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ÇINAR M. — Ege University, Faculty of Fisheries, Department of Hydrobiology, Bornova, İzmir, 35100

DAĞLI E. — Ege University, Faculty of Fisheries, Department of Hydrobiology, Bornova, İzmir, 35100

ÇAĞLAR S. — Istanbul University, Faculty of Science, Department of Biology, Vezneciler, Istanbul

ALBAYRAK S. — Istanbul University, Faculty of Science, Department of Biology, Vezneciler, Istanbul

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Polychaetes from the northern part of the Sea of Marmara with the description of a new species of *Polydora* (Annelida: Polychaeta: Spionidae)*

M.E. ÇINAR[1,3], E. DAĞLI[1], S. ÇAĞLAR[2] and S. ALBAYRAK[2]

[1] Ege University, Faculty of Fisheries, Department of Hydrobiology, Bornova, İzmir, 35100, Turkey
[2] Istanbul University, Faculty of Science, Department of Biology, Vezneciler, Istanbul, Turkey

Corresponding author: melih.cinar@ege.edu.tr

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* *Polydora brunneopunctata* register <urn:lsid:zoobank.org:act:4E6CD75C-59D4-4593-82A7-D4DD0110A84C>

Abstract

Soft-bottom material collected from the northern part of the Sea of Marmara (off Küçükçekmece) included a total of 67 species belonging to 24 polychaete families. Three species (*Brania pusilla*, *Lysidice* cf. *margaritacea* and *Sabellaria spinulosa*) are new records for the Sea of Marmara. Three alien species (*Polydora cornuta*, *Prionospio pulchra* and *Pseudopolydora paucibranchiata*) were found at the shallow-water stations. Different polychaete assemblages occurred in the area and the mud percentage of sediment and salinity were the main factors related to their distribution. A new *Polydora* species, which is mainly characterized in having brownish pigmentation solely on the antero-dorsal sides of the body, and falcate major spines with only a bulge (anterior ones) or with a bulge and a small tooth, is described.

Keywords: Spionidae, *Polydora*, new species, soft substratum, Sea of Marmara, Turkey.

Introduction

Studies on polychaetes in the Sea of Marmara date back to the end of 1800s, when Colombo (1885) and Ostroumoff (1894; 1896) reported some species from the shallow- and deep-sea environments in the area, including the Çanakkale and İstanbul Straits. The first comprehesive studies on polychaetes were performed by Demir (1952) and Rullier (1963), who reported 47 and 130 species, respectively. According to the revisionary work of Çinar (2010), a total of 254 polychaete species were recorded from this region. Later, Çinar *et al.* (2011) found 198 polychaete species in different habitats and depths, of which 84 species were newly added to the faunal inventory, including four *Levinsenia* and one *Prosphaerosyllis* species new to science. Çinar *et al.* (2014) produced an annotated and updated polychaete checklist that comprised 391 species, 6 of which were pelagic.

Some stations sampled off Küçükçekmece in the northern part of the Sea of Marmara in June 2007 (Istanbul University project, T-770) yielded a species of *Polydora* characterized by distinctive anterior brownish spots and bars. This species had been noticed previously by the first author among benthic materials collected from the Beymelek Lagoon on the southern coast of Turkey (Levantine Sea). The Turkish specimens were determined to belong to a new species, *P. brunneopunctata*, following comparison with other species of *Polydora* worldwide.

Four genera (*Boccardia*, *Dipolydora*, *Polydora* and *Pseudopolydora*) of Spionidae have a specialized/modified segment in chaetiger 5. A total of 20 species belonging to these genera are reported from the Mediterranean Sea [author's database (MEÇ)], and 11 species belonging to 3 genera (*Dipolydora*, *Polydora*, *Pseudopolydora*) occur along the coasts of Turkey (Çinar *et al.* 2014). Among those recorded from the coasts of Turkey, five species, namely *Dipolydora armata* (Langerhans, 1880), *D. coeca* (Örsted, 1843), *D. flava* (Claparède, 1870), *Polydora ciliata* (Johnston, 1838) and *P. hoplura* (Claparède, 1869), bore into calcerous substrate such as limestones or bivalves. The remainder, including *D. caulleryi* (Mesnil, 1897), *P. agassizi* Claparède, 1869, *P. cornuta* Bosc, 1802, *Pseudopolydora antennata* (Claparède, 1869), *Ps. paucibranchiata* (Okuda, 1937) and *Ps. pulchra* (Carazzi, 1893) are mud-dwellers, forming muddy tubes in the soft sediments. In the Sea of Marmara, 8 polydorid species belonging to two genera (*Polydora* and *Pseudopolydora*) were reported (Çinar *et al.* 2014) prior to the new species discovery.

The aims of the present paper are to analyze overall polychaete distribution assemblage patterns and their relation with environmental variables, and to describe a new species of *Polydora* from the Sea of Marmara.

