed from the examination of type material and additional specimens from the East coast of the U.S.A., and the Atlantic and Mediterranean coasts of Spain. The presence of tooth-like papillae on the proboscis of both species, which is revealed as a character with high taxonomic relevance, is confirmed, as well as the possession of a dorsal row of peristomial papillae and pectinate neurochaetae. Both species are morphologically very closely related but they show clear differences in the arrangement and number of papillae and tooth-like papillae on the proboscis. *S. parva* is re-established as a valid species.

**Résumé :** Redescription de *Sigambra tentaculata* et revalidation de *S. parva* (Polychaeta, Pilargidae). Les polychètes pilargidés *Sigambra tentaculata* et *S. parva*, jusqu'à présent considérés comme des espèces synonymes, sont redécrits à partir de l'examen du matériel type et de spécimens additionnels provenant de la côte est des Etats-Unis et des côtes Atlantique et Méditerranéenne d'Espagne. La présence de papilles en forme de dent sur la trompe chez les deux espèces, qui s'est révélée comme un important caractère taxonomique, est confirmée, ainsi que la présence d'une rangée de papilles péristomiales et de soies ventrales pectinées. Du point de vue morphologique, les deux espèces sont très proches, mais elles manifestent des différences considérables en ce qui concerne l'arrangement et le nombre de papilles et de papilles en forme de dent de la trompe. La validité de *S. parva* est rétablie.

**Keywords:** *Sigambra tentaculata*, *Sigambra parva*, Polychaeta, Pilargidae.

## Introduction

To date, the genus *Sigambra* Müller, 1858 (Polychaeta, Pilargidae) comprised 15 recognized species (Licher & Westheide, 1997; Paterson & Glover, 2000), four of which have been reported from the NE Atlantic and Mediterranean

Sea: *S. robusta* (Ehlers, 1908), *S. tentaculata* (Treadwell, 1941), *S. parva* (Day, 1963) and *S. magnuncus* Paterson & Glover, 2000. Katzmann et al. (1974) collected several *Sigambra* specimens in the Bahía de Rosas (Mediterranean coast of the Iberian Peninsula) which in general terms correspond to the characteristics of the taxon *S. tentaculata*, originally described from the East coast of the USA. However, based on the observation of a number of morphological characters which differed from the original description in these specimens, Katzmann et al. (*op. cit.*)

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decided to name it *S. cf. tentaculata* rather than to propose a new name. These characteristics were the presence of a dorsal row of epidermal papillae on the peristomium, the size and disposition of the distal papillae in the proboscis and the presence of one to three “pharyngeal teeth” on the proboscis surface.

Licher & Westheide (1997), in a recent review of the genus *Sigambra*, redescribe *S. tentaculata* from the examination of the holotype and other specimens from the Atlantic coast of North America, and include *S. hanaokai* (Kitamori, 1960) and *S. parva* (Day, 1963) as junior synonyms. Licher & Westheide (*op. cit.*) consider the length of the middle antenna in relation to the lateral antennae to be irrelevant as diagnostic characters for separating the species in the genus. This character was used by Pettibone (1966) and Fauchald (1972) to separate *S. hanaokai* and *S. parva* from *S. tentaculata*, and the shape of the prostomium was also proposed by Britaev & Saphronova (1981) to separate *S. hanaokai* from *S. tentaculata*. With respect to the specimens described by Katzmann et al. (1974), Licher & Westheide (*op. cit.*) did not show a clear position, since they could not examine the material deposited in the Muséum National d’Histoire Naturelle de Paris, which has probably been lost (W. Katzmann, pers. comm., in Licher & Westheide, 1997). However, these authors stated that the presence of what they call “pharyngeal teeth” in *S. cf. tentaculata sensu* Katzmann et al. (1974) is a unique characteristic of this taxon and apparently not shared by any other pilargid species. Moreover, in their redescription of *S. tentaculata*, they do not mention the presence of epidermal papillae on the peristomium and highlight the absence of pectinate neurochaetae, pointing out only the presence of minutely serrated neurochaetae and the presence of a ring of subequal distal papillae on the proboscis, characteristics that clearly do not fit the description provided by Katzmann et al. (1974).

Dean (1998) recorded the presence of *S. tentaculata* in Costa Rica, emphasizing the absence of peristomial papillae in his specimens and suggesting that the species described by Katzmann et al. (1974) was a different one. *S. hanaokai* was also considered by Licher & Westheide (1997) to be a junior synonym of *S. tentaculata*, but the species was not re-examined because the type material has most probably been lost (M. Imajima, pers. comm., in Licher & Westheide, 1997).

The above-mentioned facts, together with the presence of new specimens collected off the Iberian Peninsula, which largely coincide with the description of *Sigambra cf. tentaculata sensu* Katzmann et al. (1974), have led us to revise, once again, the holotype and additional material of *S. tentaculata* plus the paratypes of *S. parva*, in order to compare them with Iberian specimens and to clarify the taxonomic status of both species.

As a result of this comparison, *Sigambra tentaculata* and *S. parva* are redescribed in this paper. The presence of tooth-like papillae (the “pharyngeal teeth” mentioned by Katzmann et al., 1974), of a dorsal row of peristomial papillae and pectinate neurochaetae are confirmed in both species. The differences between the two species in the number and arrangement of papillae and tooth-like papillae on the proboscis, are considered to be a sufficient evidence to justify the re-establishment of the taxon *S. parva* as a valid species.

## Material and methods

Line drawings were made using a camera lucida connected to a light microscope. In order to improve the observation of different tegumentary structures like the proboscideal, peristomial and parapodial papillae, the specimens were temporarily stained with methylene blue. For SEM studies, specimens were dehydrated via a graded ethanol series, liquid-CO<sub>2</sub>-critical-point-dried, sputter coated with Au and examined in a Philips SEM XL30 at CACTI (Universidade de Vigo). Body width measurements exclude parapodia and cirri.

Type series of *Sigambra tentaculata* and *S. parva*, and other material examined, were loaned by the following institutions and personal collections: American Museum of Natural History, New York (AMNH); The Natural History Museum, London (BMNH); Museo Nacional de Ciencias Naturales, Madrid (MNCN); National Museum of Natural History, Smithsonian Institution, Washington, D.C. (USNM), and personal collection of R. Capaccioni (Univ. Valencia, Spain).

