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A new species and four new records of sedentary polychaetes from the Canadian High Arctic

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During ArcticNet surveys aboard 'CCGS Amundsen' in 2011, several subtidal stations located in Canadian Archipelago were sampled in order to study the composition of their benthic communities. Among the abundant material sampled, several specimens of rare polychaete species were found. Examination of this material showed four species not previously recorded in the area, and a new species described herein. Descriptions of these specimens are given in this work. Ophelina brattegardi *Kongsrud* et al.*, 2011 is characterized by a body composed of 27–28 chaetigers, by having the parapodia of the last four chaetigers shifted to the ventral side of the body, and by lacking branchiae in mid-body chaetigers.* Macrochaeta polyonix Eliason, *1962 is unique within the genus in having several (instead of one or two) compound neurochaetae in anterior parapodia.* Chaetozone acuta *Banse & Hobson, 1968 is characterized by having spines from anterior third of the body and arranged in bundles composed of just a few chaetae.* Chaetozone jubata *Chambers & Woodham, 2003 can be distinguished from similar species by having very long capillary chaetae from chaetiger 2 or 3. Finally,* Dialychone hervyae *n. sp. is characterized by bearing four pairs of radioles with narrow flanges, by the bilobed tip of its first peristomial ring that projects beyond the collar, and by the paleate thoracic notochaetae bearing long mucros.*

Keywords: *Ophelina*, *Macrochaeta*, *Chaetozone*, *Dialychone*, Sabellidae

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INTRODUCTION

The Canadian High Arctic encompasses the portion of the Arctic Ocean between Davis and Hudson Straits in the east and the Canada–Alaska border in the west, as a part of the Beaufort Sea (Archambault *et al.*, 2010; Olivier *et al.*, 2013). This area is almost entirely above the Arctic Circle (66°33.7633′N) with the exception of the southern half of the Hudson Bay. Within this marine region, the Canadian Archipelago forms a network of shallow channels that connect the Central Arctic Region with Baffin Bay (Archambault *et al.*, 2010). The extremely frigid temperatures cause perennial or seasonal ice cover, and it is in turn associated with the extremely pulsed cycle of primary production. This condition has prevailed over the Arctic Ocean for several million years and has shaped unique marine ecosystems (Darnis *et al.*, 2012) characterized by young faunas with few endemic taxa (Carr, 2012). The pace of climate warming is faster in the Arctic compared with other regions and it is especially worrying because polar marine ecosystems are particularly sensitive to slight temperature fluctuations that can have large effects on the extent and thickness of sea ice (Smetacek & Nicol, 2005), modifying oceanographic dynamics of the whole basin. Furthermore, an increase of the average temperature might promote northward range expansion of boreal species into the true Arctic ecosystems (Vermeij & Roopnarine, 2008). Finally, reduction of the ice cover might expose areas like the Canadian Archipelago to not only changes in natural biotic and abiotic parameters, but to new pressures such as shipping traffic, oil and gas extraction, translocation of invasive species, and large-scale commercial fishing (Gavrilchuk & Lesage, 2014). As in many other oceans, arctic benthos provides key ecosystem functions such as nutrient cycling and organic matter transport (Forest *et al.*, 2011) and its function will likely be strongly affected by such environmental stressors, especially when considering primary production dynamics (Leu *et al.*, 2011; Link *et al.*, 2013) and the whole food webs (Wassmann *et al.*, 2011). Thus, it is important to gather as much information as possible about the original communities in order to prevent these changes and their consequences (Goldsmit *et al.*, 2014). Regarding this respect, it must be noted that in spite of the scarce knowledge of the faunal composition of the arctic benthic communities, they seem to be more diverse than the adjacent sub-arctic areas of the country, challenging the paradigm of the low biodiversity of the arctic marine ecosystems (Archambault *et al.*, 2010; Hardy *et al.*, 2011; Darnis *et al.*, 2012).

Polychaeta is the main group within phylum Annelida, and includes about 100 families and over 10,000 known species

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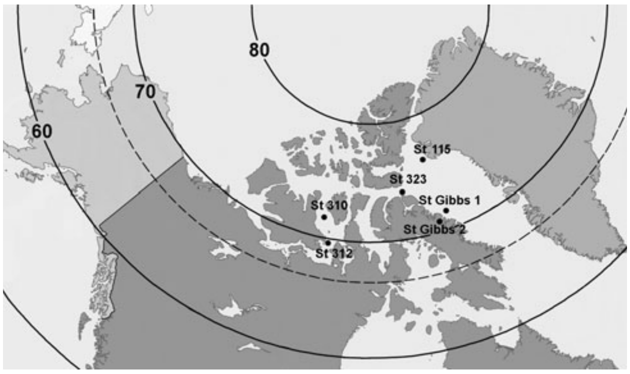

Fig. 1. Map of the area showing sample locations.

(Rouse & Pleijel, 2001). Worldwide, they are present in every benthic environment from littoral to bathyal depths, where they play a key role in the processing of organic matter (Siddall *et al.*, 2004). Boreal seas are not an exception to this, since polychaetes are a dominant group in soft bottoms in sub-arctic (Quijón & Snelgrove, 2005) and arctic (Ambrose *et al.*, 2009; MacDonald *et al.*, 2010) locations. The number of polychaete species recorded from Canadian High Arctic waters sums 522, but it is estimated to be close to 900 (Carr, 2012), showing a deep gap in the knowledge of the biodiversity of the group. The goal of this work is to increase information about the faunal composition of the benthic marine communities in the region.

MATERIALS AND METHODS

The specimens were obtained during ArcticNet surveys aboard Canadian Coast Guard Ship 'Amundsen' in 2011 from several subtidal stations located in the Canadian Archipelago (Figure 1); details on their location as well as on their environmental features are given in Table 1.

Sediment samples were collected by means of a $0.25\ m^2$ USNEL Box-corer sampler. Sediment from 25% of the total surface area of the box corer was extracted down to a maximum depth of 2 cm and sieved through a 0.5 mm gauge mesh. The retained biological material was sorted alive to family level under dissecting microscope. Polychaete specimens were then put in 95% ethanol.

