

***Pseudomastus deltaicus* gen. et sp.n. (Polychaeta: Capitellidae)
from a shallow water bay in the North-Western Mediterranean
Sea**

ROMANA CAPACCIONI-AZZATI¹ and DANIEL MARTIN²

1 Departament de Biologia Animal, Biologia Cel·lular i Parasitologia, Universitat de Valencia, Dr. Moliner 50, 46100-Burjasot (Valencia), Spain.

2 Centre d'Estudis Avançats de Blanes (CEAB-CSIC), Camí de Santa Bàrbara sin, 17300 Blanes (Girona), Spain.

Specimens of *Pseudomastus deltaicus* gen. et sp.n. (Capitellidae), were collected from muddy bottoms in Els Alfacs Bay (Ebre Delta), a semi-enclosed shallow water area. The main diagnostic characteristics are the possession of 12 thoracic setigers, of which the first 10 have only capillary setae and the last two have capillary notosetae and neuropodial hooded hooks, and presence of branchiae in the abdominal region. Pygidium bearing three anal cirri.

Running head: New genus of Capitellidae.

Introduction

The Els Alfacs Bay (Ebre Delta) located on the North East coast of the Iberian Peninsula (Western Mediterranean, 40°33'-38'N, 0°32'-44'E) is a semi-enclosed shallow water area which can be characterized as a 'paralic' environment (*sensu* Guelorget & Perthuisot 1983): although its hydrographic regime is basically marine, it is clearly influenced by the terrestrial freshwater inputs reaching the bay during the spring-summer period (Palacín *et al.* 1991). Several recent studies have been documented on the zoobenthos of the bay (Soler-Martinez 1988; Palacín 1990; Palacín *et al.* 1991; Capaccioni-Azzati 1987; Capaccioni & San Martín 1989-1990; Martín 1990, 1991; Martín & Giangrande 1991). The last five, in particular, focused on its polychaete fauna. Paralic environments like Els Alfacs Bay could offer particularly favorable sites for speciation because they are virtually isolated, having high levels of environmental stress. Among the results of the aforementioned studies, two new species of Polychaeta (Capaccioni & San Martín 1989-1990; Martín & Giangrande 1991) and 13 of Nematoda (Palacín 1990) have been identified.

In 1984-1985, a large number of incomplete specimens of a capitellid species were collected from muddy bottoms of the Els Alfacs Bay. They were identified initially as *Pseudoleiicapitelia fauveli* (Capaccioni-Azzati 1987). Additional entire specimens of the same species were obtained in 1987. The number of 12 thoracic setigers and the different setal pattern, together with the presence of an abdominal branchiate region, allow us to separate these specimens from all previously described genera and species, although similarities can be found with species of *Pseudoleiicapitelia* and *Mastobranthus*. Consequently, a new genus and species of Capitellidae is described.

Material and methods

Observations and measurements of the new genus and species were made using both Phase Contrast Microscope and Scanning Electronic Microscope (SEM). SEM micrographs were obtained at the SEM ~ Service of the 'Instituto de Ciencias del Mar' of Barcelona (CSIC).

Family Capitellidae Grube, 1862

***Pseudomastus* gen.n.**

Type species. *Pseudomastus deltaicus* sp.n.

Diagnosis. Thorax with achaetous peristomium and 12 setigerous segments. First setiger with notosetae only. Setigers 1-10 with capillary setae only. Last 2 thoracic setigers with capillary notosetae and neuropodial hooded hooks. Abdominal setigers with hooded hooks only. Abdominal branchiate region extending from setiger 205-210 to setiger 255-260. Branchiae as palmate tufts of 2-4 digitate filaments emerging posterior to notopodial tori. 10-8 preanal setigers without branchiae. Pygidium with 3 anal cirri.

***Pseudomastus deltaicus* sp.n. (Figs. 1-2)**

Pseudoleiocypris fauveli; Capaccioni-Azzati 1987: 410.

