

A new *Ophryotrocha* species (Polychaeta: Dorvilleidae) from circalittoral seabeds of the Cantabrian Sea (north-east Atlantic Ocean)

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One new dorvilleid species belonging to the genus Ophryotrocha Claparède & Mecznikow, 1869 is described. The studied material was collected in circalittoral seabeds (70–100 m depth) in the Cantabrian Sea (north-east Atlantic Ocean). The new species Ophryotrocha cantabrica is characterized by having well-developed antennae and palps, parapodia with long dorsal cirrus, sub-triangular acicular lobes and inferior chaetal lobe well-developed, as well as the presence of P-type maxillae and bifid mandibles slightly tagged. The most closely related Ophryotrocha species are O. longidentata Josefson, 1975 and O. lobifera Oug, 1978; however, both species have biarticulated palps. Other differences with O. cantabrica sp. nov. are: body size and shape, parapodia morphology and number of setae, as well as the shape of mandibles and maxillae.

Keywords: Polychaeta, Dorvilleidae, *Ophryotrocha*, circalittoral, Cantabrian Sea, Atlantic Ocean

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INTRODUCTION

In the last decades, many new species of Dorvilleidae have been described worldwide (Eibye-Jacobsen & Kristensen, 1994), especially from recently sampled environments, such as deep-sea methane seep sediments (Thronhill *et al.*, 2012). Moreover, interstitial species living in shallow marine environments have still been discovered year after year (e.g. Åkesson, 1973, 1976; Brito & Núñez, 2003).

The genus *Ophryotrocha* is one of the largest dorvilleid genera (~70 species), and traditionally has been classified as opportunistic, with some commensal species of decapods and holothuroids (Martín & Britayev, 1998), being abundant also in polluted sediments (Rouse & Pleijel, 2001; Paxton & Davey, 2010). Thus, it has been considered a target genus in monitoring assessment studies, being classified as a species resistant to pollution (Borja *et al.*, 2000). However, several recently described species of this genus have been recovered from pristine environments, from the US Atlantic slope and rise (Hilbig & Blake, 1991), and deep-sea whale- and wood-falls (Wiklund *et al.*, 2009, 2012). Even some species from experimental monoculture studies have been identified as new taxa after a detailed examination of their jaw structure (e.g. Åkesson & Paxton, 2005), as well as, genetic analysis (Heggøy *et al.*, 2007), which showed the presence of sibling species (Paxton & Åkesson, 2010, 2011).

Eight *Ophryotrocha* species have been recorded from Iberian Peninsula waters (Campoy, 1982; Martín *et al.*, 1991;

Paxton & Åkesson, 2007, 2010, 2011). However, new records are expected in the near future from field surveys carried out on deep-sea bottoms and biodiversity hotspots, such as volcanic marine caves. The new species *Ophryotrocha cantabrica* sp. nov. has been collected in circalittoral waters, 70–100 m deep, in the Cantabrian Sea, and their diagnostic characters are well developed antennae and palps, parapodia with long dorsal cirrus, sub-triangular acicular lobes and inferior chaetal lobe

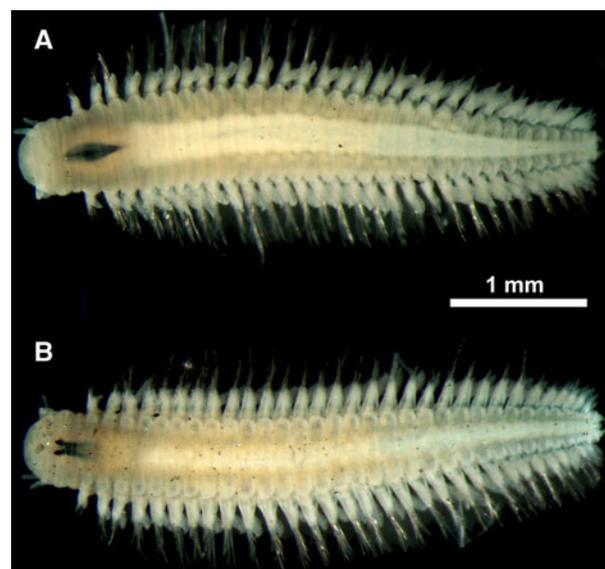


Fig. 1. *Ophryotrocha cantabrina* sp. nov.: (A), complete specimen, dorsal view; (B) complete specimen, ventral view.

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well-developed, as well as the presence of P-type maxillae and bifid mandibles slightly tagged.