Materials and Methods

Benthic samples were collected at 8 stations between 4 and 30 m depths off Küçükçekmece (northern Sea of

Marmara) in June 2007 by using a van Veen grab (sampling area: 0.1 m^2) (Fig. 1). Three replicates were taken at each station. The material was sieved through a 1 mm mesh and fixed in 10% formalin-seawater solution. Polychaetes were sorted in the laboratory and preserved in 70% ethanol. Polychaetes were identified to the lowest possible taxonomic rank and then counted.

During a TUBITAK Project (Number: 104Y065) undertaken in October 2005, some benthic materials were taken from the Beymelek Lagoon, which is located in the northern part of the Levantine Sea (near Demre, Antalya), by using a standard Van Veen grab. Among the material, some specimens belonging to the new *Polydora* species were found also.

The material is deposited at the Museum of Faculty of Fisheries of Ege University (ESFM).

At stations off Küçükçekmece, some physico-chemical characteristics of sediment and waters were analysed (Table 1). For the analysis of TOC (total organic carbon) content of the sediment (Loring & Rantala, 1992) and mud percentage (Folk, 1974), an additional sediment sample was taken by grab and kept under +4°C until analysis. Seawater just above the bottom was taken by a 3 liter Ruttner bottle to measure the salinity, temperature and dissolved oxygen.

The spatial distribution of the polychaete assemblages was analysed using both principal coordinate analysis (PCO) and cluster analysis (group average method) based on Bray-Curtis similarity of log (x+1) transformed data (Clarke, 1993).

Results and Discussion

Physico-Chemical Analysis

The lowest dissolved oxygen concentrations (<6 $mg.l^{-1}$), but the highest salinity (>36 ppt) and total organic carbon concentrations (>67 $mg.g^{-1}$) were measured at the deepest station (30 m) (Table 1). The lowest mud percentage (3.3%) in sediment was at station 1, the highest (93.3%) was at station 3. The sea-water temperature was low at 20-30 m depths (minimum 11.9 °C), but high (maximum 23 °C) in shallower water (4-10 m).

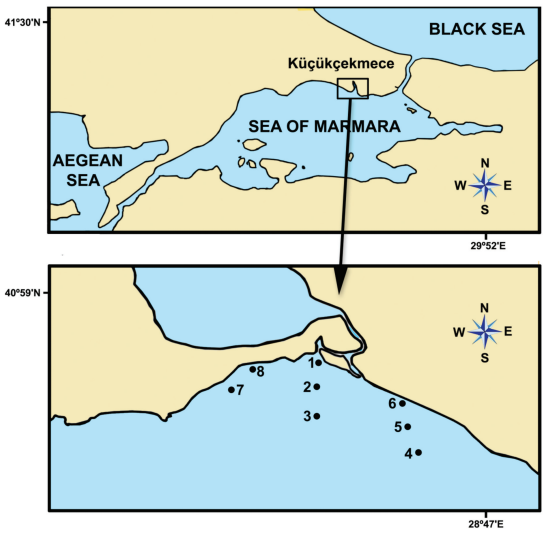

Fig. 1: Map of the investigated area with the location of stations.

Faunistic Analysis

Polychaete assemblages at stations

A total of 2034 polychaete specimens belonging to 67 species and 24 families were found at stations in the northern part of the Sea of Marmara (Table 2). *Brania pusilla*, *Lysidice* cf. *margaritacea* and *Sabellaria spinulosa* are new records for the Sea of Marmara. A *Polydora* species, which is described below, was found to be new to science. The most speciose families in the area were Syllidae (11

Table 1. Depth and physico-chemical variables recorded at sampling stations in the northern part of the Sea of Marmara (DO: Dissolved oxygen, TOC: Total organic carbon in sediment).

Stations	Coordinates	Depth (m)	Temperature (°C)	Salinity (ppt)	DO ($mg·l^{-1}$)	TOC ($mg·g^{-1}$)	Mud percentage (%)
1	40.978889° 28.765833°	4	23	20.4	12.8	1.9	3.3
2	40.977500° 28.765833°	10	21.8	21.2	12.1	5.7	62.4
3	40.975000° 28.766389°	20	12.8	29	8.3	21.6	93.3
4	40.970278° 28.779722°	30	15	36.4	5.9	24.4	67.3
5	40.971389° 28.779167°	20	11.9	28.4	8.1	10.4	44.2
6	40.973056° 28.778611°	10	20.7	22.7	11.4	5.4	6.6
7	40.975000° 28.751389°	20	13.5	26.9	8.5	14.4	32.7
8	40.977222° 28.753333°	10	18.3	22.3	12.2	20	68.6

Table 2. The polychaete species found at stations in the northern part of the Sea of Marmara, with the highest densities (ind.m^{-2}) in replicates.* New records for the Sea of Marmara, **Alien species.