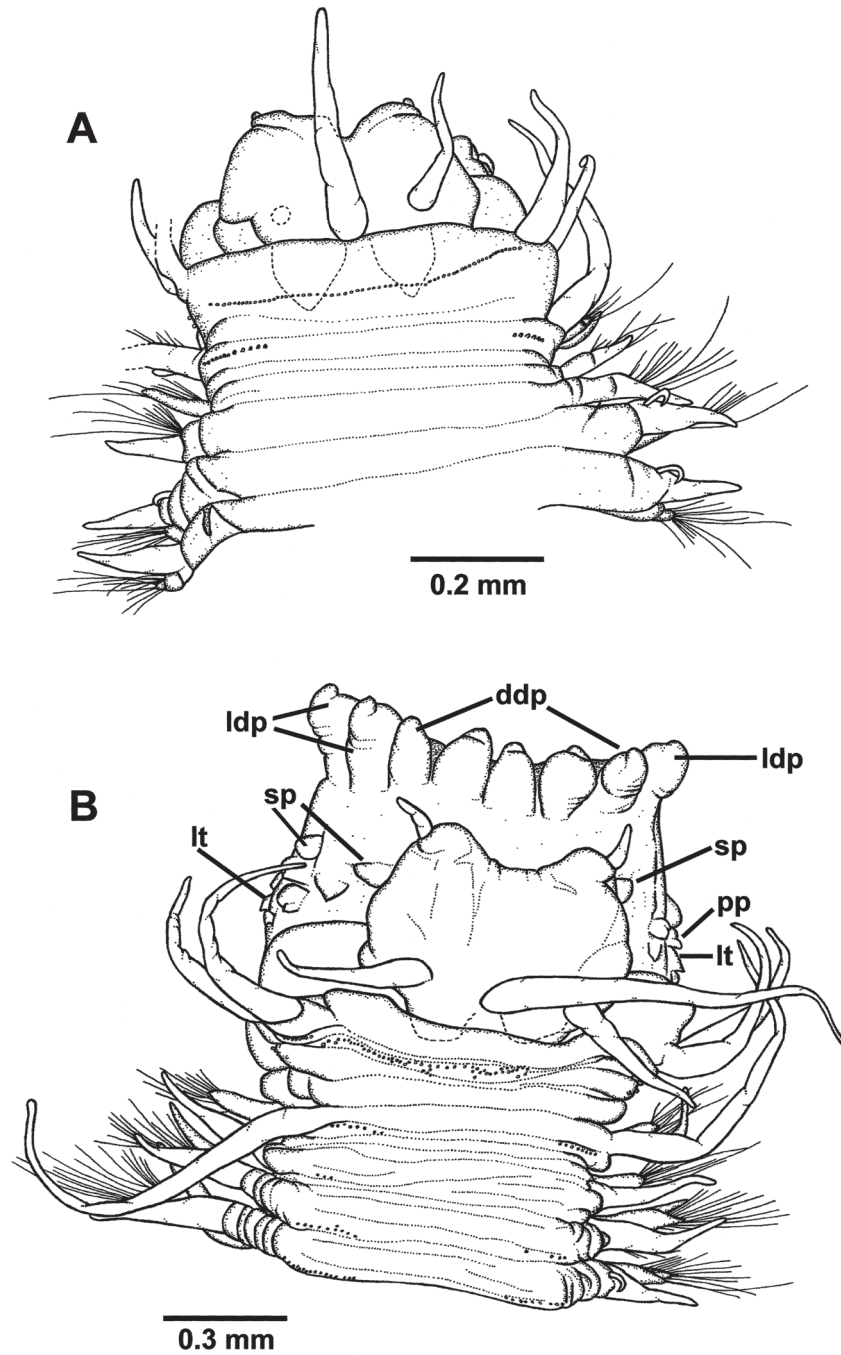
Abbreviations used in the figures

a	acicula
c	capillary notochaeta
h	hook
dt	dorsal tooth-like papilla
lt	lateral tooth-like papilla(e)
ddp	dorsal distal papilla(e)
ldp	lateral distal papilla(e)
vdp	ventral distal papilla(e)
sp	subdistal papilla(e)
pp	pointed papilla(e)
pep	peristomial papillae

## Taxonomic results

Family Pilargidae Saint-Joseph, 1899  
 Genus *Sigambra* Müller, 1858  
*Sigambra tentaculata* (Treadwell, 1941)  
 Figures 1-3

*Ancistrosyllis tentaculata* Treadwell (1941): 1-4, Figs 1-3.