The specimens were studied in the Universidad Autónoma de Madrid. An Olympus SZX-12 stereomicroscope (7–90 × magnification) was used to examine external body structures; measurements and photographs referred to them were made with the same optical equipment adding an ocular micrometer or a JVC TK-C1360B digital camera. Chaetae were studied under an Olympus CX41 microscope (100–1000 × magnification) provided with an ocular micrometer for measurements. Detailed figures were made by means of a *camera lucida* drawing tube for line pictures or an Olympus Colorview camera for digital photographs.

The type series of the new species as well as the specimens belonging to the new records were deposited at the Polychaete Collection of Museum national d'Histoire Naturelle (MNHN) in Paris (France).

SYSTEMATICS

Infraclass SCOLECIDA Rouse & Fauchald, 1997
Family OPHELIIDAE Malmgren, 1867
Genus *Ophelina* Örsted, 1843
Ophelina brattegardi Kongsrud *et al.*, 2011
(Figure 2)

Ophelina brattegardi Kongsrud *et al.*, 2011: p. 98, Figures 2 & 6B.

MATERIAL EXAMINED

MNHN-IA-2015-301: St. 310; one specimen.

DESCRIPTION

Body 3.1 mm long and 0.3 mm wide; fusiform, with 27 chaetigers, deeply grooved both laterally and ventrally. Prostomium conical, slightly shorter than wide (Figure 2A), with two distinct nuchal organs; eyes not seen in preserved specimen. Parapodia biramous, with rounded lobes, and a short piriform dorsal cirrus (Figure 2D); parapodia of last four chaetigers raised and shifted to a more ventral position (Figure 2B). All chaetae capillaries; each bundle composed of two different kinds, very thin and straight or slightly curved and much longer and broader; 7–18 capillaries in notopodia, 6–14 in neuropodia. Branchiae long and cirriform, present in chaetigers 2–5 (Figure 2A) and 21–23 (Figure 2B); absent in the first and the last four body chaetigers. Anal tube as long as last five chaetigers, three times as long as wide (Figure 2B); with several indistinct transversal furrows and scalloped posterior end; short anal cirrus attached ventrally in subterminal position (Figure 2C).

TAXONOMIC REMARKS

The specimen herein recorded fits well with the description of *O. brattegardi* provided by Kongsrud *et al.* (2011); although some minor differences were observed, they have not enough relevance to describe a new taxon. First, our specimen has 27 instead of 28 chaetigers, although it can be caused by its much smaller size (3.1 mm instead of 6–9 mm of the type series). Also to be noted is the presence of fewer pairs of

Table 1. Geographic locations, date and environmental parameters of the samples where the specimens were collected.

Station code	Coordinates	Location	Depth (m)	Sampling date	Sediment	Temperature (°C)	Salinity (ppm)
312	69°09.87N 100°42.71W	M'Clintock Channel	67	07/10/2011	Silt	−0.37	30.1
310	71°42.05N 101°42.34W	M'Clintock Channel	197	07/10/2011	Silt	−0.47	34.2
323	74°09.43N 80°28.56W	Lancaster Sound	790	15/10/2011	Silt	1.31	34.5
115	76°19.79N 71°12.12W	Northern Baffin Bay	652	17/10/2011	Silt	0.37	34.4
Gibbs 1	71°23.44N 70°06.56W	Gibb's fjord	345	20/10/2011	Silt	0.83	34.2
Gibbs 2	70°45.90N 72°15.75W	Gibb's fjord	446	21/10/2011	Silt	0.41	34.1

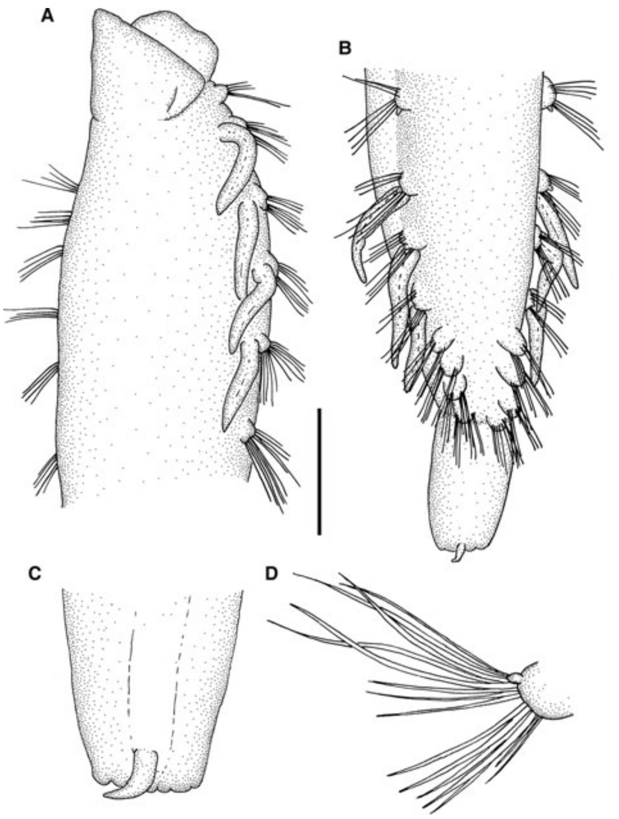

Fig. 2. *Ophelina brattegardi* Kongsrud, Bakken and Oug, 2011: (A) anterior end, dorsolateral view; (B) posterior end, ventral view; (C) detail of anal tube, ventral view; (D) left parapodium of chaetiger 7, posterior view. Scale bar: A, B, 0.25 mm; C, D, 0.10 mm.

posterior branchiae, bearing such structures in chaetigers 21–23 instead of 20–24. Other observed differences refer to features not mentioned in the description of *O. brattegardi*, but that might have been omitted or overlooked. Thus, authors do not describe any dorsal cirrus although this structure is usually present in *Ophelina* species (Parapar *et al.*, 2011). In a similar way, it is likely that the capillary chaetae of two kinds were present in the type series of the species.