Families/Species	STATIONS							
	1	2	3	4	5	6	7	8
POLYNOIDAE								
Harmothoe sp.	-	-	-	-	-	20	-	-
Malmgreniella sp.	-	-	-	-	-	20	-	-
PHOLOIDAE								
Pholoe inornata Johnston, 1839	10	-	-	-	10	960	-	-
PHYLLODOCIDAE								
Eulalia clavigera (Audouin & Milne Edwards, 1834)	-	-	-	-	-	10	-	-
Eumida sanguinea (Örsted, 1843)	-	-	-	-	-	20	-	-
Mysta picta (Quatrefages, 1865)	-	-	-	-	-	10	-	-
Nereiphylla rubiginosa (Saint-Joseph, 1888)	-	-	-	-	-	20	-	10
Phyllodoce sp.	-	-	-	-	-	20	-	-
Pterocirrus macroceros (Grube, 1860)	-	-	-	-	-	10	-	-
HESIONIDAE								
Oxydromus pallidus (Claparède, 1864)	-	-	-	-	-	10	-	-
PILARGIDAE								
Sigambra tentaculata (Treadwell, 1941)	10	10	-	-	760	1440	-	-
SYLLIDAE								
**Brania pusilla* (Dujardin, 1851)	-	-	-	-	-	10	-	-
Exogone verugera (Claparède, 1868)	-	-	-	-	-	10	-	-
Eusyllis lamelligera Marion & Bobretzky, 1875	-	-	-	-	-	10	-	-
Haplosyllis spongicola (Grube, 1855)	-	-	-	-	-	130	-	-
Sphaerosyllis marmarensis Çinar, Dagli & Açik, 2011	-	-	-	-	-	10	-	-
Sphaerosyllis pirifera Claparède, 1868	-	-	-	-	-	80	-	-
Sphaerosyllis thomasi San Martín, 1984	-	-	-	-	-	10	-	-
Syllis armillaris (O.F. Müller, 1776)	-	-	-	-	10	10	-	-
Syllis garciai (Campoy, 1982)	-	-	-	-	-	10	-	-
Syllis gracilis Grube, 1840	-	-	-	-	-	160	10	-
Syllis hyalina Grube, 1863	-	-	-	-	-	10	-	-
NEREIDIDAE								
Alitta succinea (Frey & Leuckart, 1847)	-	-	-	-	-	-	-	10
Composetia sp.	-	-	-	-	-	10	-	-
Nereis zonata Malmgren, 1867	-	-	-	-	-	40	-	-
Platynereis dumerilii (Audouin & Milne Edwards, 1833)	-	-	-	-	-	10	-	-
NEPTHYIDAE								
Nephtys hombergii Savigny in Lamarck, 1818	-	30	10	-	10	-	20	260
GLYCERIDAE								
Glycera alba (O.F. Müller, 1776)	-	-	-	-	-	10	-	-
Glycera fallax Quatrefages, 1850	-	-	-	-	-	1300	-	-
EUNICIDAE								
Eunice vittata (Delle Chiaje, 1828)	-	-	-	-	-	50	-	-
Eunice sp.	-	-	-	-	10	10	-	-
Leodice cf. *harassii* (Audouin & Milne Edwards, 1834)	-	-	-	-	10	-	-	-
**Lysidice* cf. *margaritacea* Claparède, 1868	-	-	-	-	-	10	-	-
Lysidice ninetta (Audouin & Milne-Edwards, 1833)	10	-	-	-	-	50	-	-
Lysidice unicornis (Grube, 1840)	-	-	-	-	-	10	-	-
DORVILLEIDAE								
Dorvillea rubrovittata (Grube, 1855)	-	-	-	-	-	50	-	-
Protodorvillea kefersteini (McIntosh, 1869)	-	-	-	-	40	10	-	-
OENONIDAE								
Drilonereis filum (Claparède, 1868)	-	40	-	-	-	-	-	20
ORBINIIDAE								
Scoloplos armiger (O. F. Muller, 1776)	10	-	-	-	-	10	-	-
PARAONIDAE								
Paradoneis lyra (Southern, 1914)	-	-	-	-	10	10	-	-

(continued)