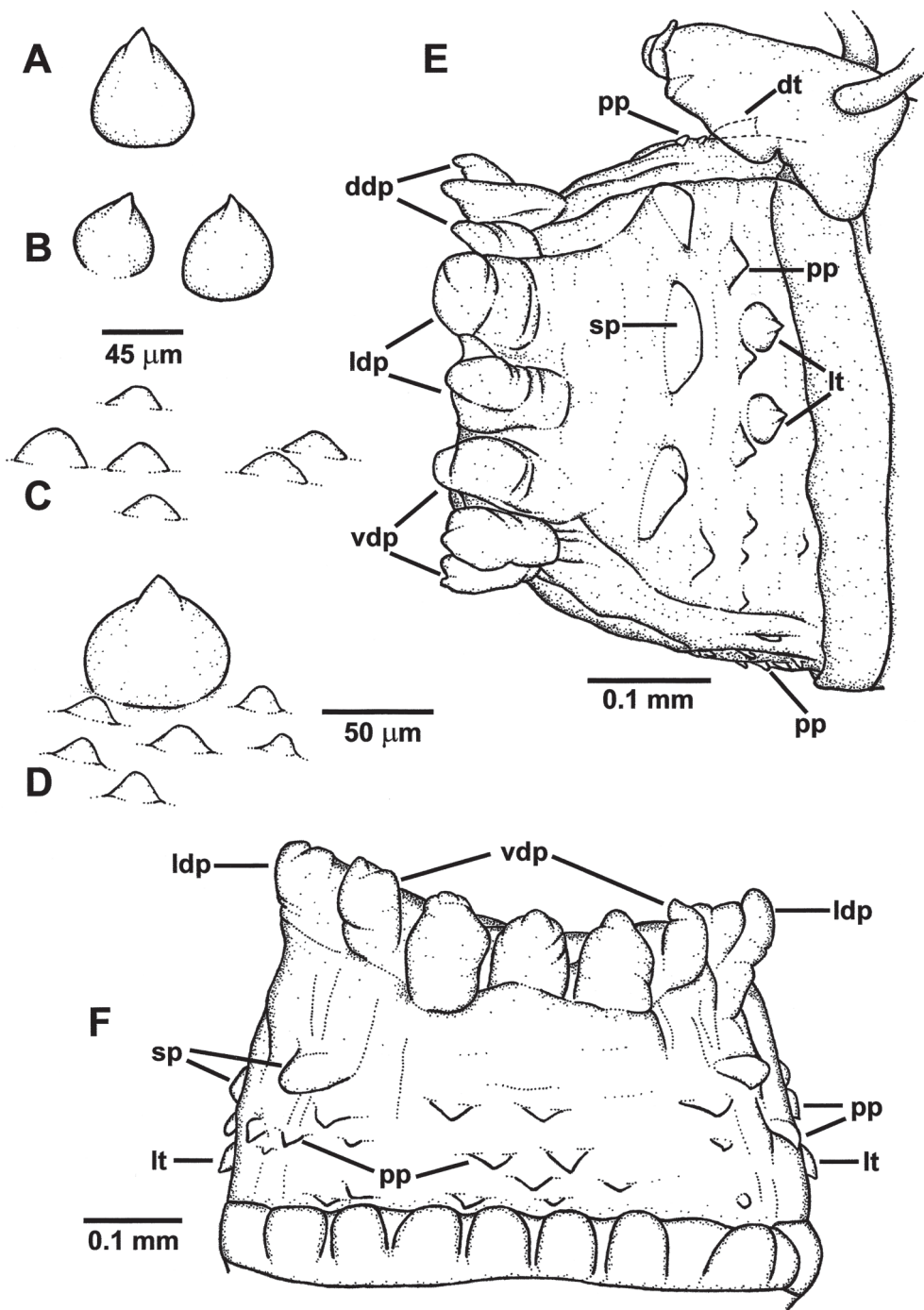


**Figure 1.** *Sigambra tentaculata* (Treadwell, 1941). **A** Holotype, anterior end, dorsal view; **B** York River specimen, anterior end with everted proboscis, dorsal view.

**Figure 1.** *Sigambra tentaculata* (Treadwell, 1941). **A** Holotype, région antérieure, vue dorsale ; **B** spécimen de York River, région antérieure, trompe sortie, vue dorsale.

*Material examined:* AMNH 2893; Crab Meadow State Park, Long Island, New York, U.S.A.; Jul 1938; incomplete

specimen 2.5 mm length, 0.5 mm width and 26 chaetigers (Holotype).

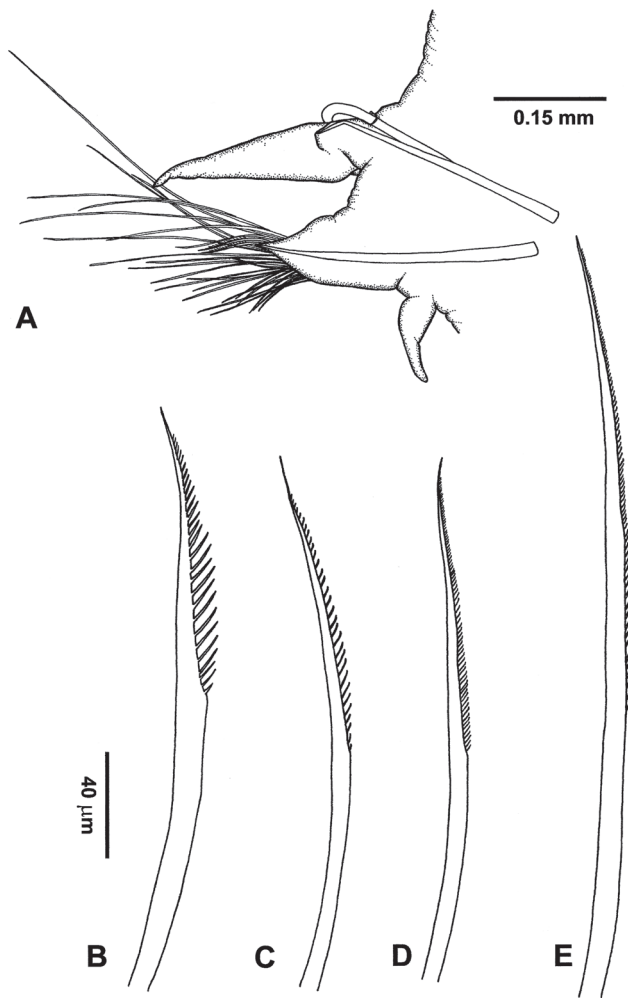


**Figure 2.** *Sigambra tentaculata* (Treadwell, 1941), different proboscis papillae. **A-C** Holotype: **A** Dorsal tooth-like papilla (the cusp points backwards); **B** lateral tooth-like papillae (orientation as in **A**); **C** ventral pointed papillae. **D-F** York River specimen: **D** Dorsal tooth-like papilla (orientation as in **A**) and pointed papillae; **E** proboscis, lateral view; **F** proboscis, ventral view. **A-C** same scale.

**Figure 2.** *Sigambra tentaculata* (Treadwell, 1941), différentes papilles de la trompe. **A-C** Holotype : **A** Papille dorsale en forme de dent (la pointe de la dent est orientée vers l'arrière) ; **B** papilles latérales en forme de dent (même orientation que **A**) ; **C** papilles pointues ventrales ; **D-F** Spécimen de York River : **D** Papille dorsale en forme de dent (même orientation que **A**) et papilles pointues ; **E** trompe, vue latérale ; **F** trompe, vue ventrale. **A-C** même échelle.

*Other material:* USNM 31009; York River, Virginia, U.S.A.; Nov 1960; coll. M. L. Wass; mud; 8 specimens;

largest complete specimen 11.0 mm length, 0.62 mm width and 95 chaetigers.



**Figure 3.** *Sigambra tentaculata* (Treadwell, 1941). A York River specimen: median parapodium, anterior view. B-E Holotype: B pectinate neurochaeta; C-E serrated neurochaetae. B-E same scale.

**Figure 3.** *Sigambra tentaculata* (Treadwell, 1941). A spécimen de York River : parapode de la région moyenne, vue antérieure. B-E Holotype : B soie pectinée ventrale ; C-E soies épineuses ventrales. B-E même échelle.

#### Description

The largest complete specimen measures 11.0 mm in length, 0.62 mm in width and bears 95 chaetigers. Body dorsoventrally flattened. Body not pigmented, eyes lacking (Fig. 1A).

Prostomium bilobed; palps biarticulate, with large palpophores and small palpostyles (Fig. 1B); three slender antennae, tapered distally and positioned posteriorly, median antenna about 1.5-2.0 times as long as lateral ones (Figs 1A-B).

