



Polychaetes from the coast of northern Cyprus (eastern Mediterranean Sea), with two new records for the Mediterranean Sea

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Abstract: Faunistic analysis of polychaetes collected during two cruises performed along the northern Cyprus in May 1997 and June 1998 yielded a total of 384 species belonging to 45 families. Among them, two species, namely *Oenone* cf. *fulgida* (Savigny, 1818) and *Notomastus mossambicus* (Thomassin, 1970), were new to the Mediterranean fauna, 19 species new to the eastern Mediterranean fauna, 90 species new to the Levant fauna and 209 species new to the Cypriot fauna, bringing the total number of taxa known from Cyprus to 456 species. A total of 11 polychaete species, which were previously regarded as Lessepsian species, were encountered, of which 7 are being newly reported for the first time along the coast of Cyprus. Two species new to the Mediterranean Sea, which could also be Lessepsian species as they have Indo-Pacific distributions, were re-described and discussed.

Résumé : Annélides polychètes de la côte nord de Chypre (Méditerranée orientale), dont deux nouvelles espèces pour la Méditerranée. L'analyse faunistique d'annélides polychètes récoltées au cours de deux campagnes effectuées le long du littoral nord de Chypre en mai 1997 et juin 1998 a fourni 384 espèces appartenant à 45 familles. Deux espèces, *Oenone* cf. *fulgida* (Savigny, 1818) et *Notomastus mossambicus* (Thomassin, 1970), sont nouvellement signalées pour la faune de Méditerranée, et il en est de même de 19 espèces pour la faune de la Méditerranée orientale, de 90 espèces pour la faune Levantine et de 209 espèces pour la faune Chypriote, ce qui porte le nombre des espèces connues de Chypre à 456. On a aussi noté 11 espèces, précédemment considérées comme espèces lessepsiennes, dont 7 sont nouvelles sur le littoral de Chypre. Les 2 espèces nouvelles pour la Méditerranée sont certainement des espèces lessepsiennes étant données leurs distributions indo-pacifiques ; elles sont redécrites et discutées.

Keywords: Polychaetes, Distribution, Northern Cyprus, Lessepsian, Eastern Mediterranean Sea

Introduction

The coast of Cyprus, which is nearly situated at the center of the Levant Sea, includes a variety of habitats from sand to rock, and from algae to phanerogames, that could sup-

port a range of microhabitats for species settlements according to their complexities. The island is surrounded by a wide bathyal zone that may restrict settlements of species of direct development on habitats of the island, and also may minimize, in some extent, exchange of stocks and genes between populations of species inhabiting the Cypriot coast and those living outside of the island. Therefore, it was believed that the Cypriot coast harbored

lesser number of species when compared to the other coasts of the Levant Sea (Por, 1978). The previous data especially about benthos inhabiting the coast of Cyprus largely supported this idea.

However, the two cruises performed along the northern Cypriot coast in 1997 and 1998 by R/V K. Piri Reis that sampled a variety of biotopes between supralittoral zone to 600 m have considerably changed the general picture about the marine biodiversity of Cyprus; many species known in other parts of the Levant Sea as well as in the western Mediterranean have been identified along the coast of the island. For example, Kocatas et al. (2001) found a total of 266 crustacean species around the northern part of the island, 179 of which are new records for the Cypriot waters. Kocak et al. (2002) studied epiphytic bryozoan community of the phanerogame *Posidonia oceanica* (L.) Delile collected along the Cypriot coasts during the cruises and have increased the known number of bryozoan species off Cyprus from 3 to 45 species. Most striking ones are the studies by Çinar et al. (2003), Çinar & Ergen (2003) and Çinar (2003), who examined syllid polychaetes collected during both cruises, and encountered a total of 86 species, 74 (87% of the species identified) of which were new to the Cypriot coasts.

Studies on the Cypriot polychaetes were first initiated by Ben-Eliahu (1972a), who found 32 species among the material collected both from the northern and southern parts of Cyprus, particularly on shallow water benthic habitats, and considered four species as Lessepsian migrants: *Pseudonereis anomala*, *Lysidice collaris*, *Terebella ehrenbergi* and *Branchiommata bohollensis* [cited as *Dasychone lucullana* therein, but corrected as *B. bohollensis* in the subsequent paper (Ben-Eliahu, 1995)]. Afterwards, polychaetes inhabiting the Cypriot coasts were a subject of interest in numerous studies (Ben-Eliahu, 1972a, 1991 & 1995; Ben-Eliahu & Fiege, 1995 & 1996; Hadjichristophorou et al., 1997; Russo, 1997; Galil & Zibrowius, 1998; Argyrou et al., 1999; Ben-Eliahu & Payiatis, 1999; Paavo et al., 2000; Böggemann, 2002; Barnich & Fiege, 2003; Çinar et al., 2003; Çinar & Ergen, 2003; Çinar, 2003; Emig et al., 2003). Among them, Ben-Eliahu (1991), Ben-Eliahu & Fiege (1996), Galil & Zibrowius (1998) and Ben-Eliahu & Payiatis (1999) concentrated only on serpulid polychaetes inhabiting the coast of Cyprus; Paavo et al (2000) on *Ophryotrocha adherens*; Böggemann (2002) on glycerids; Barnich & Fiege (2003) on scale-worms; Çinar et al. (2003), Çinar & Ergen (2003) and Çinar (2003) on syllids. The other works indicated above treated the whole polychaete families and provided species lists found along the Cypriot coasts. As a consequence of these studies, a total of 247 species were reported along the island, whereas a total of ca. 500 polychaete species were known from the relatively better-studied

Levant Sea (Ben-Eliahu, 1995; Çinar, 2003).

The purpose of this study is to present the result of faunistic analysis of polychaetes collected during the two cruises to northern Cyprus in 1997 and 1998 by R/V K. Piri Reis, and to outline polychaete diversity of the island, with special emphasis on the species newly added to the species inventory of the Mediterranean Sea.

Material and Methods

In May 1997 and July 1998, bottoms of the coast of the northern Cyprus in depths ranging from 0 to 600 m were sampled by two sampling gears such as a commercial bottom trawl and anchor dredge (in both cruises) at 42 stations, and by scuba diving and snorkeling (only in the second cruise) at 13 stations (Table 1). A total of 79 benthic samples were collected and analyzed for polychaetes.

On the shipboard, benthic materials such as sponge specimens of *Sarcotragus* sp., pieces of hard substrata, mud, sand, *Posidonia oceanica* and algae (*Caulerpa racemosa* (Forsk.) J. Agardh and *Udotea petiolata* (Turra) Boergesen) taken by dredging and trawling were first sieved with a 0.5 mm mesh and then put into separate jars. Benthic materials such as bare rocks, sand, *Padina pavonica* (L.) Thivy, *Cystoseira crinita* (Desf.) Bory, *Cystoseira* sp. and *P. oceanica* collected by snorkelling and scuba-diving in the shallow-water stations were also sieved with a 0.5 mm mesh. All material taken was fixed with 4% formaldehyde. The dates, coordinates, localities, depths and biotope structures of stations are indicated in Table 1.

In the laboratory, samples were rinsed in fresh water and sieved with a 0.5 mm mesh again. The sponge samples were cut into small pieces to collect animals occupying canals of sponges. Rhizomes of phanerogames were picked apart to gather species associated with rhizome scales. Organisms were then sorted under a stereomicroscope according to the major taxonomic groups that were subsequently preserved in 70% ethanol. Polychaetes were identified by using a stereomicroscope and dissecting microscope. When necessary, worms were dissected to examine their internal structures such as teeth, jaws, paragnaths, proboscis papillae, etc.

Drawings of specimens were made by using a "camera lucida" and photographs were taken by a digital camera (Olympus, Camedia, C-5050). One specimen of *Notomastus mossambicus* chosen for scanning electron microscope observations (SEM) was dehydrated, coated with gold and then examined in Jeol JFM-5200 SEM in the Faculty of Dentistry, Ege University, Turkey.

The material was deposited in ESFM [Ege Universitesi Su Urunleri Muzesi (Museum of Faculty of Fisheries, Ege University)].

Table 1. Dates, coordinates, depths and biotope characteristics of samples taken from the Cypriot coasts (Sta: Stations).**Tableau 1.** Dates, coordonnées géographiques, profondeurs et caractéristiques des biotopes des échantillons prélevés des côtes de Chypre (Sta: Stations).