Table 2 *(continued)*

Families/Species	STATIONS							
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
SPIONIDAE								
Aonides oxycephala (Sars, 1862)	-	-	-	-	520	140	-	-
Dipolydora coeca (Örsted, 1843)	-	-	-	-	10	10	10	-
Dipolydora flava (Claparède, 1870)	-	-	-	-	-	-	10	-
Malacoceros fuliginosus (Claparède, 1868)	-	-	-	20	-	-	-	-
Polydora brunneopunctata sp. nov.	-	-	-	-	-	10	90	10
***Polydora cornuta* Bosc, 1802	-	10	-	-	-	-	40	10
Prionospio maciolekae Dagli & Çinar, 2011	-	-	-	-	190	10	-	-
***Prionospio pulchra* Imajima, 1990	-	-	-	-	-	-	10	10
***Pseudopolydora paucibranchiata* (Okuda, 1937)	-	-	-	-	-	10	-	10
Scolelepis tridentata (Southern, 1914)	-	-	-	-	-	10	-	-
Spio decoratus Bobretzky, 1870	-	-	-	-	10	-	-	10
MAGELONIDAE								
Magelona alleni Wilson, 1958	-	-	-	-	10	-	-	-
CAPITELLIDAE								
Capitella teleta Blake, Grassle, Eckelbarger, 2009	-	-	10	-	20	-	20	10
Heteromastus filiformis (Claparède, 1864)	-	-	-	10	1550	790	30	20
CIRRATULIDAE								
Chaetozone sp.	-	-	-	-	20	-	-	-
Cirriformia sp.	-	-	-	-	10	10	-	-
Dodecaceria sp.	-	-	-	-	-	10	10	-
OWENIIDAE								
Owenia fusiformis Delle Chiaje, 1844	-	120	70	-	100	40	160	20
AMPHARETIDAE								
Amphicteis gunneri (M. Sars, 1835)	-	-	-	-	-	10	-	-
Melinna palmata Grube, 1870	-	30	-	-	20	80	-	-
SABELLARIIDAE								
**Sabellaria spinulosa* Leuckart, 1849	-	-	-	-	-	10	-	-
PECTINARIIDAE								
Lagis koreni Malmgren, 1866	-	-	-	-	-	60	-	-
TEREBELLIDAE								
Polycirrus sp.	-	-	-	-	-	20	-	-
SERPULIDAE								
Serpula concharum Langerhans, 1880	-	-	-	-	-	10	-	-
Spirobranchus triqueter (Linnaeus, 1758)	-	-	-	-	10	2470	20	10
Vermiliopsis infundibulum (Philippi, 1844)	-	-	-	-	-	10	-	-
Vermiliopsis striaticeps (Grube, 1862)	-	-	-	-	-	30	-	-

species) and Spionidae (11 species), whereas Serpulidae and Capitellidae had the highest number of individuals (23.5% and 23.2% of total number of speciemens, respectively). Among the serpulids, *Spirobranchus triqueter* formed a dense population (max. 2470 ind.m^{-2}) at station 6, where the sea-bottom was covered by large shell fragments. The other species with high number of individuals were *Heteromastus filiformis* (1550 ind.m^{-2} at station 5) and *Sigambra tentaculata* (1440 ind.m^{-2} at station 6).

Three alien spionids (*Polydora cornuta*, *Prionospio pulchra*, *Pseudopolydora paucibranchiata*) were found at stations 2, 6, 7 and 8. The densities of these species were low at most stations, but *P. cornuta* formed a relatively dense population (40 ind.m^{-2}) at station 7. These species had been reported previously from the Sea of Marmara (see Çinar *et al.*, 2011; 2014).

Four polychaete assemblages were determined in the area (Fig. 2). Stations 2, 3, 7 and 8 formed group 1, and stations 5 and 6 constituted group 2, joining each other with at least 30% similarity. The shallowest (station 1) and deepest (station 4) stations in the area were located at remote locations in the PCO graph. The first two axes of the PCO explained 30.1 and 22.6 % of the variability of assemblages, respectively. Vectors superimposed on the PCO plot indicated the relationships between environmental variables and patterns of similarity of the polychaete assemblages (Figure 2). High mud percentage in sediment was the main factor related to group 1, which had high dominances of *Owenia fusiformis* and *Nepthys hombergii*. The two layered system of the Sea of Marmara, which includes the Black Sea (upper layer, polyhaline water) and the Mediterranean waters (lower layer, euhaline water), with a halocline generally de-

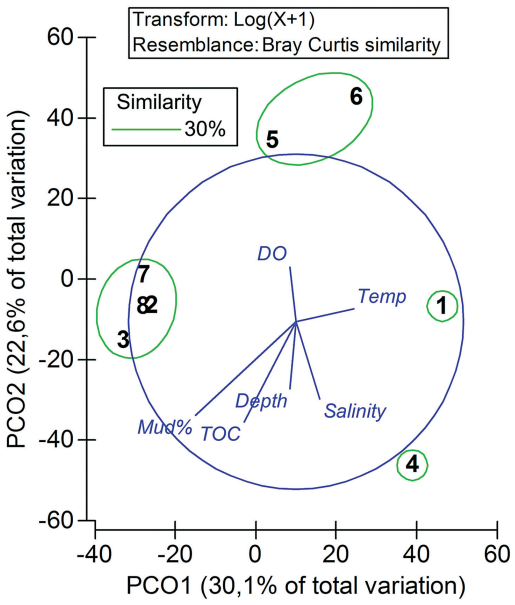

Fig. 2: PCO ordination plot of the sampled stations based on polychaete abundance data (sum of three replicates) and the correlation of environmental variables with PCO axes, represented by superimposed vectors. The similarity among stations was determined using the Bray-Curtis similarity index and was secondarily overimposed on the PCO plot.

veloping at 20-25 m depth, has a great influence on the benthic community structures (Çinar, 2011). The PCO analysis also detected salinity as a main factor related to polychaete assemblages formed in the two layers, and the shallowest and deepest stations had a weak similarity with the other stations of moderate depth (10-20 m).