Type material. Holotype (number 16-01-797, 'Museo Nacional de Ciencias Naturales' of Madrid, CSIC) from 6m, Els Alfacs Bay, Ebre Delta (Tarragona), Spain; 31 additional paratypes from 2 to 10m in the same locality (Nos 16-01-797 to 801, 'Museo Nacional de Ciencias Naturales' of Madrid, CSIC, Cap-1 to Cap-6, SEM Service of the 'Instituto de Ciencias del Mar' of Barcelona, CSIC, and number D-34410, Zoologisk Museum of Oslo).

Etymology. The generic name *Pseudomastus* refers to its similarity to *Pseudoleiocypris* and *Mastobranchus*. The specific name refers to the geographical localization of the species in the Ebre Delta system (Latin '*deltaicus*' means belonging to a delta).

Description. Holotype a complete specimen, length approximately 50 mm, maximum width 0.7 mm, 270 setigerous segments. Dark red *in vivo*, light reddish-brown in formaldehyde. Thoracic segments clearly bi-annulated, all about the same length or slightly inflated through setiger 4 (Fig. 1a). Thoracic epithelium glandular, with transversal and longitudinal wrinkles that produce more or less marked areolation; abdominal segments single-ringed, showing strongly marked transverse wrinkles only (Fig. 1a).

Prostomium short conical, with blunt anterior end (Fig. 2a). Conspicuous oblong ocular patches on dorso-lateral surface of the prostomium (Fig. 1a). Eversible pharynx bulbous,

covered by cilia on distal half, with transverse rows of papillae proximally (Fig. 2b). Papillae triangular, flattened, with tufts of cilia on the tip (Fig. 2d), becoming smaller when close to ciliate region (Fig. 2c). Achaetous peristomium similar in length to the first thoracic segment; setigers about 1-3 times wider than their length, thereafter segments gradually increase in length, becoming only twice wider than their length at the end of the thorax (Fig. 1a).

Transition from thorax to abdomen slightly distinct (Fig. 1a). Setiger 13 is considered a 'transition' segment being similar to the thoracic segments in general morphology and similar to the abdominal segments in lack of capillary setae and in teeth distribution on the hooded hooks. Anterior abdominal setigers approximately same width but slightly longer than those of posterior thorax, gradually lengthening to branchial region where they are approximately twice as long as their width. The farthest posterior segments are usually strobiliform (Fig. 1h). Branchiae from mid-to posterior abdominal region as palmate tufts of 2-3 (occasionally 4) digitate filaments emerging posterior to notopodia tori at the dorso-lateral end of each segment (Fig. 2f).

Notopodia of the first thoracic setigers dorso-lateral, becoming mid-dorsal on the last ones (Figs 1a, 2a). Thoracic neuropodia all ventro-lateral. First thoracic setiger with notosetae only (Figs 1a, 2a), bearing 13-14 capillary setae. Capillary notosetae increasing to 20 from thoracic setiger 2-12. Dorsal notosetae espinulated, with 2 espinulate subdistal and distal regions (Fig. 1b). Ventral notosetae smooth (Fig. 1c). Notosetae all with short pointed tip. Neurosetae smooth, slightly enlarged subdistally, with long pointed tip (Fig. 1d). Both notosetae and neurosetae are arranged in 2 alternate rows (Fig. 2e), the posterior being slightly longer than the anterior. Setae from parapodia 1-3 and 10-11 shorter than 4-9.

Thoracic setigers 11-12 with 16-18 hooded hooks. Shafts of these hooks frequently extend further out of body than the abdominal ones, giving the appearance that they are longer. Hooks multidentate, consisting of main fang surmounted by 2 rows of teeth; first row with 4 teeth, second row with 8-9 slightly smaller teeth (Fig. 1f). Abdominal hooded hooks (including setiger 13) multidentate (Fig. 1e), consisting of main fang surmounted by 3 rows of teeth; first and second rows with 2 and 1 alternate large teeth, respectively; third row consisting of 4 small teeth (Fig. 1g). Anterior abdominal setigers with 11 hooded hooks per fascicle, decreasing in number to 2-3 in the posterior-most setigers.