Sta	Date	Coordinates	Depth (m)	Biotopes with their codes in paranthesis
BOTTOM-TRAWL				
Start / Finish				
T1	10.5.97	35°22.7'N-33°02.6'E / 35°22.7'N-33°04.2'E	33-35	Hard substratum (T1a) and <i>Sarcotragus</i> sp.(T1b)
T2	11.5.97	35°20.5'N-33°23.4'E / 35°20.7'N-33°22.5'E	40-46	Hard substratum (T2)
T3	12.5.97	35°20.7'N-33°28.6'E / 35°20.6'N-33°27.5'E	28-38	<i>Posidonia oceanica</i> (T3)
T4	12.5.97	35°22.9'N-33°41.0'E / 35°22.4'N-33°39.3'E	38-45	<i>P. oceanica</i> and <i>Caulerpa prolifera</i> (T4)
T5	13.5.97	35°19.2'N-32°54.6'E / 35°17.7'N-32°54.4'E	28-45	<i>P. oceanica</i> (T5)
T6	13.5.97	35°12.5'N-32°52.3'E / 35°11.2'N-32°51.8'E	75-85	Muddy sand with <i>Caulerpa racemosa</i> (T6)
T7	16.5.97	35°40.3'N-34°39.1'E / 35°39.7'N-34°37.8'E	275-337	Mud (T7)
T8	16.5.97	35°40.9'N-34°35.4'E / 35°40.6'N-34°35.9'E	27-45	<i>P. oceanica</i> (T8)
T9	17.5.97	35°25.7'N-34°10.4'E / 35°25.0'N-34°08.4'E	32-35	<i>P. oceanica</i> (T9a), hard substratum (T9b) & <i>Sarcotragus</i> sp. (T9c)
T10	17.5.97	35°25.1'N-34°11.1'E / 35°26.3'N-34°11.7'E	37-69	<i>P. oceanica</i> (T10)
T11	17.5.97	35°21.5'N-34°10.4'E / 35°21.9'N-34°08.9'E	155-187	Mud and hard substratum (T11)
T12	18.5.97	35°20.2'N-34°08.0'E / 35°19.3'N-36°06.8'E	144-150	On <i>Dolium galea</i> (T12)
T13	18.5.97	35°13.9'N-33°56.9'E / 35°15.2'N-33°57.0'E	100-145	Mud and hard substratum (T13)
T14	18.5.97	35°13.6'N-33°56.0'E / 35°15.0'N-33°55.8'E	62-70	Muddy sand with <i>C. racemosa</i> (T14)
T15	18.5.97	35°12.0'N-33°55.6'E / 35°13.3'N-33°55.1'E	37-38	Muddy-sand with <i>C. racemosa</i> and <i>Udotea petiolata</i> (T15)
T16	19.5.97	35°11.1'N-33°56.7'E / 35°10.3'N-33°55.9'E	50-100	Mud (T16a) and <i>Sarcotragus</i> sp. (T16b)
T17	19.5.97	35°11.1'N-33°58.0'E / 35°10.0'N-33°57.0'E	66-150	Muddy sand with <i>C. racemosa</i> and <i>U. petiolata</i> (T17)
T18	19.5.97	35°08.0'N-34°02.4'E / 35°08.8'N-34°01.3'E	265-328	On a plastic hose (T18)
T19	14.7.98	35°19.1'N-32°49.0'E / 35°18.6'N-32°49.9'E	223-227	Mud (T19)
T20	14.7.98	35°21.5'N-32°54.0'E / 35°21.1'N-32°54.6'E	17-30	Mud and hard substratum (T20)
T21	17.7.98	35°47.7'N-34°43.8'E / 35°47.9'N-34°44.1'E	113-114	Mud (T21)
T22	19.7.98	35°06.4'N-34°00.5'E / 35°07.6'N-33°59.6'E	90-89	Mud (T22)
T23	19.7.98	35°09.4'N-33°59.1'E / 35°10.4'N-33°58.5'E	105-131	Mud with shell fragments (T23)
T24	19.7.98	35°11.8'N-33°56.3'E / 35°10.6'N-33°57.2'E	59-70	Mud (T24)
DREDGE				
D1	10.5.97	35°22.5'N-33°05.2'E	50	Hard substratum (D1)
D2	12.5.97	35°22.4'N-33°39.5'E	35	Muddy sand and <i>P. oceanica</i> (D2)
D3	12.5.97	35°20.7'N-33°28.3'E	35	Muddy sand and <i>P. oceanica</i> (D3)
D4	15.5.97	35°37.8'N-34°21.1'E	35	sand with <i>Branchiostoma lanceolatum</i> and <i>P. oceanica</i> (D4)
D5	16.5.97	35°35.7'N-34°27.4'E	70	Mud with <i>Ascidia</i> sp. (D5)
D6	16.5.97	35°34.8'N-34°25.9'E	35	<i>P. oceanica</i> (D6)
D7	16.5.97	35°34.4'N-34°26.9'E	140	Mud (D7)
D8	16.5.97	35°34.8'N-34°38.3'E	210	Mud (D8)
D9	19.5.97	35°10.0'N-33°59.4'E	25	<i>P. oceanica</i> (D9)
D10	19.5.97	35°08.9'N-33°58.6'E	92	Mud (D10)
D11	19.5.97	35°08.7'N-33°57.6'E	92	Hard substratum with <i>Sargassum vulgare</i> (D11)
D12	12.7.98	35°30.0'N-33°09.9'E	600	Mud (D12)
D13	14.7.98	35°19.9'N-32°50.1'E	210	Mud (D13)
D14	14.7.98	35°10.0'N-32°50.0'E	69	Sandy mud with shell fragments (D14)
D15	16.7.98	35°33.8'N-34°13.0'E	32	<i>P. oceanica</i> (D15)
D16	16.7.98	35°43.8'N-34°37.3'E	300	Mud with shell fragments (D16)
D17	18.7.98	35°08.7'N-34°00.1'E	120	Mud (D17)
D18	19.7.98	35°09.0'N-33°57.0'E	20	<i>P. oceanica</i> (D18)
DIVING (for the location of the shallow-water stations, see Çinar et al. 2003)				
K1	14.7.98	Guzelyurt Bay	0-15m	<i>Cystoseira crinita</i> (K1a), <i>P. oceanica</i> (K1b), rocks (K1c) & sand (K1d)
K2	14.7.98	Guzelyurt Bay	0-15m	<i>C. crinita</i> (K2a), rocks (K2b) and sand (K2c)
K3	18.7.98	Karpas Cape	0-15m	<i>C. crinita</i> (K3a), <i>P. oceanica</i> (K3b) and rocks (K3c)
K4	18.7.98	Gazi Magosa Bay	0-15m	<i>P. oceanica</i> (K4a) and rocks (K4b)
K5	19.7.98	Karpas Cape	0-15m	<i>Cystoseira</i> sp. (K5a), <i>P. oceanica</i> (K5b) and rocks (K5c)
K6	19.7.98	Karpas Cape	0-15m	<i>Padina pavonica</i> (K6a), <i>P. oceanica</i> (K6b) and rocks (K6c)
K7	19.7.98	Karpas Cape	0-15m	<i>Cystoseira</i> sp. (K7a) and rocks (K7b)
K8	20.7.98	Limanbasi Cape	0-15m	<i>C. crinita</i> (K8a) and rocks (K8b)
K9	21.7.98	Giirne	0-15m	<i>C. crinita</i> (K9a), <i>P. oceanica</i> (K9b) and rocks (K9c)
K10	21.7.98	Malazgirt	0-15m	<i>P. pavonica</i> (K10a), <i>C. crinita</i> (K10b), <i>P. oceanica</i> (K10c) & rocks (K10d)
K11	21.7.98	Kormakiti Cape	0-15m	<i>C. crinita</i> (K11a), <i>P. oceanica</i> (K11b) and sand (K11c)
K12	21.7.98	Gazi Magosa Harbour	3m	Rocks with <i>C. crinita</i> (K12)
K13	13.7.98	Giirne Harbour	1m	<i>P. pavonica</i> (K13)

Results and Discussion

Faunistic analysis

Faunistic analysis of polychaetes from 79 benthic samples taken during the two cruises performed in 1997 and 1998 revealed a total of 384 polychaete species belonging to 45 families (Table 2). The faunistic and ecological features of the family Syllidae, based on the material collected during the two cruises, were previously presented by Çinar et al (2003), Çinar & Ergen (2003) and Çinar (2003). Among the species encountered, two are being reported here for the first time in the Mediterranean Sea: *Oenone* cf. *fulgida* and *Notomastus mossambicus*. In addition, the present study reports 19 species new to the eastern Mediterranean fauna, 90 species new to the Levant fauna and 209 species new to the Cypriot fauna. Representatives of the families Euprosynidae, Lacydoniidae, Sphaerodoridae, Opheliidae, Acrocirridae, Poecilochaetidae, Cossuridae and Fauveliopsidae are also reported for the first time on the coasts of Cyprus.

Prior to this study, a total of 247 polychaete species were reported from the coast of Cyprus. This study added 209 species to the species inventory of Cyprus and the total number of polychaete species inhabiting the coasts of Cyprus has reached to 456 species. A total of 54 species, which had been previously reported from the Cypriot coasts, were not found during the two cruises. Among them, specimens of two species that were previously identified as *Mystides borealis* Théel, 1879 and *Eulalia pusilla* Örsted, 1843 by Ben-Eliahu (1995) were re-examined by courtesy of Dr. Nechama Ben-Eliahu (The Hebrew University of Jerusalem, Israel); they in fact belong to *Mystides caeca* and *Eulalia expusilla*, respectively, which are new species to the eastern Mediterranean fauna.

The two cruises undertaken along the Cypriot coasts also contributed to the better understanding of the "so-called" impoverished biodiversity of the Levant Sea; a total of 136 polychaete species were added to the list of faunal inventory of the Levant Sea, increasing the number of polychaete species known from the region to 586. This figure constitutes ca. 78% of the better studied Aegean Sea fauna and 60% of the total Mediterranean fauna. Regarding very low number of detailed faunistic studies carried out in the Levant basin, it could be stated that the Levant polychaete fauna appears to be more diversified than previously predicted.

Among the material presented here, there are 11 species that were previously considered as Lessepsian migrants; *Linopherus acarunculata*, *Ceratonereis mirabilis*, *Pseudonereis anomala*, *Lysidice collaris*, *Metasychis gotoi*, *Rhodine loveni*, *Notomastus aberans*, *Pista unibranchiata*, *Terebella* cf. *ehrenbergi*, *Branchiomma luctuosum* and *B.*

boholense. The previous faunistic analysis of syllids from the cruises' material by Çinar et al. (2003) and Çinar & Ergen (2003) yielded two exotic species; *Sphaerosyllis longipapillata* Hartmann-Schröder, 1979, which was previously reported from the Australian coasts, is probably a Lessepsian migrant; *Eusyllis kupfferi* Langerhans, 1879, that occurred in the Atlantic Ocean, might have been introduced here by the ship's transportation. Considering the previous syllid findings, the number of Lessepsian species found among the material collected during the two cruises is 12, of which 7 species (*Linopherus acarunculata*, *Ceratonereis mirabilis*, *Metasychis gotoi*, *Rhodine loveni*, *Notomastus aberans*, *Pista unibranchiata* and *Branchiomma luctuosum*) are being newly reported from the Cypriot waters. In addition, *Notomastus mossambicus* and *Oenone* cf. *fulgida*, which are new species for the Mediterranean fauna, could also be Lessepsian migrants as they have an Indo-Pacific distributional pattern, the latter being reported from the Red Sea (Savigny, 1822) in contrast to the former that was only reported from the Madagascar (Pacific Ocean) (Thomassin, 1970). The previous studies (Ben-Eliahu, 1972a; Ben-Eliahu & Payiatis, 1999) have cited a total of 6 Lessepsian species from the area; *Pseudonereis anomala*, *Lysidice collaris*, *Terebella ehrenbergi*, *Branchiomma boholensis*, *Hydroides heterocerus* and *Spirobranchus tetracerus*, of which two latter species, that were collected and identified by H. Zibrowius (Station Marine d'Endoume, Marseille, France), were not encountered during this study, probably due to the fact that the two cruises collected a little material from harbor environments where two Lessepsian serpulid species had been found. Compiling all available data from Cyprus revealed 16 Lessepsian polychaete species, accounting for ca. 3.5% of the total polychaete species known from the island.