Ophelina brattegardi belongs, together with *O. cylindricaudata* (Hansen, 1879), *O. breviata* (Ehlers, 1914), *O. chaetifera* (Hartman, 1965) and *O. minima* Hartmann-Schröder, 1974, to a group of *Ophelina* species characterized by a body composed of 24–28 chaetigers, of which the last four bear ventrally shifted parapodia, as well as cylindrical anal tube (Kongsrud *et al.*, 2011). The specimens herein recorded can be readily distinguished from most of the species in the group by lacking branchiae in mid-body chaetigers, a character only present in *O. brattegardi* and *O. chaetifera*. However, the latter has just 26 chaetigers and bears three pairs of anterior branchiae (Hartman, 1965) instead of five anterior pairs.

GEOGRAPHIC DISTRIBUTION

This is the first record of the species after its original description. Up to now, the species has been collected from Arctic Ocean deep waters (1600 m) off East Greenland, so with this report its known range widens westward to the Canadian Archipelago. This taxon is very similar to *O. cylindricaudata*, a widely recorded boreal species (Kongsrud *et al.*, 2011), the chief difference being the lack of branchiae in mid-body chaetigers of *O. brattegardi*. Thus, it is likely that re-examination of arctic material previously identified under this denomination proves it to belong to *O. brattegardi*.

Infraclass CANALIPALPATA Rouse & Fauchald, 1997
Family ACROCIRRIDAE Banse, 1969
Genus *Macrochaeta* Grube, 1850
Macrochaeta *polyonyx* Eliason, 1962
(Figure 3)

Macrochaeta polyonyx Eliason, 1962: 269, Figure 18; Hartley, 1981: p. 279; Parapar & Moreira, 2009: p. 63, Figures 5 & 6.

MATERIAL EXAMINED

MNHN-IA-2015-302: St. 115; two specimens. MNHN-IA-2015-303: St. 323; two specimens. MNHN-IA-2015-304: St. Gibbs 1; one specimen. MNHN-IA-2015-305: St. Gibbs 2; 11 specimens.

DESCRIPTION

Clavate body shape; inflated thoracic anterior region formed of 7–11 chaetigers, first 4–5 wider than long, the remainder as long as wide; abdominal region cylindrical, with longer than wide segments; longest specimen incomplete, 3.6 mm long for 16 chaetigers, 0.6 mm wide at mid-thorax level. Epithelium densely covered with triangular papillae both in dorsal and ventral body surface. Prostomium short and rounded, peristomium achaetous, divided into two rings (Figure 3A). One pair of branchiae present on dorsal surface of posterior ring peristomium, but usually lost, reaching chaetiger 2 (Figure 3A); nephridial papillae club shaped, inserted laterally to branchiae (Figure 3A). Notochaetae as thin capillaries, numbering 1–4 per parapodium (Figure 3A); surface with rows of spines resulting in a serrated appearance. Neurochaetae as compound falcigers, numbering up to 8 per parapodium in anterior chaetigers (Figure 3A) and 3–5 in posterior ones; blades bearing minute spinulation and

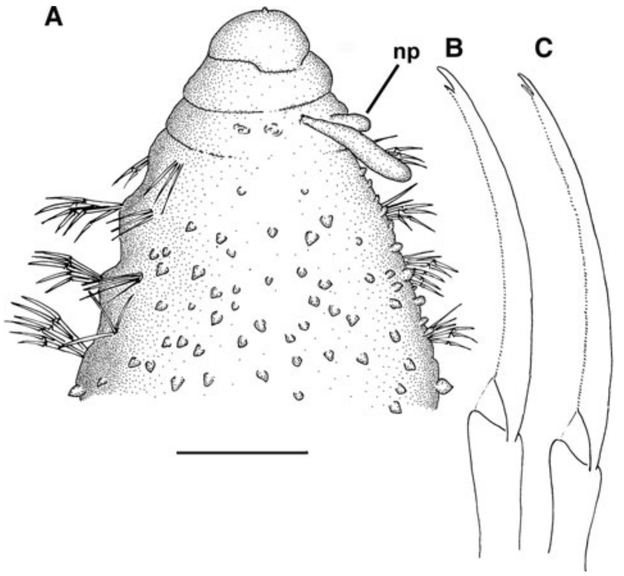

Fig. 3. *Macrochaeta polyonyx* Eliason, 1962: (A) anterior end, dorsolateral view; (B) dorsal neurochaeta, chaetiger 2; (C) ventral neurochaeta, chaetiger 2. np: nephridial papila. Scale bar: A, 0.25 mm; B, C, 25 μm.

