

MACROCHAETA WESTHEIDEI N. SP.: FIRST RECORD OF ACROCIRRIDAE FOR THE BRAZILIAN COAST (ANNELIDA; POLYCHAETA)

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INTRODUCTION

The family Acrocirridae was established by Banse (1969) for *Acrocirrus* Grube, 1872 and *Macrochaeta* Grube, 1850, which he removed from the Cirratulidae. *Flabelligella* Hartman, 1965, originally placed in the Flabelligeridae and latter transferred to the Fauveliopsidae, was added by Orensanz (1974), who noted the similarities in setae, structure of the anterior end and general appearance ("habitus") and emended the family diagnosis. Banse (1969), Orensanz (1974) and Kudenov (1976) all noted the affinities of the Acrocirridae to the Flabelligeridae, but Orensanz was the first to regard the Flabelligeridae, Acrocirridae and Fauveliopsidae as a natural group, clearly separated from the other families of Polychaeta. A fourth genus was added to the Acrocirridae by Averintsev (1980), who transferred *Chauvinelia* Laubier, 1974 from the Flabelligeridae. He also reviewed the distribution of acrocirrids in the World Ocean, although not including all the species.

To date, *Chauvinelia* is only known for two species, reviewed by Averintsev (1980); keys to species of the other three genera have been provided by Kudenov (1976, *Macrochaeta*, 10 species), Banse (1979, *Acrocirrus*, 12 species), and Kolmer (1985, *Flabelligella*, 10 species).

All acrocirrids except *Chauvinelia* are characterized by spiny, segmented capillary notosetae with a membrane below the tip of the blade. The body is divided into two regions, thorax and abdomen, weakly indicated externally by a change in the orientation of the cutting edges of the blades of the falcigers: in the thorax the cutting edges face posteriorly whereas in the abdomen they face anteriorly. One pair of large nephridia opens anteriorly in the thorax, and an epidermis provided with small papillae

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complete the principal distinguishing characteristics of members of the family (Banse, 1969; Orensanz, 1974). *Chauvinelia* shares with the other genera merely the position of the gills. The other characteristics quoted by Averintsev (1980) to justify the transference of this genus to the Acrocirridae, are superficial, as the similarity in the shape of the prostomium and its appendages, or even incorrect, as the similarity in the shape of the notosetae (acrocirrids present spiny segmented capillary notosetae and *Chauvinelia* presents simple notosetae with transverse rows of spinelets in its distal part). Considering these points, it is suggested to return *Chauvinelia* to the family Flabelligeridae until its affinities with the acrocirrids be well established.

The Acrocirridae genera are mainly characterized by their appearance (Orensanz, 1974), but species of *Macrochaeta* may be recognized by their short palps with bases separated by at least the width of the palps, inconspicuous parapodial structures, epidermis with very numerous papillae, and usually four pairs of branchiae.

Widely distributed in the northern hemisphere and with fewer reports in the southern hemisphere (Banse, 1969; Hartmann-Schroder, 1974; Orensanz, 1974; Kudenov, 1976; Westheide, 1981), the family is herein recorded for the first time for the Brazilian coast, with the occurrence of *Macrochaeta westheidei* n. sp. in Rio de Janeiro.

SYSTEMATICS

Family Acrocirridae Banse,

1969

Genus *Macrochaeta* Grube,

1850

Macrochaeta westheidei n.

sp.

Material examined: Praia Vermelha, Rio de Janeiro, 21°31'S, 42°19'W, interstitially in coarse sand, 2-4 m, collected by a PVC hand-corer (0.098 m inner diameter, 0.3 m length), December 1986, P. J. P. Santos and L. P. Souza-Santos collectors, (holotype and paratypes are deposited at the Museu do Centro de Biologia Marinha, Universidade Federal do Paraná, as MCBM-BPO 365A and MCBM-BPO 365B respectively;