Monticellina dorsobranchialis, which was also found during the present study, was previously considered as a Lessepsian migrant (Ben-Eliahu, 1995), although its type locality is in the Atlantic Ocean (West Africa). The record from the western Mediterranean (Gil & Sardá, 1999) also depicted that it has indeed a broad distributional pattern and is not restricted to the Lessepsian province, so the assumption indicating its introduction to the Mediterranean by the Suez Canal might be incorrect.

Por (1978) included *Scoloplos chevalieri candiensis* (type locality off Crete) in the list of Lessepsian species, however its occurrence in the Suez Canal and Red Sea has not been confirmed yet, so the assumption about its origin appears to be dubious. It seems that this species is endemic for the eastern Mediterranean.

Among the Lessepsian polychaete species, 6 species (*Lysidice collaris*, *Metasychis gotoi*, *Rhodine loveni*, *Pista unibranchiata*, *Branchiomma luctuosum* and *B. boholense*) seemed to have well acclimated to the Mediterranean envi-

Table 2. Polychaete species collected from the coast of northern Cyprus, number of specimens and their distribution in the biotopes and the stations (code of stations in Table 1). A: Hard substratum, B: Rocks, C: Sponge *Sarcotragus* sp., D: brown algae *Cystoseira crinita* and *Cystoseira* sp., E: brown alga *Padina pavonica*, F: phanerogame *Posidonia oceanica*, G: Sand, H: Mud, Muddy sand and sandy mud, with shell fragments. DR: Depth range in m. *new record for Cyprus, ** new record for Levantine Sea, + new record for the Eastern Mediterranean, ++ new record for the Mediterranean

Tableau 2. Les espèces de polychètes récoltées sur le littoral nord de Chypre, nombre de spécimens et leur distribution dans les biotopes et les stations (code des stations cf. Tableau 1). A : Substrat dur, B : Roches, C : Éponge *Sarcotragus* sp., D : algues brunes *Cystoseira crinita* et *Cystoseira* sp., E : algue brune *Padina pavonica*, F : phanérogame *Posidonia oceanica*, G : Sable, H : vase, sable vaseux et vase sableux avec les fragments de coquillages. DR : gamme de profondeur en mètres. * nouvellement signalée pour Chypre, **nouvellement signalée pour la Mer Levantine, + nouvellement signalée pour la Méditerranée orientale, ++ nouvellement signalée pour la Méditerranée.

Species	DR	BIOTOPES								STATIONS
		A	B	C	D	E	F	G	H	
APHRODITIDAE										
<i>Laetmonice hystrix</i> (Savigny in Lamarck, 1818)	35-150	2	-	-	-	-	2	-	5	T(10,13,14,17,22,23), D(2,5)
** <i>Laetmonice filicornis</i> Kinberg, 1856	155-187	1	-	-	-	-	-	-	-	T11
<i>Pontogenia chrysocoma</i> (Baird, 1865)	0-69	-	4	1	3	-	13	-	1	T(9,20), D15, K(1,3,5,6,10,11)
POLYNOIDAE										
* <i>Harmothoe antilopes</i> McIntosh, 1876	140	-	-	-	-	-	-	-	1	D7
* <i>Harmothoe impar</i> (Johnston, 1839)	0-15	-	-	-	2	-	2	-	-	K(1,4,8)
<i>Harmothoe spinifera</i> (Ehlers, 1864)	0-145	1	-	2	17	-	4	-	-	T(9,13), D2, K(1,8,11)
<i>Lepidonotus clava</i> (Montagu, 1808)	2	-	-	-	1	-	-	-	-	K1
+ <i>Malmgreniella liliana</i> Pettibone, 1993	35	-	-	-	-	-	1	-	-	D4
** <i>Malmgreniella ljunmani</i> (Malmgren, 1867)	35	-	-	-	-	-	1	-	-	D3
** <i>Malmgreniella lunulata</i> (delle Chiaje, 1830)	50-85	1	-	-	-	-	-	-	2	T(6,14), D1
** <i>Lepidasthenia elegans</i> (Grube, 1840)	32-100	-	-	4	-	-	-	-	-	T(1,9,16)
<i>Subadyte pellucida</i> (Ehlers, 1864)	27-300	2	-	-	-	-	5	-	5	T(5,8,10,13-15,17), D(5,6,16)
PHOLOIDAE										
<i>Pholoe inornata</i> Johnston, 1839	0-45	-	-	-	3	-	12	-	-	T(3,8), D(6,15), K(1,3,4,11)
<i>Pholoides dorsipapillatus</i> (Marenzeller, 1893)	155-337	2	-	-	-	-	-	-	7	T(7,11), D(8,16)
SIGALIONIDAE										
** <i>Claparedepelogenia inclusa</i> (Claparède, 1868)	92	1	-	-	-	-	-	-	-	D11
* <i>Euthalenessa oculata</i> (Peters, 1854)	38-45	-	-	-	-	-	1	-	-	T4
<i>Fimbriosthenelais minor</i> (Pruvot & Racovitza, 1895)	37-70	-	-	-	-	-	-	-	2	T15,D5
** <i>Fimbriosthenelais zetlandica</i> (McIntosh, 1876)	35	-	-	-	-	-	2	-	-	D2
<i>Pelogenia arenosa</i> (delle Chiaje, 1830)	0-15	-	1	-	-	-	1	-	-	K(1,10)
<i>Sigalion mathildae</i> Audouin & M. Edwards, 1830	0-300	-	-	-	-	-	-	3	5	D(13,16), K1
<i>Sthenelais boa</i> (Johnston, 1833)	0-70	-	2	-	-	-	-	-	3	T14, K(2,12)
ACOETIDAE										
<i>Eupanthalis kinbergi</i> McIntosh, 1876	69-300	1	-	-	-	-	-	-	2	T11, D(14,16)
CHRYSOPETALIDAE										
* <i>Arichlidon reyssi</i> (Katzmann, Laubier & Ramos, 1974)	37-337	2	-	-	-	-	-	-	31	T(7,12-15,19,23), D(10,16), K7
<i>Chrysopetalum debile</i> (Grube, 1855)	0-92	9	14	-	17	5	96	-	6	T(1-5,8,9,14-16), D(1,3,4,6,11,18), K(1,3-6,8-13)
AMPHINOMIDAE										
* <i>Chloeia venusta</i> Quetrefages, 1865	100-145	1	-	-	-	-	-	-	-	T13
<i>Hermodice carunculata</i> (Pallas, 1776)	0-69	1	8	1	1	-	10	-	1	T(2,8-10,15), D(2,3,15), K(1,3,4,6,8,10)
* <i>Linopherus acarunculata</i> (Monro, 1937)	0-337	-	7	-	2	5	41	-	1	T(7,8), D4, K(3-7,9-11)
EUPHROSYNIDAE										
+ <i>Euphrosyne</i> cf. <i>armadillo</i> Sars, 1851	100-145	1	-	-	-	-	-	-	-	T13
* <i>Euphrosyne foliosa</i> Audouin & M. Edwards, 1833	0-70	-	1	-	3	-	2	-	1	T14, K(1,6,8,9)
LACYDONIIDAE										
** <i>Lacydonia miranda</i> Marion & Bobretzky, 1875	27-45	-	-	-	-	-	1	-	-	T8
* <i>Paralacydonia paradoxa</i> (Fauvel, 1913)	35	-	-	-	-	-	1	-	-	D4
PHYLLODOCIDAE										
** <i>Eulalia mustela</i> Pleijel, 1987	35-92	3	-	-	-	-	11	-	-	T(4,10), D(1,3,4,11)
** <i>Eulalia tripunctata</i> McIntosh, 1874)	5	-	-	-	-	-	1	-	-	K4
+ <i>Eulalia clavigera</i> (Audouin & M. Edwards, 1834)	0-15	-	-	-	8	-	-	-	-	K(1,8,10,11)
* <i>Eumida sanguinea</i> Oersted, 1843	0-92	1	1	-	1	-	3	-	-	T8, D11, K(2,4,5)
+ <i>Hesionura coineau</i> (Laubier, 1962)	2-3	-	-	-	-	-	-	2	-	K(2,11)
** <i>Hesionura elongata</i> (Southern, 1914)	35	-	-	-	-	-	1	-	-	D4
<i>Mysta picta</i> (Quatrefages, 1866)	3-210	-	-	-	-	-	-	1	1	D13, K1
** <i>Nereiphylla paretti</i> Blainville, 1828	0-32	-	-	-	1	-	1	-	-	D15, K1
** <i>Nereiphylla rubiginosa</i> (Saint-Joseph, 1888)	0-70	-	1	-	5	-	6	-	1	T14, K(1,3,8-10)