Description of a new Polydora species

Family Spionidae Grube, 1850
Genus *Polydora* Bosc, 1802
Polydora brunneopunctata sp. nov.
(Figures 3-6)

Material examined. Holotype. ESFM–POL/2007–38, June 2007, Sea of Marmara, station 7, 20 m, muddy sand. **Paratypes.** ESFM–POL/2007–39, June 2007, Sea of Marmara, station 7, 20 m, muddy sand, 9 specimens; ESFM–POL/2007–40, June 2007, Sea of Marmara, station 8, 10 m, sandy mud, 1 specimen; ESFM–POL/2007–41, June 2007, Sea of Marmara, station 6, 10 m, muddy sand, 1 specimen.
Additional material examined: ESFM–POL/05–1497, 2 October 2005, Beymelek Lagoon, Levantine Sea, station K43 (salinity: 14.4 ppt), 36º15′43″ N–30º04′07″ E, 0.1 m, mud, 4 specimens.

Description. Based on holotype with variation of paratypes included; all specimens posteriorly incomplete. Largest specimen 11.48 mm long, 1.15 mm wide, with 39 chaetigers. Body slightly flattened dorso-ventrally, stouter in anterior part, gradually decreasing in width towards posterior end. All fixed specimens pale yellowish, with brownish pigmentation present on antero-dorso-lateral sides of prostomium; two large brown spots on dorso-lateral sides of peristomium; small brownish bars on posterior margins of chaetigers 1–3 (Figs. 3A, C; 5A, C). Palps elongate, without discernable pigmentation, extending back to chaetiger 8 (to 25 in some specimens), with a distinct ciliated groove; brownish lines sometimes present along both sides of groove (Figs. 3A, 5C).

Prostomium expanded, weakly incised anteriorly (Figs. 3A, B; 5A); slightly enlarged at level of eyes; with two pairs of black eyes in close trapezoidal arrangement; eyes small, rounded, almost similar in size; caruncle elongated, extending to middle part of chaetiger 3; occipital antenna absent (Figs. 3A, C; 5A).

Chaetiger 1 with small, digitiform notopodial lamellae, without notochaetae; neuropodial lamellae well developed, with only uni-limbate capillaries (Figs. 3A, C). Notochaetae of chaetigers, except for chaetiger 5, with uni-limbate capillary chaetae, arranged in two rows (Figs. 3A, 4B)*;* number of chaetae per fascicle gradually diminishing towards posterior chaetigers; modified chaetae absent in posterior notopodia. Neurochaetae of chaetigers 1-4 and 6, with uni- and bi-limbate capillary chaetae, arranged in two rows (Figs. 4B, C). Capillaries in each anterior chaetiger numbering 10–13 (10–15 in paratypes); those in each posterior chaetiger numbering 6–8 (5–9 in paratypes); capillaries on posterior chaetigers thinner and shorter than those on anterior ones (Figs. 4B, C). After chaetiger 6, neuropodia with hooded hooks only (Fig. 3C); without accompanying capillaries. Hooks bidentate (Fig. 4D), with a distinct constriction on shaft (Fig. 4D); main fang at slightly acute angle to shaft and a wide angle between proximal and distal tooth, bristles absent on apical end of hood. Hooks 35 µm long numbering 8 (6–10 in paratypes) on chaetiger 7; 37.5 µm long numbering 12 (12–15 in paratypes) on chaetiger 16; 30 µm long numbering 9 (7–11 in paratypes) on chaetiger 38.

Chaetiger 5 modified, approximately twice as large as chaetigers 4 and 6, with slightly curved row of 7 exposed major spines (holotype) and two (four in some paratypes) developing spines (6–8 exposed major spines and 2–4 developing spines in paratypes), alternating with 5–6 pennoned companion chaetae (Fig. 3C); with 3–4 antero-dorsal superior bi-limbate capillaries (Figs. 3C; 4C); and 5–6 ventral uni-limbate capillaries (Figs. 3C, 4B). Major spines falcate; spines located anteriorly with small laterally bulge or protuberance; three or four spines located posteriorly with both a bulge and lateral tooth; developing spines simple falcate without accessory tooth or protuberance (Fig. 4A).