Peristomium with two pairs of slender and subequal tentacular cirri, slightly longer than lateral antennae, and two small anteriorly projected lobes between lateral antennae and tentacular cirri (Fig. 1B). A transversal row of small epidermal papillae about 6-9 µm in diameter, located dorsally near the posterior margin of prostomium (Figs 1A-B). Rows of similar epidermal papillae are also observed in the posterior dorsolateral margin of each segment and near the base of each parapodium; each row bears 11-16 papillae on each side.

Proboscis with 14 distal papillae, the four lateral ones usually bigger than the dorsal and ventral ones (Fig. 2E). A subdistal row of oval, more or less pointed papillae are located behind the distal papillae. Proximal part of the proboscis with smaller lateral and ventral pointed papillae (Figs 2C, E-F). Two pairs of lateral tooth-like papillae (about 45 µm width in the holotype) with cusps directed backwards, located between the lateral pointed papillae (Figs 2B, E). When the proboscis is totally everted, a mediodorsal tooth-like papilla pointing backwards can be observed (about 56 µm width in the holotype), accompanied by small pointed papillae in front of it (Figs 2A, D-E). Dorsal and lateral tooth-like papillae can be distinguished from the pointed papillae by presenting a well developed cusp directed backwards.

Parapodia sesquiramous, with dorsal and ventral cirri slender and tapered distally (Fig. 3A); notopodia with acicula and dorsal cirrus; an emergent hook from chaetigers 4-5 until the last ones, accompanied by a single capillary chaeta in posterior parapodia. Dorsal cirri of first chaetiger longer than the tentacular cirri and the dorsal cirri of following segments (Figs 1A-B); second chaetiger with shorter dorsal cirrus than those of following segments and lacking ventral cirrus. Neuropodia well developed with ventral cirrus of similar shape but shorter than dorsal cirrus, and not extending beyond the tip of the parapodial lobe (Fig. 3A), straight acicula in a conical parapodial lobe, two short pectinate supraacicular chaetae with long spinulation (Fig. 3B), and numerous simple, minutely serrated and distally pointed neurochaetae of variable length, with spinulation directed upwards, and thicker in shorter chaetae and proximal part of longer chaetae (Figs 3C-E).

Pygidium with two slender anal cirri.

*Ecology.* To date, this species had been reported from intertidal to abyssal depths (Dean, 1998) in a wide variety of bottoms: sand, sand mixed with mud and shell fragments, mud (Wolf, 1984).

*Distribution.* East coast of U.S.A. (Long Island, York River). Other geographical records include Eastern Pacific, Northern Gulf of Mexico, NE South America (Blake, 1997) and Pacific coast of Costa Rica (Dean, 1998). In our opinion, this extremely wide geographical and ecological

(see above) distribution should be taken with care because there could be a species complex involving different, but very closely related species.

#### Remarks

In their review of the genus *Sigambra*, Licher & Westheide (1997) examined the holotype of *S. tentaculata*, confirming the absence of capillary chaetae in the neuropodium, with the neurochaetae being, in fact, minutely serrated, as had been previously observed by Hartmann-Schröder (1974). They did not mention either the presence of peristomial epidermal papillae, pectinate neurochaetae or proboscideal tooth-like papillae in *S. tentaculata*.

Our examination of the holotype has revealed the presence of peristomial papillae, which are difficult to detect without a staining of the specimens. Papillae of this kind have been previously reported in *Sigambra bassi* (Hartman, 1947) by Licher & Westheide (1997) and in *S. magnuncus* Paterson & Glover, 2000. Besides, two pectinate neurochaetae per neuropodium are also present, and are similar to the ones observed by Salazar-Vallejo (1990) in his redescription of *S. grubei* Müller, 1858.

The proboscis of the holotype is not everted, but on a careful examination, the presence of one dorsal tooth-like papilla and two pairs of lateral tooth-like papillae, accompanied by several kinds of papillae, could be detected. The presence of "pharyngeal teeth" or papillae with a tooth shape was previously reported in the genus by Katzmann et al. (1974) for several Mediterranean specimens of *Sigambra*, which they named *S. cf. tentaculata* (see Remarks for *S. parva*).

*Sigambra tentaculata* shares the following characteristics with *S. bassi*, *S. setosa* Fauchald, 1972 and *S. phuketensis* Licher & Westheide, 1997: ventral cirrus absent in chaetiger 2, 14 distal papillae on the proboscis, notopodial hooks from anterior chaetigers backwards and presence of notopodial capillaries. However, only *S. bassi* presents notopodial emergent spines; only *S. setosa* possesses up to 2-3 notopodial capillaries and only *S. phuketensis* presents slightly serrated or straight denticulate neurochaetae rather than serrated neurochaetae with spinulation directed upwards, as occurs in *S. tentaculata*. A close examination of the proboscis of these species will probably show additional differences among them, as well as between specimens identified as *S. tentaculata* from different parts of the world, taking into account its wide distribution, with records from both the Atlantic and Pacific Ocean.

Over the course of this work, additional material labelled as *Sigambra tentaculata* and deposited in the USNM was examined. The specimens collected in York River, USA (USNM 31009) share the characteristics of the holotype, but the specimens from Port Aransas, Texas, U.S.A. (USNM 31007) correspond to a different species due to the presence

of eight distal proboscideal papillae and one capillary notochoeta from chaetiger 1 backwards. These specimens have in common with *S. tentaculata* the possession of five tooth-like papillae: a mediodorsal one and two pairs of lateral ones accompanied by several papillae, but only four *Sigambra* species present eight distal proboscideal papillae: *S. ocellata* (Hartmann-Schröder, 1959), *S. bidentata* Britaev & Saphronova, 1981, *S. quingdaoensis* Licher & Westheide, 1997 and *S. magnuncus*. Only *S. quingdaoensis* and *S. magnuncus* also present capillary notochoetae from anterior chaetigers.

#### *Sigambra parva* (Day, 1963)

Figures 4-7

*Ancistrosyllis parva* Day (1963): 395-396, Figs 3g-k.

*Material examined*: BMNH London ZB 1963.1.23/24: South coast of Cape Province (South Africa); 34°10'S, 23°32'E; Nov 1960; coll. J.H. Day; 97 m; green mud; 3 paratypes specimens, largest incomplete, with 9.25 mm length, 0.4 mm width and 61 chaetigers.