<i>Notophyllum foliosum</i> (Sars, 1835)	0-100	-	1	-	-	-	1	-	3	T(14,16), D5, K(4,12)
** <i>Paranaitis kosterensis</i> (Malmgren, 1867)	35	-	-	-	-	-	2	-	-	D(3,4)
** <i>Phyllodoce maculata</i> (Linnaeus, 1767)	38-45	-	-	-	-	-	5	-	-	T4
* <i>Phyllodoce mucosa</i> Oersted, 1843	0-5	-	1	-	-	-	-	-	-	K7
** <i>Pseudomystides limbata</i> Saint-Joseph, 1888	0-210	-	-	-	-	-	4	-	1	D(2,3,8), K1
** <i>Pterocirrus macroceros</i> (Grube, 1860)	0-15	-	1	-	1	-	5	-	-	K(1,5,8,10)
+ <i>Sige fusigera</i> Malmgren, 1865	50-100	-	-	-	-	-	-	-	1	T16
HESIONIDAE										
** <i>Gyptis propinqua</i> Marion & Bobretzky, 1875	25	-	-	-	-	-	1	-	-	D9
<i>Hesione splendida</i> Savigny, 1818	0-15	-	-	-	-	-	2	-	-	K1
** <i>Hesiospina aurantiaca</i> (M. Sars, 1862)	210	-	-	-	-	-	-	-	1	D13
<i>Kefersteinia cirrata</i> (Keferstein, 1862)	0-150	3	2	-	5	-	94	-	8	T(3-5,8-10,13-17), D(1-6,11,15,18), K(1,3,5,6,8-11)
+ <i>Microphthalmus</i> cf. <i>similis</i> Bobretzky, 1870	3	-	-	-	-	-	-	1	-	K11
** <i>Ophiodromus flexuosus</i> (delle Chiaje, 1825)	5	-	-	-	-	-	1	-	-	K10
<i>Syllidia armata</i> Quatrefages, 1866	0-131	-	1	-	-	-	6	2	3	T(6,15,23), D18, K(2,4,9,10)
PILARGIDAE										
* <i>Ancistrosyllis groenlandica</i> McIntosh, 1879	600	-	-	-	-	-	-	-	1	D12
<i>Pilargis verrucosa</i> Saint-Joseph, 1899	35	-	-	-	-	-	1	-	-	D4
SYLLIDAE (see Çinar et al. 2003, Çinar & Ergen, 2003 & Çinar, 2003) - a total of 85 species and 1 subspecies										
NEREIDIDAE										
<i>Ceratonereis costae</i> Grube, 1840	0-145	4	2	28	16	-	3	-	12	T(1,2,9,13,16), K(1,7,12)
* <i>Ceratonereis hircincola</i> (Eising, 1870)	27-210	5	-	3	-	-	2	-	9	T(8,9,13-17,22), D(5, 13)
* <i>Ceratonereis mirabilis</i> Kinberg, 1866	20-210	1	-	-	-	-	16	-	1	D(6,11,13,18)
<i>Neanthes caudata</i> (delle Chiaje, 1828)	0-150	1	2	-	1	-	9	1	2	T(2,17), D14, K(1,3-5,8)
<i>Neanthes irrolata</i> (Malmgren, 1867)	33-92	4	-	-	-	-	16	-	-	T(1,4,5,8,9), D(2,3,11)
** <i>Neanthes kerguelensis</i> (McIntosh, 1885)	275-337	-	-	-	-	-	-	-	1	T7
<i>Nereis pelagica</i> Linnaeus, 1758	0-38	-	1	-	-	-	2	-	1	T15, K(1,4,8)
<i>Nereis rava</i> Ehlers, 1868	0-210	-	4	-	2	-	19	-	1	T(3,8,9), D(3,4,6,13), K(8,11)
* <i>Nereis zonata</i> Malmgren, 1867	0-100	7	3	1	11	8	27	-	5	T(1,8-10,15,16), D(2,11,15), K(1-4,8-10)
<i>Perinereis cultrifera</i> (Grube, 1840)	0-32	3	15	-	1	11	-	-	-	T9, K(6,7,12,13)
** <i>Platynereis coccinea</i> (delle Chiaje, 1841)	0-5	-	1	-	-	-	-	-	-	K6
<i>Platynereis dumerilii</i> (Audouin & M. Edwards, 1833)	0-92	2	55	-	96	24	24	-	2	T(9,15), D(2,6,11,15), K(1-13)
<i>Pseudonereis anomala</i> Gravier, 1899	1-2	-	-	-	3	-	-	-	-	K(5,7)
+ <i>Rullierinereis anoculata</i> Cantone, 1982	92	1	-	-	-	-	-	-	-	D11
** <i>Websterinereis glauca</i> (Claparède, 1870)	27-45	-	-	-	-	-	1	-	-	T8
GLYCERIDAE										
<i>Glycera alba</i> (O. F. Muller, 1776)	35	-	-	-	-	-	-	-	4	D14
* <i>Glycera fallax</i> Quatrefages, 1850	17-300	-	-	-	-	-	1	-	18	T20, D(4,10,13,16,17)
* <i>Glycera lapidum</i> Quatrefages, 1865	25-300	-	-	-	-	-	2	-	7	D(4,9,16)
<i>Glycera tessellata</i> Grube, 1863	1-210	12	-	1	-	-	43	2	16	T(1-5,8,9,11,13,14,16,17), D(2-6,8,11,13-15, 17), K1
* <i>Glycera unicornis</i> Savigny, 1818	35	-	-	-	-	-	1	-	-	D4
GONIADIDAE										
<i>Goniada emerita</i> Audouin & M. Edwards, 1833	35-120	-	-	-	-	-	1	-	1	D(4,17)
* <i>Goniada maculata</i> Oersted, 1843	25-300	1	-	-	-	-	-	-	2	D(9,16)
NEPHTHYIDAE										
** <i>Aglaophamus rubella</i> (Michaelsen, 1896)	120	-	-	-	-	-	-	-	1	D17
* <i>Inermonephthys inermis</i> (Ehlers, 1887)	20-92	-	-	-	-	-	1	-	2	D(10,18)
<i>Micronephthys maryae</i> San Martín, 1984	20-120	1	-	-	-	-	5	-	8	T(9,14), D(1,3,4,14,17,18)
<i>Nephtys caeca</i> (Fabricius, 1780)	50	1	-	-	-	-	-	-	-	D1
<i>Nephtys incisa</i> Malmgren, 1865	62-120	-	-	-	-	-	-	-	32	T14, D(10,14,17)
* <i>Nephtys paradoxa</i> Malm, 1874	140	-	-	-	-	-	-	-	1	D7
SPHAERODORIDAE										
** <i>Sphaerodoropsis minuta</i> (Webster & Benedict, 1887)	50-100	-	-	-	-	-	-	-	1	T16
EUNICIDAE										
<i>Palola siciliensis</i> (Grube, 1840)	0-46	2	1	-	-	-	1	-	1	T(2,9,20), K(8,11)
<i>Eunice pennata</i> (O. F. Muller, 1776)	37-114	-	-	-	-	-	1	-	1	T(10,21)
* <i>Eunice torquata</i> Quatrefages, 1865	32	-	-	-	-	-	1	-	-	D15
<i>Eunice vittata</i> (delle Chiaje, 1829)	0-300	15	-	1	-	-	61	-	18	T(1-4,8,9,13-15,21,23), D(2-6,10,11,13,15, 16), K(1,4,5)
<i>Lysidice collaris</i> Grube, 1870	0-46	4	2	1	-	-	20	-	-	T(1-3,8,9), D18, K(1,3,4,8,10)
<i>Lysidice ninetta</i> Audouin & M. Edwards, 1833	0-300	5	2	-	3	-	29	-	3	T(3,4,8,9,13,14), D(3,5,6,11,15,16), K(1-3,5,6,11)
<i>Marphysa belli</i> (Audouin & M. Edwards, 1833)	35-210	-	-	-	-	-	1	-	5	D(2,13,14,17)
<i>Marphysa fallax</i> Marion & Bobretzky, 1875	0-300	2	2	2	-	-	16	-	2	T(1,3,4,8,9,17), D(4,6,11,15,16), K(3,6)
<i>Marphysa sanguinea</i> (Montagu, 1815)	50-100	-	-	2	-	-	-	-	-	T16