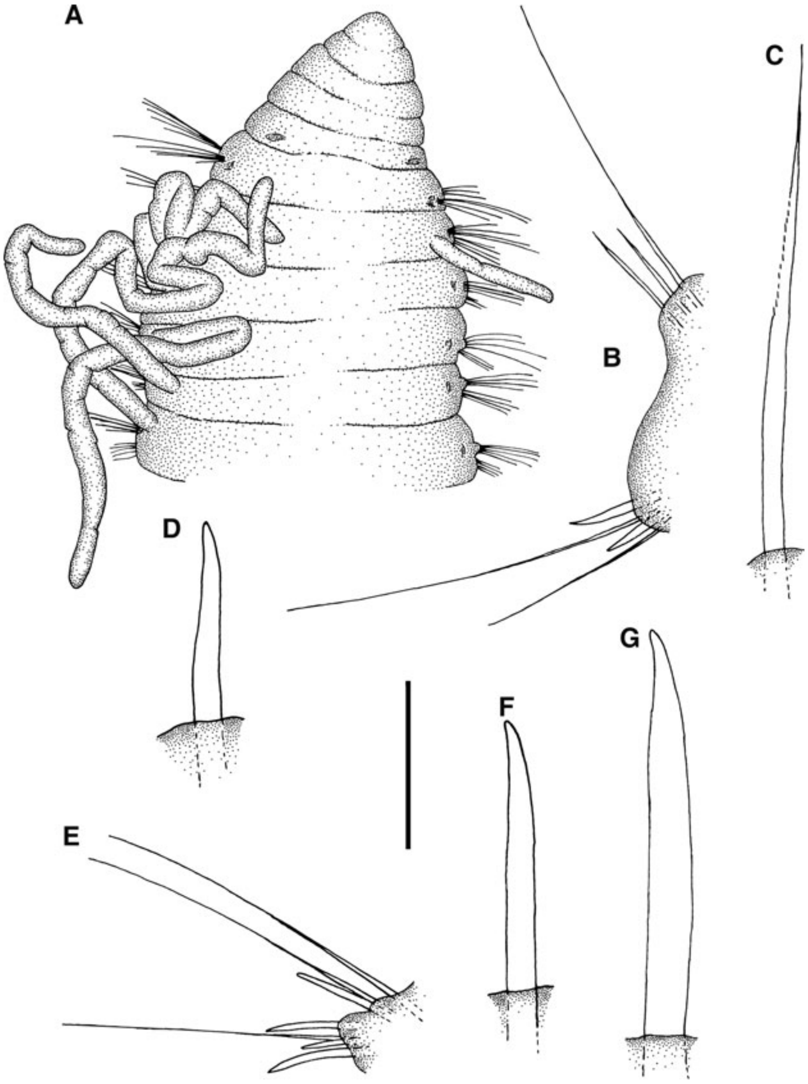

Fig. 4. *Chaetozone acuta* Banse & Hobson, 1968: (A) anterior end, dorsal view; (B) right parapodium of chaetiger 14, anterior view; (C) short capillary notochaeta, same chaetiger; (D) neuropodial spine, same chaetiger; (E) right parapodium of chaetiger 32, anterior view; (F) small neuropodial spines, same chaetiger; (G) large neuropodial spine, same chaetiger. Scale bar: A, 0.47 mm; B, E, 0.10 mm; C, D, F, G, 27 µm.

curved, unidentate tips with a minute subterminal tendon (Figure 3B, C); dorsoventral gradation in length of blades not apparent; cutting edge of blades of thoracic chaetae directed posteriorly, those of abdominal chaetae irregularly oriented. Pygidium not observed.

TAXONOMIC REMARKS

All the collected specimens can be assigned to *M. polyonyx* accurately because this species is unique within the genus in having up to eight compound neurochaetae in anterior parapodia (Eliason, 1962; Parapar & Moreira, 2009), differing from the rest of the species, which only bear one or two (Banse 1969). The only difference with the original description refers to the number of branchiae. Our specimens only bear one pair, whereas previous records mention up to two pairs (Banse, 1969; Parapar & Moreira, 2009). Up to now, just one record of an unidentified *Macrochaeta* sp. exists for the Canadian Arctic (MacDonald *et al.*, 2010), but the authors gave no details that might permit even an approximate identification. There are several other records for nearest marine areas (Carr, 2012), such as *M. leidyii* (Verrill, 1882) and *M. sexoculata* (Webster & Benedict, 1887), from Massachusetts and Maine respectively, or *M. pege* Banse, 1969, from Washington, but all of them belong to species having one or two compound neurochaetae in anterior chaetigers. Moreover, these species bear a higher number of branchiae distributed on as many segments, possessing four pairs as in *M. leidyii* and *M. pege* or 5–6 pairs as in *M. sexoculata* (Banse, 1969).

GEOGRAPHIC DISTRIBUTION

This species was described from Skagerrak off Norwegian coast (Eliason, 1962) and subsequently it has been recorded from a number of localities in the North Atlantic, such as British waters (Hartley, 1981), the deep shelf of NW Spain (Parapar & Moreira, 2009) or Jan Mayen Island (Bakken *et al.*, 2010). This is the first report of the species for the Canadian High Arctic and the west side of the Atlantic Ocean.

Family CIRRATULIDAE Carus, 1863
Genus *Chaetozone* Malmgren, 1867
Chaetozone acuta Banse & Hobson, 1968
(Figure 4)

