

Short communication

First record of *Polydora cornuta* Bosc, 1802 (Polychaeta: Spionidae) from the Sea of Marmara, Turkey basin

Ertan Dağlı* and Zeki Ergen

Department of Hydrobiology, Faculty of Fisheries, Ege University, 35100 Bornova-İzmir, Turkey

*Corresponding author

E-mail: ertan.dagli@ege.edu.tr

Received: 24 December 2007 / Accepted: 27 March 2008 / Published online: 2 July 2008

Abstract

The present study reports the first occurrence of an alien spionid polychaete *Polydora cornuta* Bosc, 1802, in Izmit Bay, Sea of Marmara, Turkey. A dense population of *P. cornuta* (up to 170 ind.m⁻²) found at 7 sampling stations in the bay on 18 August 2006. Our findings show that currently this alien polychaete is a key species of polluted soft bottom benthic assemblages in Izmit Bay.

Key words: *Polydora cornuta*, Spionidae, alien species, polychaete, Sea of Marmara, Turkey

The Turkish marine coastal biota is susceptible to invasion by ship-transported aliens due to the high volume of maritime traffic through the Dardanel and Bosphorus straits. Also, the proximity of Turkey to the Suez Canal has resulted in large number of Lessepsian aliens, especially along its Levantine coast. Previous studies along the Turkish coast have reported a total of 37 alien polychaete species, 13 of which are of questionable status (Çinar et al. 2005b; Çinar 2006). Three of these species are members of the family Spionidae. *Streblospio gynobranchiata* Rice & Levin, 1998 and *Polydora cornuta* Bosc, 1802 probably arrived in the Mediterranean with shipping throughout the Strait of Gibraltar, and *Prionospio saccifera* Mackie & Hartley, 1990 has probably entered the Mediterranean via the Suez Canal (Çinar et al. 2005b).

Polydora cornuta was originally described from Charleston Harbor, South Carolina, and was subsequently reported from the Atlantic Ocean (U.S.A., Mexico, Argentina and Europe) and Pacific Ocean (Australia, China, Taiwan and Korea) (Çinar et al. 2005a). Its origin appears to be enigmatic, as the species is nowadays cosmopolitan. The first record of *P. cornuta* in the Mediterranean Sea was reported from the polluted sediments of Valencia Harbour (Tena et

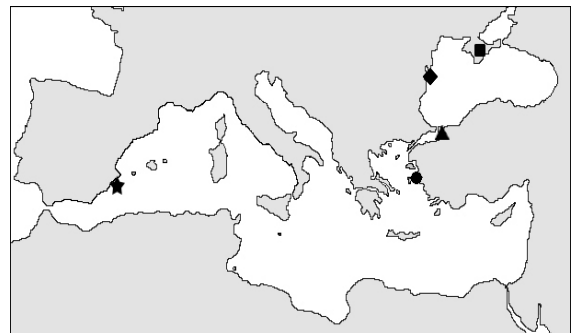


Figure 1. Records of *Polydora cornuta* in the Mediterranean and Black Seas (★Tena et al. 1991; ● Çinar et al. 2005a; ◆Radashevsky 2005; ■ Boltachova and Lisitskaya 2007; ▲ Present study). See Annex 1 for details.

al. 1991). Recently, Çinar et al. (2005a) recorded this species from Izmir Bay, home of one of the biggest commercial harbours in Turkey. *Polydora cornuta* is known from Costanta, on the Romanian coast of the Black Sea (Radashevsky 2005), and the Crimea (Boltachova and Lisitskaya 2007) (Figure 1). This study reports the occurrence of *P. cornuta* in the Marmara Sea and new locality for distribution of the species in the Mediterranean Sea.

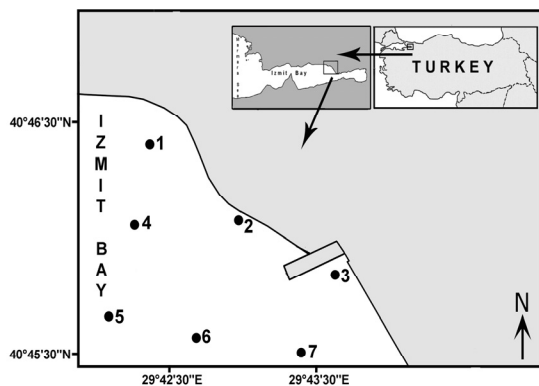


Figure 2. The map showing of sampling sites (see Annex 1 for details).

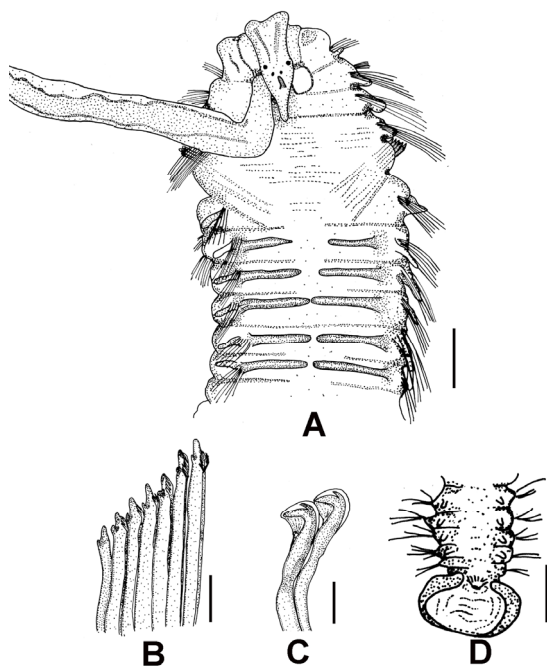


Figure 3. *Polydora cornuta*. A. Anterior end, dorsal view ; B major spines on chaetiger 5; C Hooded hooks on middle chaetigers; D disc-like pygidium. Scale bars: a: 1 mm, b-c: 50 μ m, d: 250 μ m.

