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Decapod crustaceans of soft-sediments on the Aegean Sea coast of Turkey (the eastern Aegean Sea)

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Abstract

58 species of decapod crustacean were identified (1 Dendobranchiata, 14 Caridea, 5 Thalassinidea, 14 Anomura, 24 Brachyura) on soft substrates of the Aegean Sea coast of Turkey. Samples were collected from 60 sampling sites along the Turkish Aegean shore (eastern Aegean Sea) between July 2000 and September 2000 with dredge and a van Veen grab at bottom depths of 7 to 150 m. Different species dominated in each ecological zone with the anomuran squat lobster, *Galathea intermedia* Lilljeborg, 1851, being the most dominant species across the whole sampling area, comprising 11.71% of the individuals collected. This report represents the first published investigations into soft-sediment decapod communities in the coastal waters of the Turkish Aegean Sea.

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INTRODUCTION

Soft-substrate macrobenthos are a key elements of marine ecosystems (Lu 2005), and it is important to improve our understanding of macrobenthos biodiversity in soft sediments (Díaz-Castañeda & Haris 2004). The species composition of benthic macrofauna on soft bottoms is very important in terms of benthos diversity. Previously the large-scale distribution of soft-bottom macrozoobenthos has been studied by several researchers (Zenkevitch 1963, Elmgren 1978, Andersin et al. 1997). Although soft substrate biotopes are common in coastal areas across the world, only a small part of the macrobenthos has been described (Snelgrove 1999).

During recent decades, numerous investigations into decapod crustaceans of the Mediterranean Sea area have been undertaken, several of the studies being concerned with soft-bottom decapods in these areas. The decapod fauna of soft-bottoms have largely focused on the central Mediterranean (Falciai 1981, Minervini et al. 1982, Falciai 1987, Argenti et al. 1993, Spanó 1994, Fanelli et al. 2005), resulting in the fauna of the region being relatively well known.

The recent appearence of soft-bottom crustaceans on the eastern Anatolian coast of the Black Sea was investigated by Kırkım et al. (2006). Only two studies on zoobenthic assemblages of soft-sediments have been made in the eastern Aegean Sea (Çınar et al. 2006, Sezgin et al. 2007). Sezgin et al. (2007) analysed the crustacean fauna of soft-sediments in Saros Bay (the northeastern Aegean Sea), that study including the first data on the subject in the eastern Aegean Sea.

There are no reported investigations in published literature of soft-sediment decapod communities in the coastal waters of the Turkish Aegean Sea. This study represents the first description of the composition of decapod crustacean assemblages associated with soft substrates in the sublittoral region of the Turkish Aegean Sea coast.

MATERIALS AND METHODS

The study area covers the full Continental Shelf of Turkish Aegean Sea between GPS Coordinates; 40°29′30″ N 25°55′40″ E and 36°44′30″ N 28°16′10″ E (Fig. 1). A total of 60 stations with soft-substrates were surveyed in July, August, and September, 2000. The water column depth ranged from 7 to 150 m. A detailed description of the stations (depth, type of substrate, collection date, GPS coordinates, and type of sampling gear) are shown in table 1. Experimental hauls (51 dredge and 9 van Veen grabs with sampling areas of 0.1 m^{-2}) were taken during daylight hours. Collected material was fixed with 4% buffered formalin for analysis in the laboratory. Each sample was sieved

Fig. 1. Map of study area showing sampling stations.

through a 0.5 mm mesh size screen, and the resulting fauna were counted and, identified under a binocular microscope to the lowest taxonomic levels necessary according to the work of Zariquiey Alvarez (1968), supplemented by more recent publications (Ingle 1993, Udekem d'Acoz 1996, Falciai & Minervini 1996), and counted. The higher classification follows Martin & Davis (2001).

Table 1

List of sampling stations.