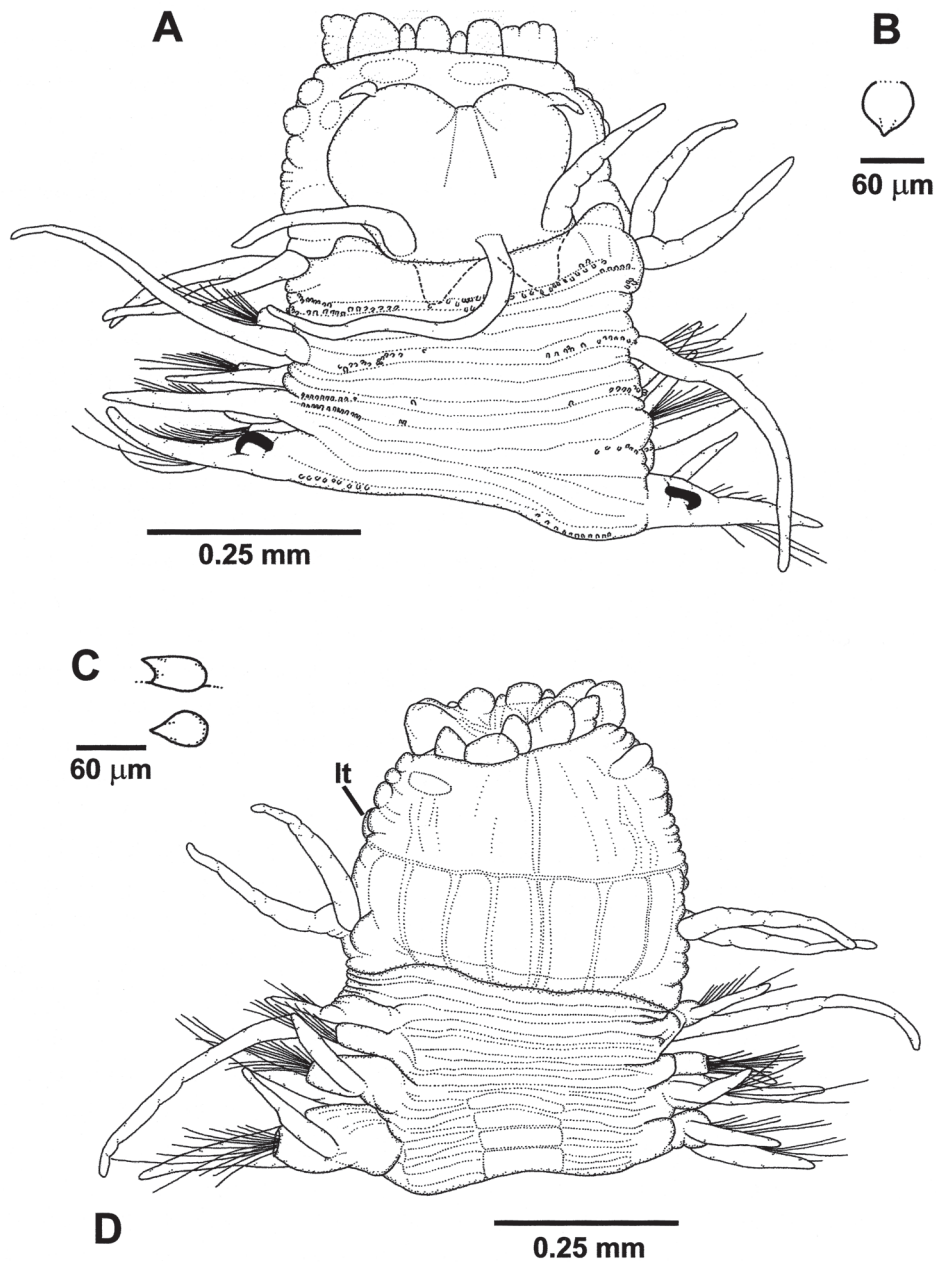
*Other material*: MNCN Madrid 16.01/7837: Ensenada de Baiona (Galicia, Atlantic coast of Spain); 42°08'50"N, 8°50'15"W; May 1996; 7 m; muddy sand with *Zostera marina*; 15-20 cm depth in sediment; incomplete specimen 10.0 mm length, 0.8 mm width and 56 chaetigers. MNCN 16.01/7838: Ensenada de Baiona; 42°07'19"N, 8°50'45"W; Oct 1996; 2 m; mud; incomplete specimen 4.2 mm length, 1.0 mm width and 25 chaetigers (in SEM stub). MNCN 16.01/7836: Islas Columbretes, east of "El Fidalgo" (Valencia, E Spain); sample 277B11 (Fauna IV); July 1996; 19.6 m; shelly sand; complete specimen 6.75 mm length, 0.35 mm width and 75 chaetigers. MNCN 16.01/5916: Salobreña (Granada, S Spain); incomplete specimen 5.0 mm length, 0.37 width and 37 chaetigers (leg. I. Doadrio). MNCN 16.01/5867: Salobreña (Granada, S Spain); two incomplete specimens, 1.5 mm length, 0.45 mm width, 12 chaetigers and 1.40 mm length, 0.37 mm width, 12 chaetigers, respectively (leg. I. Doadrio). Personal collection of R. Capaccioni: Ensenada de los Alfaques (Cataluña, E Spain); St. C5; 5.5 to 10 m depth; mud; incomplete specimen of 1.87 mm length, 0.5 mm width and 21 chaetigers.

#### Description

The largest incomplete specimen measures 10.0 mm in length, 0.8 mm in width and bears 56 chaetigers. The longest complete specimen is 6.75 mm in length, 0.35 mm in width and bears 75 chaetigers.

Body dorsoventrally flattened, with four anterior chaetigers somewhat narrower in relation to the rest of the body (Fig. 7A). Body not pigmented, eyes lacking.

Prostomium bilobed; palps biarticulate, with large palpophores and small palpostyles (Fig. 4A); three slender