Pygidium conical, with two dorsal and one mid-ventral digitiform anal cirri, the latter slightly longer and wider (Fig. 1h). Anus opening central, surrounded by 4 pads (Fig. 1h).

Discussion

Although the thirteenth setiger is similar to the thoracic setigers in general morphology, this segment is considered as abdominal because it is equal to the abdominal ones in lack of capillary setae and in the shape and disposition of the hooded hooks. Like this, the typical thoracic setal formula is 1-10 C, 11-12 CIH. Some variations from the thoracic setal arrangement of adult specimens could be observed, concerning the setal pattern of setigers 11-12. This pattern was found on setigers 9-10 in 2 specimens, on setigers 10--11 in 5 specimens and, finally, on setigers 12-13 in 3 specimens. However, these unusual patterns have been observed in small specimens of *Pseudomastus deltaicus*, which could be considered as juveniles. Moreover, a high number of mature specimens (most of them with eggs), all displaying the typical thoracic setal formula, were found in the study area, especially in September and April.

Pseudomastus gen. n. resembles *Pseudoleiicapitella* Harmelin, 1964 (monotypic genus) in that both have a similar setal arrangement. However, *Pseudoleiicapitella* differs from *Pseudomastus* in that the hooded hooks bear 2 small teeth surmounting the main fang in the thoracic setigers and 3 in the abdominal ones (Harmelin 1964). Moreover, *Pseudoleiicapitella* lacks branchiae.

Specimens of *Pseudoleiicapitella* cf. *fauveli* previously reported (Sardá 1984; Martin 1986) were examined in order to compare with our material. Specimens of Sardá (1984) have 11 thoracic setigers, with notopodial and neuropodial setae on the first one, and also their abdominal hooks are not hooded. Specimens of Martin (1986) have only 9 thoracic setigers, bearing capillary setae on both notopodial and neuropodial branches of the first setiger, showing mixed capillary setae and hooded hooks only on the ninth thoracic setiger. Further, both sets of specimens are clearly juveniles.

Mastobranhus Eisig, 1887 resembles *Pseudomastus* in that both have palmate abdominal branchiae. *Mastobranhus* differs from *Pseudomastus* in having only 11 thoracic setigers, in that the last thoracic setigers bear only capillary setae or hooded hooks, and in that some abdominal notopodia (at least the first) bear mixed capillary setae and hooded hooks (Amaral 1980; Ewing 1984). Specimens of *M. trinchesi* Eisig, 1887 found in the sandy margins of the bay (Martin 1991), fitted correctly the above-mentioned generic description. In addition, significant differences between this particular species and *P. deltaicus* can be found. Notopodia with mixed capillaries and hooks reached the posteriormost abdominal setigers of *M. trinchesi*. Moreover, this species has a higher number of digitate branchial filaments

(usually more than 10) and bears 4 anal cirri. Finally, adult specimens of *M. trinchesi* are three times longer and thicker than the adults of *P. deltaicus*.

Paralic environments seem to be suitable for the new genus and species. In fact, *Pseudomastus deltaicus* is one of the most abundant species of Polychaeta in Els Alfacs Bay, especially at the deepest level of their known depth range (average density of about 1200 specimens per square metre). Nevertheless, similar specimens have not been reported from other paralic areas, suggesting that the new genus and species could be considered as endemic in the Els Alfacs Bay.