+ <i>Perkinsiana rubra</i> (Langerhans, 1880)	2-145	1	-	-	-	-	1	-	1	T13, D5, K11
** <i>Pseudofabricia aberrans</i> Cantone, 1970	2-15	-	-	-	-	-	2	-	-	K(1,9)
* <i>Pseudopotamilla reniformis</i> (Bruguiere, 1789)	2-131	-	-	-	-	-	2	-	4	T(15,16,23), D(4,17), K4
** <i>Sabella discifera</i> Grube, 1874	62-70	-	-	-	-	-	-	-	1	T14
<i>Sabella pavonina</i> Savigny, 1822	32-227	12	-	-	-	-	-	-	3	T(1,9,19,23)
<i>Sabella spallanzani</i> (Viviani, 1805)	33-92	2	-	-	-	-	-	-	-	T1, D11
SERPULIDAE										
<i>Apomatus similis</i> Marion & Bobretzky, 1875	40-145	3	-	-	-	-	-	-	2	T(2,13,16), D5
<i>Ditrupea aeritina</i> (O. F. Muller, 1776)	69-92	3	-	-	-	-	-	-	1	D(11,14)
<i>Filograna</i> / <i>Salmacina</i> sp. or spp.	0-150	4	2	-	4	-	10	-	3	T(1,8,9,12-16), D15, K(1,3-5,9-11)
<i>Hydroides helmatus</i> (Iroso, 1921)	35	-	-	-	-	-	1	-	-	D4
<i>Hydroides niger</i> Zibrowius, 1971	0-15	-	6	-	2	-	20	-	-	K(1,2,4,5,9-11)
<i>Hydroides norvegicus</i> Gunnerus, 1768	62-227	2	-	-	-	-	-	-	6	T(11,14,19,23), D(5,11,14))
<i>Hydroides stoichadon</i> Zibrowius, 1971	37-100	1	-	-	-	-	-	-	7	T(14-16), D(5,11)
<i>Janita fimbriata</i> (delle Chiaje, 1822)	113-600	4	-	-	-	-	-	-	5	T(11,12,18,21), D(12,16)
<i>Metavermlia multicristata</i> (Philippi, 1844)	155-187	4	-	-	-	-	-	-	-	T11
<i>Placostegus crystallinus</i> , <i>sensu</i> Zibrowius, 1968	38-45	-	-	-	-	-	1	-	-	T4
<i>Placostegus tridentatus</i> (Fabricius, 1779)	100-337	6	-	-	-	-	-	-	4	T(7,12,13,18), D16
<i>Pomatoceros lamarckii</i> (Quatrefages, 1865)	0-5	-	2	-	-	-	-	-	-	K2
* <i>Pomatoceros triquetter</i> (Linnaeus, 1767)	2-100	-	-	-	-	-	2	-	2	T(15,16), K4
<i>Protula intestinum</i> (Savigny, 1818)	62-70	-	-	-	-	-	-	-	1	T14
<i>Protula tubularia</i> (Montagu, 1803)	155-187	1	-	-	-	-	-	-	-	T11
<i>Serpula concharum</i> Langerhans, 1880	2-328	9	-	3	-	-	3	-	9	T(2,3,12,13,15,16,18,22,23), D15, K5
<i>Serpula vermicularis</i> Linnaeus, 1767	0-328	8	1	-	-	-	2	-	14	T(2,3,9,13-16,18,19,23), D14, K(1,4)
<i>Spirobranchus polytrema</i> (Philippi, 1844)	0-150	3	5	4	-	-	45	-	25	T(5,8,9,14-17,22,23), D(1,5,6,11), K(1,2,4,5,10-12)
<i>Vermiliopsis infundibulum</i> (Gmelin, 1788)	0-328	12	1	2	1	-	11	-	16	T(1,5,8,11-16,18,21,23), D(2,3,5,11,15), K(1,5,8,10,11)
<i>Vermiliopsis labiata</i> (Costa, 1861)	32-145	3	-	-	-	-	2	-	-	T13, D15
<i>Vermiliopsis striaticeps</i> (Grube, 1862)	0-131	-	3	-	-	-	4	-	5	T(23,24), D(5,14,15), K(1,2,5,8,10,11)
SPIRORBIDAE										
<i>Janua pagenstecheri</i> (Quatrefages, 1865)	0-15	-	6	-	2	1	1	-	-	K(1-4,6)
** <i>Neodexiospira pseudocorrugata</i> (Bush, 1904)	0-70	-	2	-	2	1	-	-	1	T14, K(2-4,6,11)
** <i>Nidificaria clavus</i> (Harris, 1968)	27-45	-	-	-	-	-	1	-	-	T8
* <i>Pileolaria militaris</i> (Claparède, 1868)	2	-	-	-	-	-	1	-	-	K4
** <i>Vinearia koehlerii</i> (Caullery & Mesnil, 1897)	100-145	2	-	-	-	-	-	-	-	T13

ronment, dominating shallow-water habitats of the coasts of Levant, Aegean and Ionian Seas as well as the western Mediterranean Sea. However, others are of a limited distributional range in the Mediterranean, mostly reported from the Israeli coasts, with the exceptions of two species (*Pseudonereis anomala* and *Linopherus acarunculata*) that were also reported from the Levant coast of Turkey (Ergen & Çinar, 1997).

A total of ca. 30 Lessepsian polychaete species has been reported up to now (Ben-Eliahu, 1995; Çinar & Ergen, 1999). The present importance of Lessepsian migrants in the polychaete fauna of Cyprus appears to be lower than that of the southeastern part of the Levant Basin, 3.5% as compared with 9% (Ben-Eliahu, 1995). However, a similar percentage (3.1%) is also found by Ergen & Çinar (1997) along the Turkish Levant coast (northern part of the Levant Sea). This similar finding might reflect a high faunal affinity between the two parts, both having dense meadows of *Posidonia oceanica*, in contrast to the Israeli coasts where this phanerogame does not exist. Gucu & Gucu (2002) postulated that *P. oceanica* with its community is the primary defender of the Mediterranean Sea against Lessepsian inva-

sion. However, among the 11 Lessepsian migrants found in this study, five inhabit frequently on *P. oceanica* (Table 2), suggesting that *P. oceanica* appears not to hinder the settlement of the invaders, but could be a peculiar habitat for the Lessepsian species as it does not exist in the Red Sea. The ecological analysis of polychaetes from the Cypriot coast will be presented separately, might lead to better understanding of functioning role of the Lessepsian species in benthic communities on the coast of Cyprus.

In the Mediterranean Sea, *Lysidice collaris* was first recorded from Cyprus (Ben-Eliahu, 1972a) and, because of its presence in the Red Sea (type locality, Red Sea), it was considered as a Lessepsian migrant. It can be easily distinguishable from the native species *Lysidice ninetta* (type locality: France, Atlantic coast) by the shape of eyes; reniform in *L. collaris*, spherical in *L. ninetta*. On the other hand, Claparède (1868) described *L. margaritacea* from the Gulf of Naples, which has also two reniform eyes; "*En avant et en dehors des antennes externes sont les yeux, sous la forme de taches noires, semi-lunaires, avec un cristallin en dehors*". Fauvel (1923) questionably synonymized *L. margaritacea* with *L. ninetta*, then no study cited *L. mar-*

garitacea in the Mediterranean Sea. Because of a high morphological similarity between *L. margaritacea* and *L. collaris*, it is very difficult, at this stage, to verify whether two species are identical or which reports of *L. collaris* in the Mediterranean indeed refer to *L. collaris* or *L. margaritacea*, or *L. collaris* really occurs in the Mediterranean Sea. Therefore, the type specimens of two species, (absent for *L. margaritacea*), or specimens near the type localities, should be re-examined to clarify their “real” distributional pattern.

My own re-examination of some specimens of apparently cosmopolitan *Terebellides stroemi* Sars, 1853, which were collected from/near the type locality of the species (Hordaland, western Norway) and deposited in Zoological Museum of Copenhagen (ZMUC), Denmark, revealed that specimens of the genus *Terebellides* collected along the northern Cyprus belong to two or three distinct species. Therefore, the Cypriot specimens were given under *Terebellides* spp. in Table 2. This subject will be taken into account in future studies.

Cantone (1983) described a new genus and species from the Gulf of Catania (Sicily, Mediterranean Sea), namely *Lysibranchia paucibranchiata*, that is characterized by having only three antennae, the absence of tentacular cirri and a few number of pectinate branchiae located on chaetigers from 7 to 11-13. The holotype is very small, measuring ca. 7 mm. I also found some specimens from Cyprus identical to the species described from the Sicily. However, it seems that *L. paucibranchiata* is not a good species, as the description is based on very small individual that could be the juvenile of a species known from the Mediterranean Sea that has not completed its full development such as number of antennae. The study on the development of *Eunice harassi* Audouin & Milne Edwards 1833 by Giangrande (1989) supports this idea; juveniles of *E. harassi* have only three antennae in contrast to the mature forms that have five antennae. The Cypriot specimens similar to the Cantone's specimen frequently co-occurred with *Marphysa belli*, which has five antennae, branched branchiae limited on some anterior chaetigers, and other morphological characters such as subacicular hooks, maxillae and mandible very similar to the specimen described by Cantone. I therefore suppose that *L. paucibranchiata* might be a synonym of *M. belli*.

Hartman (1960) described *Monticellina tesselata* (as *Tharyx tesselata*) from the southern California and principally characterized it by its tube of tessellated projects and geniculate chaeta with coarse serration on the cutting edge. The Cypriot specimen has also the characteristic tube but the geniculate chaetae are broader than those of the Hartman's specimen and have very weak serration on the cutting edge, so it is possible that the Cypriot specimen might belong to another species.

Zoogeographical analysis of the polychaete species

identified to the species level along the Cypriot coasts (369 species) showed that the majority of species (168 species) were Atlanto-Mediterranean (45.5%), 46 species were Endemic (12.5%), 67 species were Circum-tropical (18.2%), 28 species were Disjunct (7.6%), 46 species were Cosmopolitan (12.5%), and 14 species were Indo-Pacific (3.8%). However, it should be noted that the status of majority of Cosmopolitan and Circum-tropical species is unclear, so the picture given here could change when new data on their “true” taxonomical identities and distributional patterns are accumulated. Fredj et al (1992) stated the percentage of endemic species of Annelida in the Mediterranean Sea as 23.7% and pointed out the western Mediterranean had more endemic species than the eastern Mediterranean. The species given here have been also reported from the other basins of the Mediterranean, except for the some Lessepsian species indicated above and *Scoloplos chevalieri candiensis*.

The present study outlines diversified polychaete assemblages along the northern Cyprus. However, the two cruises performed along the Cypriot coast sampled only some certain depths and biotopes, so some peculiar environments such as harbour, estuarine and deep waters still remain largely unexplored.

Descriptions of the species new to the Mediterranean fauna

Oenone cf. *fulgida* (Savigny, 1818)
(Figs. 1 & 2)

Aglaurides fulgida; Fauvel, 1953: 250-251, fig. 125
Oenone fulgida; Day, 1967: 426, fig. 17.14.a-g; Imajima, 1967: 435-437, fig. 11; Gilbert, 1984: 43-4 – 43-6, fig. 43-2.

Material examined

ESFM-POL/97-405; T14, 18 May 1997, Bottom Trawl, start: 35°13.6'N-33°56.0'E, finish: 35°15.0'N-33°55.8'E, 62-70 m, muddy sand with *Caulerpa racemosa* and *Udotea petiolata*, 1 specimen.

Description

Specimen incomplete, anterior fragment, 0.4 mm wide, 2.2 mm long for 17 chaetigers, yellowish with dark brownish transverse broad lines on dorsum of each anterior segment, with dark brownish speckles on prostomium, peristomium and ventral surface of body (Figs. 1A, B; 2A-C). Body almost cylindrical, circular in cross section.