Stations	Date	Coordinates	Sampling Gear	Depth (m)	Type of Substrat
1	04.08.2000	40°29′30″ N 25°55′40″ E	D	63	SM
2	04.08.2000	40°32′45″ N 25°55′40″ E	D	48	SM
3	04.08.2000	40°32′30″ N 26°20′00″ E	D	88	M
4	04.08.2000	40°32′45″ N 26°25′15″ E	D	93	M
5	04.08.2000	40°33′00″ N 26°30′20″ E	D	82	SM
6	03.08.2000	40°36′02″ N 26°49′30″ E	D	12	M
7	03.08.2000	40°34′20″ N 26°48′26″ E	D	20	SM
8	03.08.2000	40°27′40″ N 26°29′57″ E	D	135	M
9	03.08.2000	40°23′46″ N 26°21′46″ E	D	105	SM
10	03.08.2000	40°27′55″ N 25°34′23″ E	D	109	M
11	13.08.2000	40°10′40″ N 25°40′50″ E	D	104	M
12	30.07.2000	39°55′30″ N 25°50′20″ E	D	77	S
13	13.08.2000	40°04′45″ N 26°10′50″ E	D	29	S
14	13.08.2000	39°58′50″ N 26°03′25″ E	D	30	SM
15	29.07.2000	39°39′15″ N 26°02′00″ E	D	70	SM
16	29.07.2000	39°34′55″ N 26°05′13″ E	D	41	M
17	29.07.2000	39°27′10″ N 26°07′00″ E	D	90	S
18	29.07.2000	39°26′22″ N 26°14′42″ E	D	84	M
19	29.07.2000	39°27′12″ N 26°20′26″ E	D	109	M
20	17.08.2000	39°31′28″ N 26°29′08″ E	D	24	M
21	18.08.2000	39°23′10″ N 26°45′12″ E	D	38	SM
22	28.07.2000	39°15′00″ N 26°32°15″ E	D	53	SM
23	28.07.2000	39°00′10″ N 26°44′28″ E	D	50	S
24	19.08.2000	38°54′45″ N 26°44′40″ E	D	74	M
25	19.08.2000	38°53′40″ N 26°44′40″ E	D	118	M
26	20.08.2000	38°55′47″ N 26°56′27″ E	D	15	M
27	27.07.2000	38°41′00″ N 26°34′09″ E	G	77	M
28	27.07.2000	38°37′08″ N 26°35′00″ E	G	68	S
29	27.07.2000	38°38′02″ N 26°42′08″ E	G	30	M
30	27.07.2000	38°34′09″ N 26°38′09″ E	G	63	SM
31	27.07.2000	38°35′00″ N 26°42′04″ E	G	27	M
32	26.07.2000	38°29′01″ N 26°46′08″ E	G	54	M
33	26.07.2000	38°23′00″ N 26°39′01″ E	G	21	SM
34	26.07.2000	38°23′06″ N 26°55′00″ E	G	28	M
35	26.07.2000	38°24′05″ N 26°56′09″ E	G	37	M
36	12.09.2000	38°44′10″ N 26°22′00″ E	D	183	M
37	14.09.2000	38°20′48° N 26°14′15″ E	D	54	SM
38	30.09.2000	38°08′13″ N 26°43′00″ E	D	150	M
39	30.09.2000	38°03′10″ N 26°56′00″ E	D	41	SM
40	30.09.2000	37°59′00″ N 27°11′15″ E	D	32	M
41	14.09.2000	37°55′18″ N 27°07′41″ E	D	78	SM
42	29.09.2000	37°38′50″ N 27°01′17″ E	D	35	M
43	15.09.2000	37°23′55″ N 27°06′52″ E	D	71	M
44	16.09.2000	37°19′30″ N 27°29′00″ E	D	18	SM
45	17.09.2000	37°16′00″ N 27°35′30″ E	D	13	M
46	17.09.2000	37°09′00″ N 27°29′30″ E	D	44	SM
47	29.09.2000	37°12′43″ N 27°12′18″ E	D	85	M
48	18.09.2000	37°00′45″ N 27°20′50″ E	D	25	M
49	18.09.2000	36°58′30″ N 27°57′10″ E	D	109	SM
50	18.09.2000	36°59′00″ N 27°05′35″ E	D	82	M
51	19.09.2000	36°54′40″ N 28°09′57″ E	D	19	SM
52	18.09.2000	37° 02′39″ N 28°19′20″ E	D	7	M
53	19.09.2000	36°49′07″ N 27°52′10″ E	D	54	SM
54	20.09.2000	36°39′50″ N 27°32′30″ E	D	86	SM
55	21.09.2000	36°47′58″ N 28°07′00″ E	D	10	M
56	14.09.2000	36°42′45″ N 28°05′58″ E	D	45	SM
57	22.09.2000	36°45′50″ N 28°21′00″ E	D	86	SM
58	23.09.2000	36°50′40″ N 28°16′10″ E	D	19	M
59	23.09.2000	36°44′30″ N 28°16′10″ E	D	10	SM
60	23.09.2000	36°44′30″ N 28°16′10″ E	D	10	SM