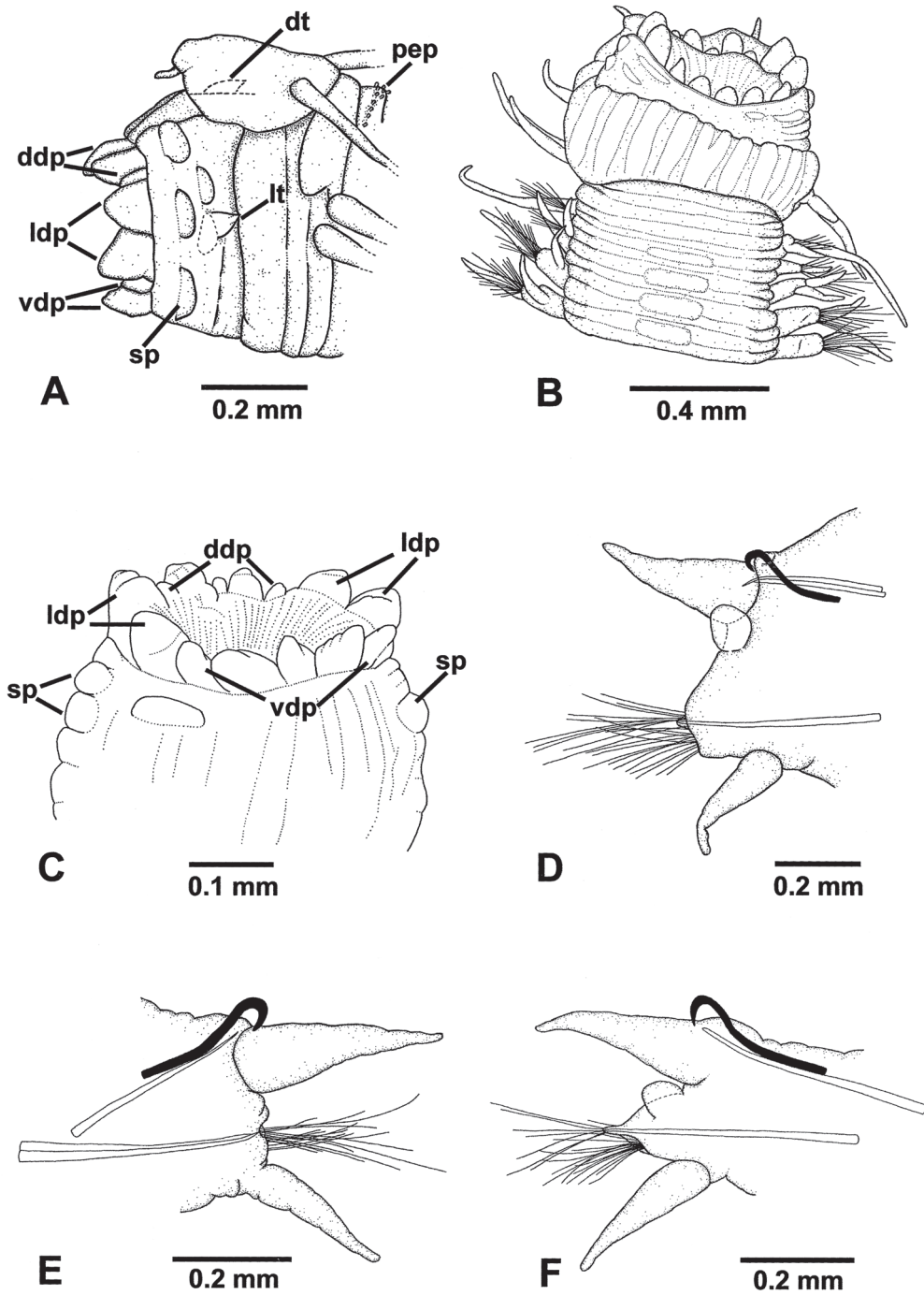
**Figure 4.** *Sigambra parva* (Day, 1963), Columbretes specimen with an everted proboscis: **A** Anterior end, dorsal view; **B** dorsal tooth-like papilla (the cusp points backwards); **C** lateral tooth-like papilla, lateral and dorsal view (the cusp points backwards); **D** anterior end, ventral view.

**Figure 4.** *Sigambra parva* (Day, 1963), spécimen de Columbretes, trompe sortie : **A** Région antérieure, vue dorsale ; **B** papille dorsale en forme de dent (pointe de la dent vers l'arrière) ; **C** papille latérale en forme de dent, vue latérale et dorsale (pointe de la dent vers l'arrière) ; **D** région antérieure, vue ventrale.

antennae, tapered distally and positioned posteriorly, median antenna about 1.5 times as long as lateral ones.

Peristomium with two pairs of slender tentacular cirri, subequal or the dorsal one slightly longer, longer than lateral

antennae (Figs 4A,D); two small anteriorly projected lobes between lateral antennae and tentacular cirri. A transversal row of small epidermal papillae about 6-8 µm in diameter, located dorsally near the posterior margin of prostomium



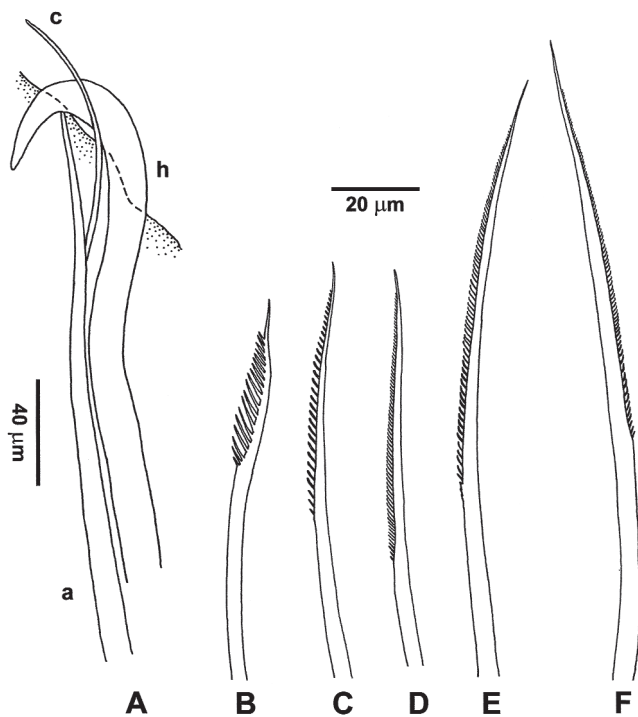
**Figure 5.** *Sigambra parva* (Day, 1963). **A** paratype specimen from Cape Province with a partly everted proboscis, lateral view; **B** Baiona specimen with a partly everted proboscis, ventral view; **C** Columbretes specimen, ventral view of everted proboscis; **D-F** Baiona specimen, median parapodia, anterior view.

**Figure 5.** *Sigambra parva* (Day, 1963). **A** paratype de la Province du Cap avec une trompe en partie sortie, vue latérale ; **B** spécimen de Baiona avec une trompe en partie sortie, vue ventrale ; **C** spécimen de Columbretes, vue ventrale de la trompe ; **D-F** spécimen de Baiona, parapodes du milieu du corps, vue antérieure.

(Figs 4A, 7B-C). Similar epidermal papillae are also observed in the posterior dorsolateral margin of each

segment and near the base of each parapodium; each row bears 10-18 papillae on each side (Fig. 7D).





**Figure 6.** *Sigambra parva* (Day, 1963), chaetae from a Columbretes specimen. **A** notochaetae; **B** pectinate neurochaeta; **C-F** serrated neurochaetae. **B-F**: same scale.

**Figure 6.** *Sigambra parva* (Day, 1963), Soies d'un spécimen de Columbretes. **A** soies dorsales ; **B** soie pectinée ventrale ; **C-F** soies épineuses ventrales. **B-F** : même échelle.

