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Deep-sea polychaetes from north-west Africa, including a description of a new species of *Neopolynoe* (Polynoidae)

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Polychaete worms obtained by RRS 'Discovery' from 200 to 4850 m north-west of Africa in 1979 contained 24 species of which five: *Macellicephala violacea*, *Bathyeliosona abyssicola*, *Laetmonice filicornis*, *Maldanella harai* and *Potamilla torelli* were present in the abyssal zone (>2000 m). *Macellicephala violacea* is widely distributed in the Arctic and the present record is the southern-most record of this species. Fifteen species were recorded from the bathyal zone, many of which have a wide distribution in the oceans. A *Neopolynoe* species from the bathyal zone is new to science.

INTRODUCTION

The second part of Cruise 105 of RRS 'Discovery' visited the area south of the Canary Islands where several benthic samples were obtained from 200 to 4850 m. This part of the cruise took place during the period from 28 September to 11 October 1979. Fourteen of these samples contained polychaetes, six from the abyssal zone (deeper than 2000 m), seven from the bathyal, and one from the sublittoral zone (200 m). This paper describes the polychaetes from these samples.

MATERIALS AND METHODS

The benthic samples were obtained using different sampling gears. The upper part of the continental slope south of the Canary Islands was previously shown to be a high-risk environment with a soft bottom. For this reason the hauls fished shallower than 1800 m were made with the Bottom net 1.5 m^2 (closing) 5 mm net fitted with a J-tape monitor, but no camera or odometer (BN 1.5 C). This net was also used for the 4800 m haul and two northerly hauls (see station list). Five hauls from 2500 to 4300 m were made with Bottom net 1.5 m^2 (closing with three nets and camera (BN 1.5/3 m). In one of the northern stations an IOS Gravity corer was used (Grav.corer). The polychaete material was kept in tubes with 80% ethyl alcohol. It was studied at the Zoological Museum, Copenhagen, using a Wild M8 stereo microscope with magnification ×6–50, zoom; slide preparations were examined using a Kyowa compound microscope (×10, ×20, ×40, ×100 objectives and ×10 oculars). Specimens in alcohol were measured by placing them over a ruler and measuring to nearest millimetre. Information of position, depth, gear, etc. may be found in the Station list in Cruise Report no. 82, 1979 from I.V.S. (Anon., 1979).

SYSTEMATICS

Family APHRODITIDAE Malmgren, 1867
Laetmonice filifornis Kinberg, 1855

Laetmonice filicornis–Fauvel 1923:36–38, figure 12 a–f. Kirkegaard 1995:11. Hartmann-Schröder 1996:36–37, figure 8 a–c.

Material

Station 10125 (1), 460 m, one complete specimen: 23×12 mm. Station 10132 (1), 1775 m, one complete specimen: 25×15 mm. Station 10138 (1), 2750 m, one complete specimen: 35×18 mm (with two parasitic copepods).

Distribution

Davis Strait; Iceland; North Atlantic; West Indies; Gulf of Mexico; Australian waters; 40–5200 m.

Family POLYNOIDAE Malmgren, 1867
Subfamily HARMOTHOINAE Horst, 1917
Eunoe laetmogonensis Kirkegaard & Billett, 1980

Eunoe laetmogonensis–Kirkegaard & Billett, 1980:101–109, figure 1–4. Kirkegaard 1983:598.

Material

Station 10106 (1), 2300 m, one specimen: 105 mm (anterior part). Station 10131 (1), 1325 m, one specimen: 22×12 mm (complete, 38 setigers). Station 10153 (1), 1090 m, one specimen: 11×8 mm (anterior part).

Remarks

This species was described as having a relationship with the holothurian *Laetmogone violacea* (Kirkegaard & Billett, 1980). The material for this description was obtained from the RV 'Discovery' Cruise 92 in April–May 1978 and was collected in the Porcupine Sea Bight and off the north-west coast of Africa. The specimen from

Station 10106 was also obtained from the Porcupine Sea Bight, in practically the same area where the type specimen was collected in 1978. It was delivered by a colleague, Dr Jørgen Knudsen, who was on board RV 'Discovery' at the first leg of Cruise 105 in 1979. Stations 10131 and 10153 were very close to the place where the species was obtained in 1978 off north-west Africa. At Station 10153 some specimens of *Laetmogone violace* were collected with red scars from the polychaete on their ventral surface.

Distribution

Porcupine Sea Bight (south-west of Ireland); north-west of Africa; south and east of Canary Islands; 800–2300 m.