Substrates: S - sand; M - mud; SM - sandy mud.
Sampling gears: D - dredge; G - van Veen Grab.

Dominance was calculated as:

$$Di = \left(\frac{n_i}{N} \right) \times 100$$

where *Di* is the mean dominance index for species *i*; *ni*, the number of individuals belonging to species *i*; *N*, the total number of individuals belonging to all the species (Bellan-Santini 1969, Soyer 1970). Soyer's (1970) frequency index (f%) was used to determine the abundance of species at the stations, and in biotopes.

RESULTS

In total 478 individuals representing 58 species of decapods were collected through the course of the study. Species composition, dominances, abundances, and the distrubition of species with respect to biotope type are given in Table 2. The highest number of species (11 species) was observed at the station 55, followed by the station 46 (10 species), and station 20 (9 species); the lowest number of species was seen at the stations 1, 2, 3, 8, 9, 12, 24, 26, 48, 50, 56, and 60 with 1 species each. The highest value belong to the number of individuals was found at the station 44 (43 specimens), whilst the the lowest numbers were seen at the stations 3, 8, 9, 12, 24, 26, 48, and 50 with only 1 specimen each (Fig. 2).

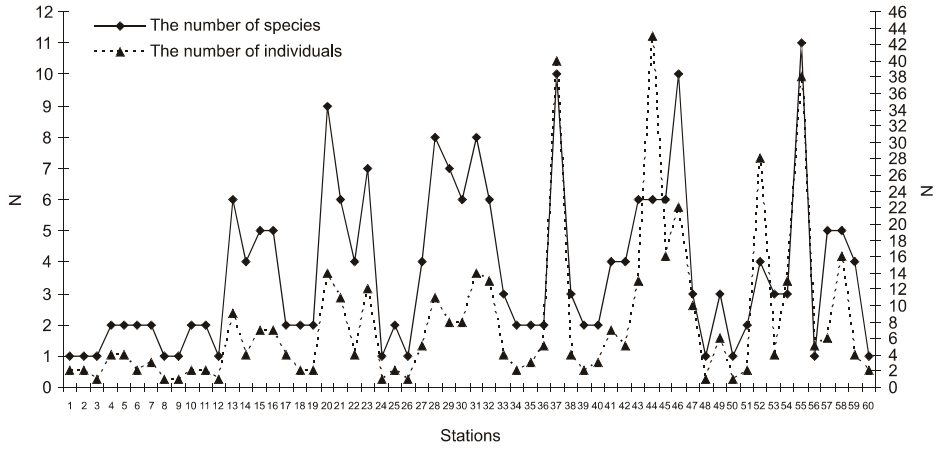

Fig. 2. The number (N) of the species and specimens collected at each sampling station.

Table 2

Species composition, values of dominance (Di%), and frequency index (f%) of decapod crustaceans in the study area.