Proboscis with 14 distal papillae of different sizes (Figs 5A-C): two pairs of lateral papillae of bigger size, five ventral ones of medium size, and five dorsal ones, two of them of similar size to the ventral ones and three smaller ones. Size of papillae can vary according to their state of contraction, being the smallest dorsal ones difficult to detect as it happens in the paratypes. Two subdistal rows of oval, non-pointed papillae are located behind the distal papillae (Figs 5A, C). When the proboscis is totally everted, a mediodorsal tooth-like papilla with a cusp pointing backwards can be observed (Figs 4B, 5A). Two lateral tooth-like papillae, one on each side of proboscis, pointing backwards and located behind the subdistal oval papillae (Figs. 4C, 5A).

Parapodia sesquiramous, with dorsal and ventral cirri slender and tapered distally (Figs 5D-F); notopodia with 1-2 aciculae, a dorsal cirrus, and an emergent hook from chaetiger 4-5 backwards (Fig. 7E), accompanied by a single capillary chaeta in posterior parapodia (Fig. 6A). Two of the paratypes with emergent hook from chaetiger 5, presenting a non-emergent hook on chaetiger 4. Dorsal cirri of first

chaetiger longer than the tentacular cirri and the dorsal cirri of following segments (Fig. 4A); second chaetiger with shorter dorsal cirri than those of following segments and without ventral cirri (Fig. 4B). A globular structure near the proximal part of the dorsal cirri can be observed, in some of the specimens, from chaetigers 6-7 in most parapodia (Figs 5D, F). Neuropodia well developed with ventral cirri of similar shape but shorter than dorsal cirri, extending beyond the tip of the parapodial lobes, and straight acicula in conical parapodial lobes.

Chaetae: 1-2 short pectinate supraaciculae chaetae, with delicate spinulation in posterior chaetigers (Figs 6B, 7F), and numerous simple, minutely serrated and distally pointed neurochaetae of variable length, with spinulation directed upwards, thicker in shorter chaetae and in proximal part of longer chaetae (Figs 6C-F).

Pygidium with two slender anal cirri.

*Ecology.* Day (1963) found this species in mud at 97 m depth (South Africa). In Spanish coasts the species was collected in shelly sand, fine sand with mats of *Zostera marina* L. and mud between 2 and 20 m depth.

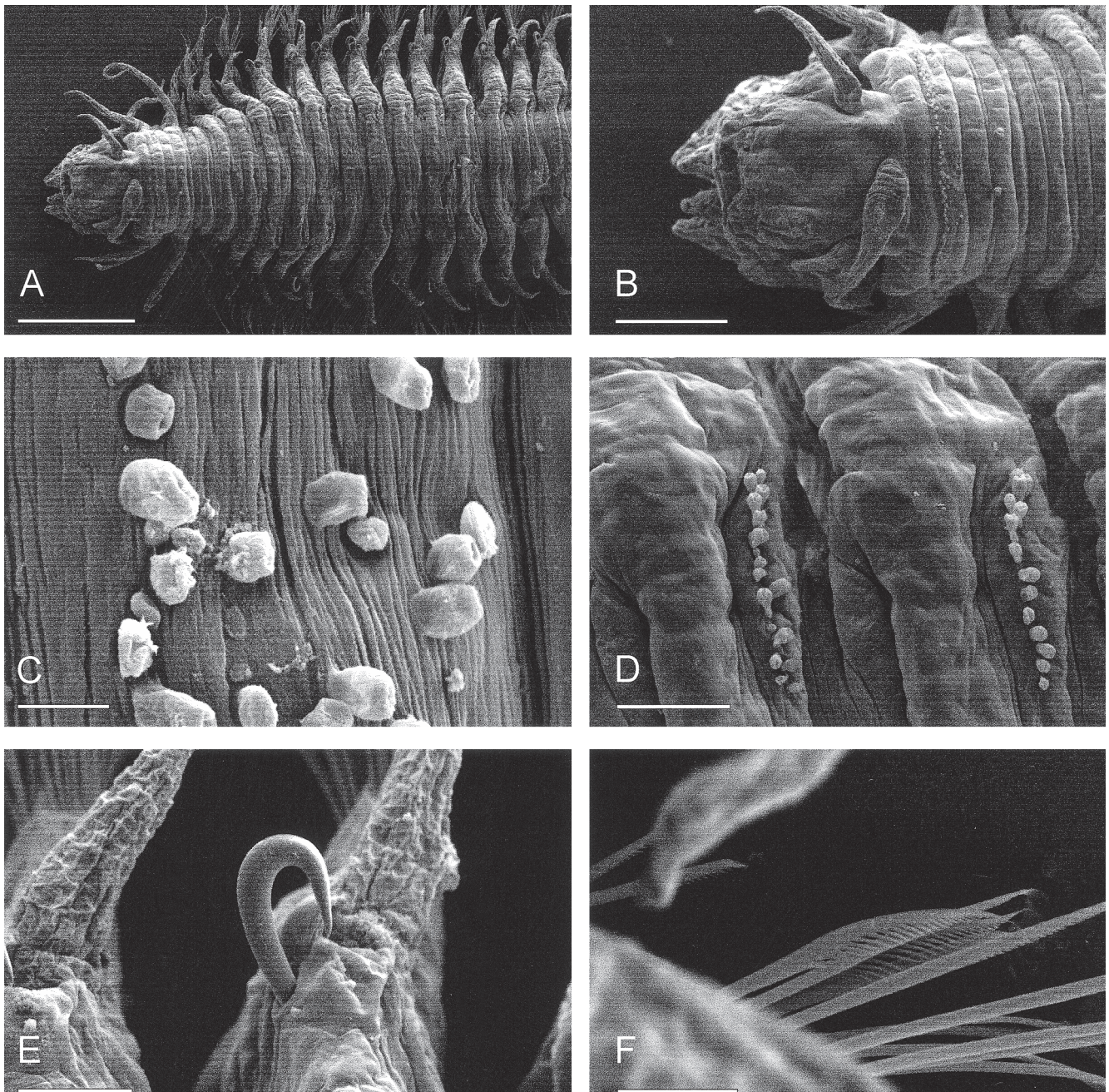
*Distribution.* South Africa (Day, 1963). Atlantic and Mediterranean coasts of Spain (this work).