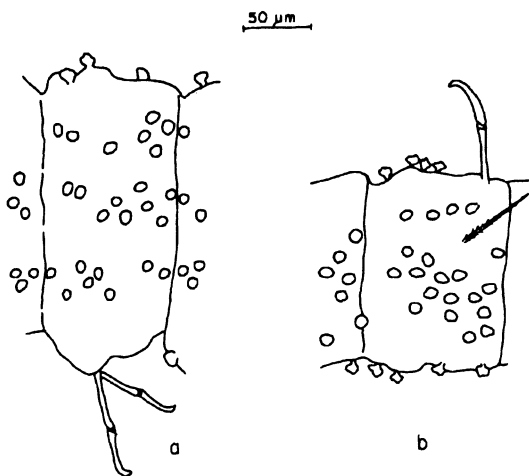


Fig. 1

Macrochaeta westheidei n. sp. Papillae dispersion: a. 8th thoracic setiger segment, ventral view; b. abdominal setiger, dorsolateral view.

paratypes were also sent to the National Museum of Natural History, USNM 136588).

Diagnosis: A *Macrochaeta* species up to 5 mm long and with up to 33 segments. Segment 1 reduced, not visible dorsally in fixed specimens. Four pairs of branchiae. Usually 1 notoseta and 1-2 composite falcigers per neuropodium. Pedunculate papillae not showing any kind of regular arrangement on body; pygidium with 4-6 cupshaped papillae around its margin.

Description: Average length 4.0 mm; smallest complete specimen 3.0 mm (23 segments) and largest 5.0 mm (33 segments, holotype, sex indeterminated). Body surface papillate. Papillae evenly dispersed, not arranged in transverse rows (Fig. 1). Colour brownish yellow alive and greenish yellow preserved. Prostomium heart-shaped, with two pairs of eyes, anterior pair always smaller than posterior pair and situated inferiorly in the lateral prostomial margin (Fig. 2); two ciliated nuchal grooves on lateral posterior margin. Palpi club-shaped, arising from ventrolateral part of prostomium. The proboscis was everted in living specimens, probably by the slight pressure exerted by the coverslip.

Segment 1 is dorsally reduced but can be clearly visible laterally in living specimens. Segments 2-5 each with one pair of branchiae, those of segment 3 (second pair) slightly more dorsal than the others and arising above a pair of small nephridial papillae (Fig. 2). Generally one (occasionally two) neurosetae (Fig. 3A) per segment starting on segment 4. Cutting edges of the blades of the setae face posteriorly in the thorax (up to segment 12). One or two notosetae are usually present from segment 4 but may also start more posteriorly (in one specimen starting at segment 6). Segmentation of spiny capillary notosetae not clearly visible (Fig. 3B). Notopodia and neuropodia with 0-3 spindle-shaped aciculae each (Fig. 3C,D).

Epidermis with two types of papillae: pedunculate and digitate (Fig. 4A,B). Pedunculate papillae, found on the entire body, are 7 μ m long and 9 μ m wide. Digitate papillae are present on the pygidium (4-6 papillae) and are up to 11 μ m long

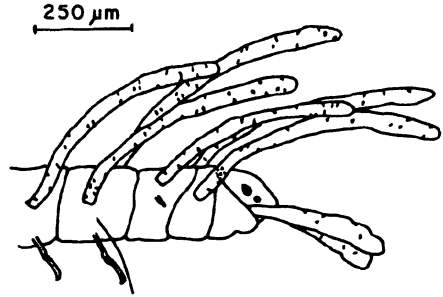


Fig. 2
Macrochaeta westheidei n. sp. : Lateral view of anterior end.

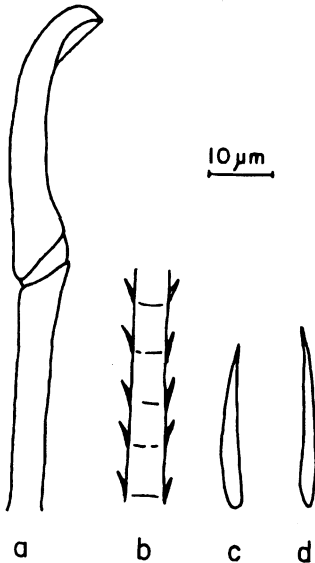


Fig. 3

Macrochaeta westheidei n. sp. Setae and aciculae : a. neuroseta; b. notoseta; c. neuroacicula; d. notoacicula.

and 7 μm wide. No podial papillae could be detected.