Total species Σ 58

Total specimens Σ 478	**Type of Substrat**				
	f%	**%Di**	**S**	**M**	**SM**
CARIDEA					
Solenocera membranecea (Risso, 1816)	1.66	0.21		+	
Hippolyte inermis Leach, 1815	3.33	0.21		+	+
Lysmata seticaudata (Risso, 1816)	3.33	1.88			+
Thoralus cranchii (Leach, 1817)	1.66	0.21			+
Alpheus glaber (Olivi, 1792)	18.33	2.51	+	+	+
Alpheus macrocheles (Hailstone, 1835)	1.66	0.21		+	
Athanas nitescens (Leach, 1814)	23.33	3.97	+	+	+
Processa elegantula Nouvel & Holthuis, 1957	1.66	0.21			+
Processa macrodactyla Holthuis, 1952	5.00	1.25	+	+	+
Processa macrophthalma Nouvel et Holthuis, 1957	8.33	1.88	+	+	+
Processa nouveli Al-Adhud & Williamson, 1975	18.33	3.97		+	+
Aegaeon cataphractus (Olivi, 1792)	1.66	0.21			+
Crangon crangon (Linnaeus, 1758)	1.66	0.21		+	
Philocheras bispinosus (Hailstone, 1835)	6.66	0.84		+	+
Philocheras sculptus (Bell, 1847)	3.33	1.25	+		+
THALLASINIDEA					
Callianassa subterranea (Montagu, 1808)	5.00	0.63			+
Gourretia denticulata (Lutze, 1937)	6.66	1.46			+
Upogebia deltaura (Leach, 1815)	3.33	0.42			+
Upogebia pusilla (Petagna, 1792)	11.66	7.32	+	+	+
Calocaris macandreae Bell, 1846	1.66	0.21		+	
ANOMURA					
Diogenes pugilator (Roux, 1829)	1.66	0.21		+	
Paguristes eremita (Linnaeus, 1767)	1.66	1.46			+
Paguristes syrtensis De Saint Laurent, 1971	3.33	0.84			+
Anapagurus laevis (Bell, 1845)	3.33	0.42			+
Anapagurus petiti Dechancé et Forest, 1962	8.33	2.30	+		+
Pagurus alatus Fabricius, 1775	8.33	2.72	+		+
Pagurus anachoretus Risso, 1827	5.00	1.46			+
Pagurus cuanensis Bell, 1845	6.66	2.09	+	+	+
Pagurus forbesii Bell, 1845	3.33	0.63			+
Pagurus prideaux Leach, 1815	1.66	0.21			+
Galathea bolivari Zariquiey Alvarez, 1950	15.00	11.08	+	+	+
Galathea intermedia Lilljeborg, 1851	16.66	11.71		+	+
Pisidia bluteli (Risso, 1816)	6.66	2.09			+
Pisidia longimana (Risso, 1816)	6.66	1.46	+	+	
BRACHYURA					
Ethusa mascarone (Herbst, 1785)	6.66	1.46		+	+
Ebalia deshayesi Lucas, 1846	3.33	0.63			+
Ebalia granulosa H. Milne Edwards, 1837	8.33	2.09		+	+
Ebalia nux A. Milne Edwards, 1883	6.66	1.25		+	+
Ebalia tuberosa (Pennant, 1777)	6.66	0.84	+		+
Ebalia tumefacta (Montagu, 1808)	5.00	1.04		+	
Ilia nucleus (Linnaeus, 1758)	5.00	0.63		+	+
Eurynome aspera (Pennant, 1777)	13.33	2.72		+	+
Macropodia linerasi Forest & Zariquiey Alvarez, 1964	3.33	0.42			+
Inachus dorsettensis (Pennant, 1777)	5.00	1.04		+	+
Pisa armata (Latreille, 1803)	1.66	0.21		+	
Parthenope massena (Roux, 1830)	6.66	1.25	+	+	+
Atelecyclus rotundatus (Olivi, 1792)	3.33	0.42			+
Liocarcinus depurator (Linnaeus, 1758)	3.33	0.42			+
Liocarcinus maculatus (Risso, 1827)	13.33	3.76	+		+
Liocarcinus navigator (Herbst, 1794)	5.00	0.63	+	+	+
BRACHYURA					
Microcassiope minor (Dana, 1852)	5.00	1.46		+	+
Monodaeus couchii (Couch, 1851)	5.00	0.84		+	+
Pilumnus hirtellus (Linnaeus, 1761)	11.66	2.09	+	+	+
Pilumnus spinifer H. Milne Edwards, 1834	1.66	0.21		+	
Goneplax rhomboides (Linnaeus, 1758)	26.66	6.69		+	+
Brachynotus sexdentatus (Risso, 1827)	1.66	0.63	+		
Macrophthalmus graeffei A. Milne Edwards, 1873	1.66	0.84		+	
Nepinnotheres pinnotheres (Linnaeus, 1758)	1.66	0.63		+	