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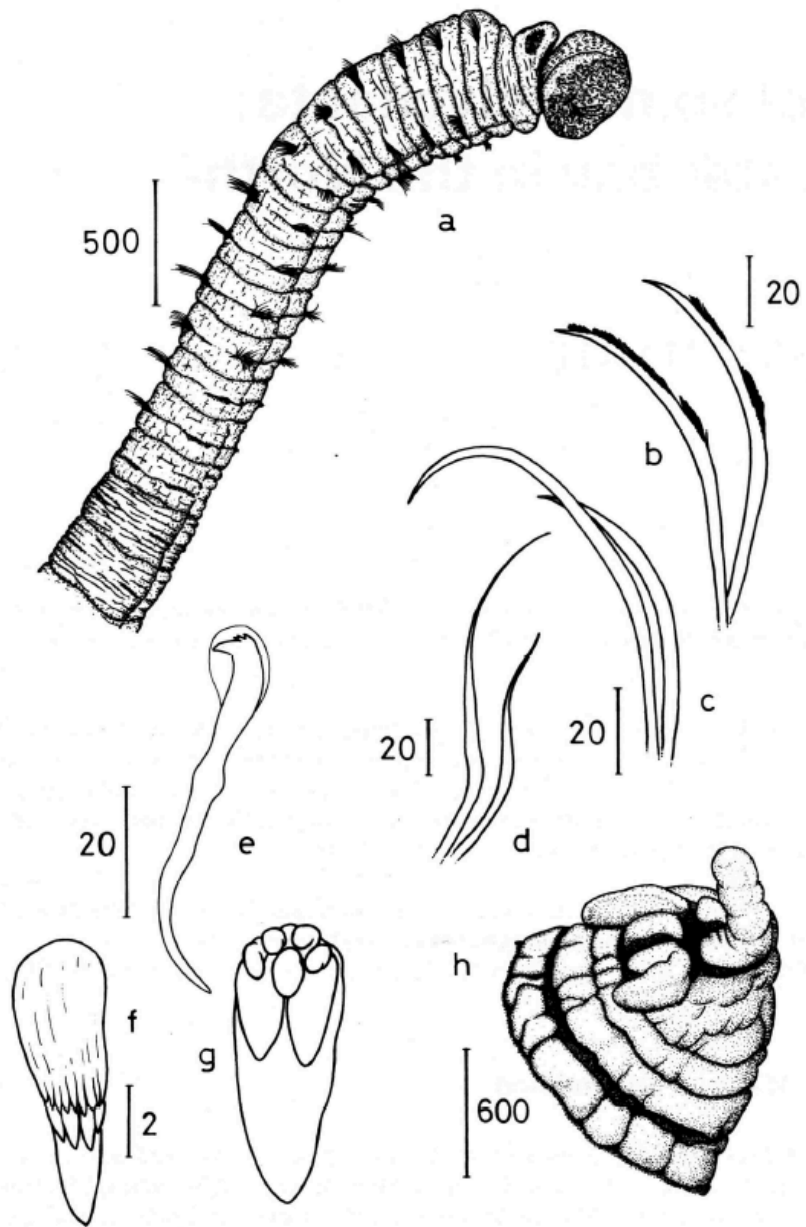


Fig. 1. *Pseudomastus deltaicus* gen. et sp.n. - a. Anterior end of the body, showing the pharynx.-b. Dorsal thoracic notosetae. - c. Ventral thoracic notosetae. - d. Thoracic neurosetae. - e. Abdominal hooded hook, entire. - f. Disposition of the denticles of a thoracic hooded hook. - g. Disposition of the denticles of an abdominal hooded hook. - h. Posterior end of the body. Scale bars in micrometers.