Prostomium somewhat broadly triangular with blunt anterior end. Two pairs of eyes on dorsum of prostomium, arranged in open trapezoidal arrangement; one pair of reddish eyes, large, located posterio-lateral side of prostomium, apart from lateral antennae; one pair of smaller reddish eyes

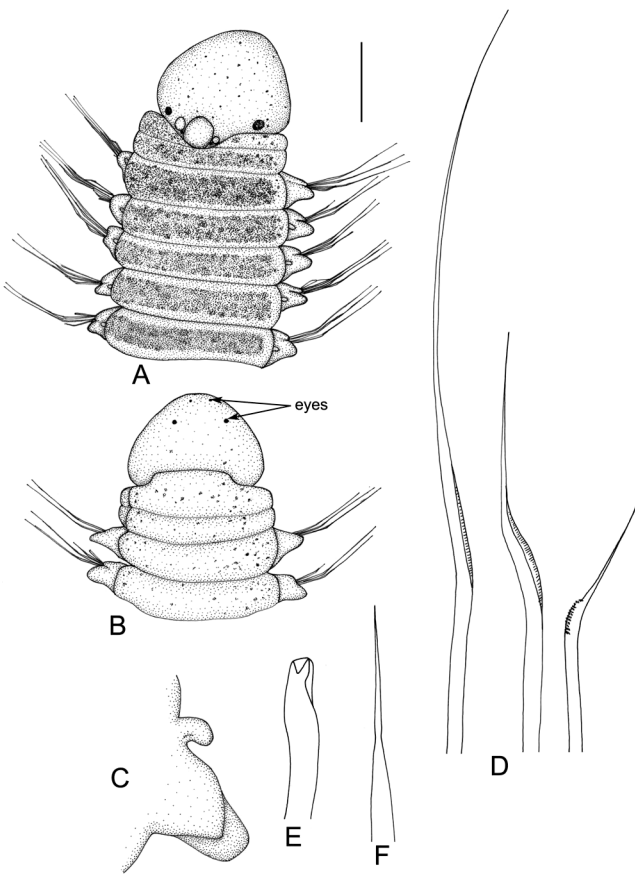


Figure 1. *Oenone cf. fulgida*. **A.** Anterior end, dorsal view. **B.** Anterior end, ventral view. **C.** Lateral view of anterior parapodium. **D.** Capillary and geniculate chaetae. **E.** Hooded hook. **F.** Aciculum. Scale bar: A and B = 200 μm , C = 80 μm , D = 33 μm , E and F = 23 μm .

Figure 1. *Oenone cf. fulgida*. **A.** Extrémité antérieure, vue dorsale. **B.** Extrémité antérieure, vue ventrale. **C.** Vue latérale d'un parapode antérieur. **D.** Soies capillaires et géniculées. **E.** Crochet à capuchon. **F.** Acicule. Échelle : A et B = 200 μm , C = 80 μm , D = 33 μm , E et F = 23 μm .

located just next to median antenna (Figs. 1A; 2A-C). Two pairs of small reddish eyes also present on ventral side of prostomium; anterior pair, smaller, located at anterior part of prostomium, next to tip of prostomium; posterior pair larger, located next to middle part of prostomium (Figs. 1B; 2A-C). Prostomium with three antennae, emerging in a line on mid-posterior part of prostomium; median one ca. 2.5 times longer than lateral ones, thick, massive, rounded at tip, reaching level of anterior eyes; lateral antennae small, partly covered by peristomium, rounded at tip.

Peristomium with one segment, biannulated; anterior annulation narrow on dorsal side of body, with a deep notch at middle, large on ventral side of body, extended anterior-

ly; posterior annulation two times broader than anterior one on dorsal side, smaller on ventral side; ca. two times narrower than subsequent segment (Fig. 1A, B). Parapodia triangular, with two lobes; prechaetal lobe smaller than postchaetal one, broadly triangular; postchaetal lobe truncated (Fig. 1C). Dorsal cirri small, not reaching midline of prechaetal lobe, ovoid, slightly directed ventrally (Fig. 1C). Ventral cirri absent.

Two types of chaetae present on parapodia; capillary and hook. Capillary chaetae three types (Fig. 1D); superior ones numbering 2 per parapodium longest, ca. 312 μm long, slightly limbate and geniculate; middle one clearly geniculate, numbering 2 per parapodium, ca. 175 μm long, with striped hood; inferior one smallest, ca. 112 μm long, numbering 2 per parapodium, geniculate, with serrated hood (Fig. 1D). Hooded hooks numbering 2 per parapodium, ca. 82.5 μm long, from chaetiger 1, clearly bidentate, proximal tooth slightly larger than distal one (Fig. 1E). Aciculae numbering 2-3 per parapodium, with long, thin, slender tips emerging from parapodia (Fig. 1F). As only one specimen is available, the specimen was partly dissected to observe mandible and maxillary teeth. Two mandibles, black, rod like without serration. Only maxillary I was observed; dark brownish, asymmetrical, slightly curved tip, pointed distally, bearing ca. 6 teeth proximally.

Remarks

The morphological features of the specimen found in this study coincide with the descriptions of *Oenone fulgida* (Fauvel, 1953; Day, 1967; Imajima, 1967; Gilbert, 1984), but the Cypriot specimen differs from the previous reports in having relatively small, ovoid dorsal cirri (large and leaf like in previous reports), the presence of eyes on ventral side of prostomium (absent in previous reports) and hooded hooks first appeared on chaetiger 1, more posteriorly in other reports: on chaetiger 22 (length of worm: 55 mm, Imajima, 1967) and on chaetiger 48 (length of worm: 101 mm, Gilbert, 1984). However, the Cypriot specimen is very small and could be a juvenile form of *O. fulgida*, and the characters such as size of dorsal cirri, first appearance of bifid hooded hooks on chaetigers and the presence of eyes on the ventral side of prostomium could be size dependent. For a clear judgement whether or not the specimen belongs to *O. fulgida*, more materials from the Levant Sea are required. Ben-Eliahu (1972b) reported a specimen of *Oenone cf. fulgida* from the Suez Canal, but her specimen appears to be different from the present material as it has longer antennae and unidentate hooks without hoods.

Distribution and Ecology

Red Sea (Savigny, 1822); Pacific Ocean: Japan-intertidal zone (Imajima, 1967); N. East Atlantic: Gulf of Mexico,

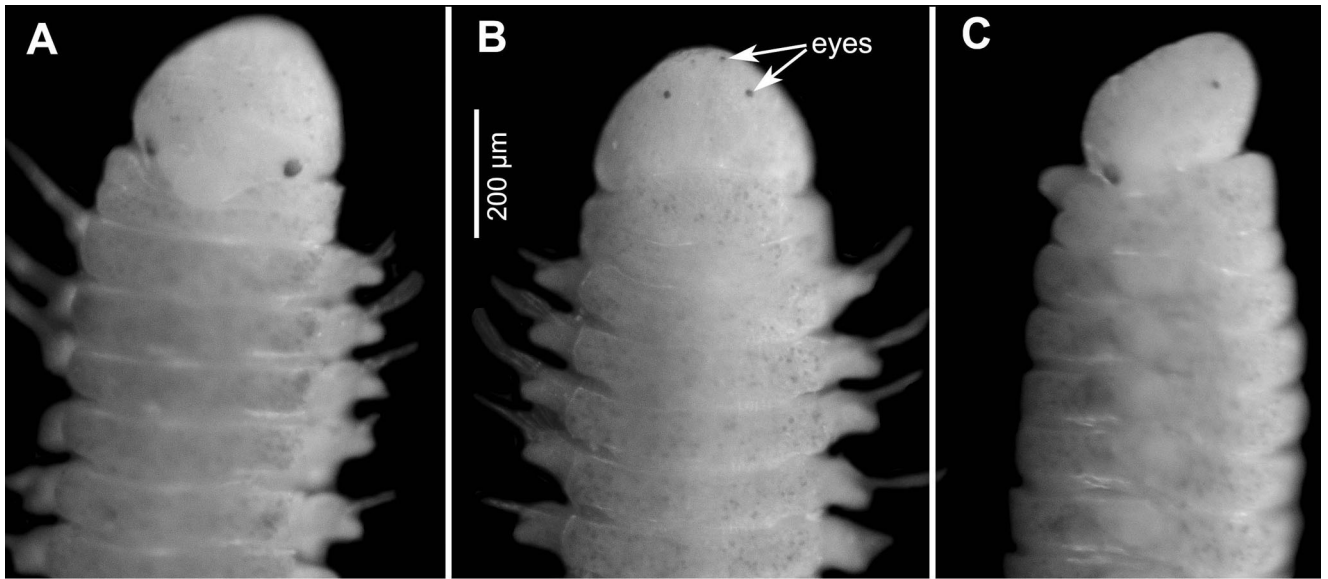


Figure 2. *Oenone cf. fulgida*. **A.** Anterior end, dorsal view. **B.** Anterior end, ventral view. **C.** Anterior end, lateral view.

Figure 2. *Oenone cf. fulgida*. **A.** Extrémité antérieure, vue dorsale. **B.** Extrémité antérieure, vue ventrale. **C.** Extrémité antérieure, vue latérale.

74 m, coarse sand-rubble (Gilbert, 1984); Indian Ocean: many localities (Fauvel, 1953; Day, 1967) - intertidal, estuarine and shallow water (1-99 m) (Day, 1967). This specimen was collected on muddy sand with *Caulerpa racemosa* and *Udotea petiolata* in 62-70 m in Cypriot waters.

Notomastus mossambicus (Thomassin, 1970)
(Figs. 3 & 4)

Paraleiocapitella mossambica Thomassin 1970: 87-88, fig. 9.

Notomastus mossambicus Ewing, 1982: 232-234.

Material examined

ESFM-POL/97-336; T14, 18 May 1997, Bottom Trawl, start: 35°13.6'N-33°56.0'E, finish: 35°15.0'N-33°55.8'E, 62-70 m, muddy sand with *Caulerpa racemosa* and *Udotea petiolata*, 2 specimens; ESFM-POL/97-488; D1, 10 May 1997, anchor dredge, 35°22.5'N-33°05.2'E, 50 m, hard substrate with mud, 9 specimens.