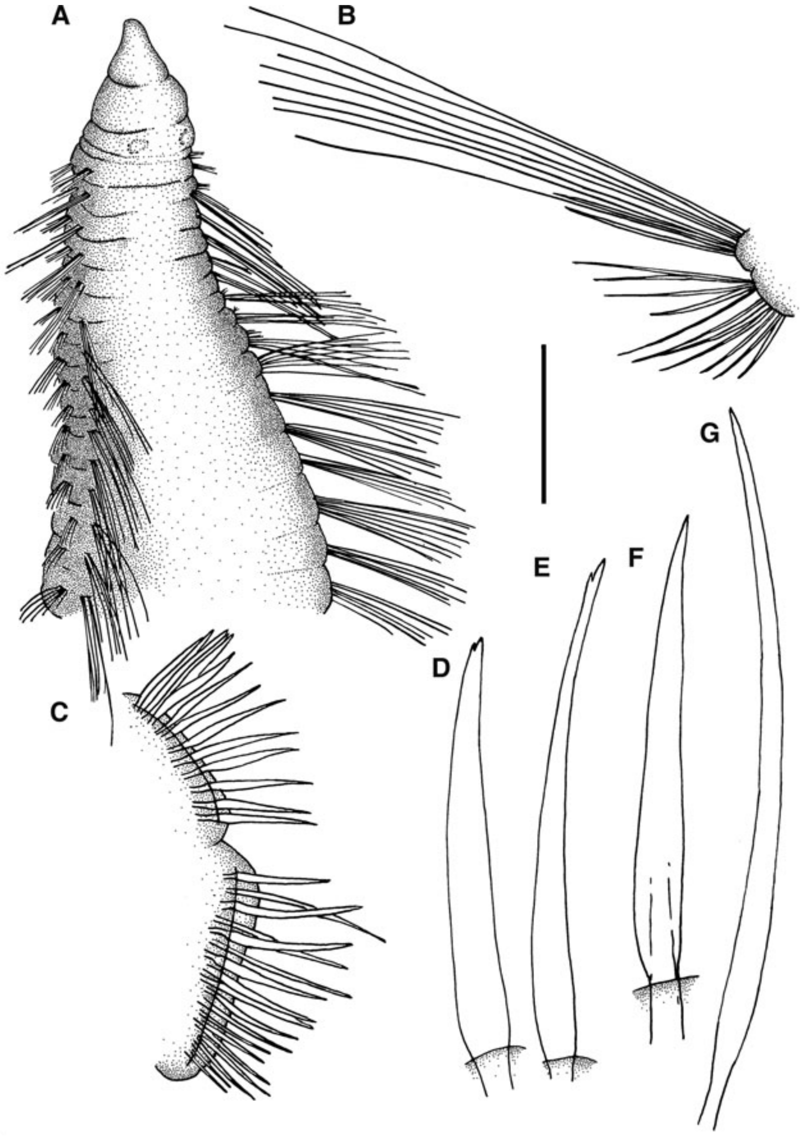

Fig. 5. *Chaetozone jubata* Chambers & Woodham, 2003: (A) anterior end, dorsolateral view; (B) right parapodium of chaetiger 2, anterior view; (C) left parapodium of chaetiger 48, anterior view; (D) dorsal notochaeta, same chaetiger; (E) ventral notochaeta, same chaetiger; (F) short neurochaeta, same chaetiger; (G) long neurochaeta, same chaetiger. Scale bar: A, 0.47 mm; B, C, 0.10 mm; D–G, 27 μm.

Chaetozone acuta Banse & Hobson, 1968: p. 32, Figure 7A–B; Blake, 1996: p. 276, Figure 8.2.

MATERIAL EXAMINED

MNHN-IA-2015-306: St. 323; one specimen.

DESCRIPTION

Specimen complete, 7 mm long for 35 chaetigers, 0.8 mm wide at tenth chaetiger level. Body surfaces smooth; anterior and mid-body regions slightly wider than posterior region; dorsal and ventral surfaces flattened in anterior and mid-body regions. Colour of preserved material creamy white. Prostomium conical, without eyes; peristomium achaetous, divided into two rings (Figure 4A). First segment achaetous, remaining ones all biramous (Figure 4A); notopodial and neuropodial lobes slightly separated all along body (Figure 4B, E). Pair of tentacular palps inserted on first, achaetous segment; first pair of branchiae arising in second segment; branchiae arising dorsal to notopodia and occurring in every segment in first six chaetigers (Figure 4A), absent in mid-body and posterior body regions. Chaetae simple and unidentate, of three types: long capillaries, short capillaries and spines. Long capillaries similar in length to maximum body width, with acute, straight tips; present in both noto- and neuropodia; arranged in fascicles composed of up to eight chaetae in anterior chaetigers, gradually reducing in number to 2–3 in posterior chaetigers. Short capillaries (Figure 4C) about a third as long as long ones but wider, with oblique tips; present in both neuropodia and notopodia of chaetigers 9 to 14, absent in the rest of body. Spines at least one and a half wider at base than long capillaries; 1–2 notopodial spines present from chaetiger 22, unidentate and somewhat curved, all similar in size; 3–4 neuropodial spines present from chaetiger 13, neuropodial fascicles composed of small and large spines, small ones identical to notopodial ones (Figure 4 D, F), large ones similarly shaped but approximately double sized (Figure 4G); spines accompanied by up to three capillaries in both noto- and neuropodia. Pygidium with ventral, rounded lobe.