Present distribution restricted to Praia Vermelha, Rio de Janeiro. Ecological data were presented by Zanatta (1990).

DISCUSSION

Macrochaeta westheidei n. sp. is closely related to *M. multipapillata* Westheide, 1981, from the Galapagos Islands; both can be easily distinguished from other species of the genus by the presence of pedunculate papillae ("schoppenglasformig" according to Westheide (1981)).

Banse (1969) suggests that the presence and number of aciculae could play an important role in defining the species identity, and Westheide (1981) states that the form and arrangement of the epidermal papillae should be of great use for the systematics of this family. These statements are herein accepted and used to establish the new species.

M. westheidei differs from *M. multipapillata* by not having the epidermal papillae arranged in transverse rows and in the greater number of aciculae (only 1-2 notoaciculae and none neuroaciculae in the latter species).

The great similarities found between the two species, together with their known distribution, suggest a common origin from a stem species probably occurring on both sides of Central America. After the closing of the Isthmus of Panama (2 to 3 million years ago), the populations became separated, favoring subsequent differentiation.

This is the first occurrence of the genus *Macrochaeta* for the South Atlantic Ocean and also the first record of Acrocirridae for the Brazilian coast.

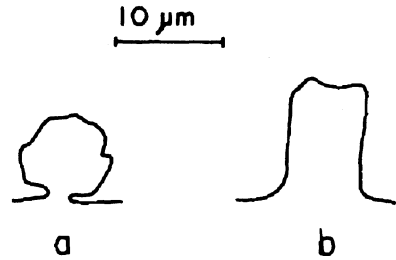


Fig. 4

Macrochaeta westheidei n. sp. Epidermal papillae in lateral view : a. pedunculate papilla; b. cup-shaped papilla from pygidium.

KEY TO THE SPECIES OF *Macrochaeta* (modified from Kudenov, 1976, p. 143)

1. Three or more neurosetae per fascicle

M. polyonyx
Eliason, 1962

- Only one or two neurosetae per fascicle

2

2. Three pairs of branchiae present

M. bansei
Hartmann- Schröder, 1974a

- Four or more pairs of branchiae present

3

3. More than four pairs of branchiae present

M. sexoculata
(Webster & Benedict, 1887)

- Four pairs of branchiae present	4
4. Abdominal neurosetae as simple falcigers	<i>M. helgolandica</i> Friedrich, 1937
- Abdominal neurosetae as composite falcigers	5
5. Cushion-like elevations present on anterolateral lips of mouth	6
- Cushion-like elevations absent from anterolateral lips of mouth	7
6. Segment 1 not visible dorsally	<i>M. australiensis</i> Kudenov, 1976
- Segment 1 and 2 not visible dorsally	<i>M. papillosa</i> Ehlers, 1913
7. Segment 1 visible dorsally	<i>M. clavicornis</i> (Sars, 1835)
- Segment 1 not visible dorsally	8
8. Pedunculate papillae absent	<i>M. pege</i> Banse, 1969
- Pedunculate papillae present	9
9. Without aciculae	<i>M. caroli</i> Westheide, 1981
- With aciculae	10
10. Pedunculate papillae mainly arranged into transverse rows, 1-2 aciculae	<i>M. multipapillata</i> Westheide, 1981
- Pedunculate papillae not arranged into transverse rows, up to six aciculae	<i>M. westheidei</i> n. sp.

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ABSTRACT

The family Acrocirridae (Annelida ; Polychaeta) is newly reported from the Brazilian coast. *Macrochaeta westheidei* n. sp. is described and a key to all known species of the genus is given.

Key words: Polychaeta, Acrocirridae, *Macrochaeta westheidei* n. sp., Brazil.

RESUMO

Macrochaeta westheidei n. sp.: Primeira ocorrência de Acrocirridae para a costa brasileira.

A distribuição da família Acrocirridae (Annelida; Polychaeta) é ampliada para a costa brasileira. *Macrochaeta westheidei* n. sp. é descrita, sendo fornecida uma chave taxonômica para as espécies do gênero já descritas.

Palavras-chave: Polychaeta, Acrocirridae, *Macrochaeta westheidei* n. sp., Brasil.

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