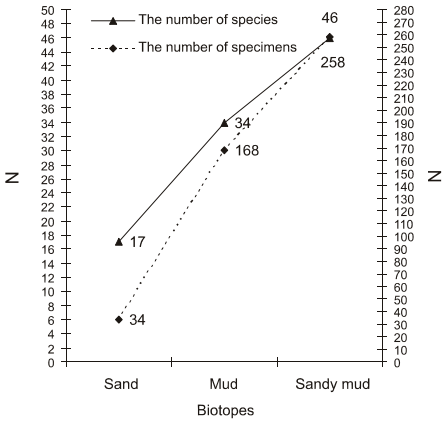

Fig. 3. The number of the species and specimens found in each of the three biotopes.

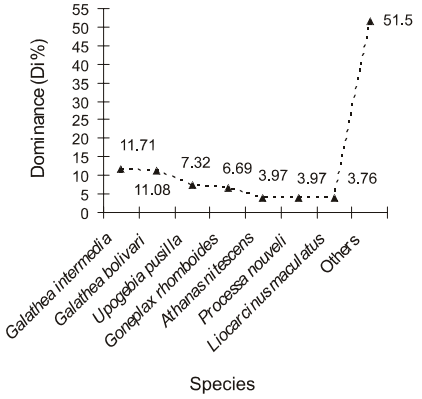

Fig. 4. Dominance values of observed species.

In terms of biotope the highest numbers (258 individuals) and species numbers (46) were found in sandy mud regions. Mud substrata were the next most prolific with 34 species. The lowest richness was found on the sand sediments, with 17 species and 34 specimens (Fig. 3). The commonest species sampled was the brachyuran crab, *Goneplax rhomboides* present in over 26% of the samples collected. Other common species were the caridean shrimps, *Athanas nitescens* (f = 23.33), *Alpheus glaber* (f = 18.33), *Processa nouveli* (f = 18.33), and the hermit crabs, *Galathea intermedia* (f = 16.66) and *Galathea bolivari* (f = 15.00). The hermit crabs, *G. intermedia* and *G. bolivari* had the highest dominance values (approx. 11%), followed by the thalassinid, *Upogebia pusilla* with 7.32%, the brachyuran crab, *G. rhomboides* with 6.69%, two caridean shrimps, *A. nitescens* and *Processa nouveli* each with 3.97% (Fig. 4).

According to Soyer's (1970) frequency index, only 1 decapod species (2% of the total) can be considered as common, the other 57 species (98%), being rare (Fig. 5). With regard to dominance in the sandy mud biotope, the highest value was for the hermit crab, *G. intermedia* (19.37%), followed by the other hermit crab, *G. bolivari* (13.17%), and the brachyuran crabs, *G. rhomboides* (6.58%) and *Liocarcinus maculatus* (5.03%). The species with the lowest dominance values were the caridean shrimps, *Aegaeon catapractus*, *Processa elegantula*, and the hermit crab, *Pagurus prideaux* (0.21% each) (Fig. 6).

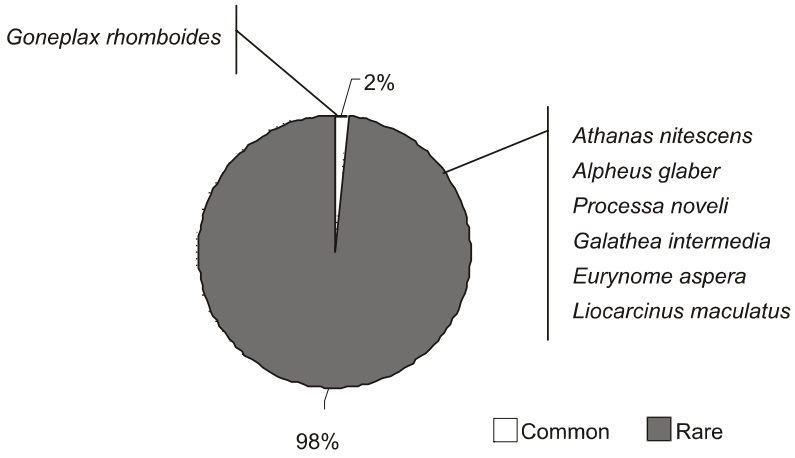

Fig. 5. Dispersion of species as a result of 3 frequency index group values.