Genus *Neopolynoe* Loshamn, 1981

Diagnosis (emended)

Body oblong, tapering posteriorly, up to 105 setigers. Prostomium bilobed, with cephalic peaks and four subequal eyes; anterior pair dorsolateral at greatest width of prostomium, posterior pair dorsal near posterior margin. Lateral antennae with large ceratophores inserted ventrally. Palps smooth. Elytra 15 pairs on segments 2, 4, 5, 7, ... 23, 26, 29, and 32. Elytra oval to subreniform in shape, not covering posterior part of the animal. Parapodia biramous. Notosetae stouter than neurosetae, with distinct spinous regions, with entire tips distally curved. Nephridial papillae short, cylindrical, dorsally between successive neuropodia from segment 6, continuing posteriorly.

Neopolynoe africana sp. nov.

Material

Station 10 154 (1), 1585–1610 m, 16 specimens, nine complete: 48×5, 47×5, 40×4, 36×5, 34×4, 31×5, 30×4, 23×4 mm; six anterior parts: 35×5, 32×4, 31×5, 28×5, 21×5, 15×5; one specimen, in its tube; five fragments.

Description

Holotype 47 mm long, 5 mm wide. 105 setigers. Body tapering posteriorly. Prostomium bilobed with two small cephalic peaks and four eyes, the two anterior at the broadest part of the prostomium, the posterior pair somewhat larger at the posterior margin (Figure 1A). Median antenna with large ceratophore, style nearly as long as the palps. Two small lateral antennae with large ceratophores, inserted ventrally. Palps 4–5 times the length of the prostomium. Antennae and palps smooth without papillae. Tentacular cirri, as long as the median antenna. They are smooth without papillae. Fifteen pairs of elytra on segments 2, 4, 5, 7 ... 23, 26, 29 and 32. They are oval and not covering the posterior part of the body (Figure 1B). Elytra with short papillae on the lateral border and covered with many conical tubercles on the surface (Figure 1C). The parapodia are biramous. Notopodium rounded with acicular lobe, neuropodium also rounded with fingerformed acicular lobe (Figure 1D). Notosetae are stouter than the neurosetae in bundles of 15–16, all with rows of small spines and an entire tip. (Figure 1E). No capillary setae. Neurosetae all unidentate with flat spinous region, ending in a curved tip. Anterior

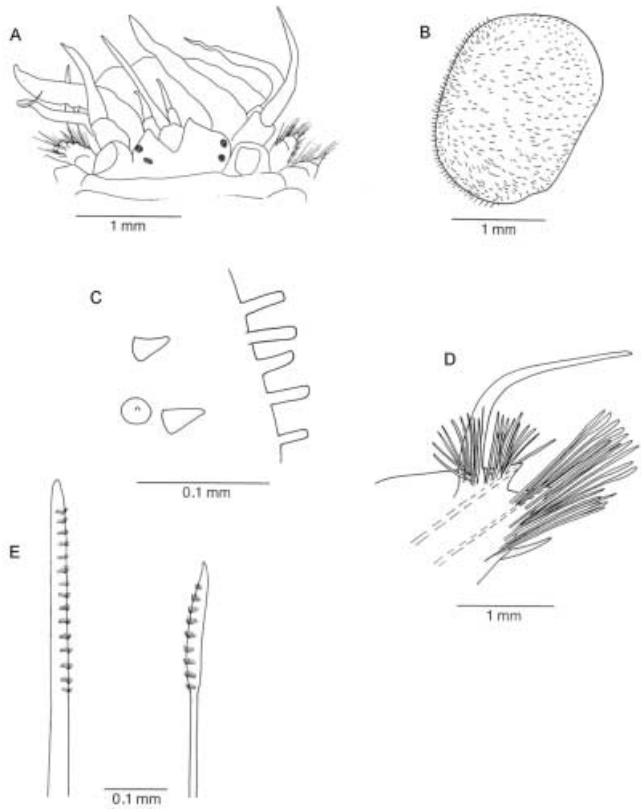

Figure 1. *Neopolynoe africana* sp. nov. (A) Prostomium; (B) elytron; (C) part of lateral border of elytron; (D) parapodium; and (E) dorsal and ventral setae.

dorsal cirri as long as the tentacular cirri, longer and thinner posteriorly. Ventral cirri finger shaped, very short. No papillae on the parapodial cirri. Two fairly long anal cirri.

The animals live in transparent tubes on the surface of the deep-sea sponge *Chondrocladia* sp. Elytra with strong luminescens.