Seven stations in Izmit Bay at the depths of 3–10 meters were sampled with a van Veen grab having sampling area 0.1 m^{-2} on 18 August 2006 (Figure 2, Annex 1). The samples were sieved through 0.5 mm mesh and the retained material preserved in 4% formaldehyde solution in sea water. In the laboratory, samples were sorted under a stereomicroscope, and preserved in 70% ethanol. Date, coordinates, depth (meters), biotope structure and number of individuals collected at the stations are given in Annex 1. The samples comprise few other opportunistic species, such as *Capitella capitata* (Fabricius, 1780), *Neanthes caudata* (Delle Chiaje, 1828), *Ophiodromus pallidus* (Claparède, 1864) and *Malacoceros fuliginosus* (Claparède, 1868), which indicate polluted environments and were represented by a small number of individuals. Our findings show *P. cornuta* is a key species of polluted soft bottom benthic assemblages in Izmit Bay. Its population density varied among stations from 30 ind.m^{-2} (Station 2) to 170 ind.m^{-2} (Station 4) (Annex 1), and it accounted for more than 50% of total polychaete and faunal population at stations 4 (52%) and 6 (51%).

It can be concluded at this stage that *P. cornuta* is a dominant opportunistic species on the highly polluted sediments of Izmit. Morphological characteristics of the specimens of *P. cornuta* collected from the Marmara Sea (Figure 3) are similar to those sampled from Izmir (Çinar et al. 2005a), but differ somewhat from the materials studied by Radashevsky (2005).

Acknowledgements

We thank the anonymous reviewers for comments on earlier version of this paper. The authors also thank the colleagues at the Department of Marine Biology, Fisheries Faculty, Ege University for their help in collecting and sorting the benthic material.

References

- Boltachova NA, Lisitskaya EV (2007) About species of Polydora (Polychaeta: Spionidae) from the Balaklava bay (the Black Sea). *Morskoi ekologichnii Zhurnal* 6: 33-35
- Çinar ME (2006) Serpulid species (Polychaeta: Serpulidae) from the Levantine coast of Turkey (eastern Mediterranean) with special emphasis on alien species. *Aquatic Invasions* 1: 223-240, <http://dx.doi.org/10.3391/ai.2006.1.4.6>
- Çinar ME, Ergen Z, Dağlı E, Petersen, ME (2005a) Alien species of spionid polychaetes (*Streblospio gynobranchiata* and *Polydora cornuta*) in Izmir Bay, eastern Mediterranean. *Journal of the Marine Biological Associations of the United Kingdom* 85: 821-827, <http://dx.doi.org/10.1017/S0025315405011768>

First record of *Polydora cornuta*

Çinar ME, Bilecenoglu M, Öztürk B, Katagan T, Aysel V (2005b) Alien species on the coasts of Turkey. *Mediterranean Marine Science* 6: 119-146
 Radashevsky VI (2005) On adult and larval morphology of *Polydora cornuta* Bosc, 1802 (Annelida: Spionidae). *Zootaxa* 1064: 1-24

Tena J, Capaccioni-Azzati R, Porras R, Torres-Gavilá FJ (1991) Cuatro especies de poliquetos nuevas para las costas Mediterráneas en los sedimentos del antepuerto de Valencia. *Miscellánia Zoològica* 15: 29-41

Annex 1. Records of *Polydora cornuta* in the Mediterranean and Black Seas.

Location (station)	Record coordinates		Record date	Biotope	Depth	Abundance, ind.m ⁻²	Reference
	Latitude	Longitude					
Mediterranean Sea							
Valencia Harbour	39°26'05"N	00°18'00"W	March 1990	Mud	5-15.5	464	Tena et al. 1991
Izmir Bay	38°28'00"N	27°10'00"E	July 2003 January 2004	Mud	5.6-11	3170	Çinar et al. 2005a
Izmit Bay(station 1)	40°46'24"N	29°42'28"E	18.08.2006	Mud	3	120	Present study
Izmit Bay(station 2)	40°46'15"N	29°43'04"E	18.08.2006	Mud	4	30	Present study
Izmit Bay(station 3)	40°46'07"N	29°43'39"E	18.08.2006	Mud	3	90	Present study
Izmit Bay(station 4)	40°46'05"N	29°42'18"E	18.08.2006	Mud	7	170	Present study
Izmit Bay(station 5)	40°45'41"N	29°42'06"E	18.08.2006	Mud	10	80	Present study
Izmit Bay(station 6)	40°45'35"N	29°42'44"E	18.08.2006	Mud	10	140	Present study
Izmit Bay(station 7)	40°45'31"N	29°43'22"E	18.08.2006	Mud	10	90	Present study
Black Sea							
Costanta	44°04'05"N	28°38'02"E	June-August 1997	Mud, on hard substratum	0.2-1	30	Radashevsky 2005
Balaklava Bay	44°29'00"N	33°34'00"E	May 2005	Mud	9	?	Boltachova and Lisitskaya 2007