Branchiae present from chaetiger 7, length of anterior branchiae almost same in size, gradually decreasing in size towards posterior end (Fig. 3A). Branchiae flattened, free

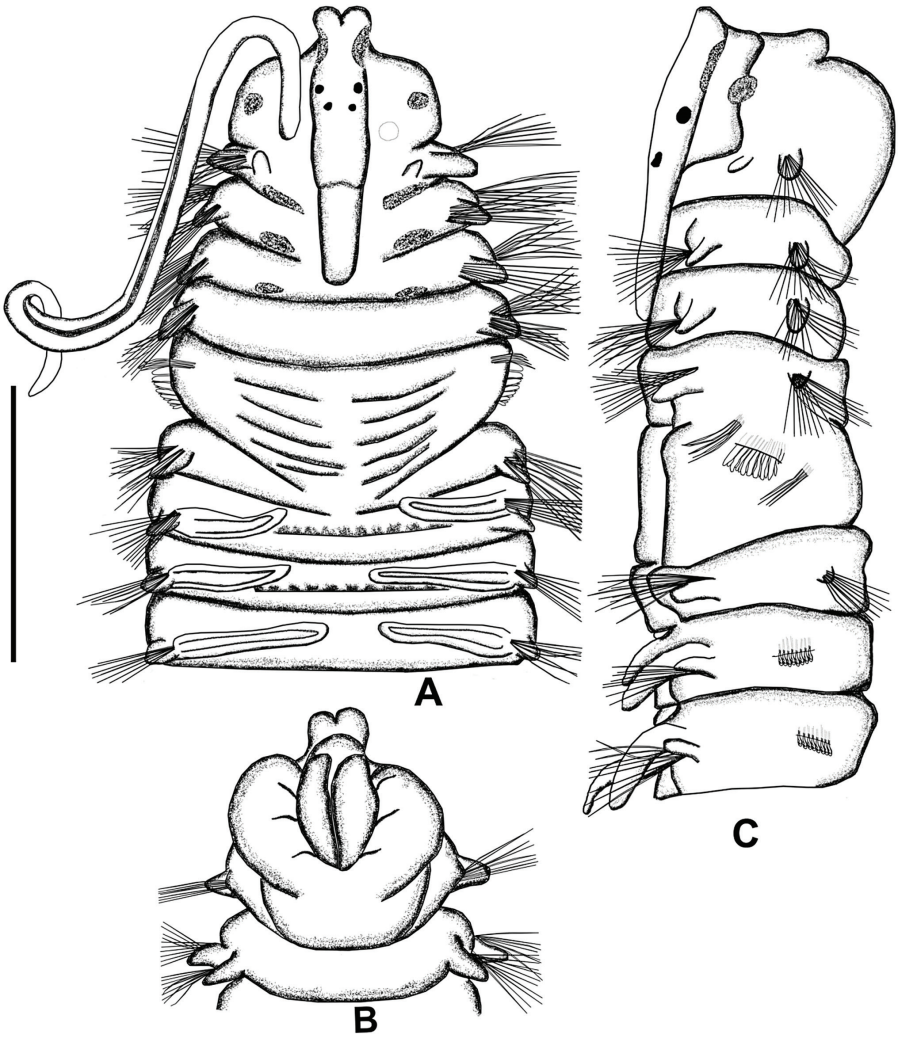

Fig. 3: *Polydora brunneopunctata* sp. nov. A, anterior end, dorsal view, paratype (ESFM–POL/2007–39); B, anterior end, ventral view, paratype (ESFM–POL/05–39); C, anterior end, lateral view. Scale: A = 1mm; B = 0.62mm; C = 0.9 mm.

from notopodial postchaetal lamellae. Nototrochs from chaetiger 7 backwards (Fig. 3A). Pygidium unknown.

Glandular pouches from chaetiger 7, larger in chaetigers 8–9 and diminishing in size in posterior segments. Gizzard-like structure in digestive tract absent.

Remarks. *Polydora brunneopunctata* sp. nov. is distinguished from other species of the genus in having a characteristic brownish pigmentation on the anterior part of the body and no pigmentation on palps. Different pigmentation patterns were previously reported in the following species; *Polydora agassizi* Claparède, 1869; *Polydora aggregata* Blake, 1969; *Polydora neocaeca* Williams & Radashevsky, 1999; *Polydora haswelli* Blake & Kudenov, 1978; and *Polydora fusca* Radashevsky & Hsieh, 2000.

Polydora neocaeca was originally described from the Rhode Island (Atlantic coast of North America) by Williams & Radashevsky (1999). This species is similar to *P. brunneopunctata* sp. nov. with regards to the pigmentation on the anterior part of the body, and shape of the prostomium. However, these two species differ from each other in the following characters; 1) palps (the palps of *P. neocaeca* have 7 distinct black bars, those of *P. brunneopunctata* sp. nov. lack transverse pigmentation); 2) the size of the caruncle (the caruncle of *P. neocaeca* extends to the posterior end of chaetiger 3, whereas *P. brunneopunctata* sp. nov. has a caruncle extending to the middle of chaetiger 3); 3) the number and shape of major spines on chaetiger 5 (*P. neocaeca* has 5 exposed major spines and two developing spines, spines with lateral obliquely curved flange, whereas *P. brunneopunctata* sp. nov. has 7 exposed major spines and two (four in some specimens) developing spines, anterior spines