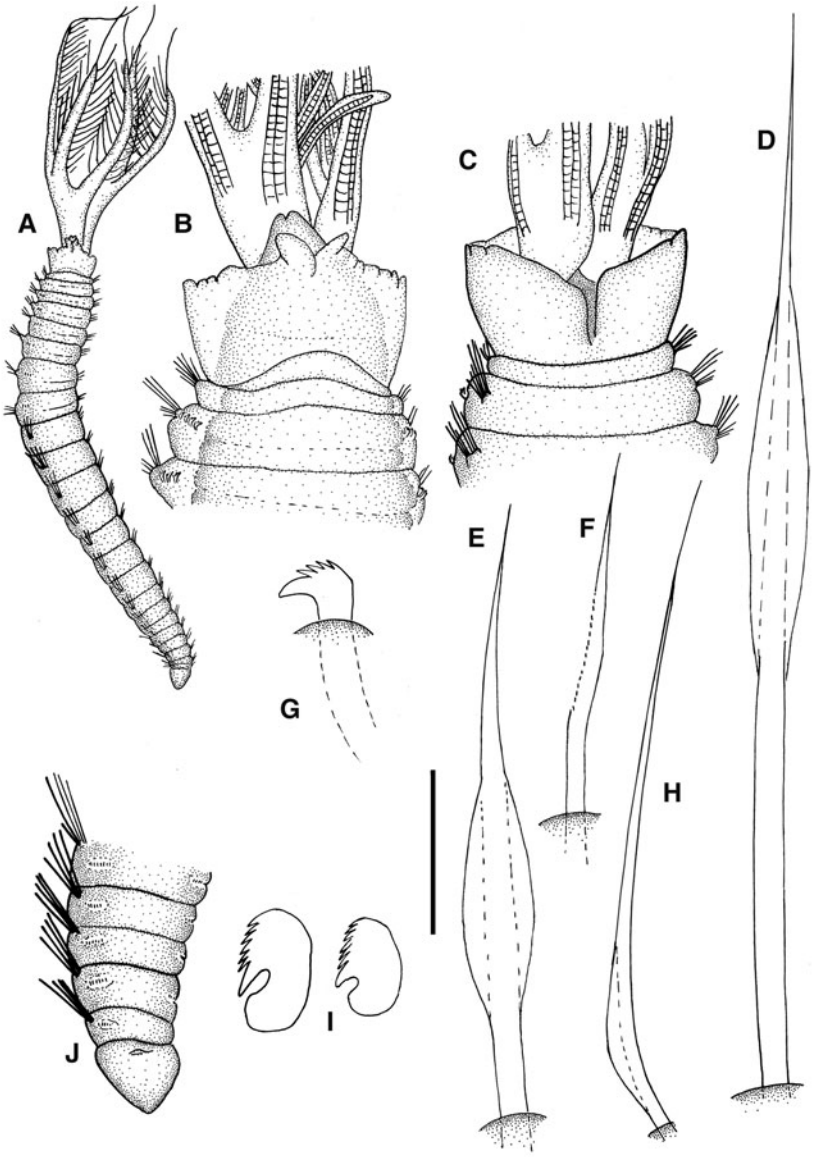

Fig. 6. *Dialychone hervyae* n. sp. Holotype. (A) entire body, ventral view; (B) anterior end, ventral view; (C) anterior end, dorsal view; (D) short narrowly hooded thoracic notochaeta; (E) paleate thoracic notochaeta; (F) bayonet thoracic notochaeta; (G) thoracic uncinus (neurochaeta); (H) narrowly hooded abdominal neurochaeta; (I) abdominal uncini (notochaetae); (J) pygidium, dorsal view. Scale bar: A, 2 mm; B, C, J, 0.4 mm; D–I, 20 μm.

REMARKS

Chaetozone acuta belongs to a group of Boreal-Pacific species characterized by possessing a biannulated peristomium followed by an achaetous segment, by having palps inserted in the posterior half of the peristomium and first pair of branchiae inserted on achaetous segment, and by bearing neuropodial spines from anterior third of body, appearing from chaetiger 5 to 40 (Blake, 2015). Along with *C. acuta*, this group is composed of *C. bathyala* Blake, 2015, *C. palaea* Blake, 2006 and *C. pigmentata* Blake, 2015. Among them, *C. palaea* is unique because it possesses very broad and flattened spines in posterior chaetigers (Blake, 2006), clearly different to the rounded in section ones of our specimen. *Chaetozone acuta* can be distinguished from the two other species by having much fewer spines on posterior chaetigers, bearing up to eight instead of 13–19 as in *C. pigmentata* or 20–22 as in *C. bathyala* (Blake, 2015). In addition, *C. pigmentata* is characterized by a very distinct colour pattern composed of black speckles and a prominent ventral ridge (Blake, 2015), both features absent in *C. acuta*.

The specimen herein described fits well with the most recent re-description of the species based on the type series (Blake, 1996), sharing diagnostic characters such as the presence of capillaries with oblique tips, the spines appearing in the anterior third of the body and always arranged in bundles composed of few chaetae, the biannulate peristomium accompanied by an achaetous segment, and the palps inserted before the branchiae. However, it also shows some minor differences. For instance, neither the small lateral eyes nor the pigmentation of the nuchal organs cited by Blake (1996) were observed, although this fact could be caused by decolouration due to the preservation process. Other differences refer to the details in the structure of the chaetae. Firstly, pointed short capillaries are thinner than smaller spines in

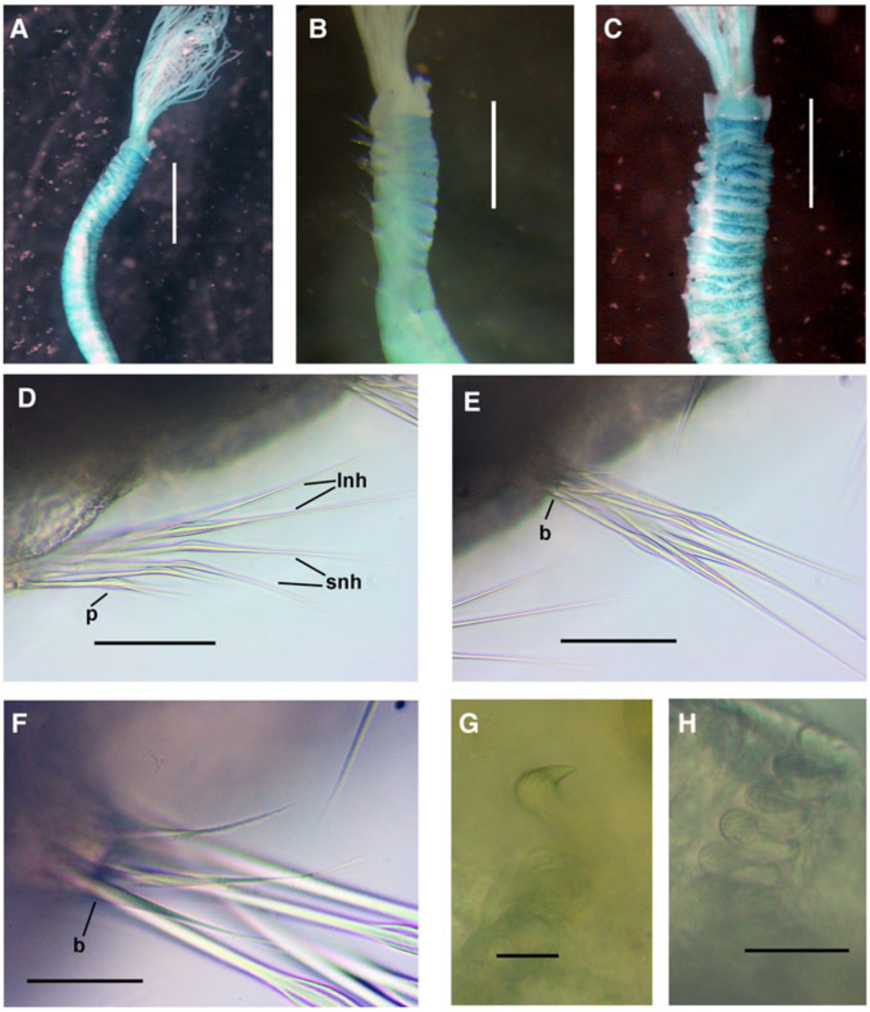

Fig. 7. *Dialychone hervyae* n. sp. Holotype. (A) body, lateral view; (B) anterior end, lateral view; (C) anterior end, ventral view; (D) thoracic notopodial lobe, fourth chaetiger; (E) thoracic notopodial lobe, fifth chaetiger; (F) detail of bayonet notochaetae, fifth chaetiger; (G) thoracic uncinus, sixth chaetiger; (H) abdominal uncini, twelfth chaetiger. lnh, long narrowly hooded chaeta; snh, short narrowly hooded chaeta; p, paleate chaeta; b, bayonet chaeta. Scale bar: A, 2 mm; B, C, 0.8 mm; D–E, 30 µm; F, 15 µm; G–H, 10 µm.