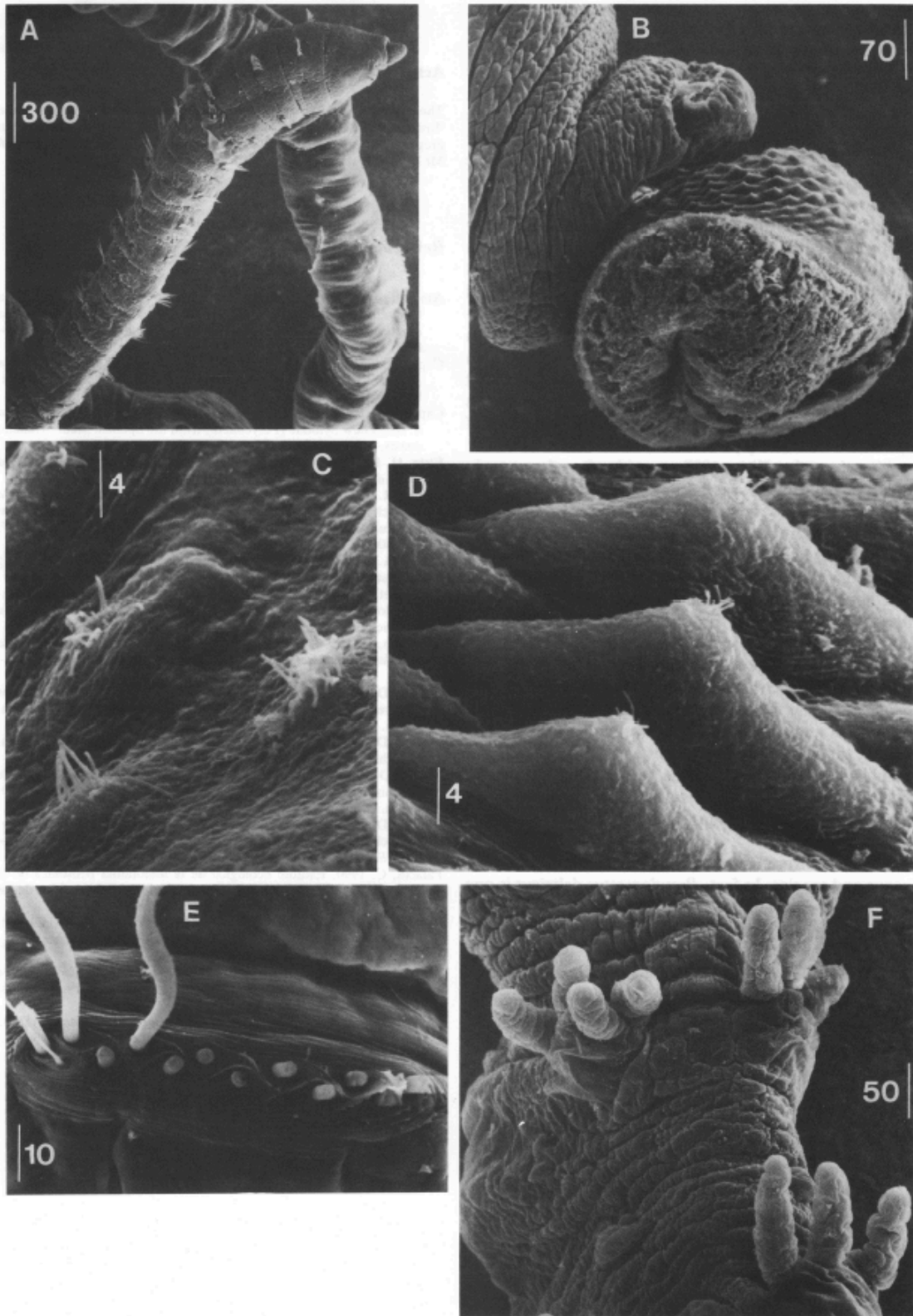


Fig. 2. *Pseudomastus deltaicus* gen . et sp.n.-A. Anterior end of the body.-B. Detail of the eversible bulbous pharynx.-C. Papillae of the pharynx, proximal to ciliate region.-D. Papillae of the pharynx, proximal to the prostomium.-E. Detail of the insertion of the thoracic capillary setae (neurosetae).-F. Branchiae of the post-abdominal region of the body. Scale bars in micrometers.