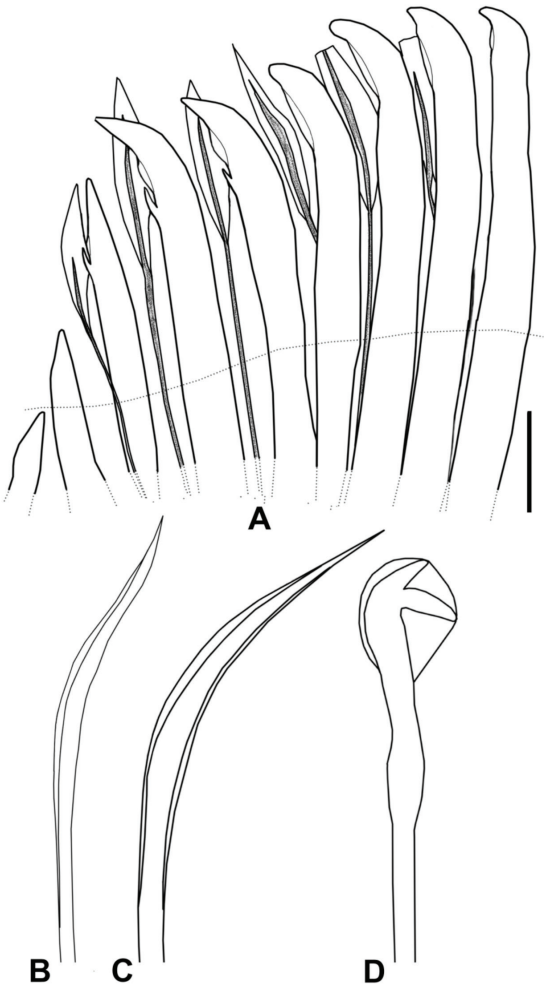

Fig. 4: *Polydora brunneopunctata* sp. nov. A, Major falcate spines and pennoned companion chaetae of chaetiger 5, paratype (ESFM–POL/2007–40); B, ventral uni-limbate capillary chaeta of chaetiger 5; C, dorsal superior bi-limbate capillary chaeta of chaetiger 5; D, neuropodial bidentate hooded hook of chaetiger 10 (ESFM–POL/05–40). Scale: A = 20 µm; B = 23 µm; C = 15 µm; D = 13 µm.

with a small laterally bulge or protuberance and posterior spines with a small laterally bulge and a lateral tooth); 4) habitats (*P. neocaeca* bores into calcareous substrata in euhaline waters, *P. brunneopunctata* sp. nov. lives in soft substrata in brackish waters).

Polydora agassizi was originally described from the Gulf of Naples by Claparède (1869) and was subsequently synonymized with *Polydora ciliata* (Johnston 1838) by Carazzi (1893). This species was re-surrected by Radashevsky & Hsieh (2000), based on specimens collected from Kinmen Island, the northeastern Pacific Ocean, and then was re-described by Dağlı *et al.* (2011), based on the specimens collected from the Aegean Sea, which is close to the type locality. *Polydora agassizi* is similar to *P. brunneopunctata* sp. nov., but differs from it in having black spots on palps (without spots in *P. brunneopunctata* sp. nov.); a caruncle extending to the posterior margin of chaetiger 3 (versus middle of chaetiger 3 in *P. brunneopunctata* sp. nov.); and noto- and neurocapillary chaetae arranged in one row (arranged in two rows in *P. brunneopunctata* sp. nov.).

Polydora fusca, which was originally described from the Kinman Island off China, constructs mud tubes on muddy bottoms in brackish-water environments (Radashevsky & Hsieh 2000). This species differs from *P. brunneopunctata* sp. nov. in having a blunt prostomium (distinctly incised in *P. brunneopunctata* sp. nov.), no eyes (two pairs of black eyes in *P. brunneopunctata* sp. nov.), a caruncle extending to the posterior margin of chaetiger 2 (versus middle of chaetiger 3 in *P. brunneopunctata* sp. nov.), and a finger-like median antenna (antenna absent in *P. brunneopunctata* sp. nov.).

Polydora aggregata, originally described from larvae collected in Maine (Lamoine Beach State Park), USA, by Blake (1969) and whose adult morphology was then described by Blake (1971), shows similar morphological characters with *Polydora brunneopunctata* sp. nov., but differs from it in having a dark-brown pigmentation pattern of varying intensity on the peristomium and the first six to eight chaetigers (only brownish pigmentation present on prostomium and the first three chaetigers in *P. brunneopunctata* sp. nov.); a caruncle extending to the posterior margin of chaetiger 2 (versus middle of chaetiger 3 in *P. brunneopunctata* sp. nov.); and a different habitat preference, occurring in dense mats on and between rocks, exposed at low tide (*P. brunneopunctata* sp. nov. inhabits muddy bottoms in 10-20 m depth).