MATERIALS AND METHODS

The material studied was collected during the research cruise 'Fauna II' of project 'Fauna Ibérica' in the Bay of Biscay, in the summer of 1991. Samples were collected from circalittoral seabeds (70–100 m depth) by means of a Bou de varas grab. Samples were fixed with 10% formaldehyde in seawater, and the specimens were transferred to 70% ethanol. Some specimens were mounted whole in permanent microscopic slides in glycerine jelly; examination was made by means of a compound microscope provided with differential interference contrast optics (Nomarski). Drawings were made to scale with a camera lucida drawing tube. Specimens were photographed with a digital camera (Olympus DP70) coupled to a stereomicroscope (Olympus SZX12).

The type material is deposited at the Museo Nacional de Ciencias Naturales de Madrid (MNCN).

RESULTS

SYSTEMATICS

DORVILLEIDAE Chamberlin 1919

Ophryotrocha cantabrica sp. nov.

(Figures 1–3)

TYPE MATERIAL

'Fauna II', Station 114A, 15 June 1991, Gijón (Asturias), initial coordinates $43^{\circ}37.71'N$ $05^{\circ}37.59'W$, final coordinates $43^{\circ}38.36'N$ $05^{\circ}39.78'W$, 72–74 m deep, muddy sandy seabed, holotype (MNCN 16.0/14704) and 38 paratypes (MNCN 16.01/13633); Station 150A, 22 June 1991, Zumaya

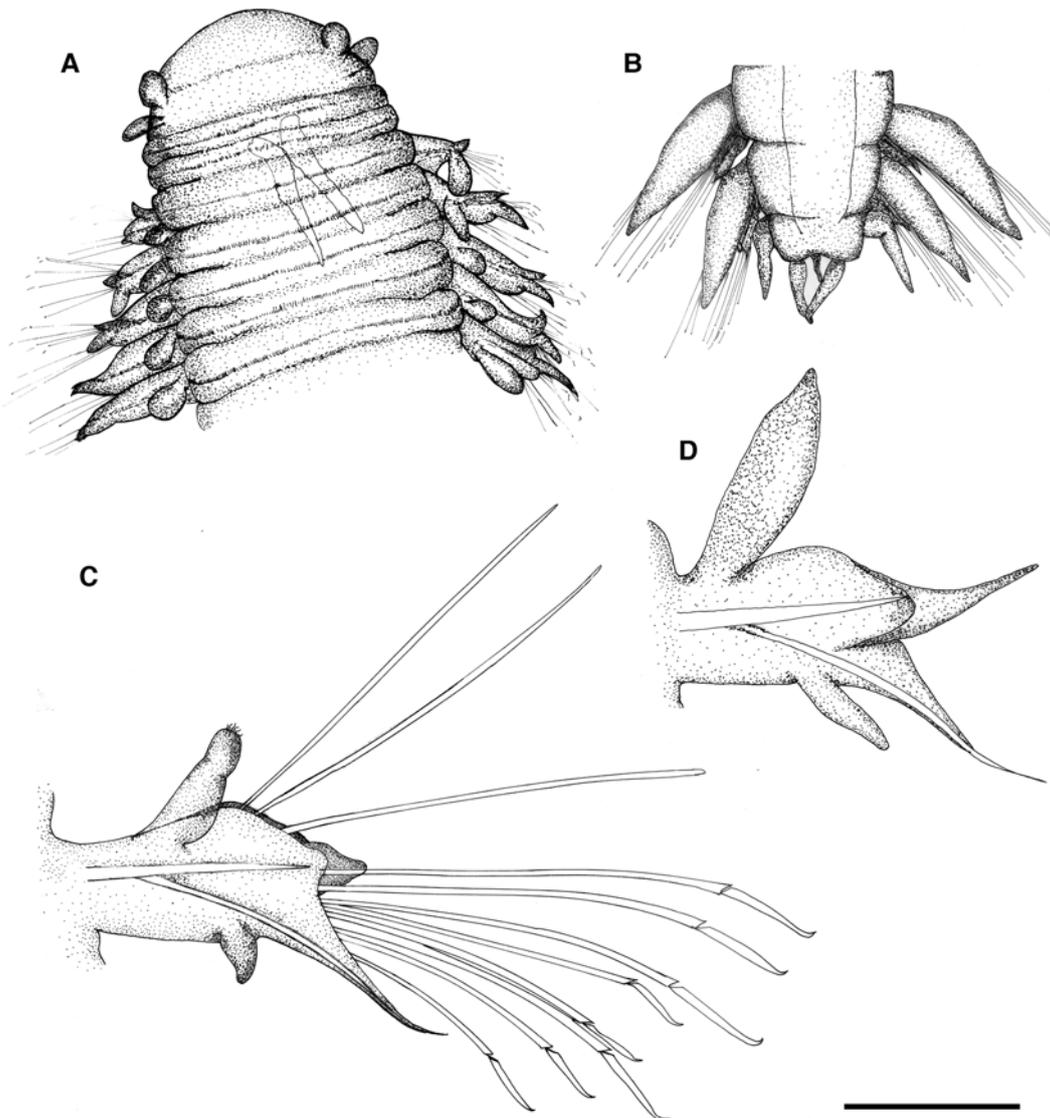


Fig. 2. *Ophryotrocha cantabrica* sp. nov.: (A) anterior end, dorsal view; (B) posterior end, dorsal view; (C) anterior parapodia, lateral view; (D) middle parapodium without chaetae, lateral view. Scale bars: A, 370 μ m; B, 320 μ m; C,D, 77 μ m.