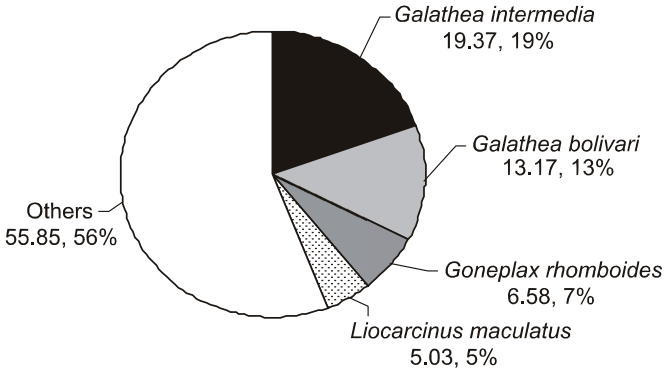

Fig. 6. Dominance values of species on the sandy mud biotope.

The commonest species sampled from mud substrates was the thalassinid ghost crab, *Upogebia pusilla* with a dominance value of 19.76%, followed by the hermit crab, *G. bolivari* (10.17%), the brachyuran crab, *G. rhomboides*, and caridean shrimp, *P. nouveli* (8.98% each), and the other caridean shrimps, *A. nitescens* (6.58%) and *A. glaber* (5.38%). The species with the lowest dominance values in this biotope were the caridean shrimps, *Alpheus macrocheles*, *Crangon crangon*, *Hippolyte inermis*, *Solenocera membranacea*,

the hermit crab, *Diogenes pugilator*, the thalassinid ghost crab, *Calocaris macandreae*, and the brachyuran crab, *Pisa armata* each with dominance values of 0.21% (Table 2, Fig. 7).

In the sandy substrates the brachyuran crab, *Liocarcinus maculatus* had the highest abundance (11.76%), with the combined brachyuran crabs being important components of that biotope (41.37% of the total abundance). The hermit crab, *Pagurus cuanensis* had the highest dominance value (14.7%) (Fig. 8), with *G. rhomboides*, being the dominant brachyuran crab species (dominance value of 6.69%).

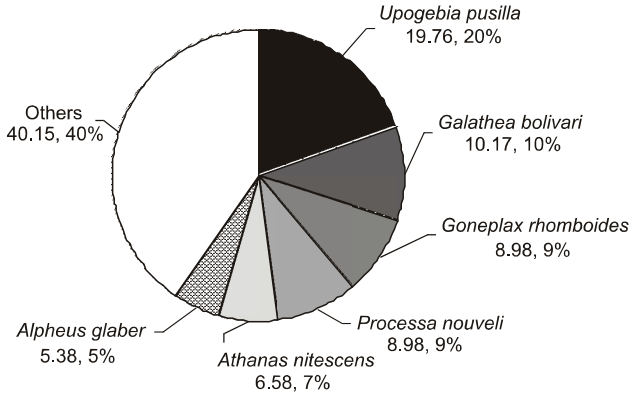

Fig. 7. Dominance values of species on the mud biotope.

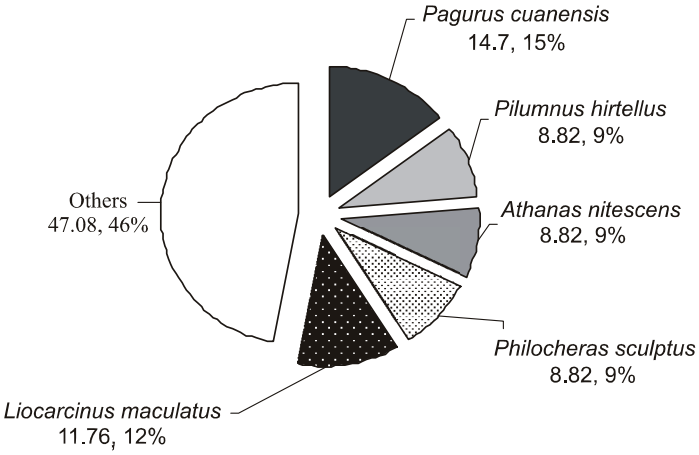

Fig. 8. Dominance values of species on the sand biotope.