Remarks

With 15 pairs of elytra and the number of setigers very large, the present species reminds of the genus *Polynoe*. However, all neurosetae are unidentate and there are no capillary setae present in the notopodiae.

The new species from off north-west Africa appears to be very closely related to *Neopolynoe paradoxa* (Storm), known from deep water, down to 975 m, in the north-east Atlantic and newly redescribed by Losham (1981) in a new genus. *Neopolynoe africana* differs from his description by a large number of setigers (105 against 40–58) and no papillae on the antennae, tentacular and parapodial cirri.

Distribution

Off north-west Africa, east of the Canary Islands; 1610 m.

Subfamily MACELLICEPHALINAE Hartmann-Schröder, 1971

Bathyeliasona abyssicola (Fauvel, 1913)

Bathyeliasona abyssicola–Pettibone 1976:25, figures 13 & 14. *Macellicephala abyssicola*–Fauvel 1913:7, figure 2A–D. Hartmann-Schröder 1974:76.

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Material

Station 10143 (1), 3810 m, one specimen: 255 mm (complete). Station 10145 (1), 4250 m, two specimens: 20×5, 28×5 mm (complete), three proboscis. Station 10148 (1), 4850 m, one proboscis.

Remarks

This species was recorded by Eliason (1951) on two specimens obtained by the Swedish Deep-Sea Expedition in 1947–1948 off the Canary Islands and off north-west Africa. Later it was recorded from the North Pacific.

The colour of the specimens from Station 10143 was dark violet and so were the proboscis which were present together with the two complete specimens from Station 10145. Since the single proboscis from Station 10148 also had the same colour and shape, it probably represents the same species.

Distribution

North Atlantic (Bay of Biscay, off Canary Islands, off north-west Africa); North Pacific (Bering Sea, Aleutian Trench); 3860–7180 m.

Macellicephala violacea (Levinsen, 1887)

Macellicephala violacea–Hartmann-Schröder 1974:76. Pettibone, 1976:12, figures 3 & 4. *Oligolepis violacea*–Levinsen 1887:290, plate 25, figures 1–4.

Material

Station 10131 (1), 1320–1325 m, one specimen: 2812 mm. Station 10143 (1), 3810 m, one specimen: 17×6 mm.

Remarks

The specimen from Station 10131 was sitting on the holothurian *Echinothurion*, which had the same colour as *Macellicephala violacea* (violet).

Distribution

Arctic (Greenland, Spitsbergen, Jan Mayen, north-east Iceland); north-east Atlantic (Norway to north-west Africa); North Pacific (Aleutian- and Kurile-Kamchatka Trench, Okhotsk Sea); 46–8400 m.

Family SIGALIONIDAE Malmgren, 1867

Euthalenessa oculata (Peters, 1854)

Euthalenessa oculata–Pettibone, 1970a:6, figures 1–5. Kirkegaard, 1983b:19. *Euthalenessa dendrolepis*–Fauvel, 1923:114, figure 42H–O. *Thalenessa oculata*–Day 1967:107, figure 1.19 M–Q.

Material

Station 10131 (1), 1320 m, three specimens: 52×3 mm (complete), 14×2, 14×2 mm (anterior part).

Distribution

East Atlantic (Bay of Biscay to South Africa); Indian Ocean (Mozambique, Natal); Mediterranean; 20–1300 m.

Neoleanira tetragona (Ørsted, 1845)

Neoleanira tetragona–Pettibone, 1970b:368. Kirkegaard, 1983a:594, 1983b:198, 1995:23. *Leanira tetragona*–Fauvel, 1923:117, figure 43A–G.

Material

Station 10122 (1), 195–210 m, three specimens: 275, 202, 101 mm (anterior parts).

Distribution

Arctic, Atlantic (Gulf of St Lawrence to off Chesapeake Bay, Norway to Azores, West Africa to South Africa); Mediterranean; 100–2200 m.

Psammolyce arenosa (Delle Chiaje, 1841)

Psammolyce arenosa–Fauvel, 1923:106, figure 40A–M. Kirkegaard, 1983b:198.

Material

Station 10131 (1), 1320 m, one specimen: 255 mm.

Remarks

This is only a posterior part, but the elytra covered with black sand and the shape of the setae is so characteristic that I do not hesitate to refer it to this species.