Description

Largest incomplete, anterior fragments, 0.65 mm wide, 13.75 mm long for 20 chaetigers, pale yellowish, no color marking (Figs. 3A; 4A). Prostomium short, conical, with blunt anterior end (Figs. 3A; 4B). Ocular patches, black, on dorso-lateral surface of prostomium, partly covered with peristomium. Eversible pharynx bulbous, covered with transverse rows of small, bluntly conical papillae (Figs. 3A; 4B).

Achaetous peristomium clearly biannulated; larger than

prostomium and subsequent thoracic segment, with many irregular transverse and longitudinal wrinkles. Thoracic segments from chaetiger 1 to 4 slightly biannulated, with transverse and longitudinal wrinkles that produce marked areolation; those from chaetiger 5 to 10 without wrinkles and annulation; smooth with whitish globular areas (ca. 17.5-22.5 µm in diameter) just under epithelium, forming swellings on surfaces (Figs. 3A; 4A, B). Chaetigers 11 and 12 multiannulated, slightly expanded; rest of segments gradually decreasing in size, with indistinct transverse wrinkles only.

Thorax with 11 chaetigers; first thoracic chaetiger with notochaetae only, bearing 14 capillary chaetae; smooth, limbate, tapering from proximal to 8/10 of the chaetae then sharply decreasing in size, producing very thin distal part; ca. 137 µm long. Chaetigers from 1 to 10 with capillaries only; two types; one limbate, long, ca. 130-140 µm long, arranged in a line, numbering ca. 16 on notopodia, 13 on neuropodia (Figs. 3B, 4D); the other shorter, widely limbate, ca. 60-70 µm long, numbering ca. 2-3 per thoracic fascicle (Fig. 3C). Chaetiger 11, transitional segment, with notopodium bearing capillary chaetae; neuropodium bearing hooded hooks (Figs. 3A; 4C); capillary chaetae numbering 16, ca. 137 µm long; hooded hooks numbering 23, ca. 37.5 µm long; multidentate, consisting of a main fang surmounted by 2 rows of teeth; first row with 2 teeth, large, distally blunt, second row consisting of 4 smaller denticles. Abdominal parapodia with hooded hooks only; hooded hooks numbering from 14 to 13 on notopodia of anterior and posterior abdominal segments, respectively; hooded

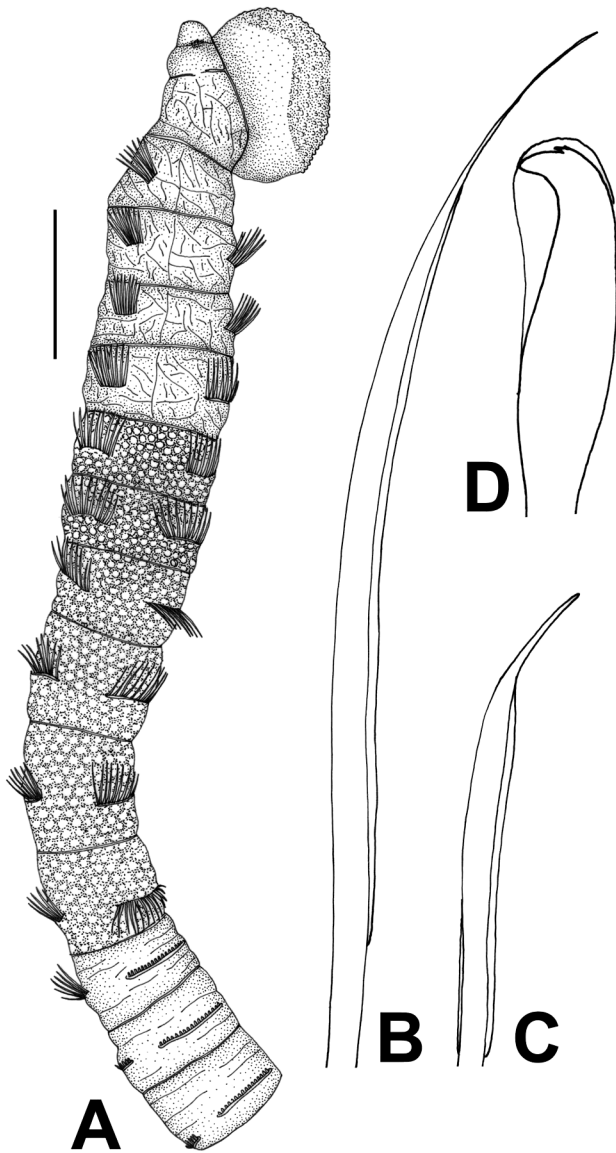


Figure 3. *Notomastus mossambicus*. **A.** Anterior part, lateral view. **B.** Capillary chaeta. **C.** Capillary chaeta. **D.** Hooded hook from abdominal chaetiger. Scale bar: A = 0.65 mm, B-D = 19 μ m.

Figure 3. *Notomastus mossambicus*. **A.** Partie antérieure, vue latérale. **B.** Soie capillaire. **C.** Soie capillaire. **D.** Crochet à capuchon d'un sétigère abdominal. Échelle : A = 0.65 mm, B-D = 19 μ m.

hooks numbering 10 both on neuropodia of anterior and posterior abdominal chaetigers. Abdominal hooded hooks multidentate consisting of a main fang surmounted by 3 teeth in a triangular arrangement and a second row of 4-5 smaller denticles (Figs. 3D; 4E, F). Abdominal hooks were mostly embedded into parapodia, giving the abdomen a smooth appearance. Branchiae not observed on specimens examined. A specimen has a transparent tube. Guts of two specimens contain sand inclusions and debris.

Remarks

Thomassin (1970) erected a new genus *Paraleiocapitella* from Madagascar and described the species *P. mossambica* as a type species of the genus. The genus differs from the other genera of the family Capitellidae in having 11 thoracic chaetigers (the first ten chaetigers with capillary chaetae only, the eleventh chaetiger with notopodium bearing capillary chaetae and neuropodium with hooded hooks) and abdominal chaetigers that have no branchiae and capillary chaetae, and bear hooded hooks only. However, Ewing (1982) partially revised the genus *Notomastus* and synonymized *Paraleiocapitella* with *Notomastus*.

The Cypriot specimens of *Notomastus mossambicus* agree well with the original description of the species in terms of the chaetal formulae and morphology, but differ from it in some meristic characters such as number of capillaries in thorax (ca. 18 on notopodia of the Cypriot specimens vs. 12-14 on those of the specimens from Madagascar, and ca. 15 on neuropodia of the Cypriot specimens vs. 6-10 on those of the specimens from Madagascar), number of hooded hooks on neuropodia of chaetiger 11 (23 on the Cypriot specimens, 16 on the Madagascar's specimens), number of hooded hooks on notopodia and neuropodia of abdominal chaetigers (14-13/ 10 on the Cypriot specimens, 7-12/4-9 on the Madagascar's specimens). However, these features appear to be related to the size of the specimens and such minor differences should be expected in distinct populations.

Ecology and distribution

Thomassin (1970) found *Notomastus mossambicus* on sandy mud sediment, among phanerogames and in association with a community of *Enteropneusta* in the south west of Madagascar (Indian Ocean). I collected specimens of *N. mossambicus* on muddy sand with the algae *Caulerpa racemosa* and *Udotea petiolata* in 62-70 m and on mud accumulated within hard substratum in 50 m.

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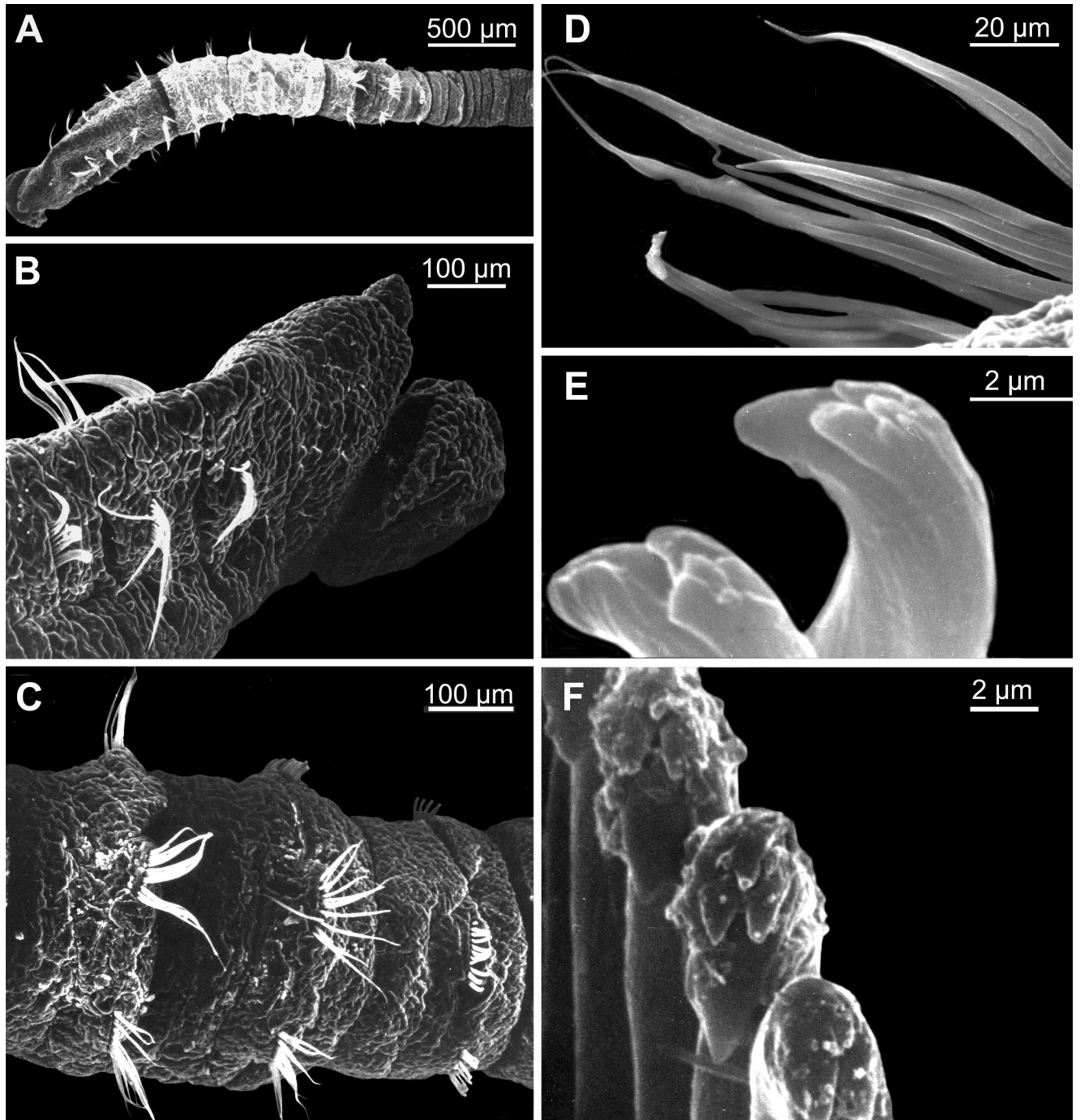


Figure 4. *Notomastus mossambicus*. **A.** Anterior end, dorsal view. **B.** Anterior end, dorso-lateral view. **C.** Transitional segment, chaetiger 11. **D.** Capillary chaetae on anterior parapodium. **E-F.** Hooks on abdominal chaetigers.