A great majority (79%) of the species recorded here were collected on sandy mud bottoms. In addition, 4 species (anomuran squat lobsters, *Paguristes syrtensis*, *Pisidia bluteli*, *Pisidia longimana* and the brachyuran crab, *Liocarcinus maculatus*) collected are endemic for the Mediterranean. Only 10 of the species collected (around 16.66% of the total) were found in all the biotopes. The majority of the species (23 species, 39.65%) were common at the depths of 25-50 m with only *Ebalia nux* of the brachyuran crabs occurring at the depths of 137 m (Fig. 9).

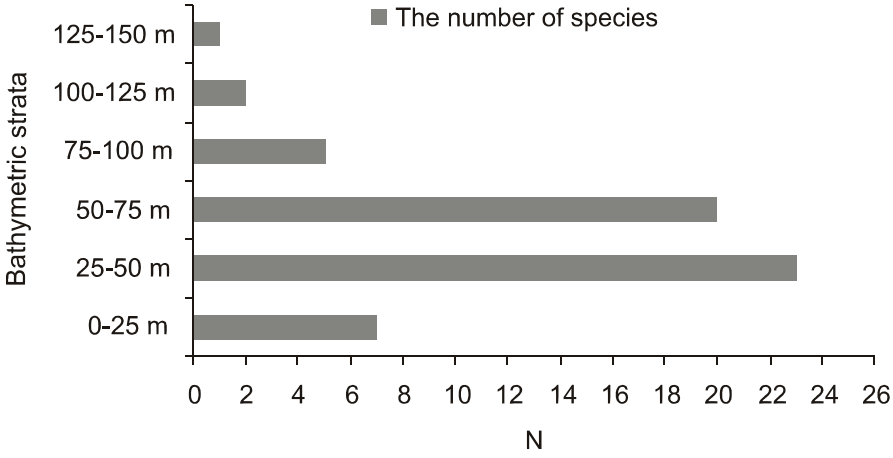

Fig. 9. Dominance values of species on the mud biotope.

DISCUSSION

The results presented here are the first analysis exclusively of the soft-sediment decapod crustacean assemblages of the Aegean Sea shore of Turkey. 58 species were retrieved from benthic samples collected in the area of investigation. In an earlier study Katağan et al. (1988) reported 13 decapod species (7 carideans, 1 thalassinid, 2 anomurans, and 3 brachyurans) on the soft-bottoms of the bathyal depths off the Aegean Sea coast of Turkey. Our samples revealed only 4 (*S. membranacea*, *C. macandreae*, *E. nux*, and *M. couchii*, at the depths of 74 – 183 m) of the bathyal species reported by Katağan et al. (1988). Shrimps that had previously been reported by Balkıs (1999) from soft-bottoms of the Sea of Marmara such as the dentrobranchiat shrimp, *Parapenaeus longirostris* (Lucas, 1846), the caridean shrimps, *Plesionika*

heterocarpus (A. Costa, 1871) and *Palaemon serratus* (Pennant, 1777) were not recorded in this study.

Balkıs et al. (2001) reported 20 brachyura species on soft sediments of the Gökceada (Imbros) Island shores. Koçak et al. (2001) documented 11 anomurans (4 species for sandy, 5 for mud, and 2 for sandy mud sediments) living on the soft-bottoms of the Aegean Sea coast of Turkey. The hermit crab, *Anapagurus bicorniger* A.M.-Edwards & Bouvier, 1892, the anomuran squat lobsters, *Galathea nexa* Embleton, 1834, *Munida intermedia* A. Milne-Edwards & Bouvier, 1899, and *Munida tenuimana* G.O. Sars, 1872 were not recorded in the area of this study (Table 3).