Table 1. *Sampling locations and sediment characteristics.*

Station	Latitude	Longitude	Depth (m)	Bottom
10106	50°41.7′N	12°58.7′W	2300	
10122	23°36.6′N	16°55.9′W	195	Sand, shells, debris
10124	23°40.5′N	17°04.0′W	660	
10125	23°42.4′N	16°54.2′W	410	
10127	23°48.0′N	17°12.5′W	1105	Hard bottom
10131	24°17.4′N	16°59.1′W	–	
10132	24°20.5′N	17°09.4′W	1775	Very muddy
10138	24°29.9′N	18° 21.0′W	2750	
10141	24°33.8′N	19°48.6′W	3460	
10143	24°43.6′N	20°03.7′W	3780	
10145	24°51.5′N	20°44.4′W	4250	
10148	25°16.8′N	22°21.3′W	4830	
10153	29°06.3′N	12°29.0′W	1065	Mud
10154	29°23.8′N	12°12.3′W	1585	

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Distribution

Atlantic (English Channel to Mediterranean, West Africa, Canary Islands to Gold Coast); Mediterranean. 10–1300 m.

Family GLYCERIDAE Grube, 1850

Glycera tesselata Grube, 1863

Glycera tesselata–Fauvel, 1923:387, figure 152A–C. Kirkegaard, 1980:86, 1983a:595, 1988:17, 1995:27. Hartmann-Schröder, 1996:245.

Material

Station 10122 (1), 195 m, one specimen: 101 mm (anterior part). Station 10153 (1), 1090 m, one specimen: 33×5 mm (complete).

Distribution

Atlantic (Scotland to West Africa, North Carolina); Indian Ocean (Madagascar, Red Sea, India, Indonesia); Pacific (Japan, Canada to California); 50–4165 m.

Family SPHAERODORIDAE Malmgren, 1867

Sphaerodorum flavum Ørsted, 1843

Sphaerodorum flavum–Hartmann-Schröder, 1996:238, figure 107. *Ephesia gracilis*–Fauvel, 1923:377, figure 148A–F.

Material

Station 10127 (1), 1105 m, one specimen: 10×0.5 mm (complete).

Distribution

Arctic; North Atlantic; Mediterranean; South Africa; North Pacific; Antarctic; 10–1500 m.

Family NEPTHYIDAE Grube, 1850

Aglaophamus elamellata (Eliason, 1951)

Aglaophamus elamellata–Kirkegaard, 1980:85, figure 21, 1995:36. *Nephthys elamellata*–Eliason, 1951:133, figure 2. Kirkegaard, 1956:68, figure 7.

Material

Station 10131 (1), 1230–1325 m, two specimens: 12×3, 10×2 mm (anterior parts).

Remarks

The two specimens of *A. elamellata* were obtained not so far from the type locality of the species which was described by Eliason on two specimens collected by the Albatross Expedition north of the Canary Islands. *Aglaophamus elamellata* has a remarkable worldwide distribution in deep water from the Bay of Biscay to New Zealand.

Distribution

Atlantic (Bay of Biscay, Azores, Canary Islands, off West Africa); Indian Ocean (off East Africa, Sri Lanka); Pacific (Tasman Sea, Kermadec Trench); 1000–7000 m.

Aglaophamus rubella (Michaelsen, 1896)

Aglaophamus rubella–Hartmann-Schröder, 1996:216, figure 13. *Nepthys rubella*–Fauvel, 1923:373, figure 145H–I.

Material

Station 10122 (1), 195–210 m, three specimens: 20×7, 12×6, 10×7 mm (anterior parts).

Distribution

Arctic; north-east Atlantic; Mediterranean, 40–1100 m.

Family AMPHINOMIDAE Savigny, 1818

Chloeia venusta–Fauvel, 1923:134, figure 48D–H. *Chloeia viridis*–Fauvel & Rullier 1957:54, figure 2. Kirkegaard, 1983b:201, figure 4.

Material

Station 10122 (1), 210 m, three specimens: 30×5, 28×6, 14×2 mm (complete).

Distribution

Atlantic (Spain, West Africa); Indian Ocean (west coast of India); Pacific (Gulf of California, Galapagos); 10–200 m.

Family ONUPHIDAE Kinberg, 1865

Hyalinoecia robusta Southward, 1977

Hyalinoecia robusta–Southward, 1977:173, plate 1, figure A–J, plate 2, figure A–B. Kirkegaard, 1988:34, 1995:41, figure 23.