our specimen, whereas they are figured in descriptions as being as thick as spines (Banse & Hobson, 1968; Blake, 1996). The number of spines in mid-body parapodial lobes is fewer than originally described, since our material bears 1–2 in notopodia and 3–4 in neuropodia, instead of bearing 2–5 in notopodia and 5–7 in neuropodia (Banse & Hobson, 1968). In this respect, the number is closer to the diagnoses provided later by Blake (1996, 2015), in which the species is described as having up to eight spines on each side. Furthermore, the ridges on convex side of spines that are recorded in the description were not seen in our material. We do not consider these differences important enough to describe a new taxon.

GEOGRAPHIC DISTRIBUTION

Previously to this record, the species has been reported only from shallow depths in its type locality (Puget Sound, Washington State, USA) and close locations (Blake, 1996). This report extends its known range northwards to the Canadian Archipelago, leaving a wide gap between the two known localities. However, the genus is in need of a deep revision (Blake, 1996), and it is likely that careful re-examination of the abundant material from the Pacific coast of Canada referred to other species of genus *Chaetozone* (Carr, 2012) might show some of them to belong to this species.

Chaetozone jubata Chambers & Woodham, 2003
(Figure 5)

Chaetozone jubata Chambers & Woodham, 2003: p. 43, Figure 2.

MATERIAL EXAMINED

MNHN-IA-2015-307: St. Gibbs 2; 21 specimens.

DESCRIPTION

Longest specimen complete, 6.2 mm long for 45 chaetigers, 0.6 mm wide at tenth chaetiger level. Body surfaces smooth; anterior and mid-body regions wider than posterior region; dorsal and ventral surfaces flattened in anterior and mid-body regions, ventral surface with longitudinal groove. Colour of preserved material creamy white. Prostomium conical, without eyes (Figure 5A). Peristomium achaetous, divided into two rings, anterior one clearly longer than posterior one; pair of tentacular palps inserted in posterior half of second ring (Figure 5A). First segment achaetous and very short, remaining ones all biramous (Figure 5B). First pair of branchiae arising in first chaetiger segment; branchiae arising dorsal to notopodia and occurring in every segment in first 5–10 chaetigers, more sporadically in mid-body, and absent in posterior body region. Chaetae simple and unidentate, of three types: very long capillaries, short capillaries and spines. Very long capillaries about three times as long as maximum body width, present in notopodia only, numbering 4–8 from chaetiger 2 to about chaetiger 28, gradually reducing in number to 1–2 in posterior chaetigers (Figure 5B). Short capillaries about a quarter the length of long ones; in notopodia 1–2 capillaries from chaetiger 2 to 29–30; in neuropodia 4–8 capillaries from chaetiger 2 to 18–19 (Figure 5B), then progressively thicker and shorter, becoming true spines in chaetiger 29–31. Spines twice wider at base than capillaries, present in both rami from chaetiger 30–31; first alternating with capillaries in notopodia and then alone, alone always in neuropodia; number gradually increasing from 2–4 in the mid-body region to up to 17 in each ramus of posterior chaetigers (Figure 5C); notopodial spines all similar in length and minutely bidentate (Figure 5D, E); neuropodial spines unidentate, alternating short and long ones (Figure 5F, G). Pygidium with ventral, sub-spherical lobe.

TAXONOMIC REMARKS

Historically, specimens of *Chaetozone* having spines arranged in large cinctures on posterior segments were referred globally to *C. setosa* Malmgren, 1867, originally described from Spitsbergen. However, more recent studies showed that in the Arctic there is a complete array of species which can be distinguished by a number of characters that usually are overlooked (Blake, 2015). Concerning *C. jubata*, it is easily identifiable within this group of species resembling *C. setosa* by the distribution of very long capillary chaetae, which are concentrated on the anterior part of the body (in chaetigers 2–15 in *C. jubata* instead of chaetigers 20–50 in *C. setosa*). Chambers and Woodham (2003) also described differences in the shape and number of spines in the posterior segments, which were thinner (6.3 *vs* 16.8 μm) and more numerous (up to 14 in each fascicle instead of up to 8) in *C. jubata*. However, the most recent redescription of *C. setosa* (Blake and Petersen in Blake, 2015) reduces this difference since their data on the spines show higher variability in this species, with values that may be closer to that of *C. jubata*. In addition, these authors describe *C. setosa* as bearing an enlarged dorsal swelling on the peristomium, although it is not always very evident (Chambers, 2000). This swelling is altogether absent in the herein recorded specimens as well as in the original description of *C. jubata*.

GEOGRAPHIC DISTRIBUTION

Previously to this record, the species has been reported only from deep waters of the Faroe–Shetlands Channel and from the Faroes Rise, between these islands and Iceland (Chambers & Woodham, 2003). Although they were collected from subarctic latitudes in the north-east Atlantic Ocean, the authors indicated environmental conditions to be very cold in both sites due to the effect of the deep water flowing southwards from the Norwegian Sea. It suggests a preference for cold waters and probably an arctic distribution that has been neglected because of the superficial similarity of this taxon with the widely recorded *C. setosa*.

Family SABELLIDAE Latreille, 1825
Genus *Dialychone* Claparède, 1870
Dialychone hervyae n. sp.
(Figures 6 & 7)

MATERIAL EXAMINED

MNHN-IA-TYPE 1770: St. 312; holotype. MNHN-IA-TYPE 1771: St. 312; four paratypes. MNHN-IA-TYPE 1772: St. 310; three paratypes. MNHN-IA-TYPE 1773: St. 323; one paratype. MNHN-IA-TYPE 1774: St. Gibbs 2; one paratype.