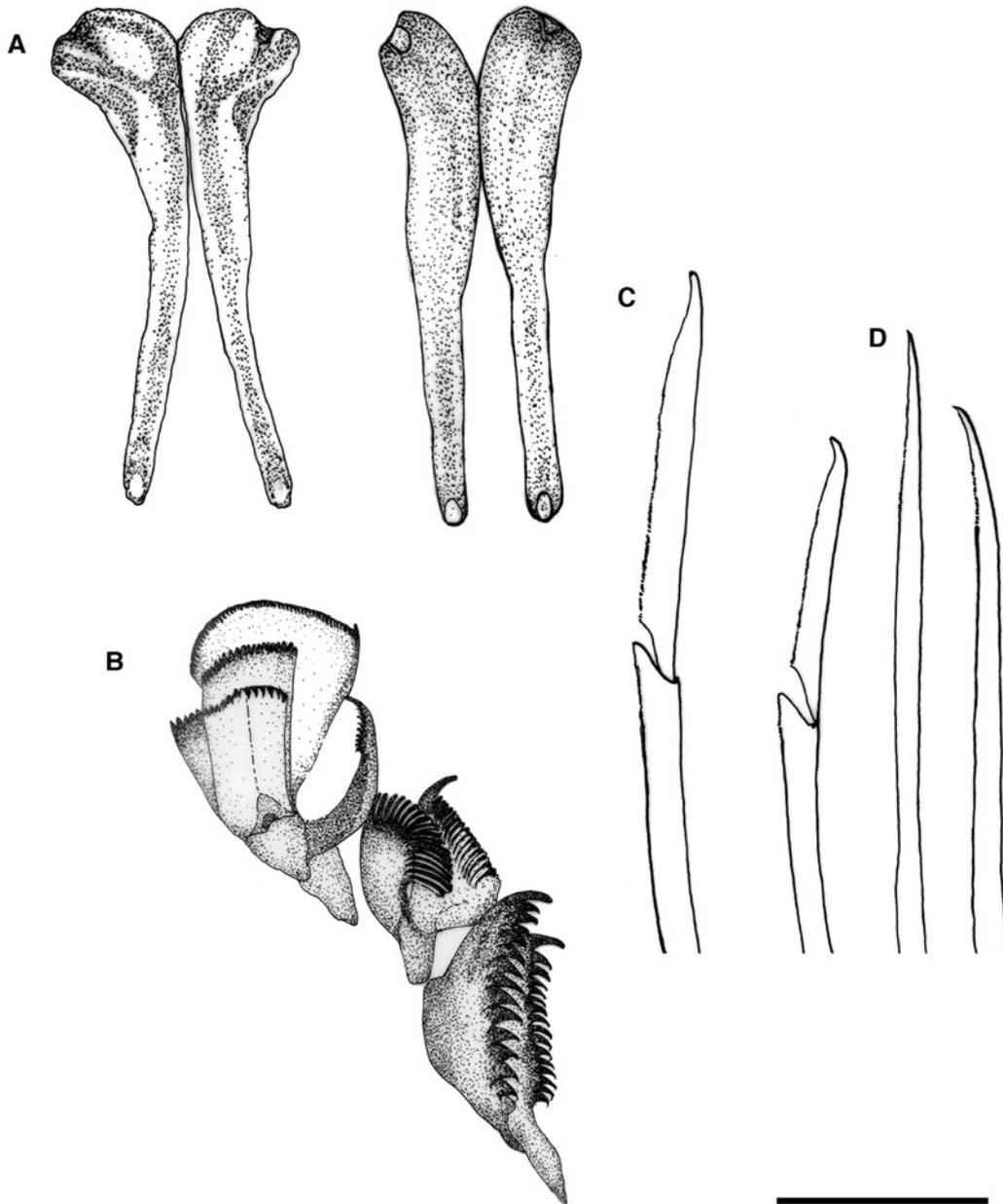


Fig. 3. *Ophryotrocha cantabrina* sp. nov.: (A) mandibles; (B) P-maxillae; (C) heterogomph falciger chaetae; (D) simple chaetae. Scale bars: A, 100 μm ; B, 89 μm ; C, D, 24 μm .