Material

Station 10124 (1), 660 m, two specimens: 35×5, 27×3 mm (anterior parts), one tube. Station 10132 (1), 1775–1790 m, one specimen: 17×2 mm (anterior part). Station 10153 (1), 1065–1090 m, two specimens: 80×4, 705 mm (anterior parts).

Remarks

This species was described by Southward on material from the Bay of Biscay, but it appears to have a worldwide distribution in the oceans (Kirkegaard, 1995, figure 23).

Distribution

Eastern Atlantic (Bay of Biscay, off West Africa); Indonesia, 260–2810 m.

Hyalinoecia tubicola (Müller, 1776)

Hyalinoecia tubicola–Fauvel, 1923:421, figure 166I–Q. Kirkegaard, 1988:34, 1995:41. Hartmann-Schröder, 1996: 253.

Material

Station 10122, 195–200 m, two specimens, 352, 171 mm, tubes.

Remarks

This species is closely related to *Hyalinoecia robusta* which appears to replace it at depths below 400 m. Earlier records from deep water of *H. tubicola* should probably be *H. robusta*.

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Distribution

Atlantic (Greenland to Argentina and South Africa); Indian Ocean (India); Pacific (California, Peru, Australia and New Zealand); 15–500 m.

Nothria conchylega (Sars, 1835)

Nothria conchylega–Kirkegaard, 1988:35. Hartmann-Schröder, 1996:254, figure 115. *Onuphis conchylega*–Fauvel, 1923:415, figure 164.

Material

Station 10145 (1), 4250 m, two specimens: 7×2, 6×2 mm (anterior parts), tube. Station 10153 (1), 1090 m, two specimens: 3×1, 4×1 mm. Station 10154 (1), 1610 m, one specimen: 7×2 mm, tube.

Distribution

Arctic; Atlantic (Norway to West and South Africa, Labrador to Florida, West Indies); Mediterranean; Indian Ocean (Andaman Sea, Sri Lanka, Natal, Mozambique); Pacific (Bering Sea, British Columbia, California, Japan, New Zealand); 30–4250 m.

Family EUNICIDAE Savigny, 1818

Eunice norvegica (Linnaeus, 1767)

Eunice norvegica–Pettibone, 1963:240 figure 63. Winsnes, 1989:483. Fauchald, 1992:241, figure 81A–E. Hartmann-Schröder, 1996:258. *Eunice floridana*–Fauvel, 1923:402, figure 157A–G.

Material

Station 10124 (1), 660–665 m, three specimens: 32×3 mm (complete), 42×6, 50×6 mm (anterior parts).

Remarks

There seems to be some confusion about this species. The present specimens fits well with the description of *E. norvegica* by Hartmann-Schröder (1996) and Pettibone (1963). The aciculae and ventral subacicular hooks are black, the subacicular hooks start at parapodium 30 and there are branchiae from setiger 7 which have 1–3 filaments. This fits also with Fauvel's description of *E. floridana* which both Pettibone, Hartmann-Schröder and Winsnes refer to as a synonym of *E. norvegica*. However, Fauchald (1992) described a neotype of *E. norvegica* with amber coloured aciculae and subacicular hooks, branchiae from setiger 7 to setiger 155 with up to seven filaments, hooks first present from setiger 42.

Since the species probably have been confused with *E. floridana* and *E. pennata* (Müller, 1776) its distribution is uncertain. However, it is certainly known from different places in the Atlantic.

Distribution

North-west Atlantic (New England); north-east Atlantic (Norway and Iceland to Morocco and south of the Canary Islands); 50–1200 m.

Eunice pennata (Müller, 1776)

Eunice pennata–Fauvel, 1923:400, figure 156H–O. Pettibone, 1963:242, figure 63E. Kirkegaard, 1983a:600, 1995:47. Winsnes, 1989:485, figures 3&4. Fauchald, 1992:263, figure 87G–P. Hartmann-Schröder, 1996:259, figure 116.

Material

Station 10132 (1), 1775 m, one specimen: 22×2 mm (anterior part). Tube covered with foraminifera.

Distribution

Atlantic (South Greenland to South Africa, New England and Bay of Fundy); Mediterranean; Indonesia; Antarctic; 5–3500 m.

Eunice vittata (Delle Chiaje, 1825)

Eunice vittata–Fauvel, 1923:404, figure 158H–N. Fauchald, 1992:337, figure 115A–J. Kirkegaard, 1995:47, 1988:43.

Material

Station 10122 (1), 195–210 m, three specimens: 20×1, 15×1, 5×1 mm (anterior parts).