DESCRIPTION

Holotype, largest specimen, complete; 0.3 mm wide, 5.3 mm long without branchial crown. Body cylindrical (Figures 6A & 7A), creamy white coloured when preserved; methyl green staining pattern uniformly light turquoise, except for deeper coloured pygidium and ventral shields, those of thoracic chaetigers showing two transversal bands of stained cells (Figure 7A–C). Insertion of the branchial crown not exposed beyond collar (Figures 6C & 7A, B); branchial crown up to 2.4 mm long (holotype), composed of four pairs of radioles, tips up to one quarter of total radiole length; median pinnules not longer than more basal ones; radiolar flanges narrow; palmate membrane extending through one quarter of crown length; one pair of ventral radiolar appendages, about half the length of crown; dorsal pinnular appendages not observed. Anterior peristomial ring bearing a ventral projection barely extending beyond collar, distally bilobed (Figure 6B). Posterior peristomial ring collar with ventral, dorsal and lateral margins irregularly wrinkled (Figure 6A–C); ventral margin higher than lateral ones (Figure 6B); dorsal margin forming a narrow gap (Figure 6C), ventral margin folded in two lobes (Figure 7C); dorsal pockets present; ventral collar shield crescentic (Figure 6B); length ratio of collar *vs* second chaetiger 1.5:1 in lateral view. Thorax composed of eight biannulate chaetigers (Figure 6A), mid-segmental furrow dorsally inconspicuous; glandular ridge on second chaetiger very narrow and inconspicuous, subtly pigmented in pink after methyl-green staining. First chaetiger with two rows of narrowly hooded chaetae, those of anterior one clearly longer; uncini absent. Remaining thoracic chaetigers with notopodia bearing dorsally two rows of narrowly hooded chaetae (Figures 6D & 7D, E) similar to those of first chaetiger and ventrally one row of paleate chaetae with very long mucro (Figures 6E & 7D) and another row of bayonet chaetae (Figures 6F & 7F); neuropodia with one row of acicular uncini, main fang surmounted by four rows of teeth covering two-thirds of fang length, size of teeth progressively decreasing to apex (Figures 6G & 7G). Abdomen composed of 16 chaetigers (Figure 6A); neuropodia with two rows of very narrowly hooded chaetae (Figure 6H), those of ventral row twice longer than dorsal ones; neuropodia of anterior abdomen bearing one row of rectangular uncini with the main fang surmounted by up to six rows of teeth extending through half of the fang length; uncini of posterior segments rectangular with proportionately smaller main fang surmounted by up to six rows of teeth extending through almost entire fang length (Figures 6I & 7H). Pygidium with rounded posterior margin (Figure 6J); prepygidial depression occupying last six abdominal chaetigers.

REMARKS

Dialychone hervyae n. sp. belongs to a group of species defined by Tovar-Hernández (2008) and characterized by their anterior peristomial ring bearing a bilobed ventral projection that extends beyond the collar (Tovar-Hernández, 2008). Apart from *D. hervyae* n. sp., the group is formed by *D. collaris* (Langerhans, 1881), from the eastern Atlantic and the Mediterranean Sea (Tovar-Hernández, 2008), *D. normani* (McIntosh, 1916), from Scotland (Tovar-Hernández, 2007a), *D. quebecensis* (Tovar-Hernández, 2007), from the Gulf of Saint Lawrence (Tovar-Hernández, 2007b), *D. trilineata* (Tovar-Hernández, 2007), from California (Tovar-Hernández, 2007b), *D. dunerificta* (Tovar-Hernández *et al.*, 2007), *D. longiseta* (Giangrande, 1992) and *D. egyptica* (Selim *et al.*, 2012), the three latter species from the Mediterranean Sea (Giangrande, 1992; Tovar-Hernández *et al.*, 2007; Selim *et al.*, 2012). The new species is characterized from *D. dunerificta, D. quebecensis, D. trilineata* and *D. collaris* by its distinctive pattern of methyl-green staining and by the shape of its paleate thoracic notochaetae, which bear very long mucros. Furthermore, the posterior margin of its pygidium is rounded, whereas in the first three species it is triangular and pointed in the fourth. The shape of the collar is another useful feature to distinguish the new species from *D. collaris*, as the latter bears a clearly and regularly scalloped collar, whereas *D. hervyae* n. sp. has a collar subtly and irregularly wrinkled. Moreover, *D. collaris* possesses radioles with proportionately shorter tips than those of *D. hervyae* n. sp.

Dialychone longiseta, D. normani and *D. egyptica* are the most similar species since they possess paleate chaetae with very long mucros (Giangrande, 1992; Tovar-Hernández, 2007a, 2008). However, *D. egyptica* is easily told apart from the other species by its very characteristic abdominal glandular ridge on chaetiger 13 and by having a conspicuous pygidial cirrus. *Dialychone longiseta* is a more similar species, but it can be distinguished by the shape of the ventral shield in the collar segment (which is rectangular in *D. longiseta*), by the number (6–10 pairs in *D. longiseta*, three pairs in the new species) and the shape of the radioles, which are clearly broader and with longer tips in the Mediterranean species (up to half of the radiole length in *D. longiseta*, up to one quarter in the new species). Finally, *D. normani*, although showing a very similar methyl green staining pattern, differs in some details. Some of them can be observed in the branchial crown, such as the number of radioles (four pairs in *D. hervyae* n. sp. instead of six), the length of median pinnules (clearly longer in *D. normani*, similar to the rest in the herein described specimens), and the distinctly narrower tips and lateral flanges of the radioles in *D. hervyae* n. sp. Other differences refer to thoracic uncini, that in *D. normani* bear apical teeth over half the length of the main fang and over two thirds in our specimens.

ETYMOLOGY

The new species is named in honour of Annie Olivier, the second author's mother, whose maiden name 'Hervy' comes from a family from St-Malo (France).

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