#### Remarks

Licher & Westheide (1997) have regarded *Sigambra hanaokai* (Kitamori, 1960) and *S. parva* (Day, 1963) as junior synonyms of *S. tentaculata* due to the following shared morphological characteristics: the presence of notopodial hooks from chaetiger 3-4; similar neuropodial serrated capillaries; similar body size, colour and general appearance. Nevertheless, contrary to the opinion of Pettibone (1966) and Fauchald (1972), Licher & Westheide (op. cit.) do not consider the length of the middle antenna in relation to the lateral antennae to be relevant as a diagnostic character.

Examination of paratypes of *Sigambra parva* has shown that this species is closely related to *S. tentaculata* but we do not consider them to be synonyms because of the different arrangement of the proboscideal papillae and tooth-like papillae, a character not included in the description of *S. tentaculata* provided by Licher & Westheide (1997). While *S. tentaculata* presents five tooth-like papillae in the proboscis surface (one mediodorsal and two pairs of lateral ones), *S. parva* possesses only one mediodorsal and two lateral ones. Moreover, *S. tentaculata* also presents numerous pointed papillae across the proximal surface of the proboscis, accompanying the dorsal and lateral tooth-like papillae.

The result of an additional examination of *Sigambra* specimens collected on the Spanish coasts, largely confirms the characteristics of paratypes of *S. parva*, mainly in the arrangement of proboscideal papillae and number of tooth-



**Figure 7.** *Sigambra parva* (Day, 1963), Baiona specimen, SEM micrographs. **A** anterior end, dorsal view; **B** detail of anterior end, dorsal view; **C** detail of peristomial papillae; **D** detail of parapodial papillae; **E** dorsal hook; **F** two pectinate neurochaetae and serrated neurochaetae. Scale bars: A: 0.5 mm. B: 0.2 mm. C: 10  $\mu$ m. D-E: 50  $\mu$ m. F: 20  $\mu$ m.

**Figure 7.** *Sigambra parva* (Day, 1963), spécimen de Baiona, micrographies MEB. **A** région antérieure, vue dorsale ; **B** détail de la région antérieure, vue dorsale ; **C** détail des papilles du péristomium ; **D** détail des papilles parapodiales ; **E** soie dorsale en crochet ; **F** deux soies pectinées et soies épineuses ventrales. Echelles : A : 0.5 mm. B : 0.2 mm. C : 10  $\mu$ m. D-E : 50  $\mu$ m. F : 20  $\mu$ m.

like papillae. The specimens described by Katzmann et al. (1974) as *S. cf. tentaculata* possessing between 1-3 “pharyngeal teeth” might belong to *S. parva*, but this fact

could not be ascertained because these specimens have probably been lost (see Introduction).

The fact that the original description of *Sigambra parva* provided by Day (1963) mentions a lower number of distal papillae on the proboscis (10-12) than the usual number of 14, could be explained by the state of contraction of the small dorsal distal papillae in the paratypes, which may remain hidden among the larger ones. Besides, notoaciaculae are present from chaetiger 1 in the paratypes and Spanish specimens, and no smooth neurochaetae were observed. Some neurochaetae could appear to be smooth under low microscope magnification, but a close examination with high magnification always reveals a minutely serrated nature.

The type material of *Sigambra hanaokai* was not examined by Licher & Westheide (1997) since it has probably been lost (see Introduction). In our opinion, its synonymy with either *S. tentaculata* or *S. parva*, taking into account only characters such as the relative length of the antennae or the nature and distribution of the chaetae, could not be confirmed without the examination of the proboscideal papillae and tooth-like papillae considered to be of great relevance as specific characters in the genus *Sigambra*.

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#### References

- Blake J.A. 1997.** Family Pilargidae Saint Joseph, 1899. In: *Taxonomic Atlas of the benthic fauna of the Santa Maria Basin and western Santa Barbara Channel, Vol. 4* (J.A. Blake, B. Hilbig and P.H. Scott eds), pp. 261-284. Santa Barbara Museum of Natural History: Santa Barbara, California.
- Britaev T.A. & Saphronova M.A. 1981.** New species of the family Pilargiidae (Polychaeta) from the sea of Japan and a revision of the genus *Cabira*. *Zoologicheskii Zhurnal*, **60**: 1314-1324 (In Russian).
- Day J.H. 1963.** The polychaete fauna of South Africa. Pt. 8. New species and records from grab samples and dredgings. *Bulletin of the British Museum (Natural History), ser. Zoology*, **10**: 383-445.
- Dean H.K. 1998.** The Pilargidae (Annelida: Polychaeta) of the Pacific coast of Costa Rica. *Revista de Biología Tropical*, **46**, Supl. 6: 47-62.
- Fauchald K. 1972.** Benthic polychaetous annelids from deep water off western México and adjacent areas in the Eastern Pacific Ocean. *Allan Hancock Foundation Monograph*, **7**: 1-575.
- Hartmann-Schröder G. 1974.** Zur Kenntnis des Eulitorals der afrikanischen Westküste zwischen Angola und Kap der Guten Hoffnung und der afrikanischen Ostküste von Südafrika und Mocambique unter besonderer Berücksichtigung der Polychaeten und Ostracoden. Teil II. Die Polychaeten des Untersuchungsgebietes. *Mitteilungen aus dem Hamburgischen Zoologischen Museum und Institut*, **69**: 95-228.
- Katzmann W., Laubier L. & Ramos J. 1974.** Pilargidae (Annelides Polychètes errantes) de Méditerranée. *Bulletin de l'Institut Océanographique*, **71**: 1-40.
- Licher F. & Westheide W. 1997.** Review of the genus *Sigambra* (Polychaeta: Hesionidae), redescription of *S. bassi* (Hartman, 1947), and descriptions of two new species from Thailand and China. *Steenstrupia*, **23**: 1-20.
- Paterson G.L.J. & Glover A.G. 2000.** A new species of *Sigambra* (Polychaeta, Pilargidae) from the abyssal plains of the NE Atlantic. *Bulletin of the Natural History Museum: Zoology*, **66** (2): 167-170.
- Salazar-Vallejo S.I. 1990.** Redescriptions of *Sigambra grubii* Müller, 1858 and *Hermundura tricuspis* Müller, 1858 from Brazil and designation of neotypes (Polychaeta: Pilargidae). *Journal of Natural History*, **24**: 507-517.
- Treadwell A. L. 1941.** Polychaetous annelids from the New England region, Puerto Rico and Brazil. *American Museum Novitates*, **1138**: 1-4.
- Wolf P.S. 1984.** Family Pilargidae. In: *Taxonomic guide to the polychaetes of the northern Gulf of Mexico, Vol. 4* (J.M. Uebelacker and P.G. Johnson eds), pp. 1-41. Barry A. Vittor & Associates, Inc.: Mobile, Alabama.