Distribution

Atlantic (English Channel to South Africa; West Indies; Indian Ocean; Pacific (California, Japan); 10–600 m.

Family LUMBRINERIDAE Malmgren 1867

Lumbrineris fragilis Müller, 1776

Lumbrineris fragilis–Fauvel, 1923:430, figure 171K–L. Kirkegaard, 1980:88, 1983a:600, 1995:50. Pettibone, 1963: 262, figure 69. Hartmann-Schröder, 1996:264, figure 117.

Material

Station 10127 (1), 1105 m, one specimen: 5×1 mm (anterior part).

Distribution

Arctic; Atlantic (Iceland to West Africa, Hudson Bay to Virginia); Mediterranean; North Pacific (Bering Sea, Alaska, Japan); 15–4165 m.

Family CHAETOPTERIDAE Malmgren, 1827

Phyllochaetopterus socialis Claparede, 1868

Phyllochaetopterus socialis–Fauvel, 1927:84, figure 30A. Kirkegaard, 1959:28.

Material

Station 10122 (1), 210 m, one specimen: 6×0.5 mm.

Distribution

East Atlantic (Bay of Biscay, Santander, West Africa); Mediterranean; Falkland Islands; Indian Ocean (East Africa); Australia; 40–650 m.

Family MALDANIDAE McIntosh, 1885

Maldanella harai (Izuka, 1902)

Maldanella harai–Fauvel, 1927:186, figure 64I–N. Kirkegaard, 1956:72, 1980:92.

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Material

Station 10143 (1), 3820 m, two specimens: 30×8, 35×8 mm (anterior parts).

Distribution

North-east Atlantic; Bay of Bengal; Laccadive Sea; Japan; Kermadec Trench; Sea of Okhotsk; Java; 100–6720 m.

Family STERNASPIDAE Carus, 1863

Sternaspis scutata (Ranzani, 1817)

Sternaspis scutata–Fauvel 1927:216, figure 76A–G. Hartmann-Schröder 1996:479. Kirkegaard 1959:71, 1983:596, 1996:71.

Material

Station 10131 (1), 1320 m, one specimen: 12×6 mm.

Distribution

Arctic; Atlantic (Europe, Mediterranean, South Africa); Pacific (Japan, California, Australia, New Zealand); Indian Ocean (Sea of Bengal); 10–4000 m.

Family SABELLIDAE Malmgren, 1857

Potamilla torelli Malmgren, 1865

Potamilla torelli–Fauvel, 1927:310, figure 107M–S. Hartman-Schröder, 1996:544.

Material

Station 10141 (1), 3460 m, two specimens: 60×1, 85×1 mm (including crown), complete specimen.

Distribution

Arctic; Atlantic (Europe, West Africa, South Africa); Mediterranean; Indian Ocean (Mozambique, Madagascar); Pacific (Japan, New Caledonia); 20–3500 m.

CONCLUSIONS

Five of the stations with polychaetes were situated in the abyssal zone. At these stations the polychaetes were represented by five species, all known as typical abyssal species. Two of the species, *Macellicephala violacea* and *Bathyeliasona abyssicola*, belong to the subfamily Macellicephalinae, the species of which mostly belong to abyssal and bathyal depths. In the present investigation *B. abyssicola* was recorded from 4250–4850 m and *M. violacea* from 1320–3810 m. *Bathyeliosona abyssicola* is known from north-west Africa, the Bay of Biscay, and the Bering Sea. *Macellicephala violacea* is known from north-west Africa, western Norway, the Kara Sea, the Barent Sea, north-east Greenland to Kurile Kamchatka Trench and the Okhotsk Sea.

The remaining three species, *Laetmonice filicornis*, *Maldanella harai* and *Potamilla torelli* enter both the littoral and the bathyal zones and have a wider distribution in the oceans, and so are also found in the Indian Ocean and the Pacific.

Fifteen species were recorded from the bathyal zone off north-west Africa, ten of these are also known from the abyssal zone. Six of the species are known from both the abyssal and the bathyal zone, i.e. *Hyalinoecia robusta*, *Laetmonice filicornis*, *Aglaophamus elamellata*, *Sternaspis scutata*, *Glycera tesselata* and *Nothria conchilega* have a wide distribution.

Three of the bathyal species, *Sphaerodorum flavum*, *Lumbrineris fragilis* and *Macellicephala violacea* are distributed in the North Atlantic, the Arctic and in the North Pacific (21%). In the Bay of Biscay 23% of the bathyal species have a similar distribution (Kirkegaard, 1983a).

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