Polydora brunneopunctata sp. nov. is closely related to *P. haswelli*, which was originally described from the southeastern Australia by Blake & Kudenov (1978), but differs from it in having the following characters; 1) pigmentation on palps (no distinct pigment in *P. brunneopunctata* sp. nov., distinctly pigmented in *P. haswelli*); 2) the shape of the anterior margin of the prostomium (weakly incised in *P. brunneopunctata* sp. nov., distinctly incised in *P. haswelli*); 3) the morphology of capillary chaetae (uni- or bi-limbate capillaries arranged in one or two rows in *P. brunneopunctata* sp. nov., only uni-limbate capillaries in one row in *P. haswelli*); 4) eyes (all specimens with two pairs of black eyes in *P. brunneopunctata* sp. nov., with or without subcuticular eyes in *P. haswelli*); and 5) the shape of the major spines on chaetiger 5 (falcate, anterior in a row with small laterally bulge or protuberance; in posterior row with an additional lateral tooth resembling narrow flange in *P. brunneopunctata* sp. nov. versus slightly falcate with two accessory structures- one a prominent accessory tooth, the second a low flange located just distal to tooth- in *P. haswelli*).

Polydora brunneopunctata sp. nov. is also similar to *Polydora calcarea* (Templeton 1836; as redescribed by

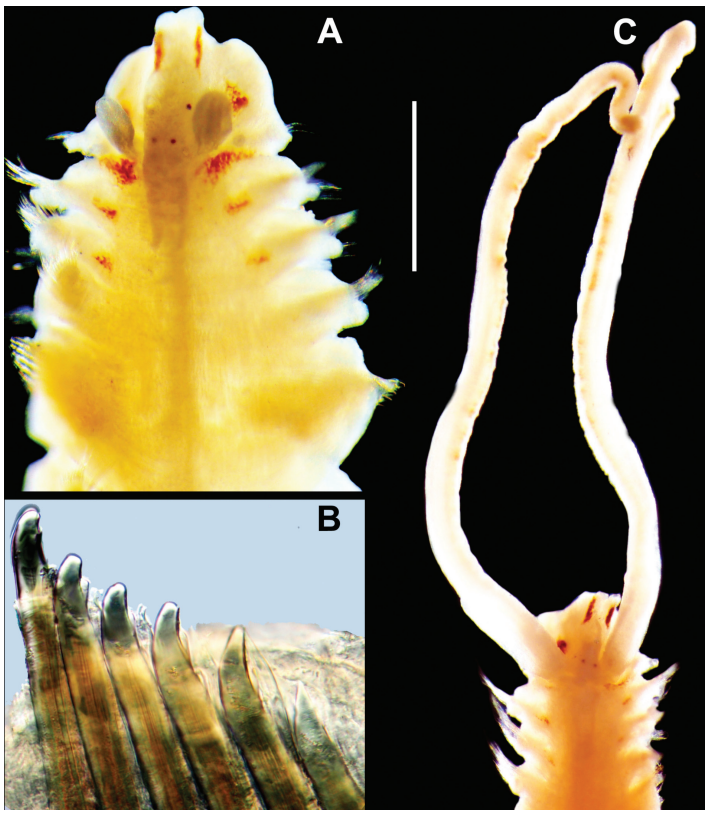

Fig. 5: *Polydora brunneopunctata* sp. nov. A, anterior end, dorsal view, paratype (ESFM–POL/2007–39); B, major falcate spines and pennoned companion chaetae of chaetiger 5, paratype (ESFM–POL/2007–39); C, anterior end, dorsal view with palps, paratype (ESFM–POL/2007–39). Scale: A = 0.5mm; B =0.69mm; C = 28 µm.

Radashevsky and Pankova (2006) from the Sea of Japan), *Polydora carinhosa* Radashevsky, Lana & Nalesso 2006 and *Polydora rickettsi* Woodwick 1961 in having distinct colour pigmentation on the body surface. However, these species differ considerably from each other in the shape of the prostomium, the length of the caruncle, the number of eyes, the presence/absence of the median antenna and the habitat preferences. *Polydora calcarea* has a prostomium distinctly incised on the anterior margin and a caruncle extending to the posterior margin of chaetiger 2, and bores into coralline algae, shells of barnacles and various gastropod and bivalve molluscs (Radashevsky and Pankova, 2006). *Polydora carinhosa* has an anteriorly rounded prostomium, one pair of black eyes, and bores into shells of the oysters *Crassostrea rhizophorae* (Guilding 1828) and *Crassostrea gigas* (Thunberg 1793). *Polydora rickettsi* has an rounded anteriorly prostomium, occasionally with shallow incision, a caruncle extending until the end of chaetiger 4, and is a borer of various calcareous substrates.

Habitat. *Polydora brunneopunctata* was found in sandy mud bottoms in brackish-waters of the Sea of Marmara and Levantine Sea, ranging from 14.4 (Levantine Sea) to 26.9 (Sea of Marmara) ppt. The highest population density (90 individuals.m^{-2}) of this species was found at station 7 at 20 m depth in the Sea of Marmara.

Distribution. Sea of Marmara and Levantine Sea.

Etymology. This species is named for the brownish pigmentations on the prostomium, peristomium and first three chaetigers in fixed specimens.

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