(Guipúzcoa), initial coordinates $43^{\circ}22.18'N02^{\circ}15.00'W$, final coordinates $43^{\circ}23.14'N02^{\circ}15.21'W$, 93–101 m deep, sandy seabed with shells, 7 specimens (MNCN 16.9/13680).

DESCRIPTION

Body shape elongated, of generally uniform width, from the middle part of the body they gradually taper posteriorly (Figure 1). Holotype complete, 4.2 mm long, 0.6 mm wide (without parapodia) for 28 chaetigers, other complete specimen (paratype) 2.5 mm long, 0.5 mm wide for 22 chaetigers. Colour in alcohol opaque white. Prostomium rounded without discernible eyes, a pair of ovoid to digitiform dorsal antennae and a pair of ventro-lateral palps similar to antennae (Figure 2A). Two peristomial achaetous segments, twice as long as the following chaetigers, both rings circumscribed by a ciliary band (Figure 2A). Mandibles long and slender

(143–280 μm long), distally slightly bifid without serration in anterior part edge (Figure 3A). Maxillary apparatus of P-type only, maxillae composed of a posterior large piece with teeth (forceps) and seven anterior free denticles on either side (Figure 3B); denticles on each side in two closely situated, with small dorsal teeth, denticles of outer row with an additional larger and strong lateral tooth. Forceps of adult specimens with distal fang and 13–15 teeth, distal fang not much larger than other teeth; D1 similar to forceps with larger teeth, D2–D3 with distal fang and cutting edge coarsely serrated, D4–D7 with uniform serrated edge (Figure 3B).

Setigers circumscribed by a ciliary band. Parapodia uniramous with dorsal and ventral cirri (Figure 2C, D); dorsal cirrus more or less developed, of ovoid in anterior part to foliose in the rest of the body (Figure 2D), ventral cirrus

short (Figure 2C). Two conical chaetiger lobes, with strong aciculum, and one ventral (sub-acicular), longer pointed lobe, with a thinner supporting aciculum protrudes from tip of lobe, similar to simple chaeta (conical chaetal lobe) (Figure 2C, D). Chaetae long, divergent and forming a fan. Three to seven supra-acicular simple chaeta smooth with hooked unidentate distal parts (Figure 3D), eight to nine sub-acicular heterogomph compound chaetae, unidentate blades with slight serration and hooked tips (Figure 3C), gradation blade length of 48 μm dorsal chaeta to 32 μm ventral most chaeta, shaft also with slight serration; the sub-acicular conical chaetal lobe holds one simple chaeta (Figure 2C, D).

Pygidium wider than long, with terminal anus and two laterally digitiform anal cirri, and an unpaired conical appendage attached ventrally (median stylus) (Figure 2B).

Some specimens had eggs with a maximum diameter of 80–100 μm beginning about chaetiger 4 to 11 (female with 19 chaetigers).

ETYMOLOGY

The specific named refers to the type locality geographical distribution (Cantabrian Sea).

DISTRIBUTION

North-east Atlantic Ocean, Cantabrian Sea, Bay of Biscay (Asturias and Guipúzcoa).

DISCUSSION

Ophryotrocha cantabrica sp. nov. differs from the remaining *Ophryotrocha* species by having the following characteristics: well-developed antennae and palps, lacking eyes, parapodia with long dorsal cirrus, sub-triangular acicular lobes and inferior chaetal lobe well-developed, supported by inferiormost chaeta, and the presence of bifid mandibles and P-type maxillae. *Ophryotrocha longidentata* Josefson, 1975 (Josefson, 1975) and *O. lobifera* Oug, 1978 (Oug, 1978) are two species that more closely resemble *O. cantabrica* sp. nov. in body shape and the morphology of the parapodia; both species have palps biarticulated, while in *O. cantabrica* sp. nov. are simple. *Ophryotrocha lobifera* differs in having prominent dorsal and ventral thickenings to parapodia. In the parapodia of *O. cantabrica* sp. nov. the dorsal cirrus is much more developed, especially in the posterior part. The shape of the mandibles differs greatly among the three species, in *O. longidentata* has expansions wing with smooth edge and without teeth, while *O. lobifera* has the serrated edge and *O. cantabrica* distally slightly bifid without serration in the anterior part of the edge.

In relation to reproduction, we found only one ovigerous female, whereas we have not observed sperm in any of the studied specimens. The egg size ranges from 50 μm in *O. longidentata* to 120 μm in *O. lobifera*, being intermediate in *O. cantabrica* sp. nov. (100 μm).

The three species inhabit soft substrates at circalittoral depths (50–100 m), *O. longidentata* inhabits muds and fine sands, *O. lobifera* in black muds with sulphide and *O. cantabrica* sp. nov. in muddy sandy and sandy substrates with shell fragments. The three species are considered meiofauna because of their body sizes and habitats.

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