Figure 4. *Notomastus mossambicus*. **A.** Extrémité antérieure, vue dorsale. **B.** Extrémité antérieure, vue dorso-latérale. **C.** Segments intermédiaires, sétigère 11. **D.** Soies capillaires sur un parapode antérieur. **E-F.** Crochets des sétigères abdominaux.

References

- Argyrou M., Demetropoulos A. & Hadjichristophorou M. 1999.** Expansion of the macroalga *Caulerpa racemosa* and changes in softbottom macrofaunal assemblages in Moni Bay, Cyprus. *Oceanologica Acta*, **22**: 517-528.
- Barnich R. & Fiege D. 2003.** The Aphroditoidea (Annelida: Polychaeta) of the Mediterranean Sea. *Abhandlungen der Senckenbergischen Naturforschenden Gesellschaft*, **559**: 1-167.
- Ben-Eliahu M.N. 1972a.** Littoral Polychaeta from Cyprus. *Tethys*, **4**: 85-94.
- Ben-Eliahu M.N. 1972b.** Polychaeta errantia of the Suez Canal. *Israel Journal of Zoology*, **21**: 189-237.
- Ben-Eliahu M.N. 1991.** Red Sea serpulids (Polychaeta) in the eastern Mediterranean. In: *Proceedings of the 2nd International Polychaete Conference. Systematics, biology and morphology of world Polychaeta* (Petersen M.E. & Kirkegaard J.B. eds). *Ophelia Supplement*, **5**: 515-528.
- Ben-Eliahu M.N. 1995.** A list of Polychaeta along the Levant coast. *Haasiana*, **1**: 78-93.
- Ben-Eliahu M.N. & Fiege D. 1995.** Polychaeta from the continental shelf and slope of Israel collected by the "Meteor" 5 Expedition (1987). *Senckenbergiana Maritima*, **25**: 85-105.
- Ben-Eliahu M.N. & Fiege D. 1996.** Serpulid tube worms (Annelida: Polychaeta) of the central and eastern Mediterranean with particular attention to the Levant basin. *Senckenbergiana Maritima*, **28**: 1-52.
- Ben-Eliahu M.N. & Payiatas G. 1999.** Searching for Lessepsian migrant serpulids (Annelida: Polychaeta) on Cyprus- some results of a recent expedition. *Israel Journal of Zoology*, **45**: 101-119.
- Böggemann M. 2002.** Revision of the Glyceridae Grube 1850 (Annelida: Polychaeta). *Abhandlungen der Senckenbergischen Naturforschenden Gesellschaft*, **555**: 1-249.
- Cantone G. 1983.** Un nuovo genere di Eunicidae (Annelida: Polychaeta) del Golfo di Catania. *Animalia*, **10**: 81-86.
- Çinar M. E. 2003.** Ecology of Syllidae (Annelida: Polychaeta) from northern Cyprus (eastern Mediterranean Sea). *Bulletin of Marine Science*, **72**: 795-811.
- Çinar M.E. & Ergen Z. 1999.** Occurrence of *Prionospio sac-cifera* (Spionidae: Polychaeta) in the Mediterranean Sea. *Cahiers de Biologie Marine*, **40**: 105-112.
- Çinar M.E. & Ergen Z. 2003.** Eusyllinae and Syllinae (Annelida: Polychaeta) from northern Cyprus (eastern Mediterranean Sea) with a checklist of species reported from the Levant Sea. *Bulletin of Marine Science*, **72**: 769-793.
- Çinar M.E., Ergen Z. & Benli H.A. 2003.** Autolytinae and Exogoninae (Polychaeta: Syllidae) from northern Cyprus (eastern Mediterranean Sea) with a checklist of species reported from the Levant Sea. *Bulletin of Marine Science*, **72**: 741-767.
- Claparède É. 1868.** Les Annélides Chétopodes du Golfe de Naples. *Mémoires de la Société de physique et d'histoire naturelle de Genève*, **19**: 313-584.
- Day J.H. 1967.** A monograph on the Polychaeta of Southern Africa. *British Museum (Natural History) Publication*, London, **656**: 878 pp.
- Emig C.C., Çinar M.E. & Ergen Z. 2003.** Phoronida from the eastern Mediterranean and Black Sea. *Cahiers de Biologie Marine*, **44**: 185-191.
- Ergen Z. & Çinar M.E. 1997.** Polychaeta of Antalya Bay (Mediterranean Sea coast of Turkey). *Israel Journal of Zoology*, **43**: 229-241.
- Ewing R.M. 1982.** A partial revision of the genus *Notomastus* (Polychaeta: Capitellidae) with a description of a new species from the Gulf of Mexico. *Proceedings of the Biological Society of Washington*, **95**: 232-237.
- Fauvel P. 1923.** *Polychètes Errantes*. Faune de France V. Le Chevalier, Paris, 488 pp.
- Fauvel P. 1953.** *The fauna of India including Pakistan, Ceylon, Burma and Malaya. Annelida, Polychaeta*. The Indian Press, Ltd., Allahabad, 507 pp.
- Fredj G., Bellan-Santini D. & Meinardi M. 1992.** Etat des connaissances sur la faune marine méditerranéenne. *Bulletin de l'Institut Océanographique, Monaco*, n° spécial **9**: 133-145.
- Galil B.S. & Zibrowius H. 1998.** First benthos samples from Eratosthenes Seamount, eastern Mediterranean. *Senckenbergiana Maritima*, **28**: 111-121.
- Gianguarde A. 1989.** Observations on recruitment and growth of *Eunice harassii* Audouin & Milne Edwards (Polychaeta, Eunicidae) in the Mediterranean Sea. *Vie et Milieu*, **39**: 135-141.
- Gil J. & Sardá R. 1999.** New records of Annelida Polychaeta for the Portuguese Fauna (with comments on some already known species). *Arquivos do Museu Bocage*, **3**: 287-336.
- Gilbert K.M. 1984.** Family Lysaretidae Kinberg, 1865. In: *Taxonomic guide to the polychaetes of the northern Gulf of Mexico* (J.M. Uebelacker & P.G. Johnston eds.), Vol. 6. Pages 43-1. U. S. Department of Interior, Minerals Management Service, Barry A. Vittor & Associates, Mobile.
- Gucu A.C. & Gucu G.M. 2002.** Why Lessepsian immigrants are so successful in colonizing the eastern Mediterranean Sea and who are the defenders of the native ecosystem? In: *Proceedings of Workshop on Lessepsian migration* (B. Ozturk & N. Basusta eds.). *Turkish Marine Research Foundation*, **9**: 75-82.
- Hadjichristophorou M., Argyrou A., Demetropoulos A. & Bianchi T.S. 1997.** A species list of the sublittoral soft-bottom macrobenthos of Cyprus. *Acta Adriatica*, **38**: 3-32.
- Hartman O. 1960.** Systematic account of some marine invertebrate animals from the deep basins off southern California. *Allan Hancock Pacific Expedition*, **22**: 69-215.
- Imajima M. 1967.** Errant polychaetous Annelids from Tsukumo Bay and vicinity of Noto Peninsula, Japan. *Bulletin of the National Science Museum*, **10**: 403-441.
- Kocak F., Balduzzi A. & Benli H.A. 2002.** Epiphytic bryozoan community of *Posidonia oceanica* (L.) Delile meadow in the northern Cyprus (Eastern Mediterranean). *Indian Journal of Marine Sciences*, **31**: 235-238.
- Kocatas A., Katagan T. & Benli H.A. 2001.** Contribution to the knowledge of the Crustacean fauna of Cyprus. *Israel Journal of Zoology*, **47**: 147-160.
- Paavo B., Bailey-Brock J.H. & Åkesson B. 2000.** Morphology and life history of *Ophryotrocha adherens* sp. nov. (Polychaeta, Dorvilledae). *Sarsia*, **85**: 251-264.
- Por F.D. 1978.** *Lessepsian migration - the influx of Red Sea biota into the Mediterranean by way of the Suez Canal*. Springer-

Verlag, Berlin, **23**: 228 pp.

Russo A.R. 1997. Epifauna living on sublittoral seaweeds around Cyprus. *Hydrobiologia*, **344**: 169-179.

Savigny J.C. 1822. Système des annélides, principalement de celles des côtes de l'Égypte et de la Syrie, offrant les caractères tant distinctifs que naturels des ordres, familles et genres, avec

la description des espèces. Description de l'Égypte. *Histoire Naturelle*, Paris, **1**: 1-128.

Thomassin B. 1970. Contribution à l'étude des polychètes de la région de Tuléar (S.W. de Madagascar). III. Sur les Capitellidae des sables coralliens. *Recueil des Travaux de la Station Marine d'Endoume*, **10**: 71-101.