Table 3

Anomuran species found on soft-bottoms reported in Koçak et al. (2001) and this study.

	Koçak et al. (2001)			This study		
	Type of sediment					
Anomuran species	S	M	SM	S	M	SM
Diogenes pugilator	+				+	
Paguristes eremita	+					+
Paguristes syrtensis	+					+
Anapagurus bicorniger			+			
Anapagurus laevis						+
Anapagurus petiti			+	+		+
Pagurus alatus		+		+		+
Pagurus anachoretus						+
Pagurus cuanensis				+	+	+
Pagurus forbesii	+					+
Pagurus prideaux		+				+
Galathea bolivari				+	+	+
Galathea intermedia					+	
Galathea nexa		+				
Munida intermedia		+				+
Munida tenuimana		+				
Pisidia bluteli						+
Pisidia longimana				+	+	

Kocataş and Katağan (2003) reported some bathyal decapod species (the pandaloid shrimp, *Pandalina profunda* Holthuis, 1946, the stenopodid shrimp, *Richardina fredericii* Lo Bianco, 1903, the caridean shrimp, *Plesionika gigliolii* (Senna, 1903), the brachyuran crabs, *Bathynectes maravigna* (Prestandrea, 1939), *Dorhynchus thomsoni* Thomson, 1873, and *Latreillia elegans* Roux, 1830) on silt sediments at depths of 200-720 m in the Sea of Marmara and in the Aegean Sea off the coast of Turkey. None of those species were observed in this study probably as a result of the relatively narrow depth range here studied (7 – 183 m).

Çınar et al. (2006) recorded the caridean shrimps, *C. crangon*, *Melicertus kerathurus* (Forskål, 1775), *Palaemon adspersus* Rathke, 1837, and *Sicyonia*

carinata (Brünnich, 1768), the thalassinid ghost crab, *U. pusilla*, the anomuran squat lobster, *Galathea cenarroi* (Zariquiey-Alvarez, 1968), the hermit crab, *P. bluteli*, and the brachyuran crabs, *B. sexdentatus*, *Carcinus aestuarii* Nardo, 1847, and *Liocarcinus vernalis* (Risso, 1816) on the soft-bottoms in Alsancak Harbour, İzmir Bay. Of those species only the caridean shrimp, *C. crangon*, the thalassinid ghost crab, *U. pusilla*, and the brachyuran crab, *B. sexdentatus* were observed in this study.

In the central Mediterranean, Fanelli et al. (2005) reported a total of 16 species of decapods (6 Caridea, 4 Thalassinidea, 2 Anomura, and 4 Brachyura) on the soft-bottoms of the Montalto di Castro coast and Gaeta Bay. The caridean shrimps, *Processa canaliculata* Leach, 1815, and *Philocheras monocanthus* (Holthuis, 1761), the thalassinid ghost crabs, *Jaxea nocturna* Nardo, 1847 and *Upogebia tipica* (Nardo, 1869), the hermit crab, *Anapagurus bicorniger* A.M.-Edwards & Bouvier, 1892, and the brachyuran crab, *Medorippe lanata* (Linnaeus, 1767) reported in that publication were not recorded here. Fanelli et al. (2005) emphasized that the hermit crab, *Anapagurus laevis* is specific to coastal detritic bottoms, however, we recorded this species on sandy mud substrates in our study area. Further, those authors reported the thalassinid ghost crab, *Gourretia denticulata* present on the muddy sediments of the Montalto di Castro coast and Gaeta Bay, whilst they were observed on sandy mud bottoms in this study.

One specimen of the caridean shrimp, *Athanas nitescens*, which is a characteristic species of *Posidonia oceanica* meadows has been reported on silty clay sediments in the Tyrrhenian Sea (Fanelli et al. 2005), on sandy bottoms of the southern Sardinia coast (Manning & Froglia 1982) and in Argolikos Bay, Greek waters of the Aegean (Marka & Nicolaidou 2000). The caridean shrimp, *Athanas nitescens* was found on 3 different sediments (sand, mud, and sandy mud) in this study. In Fanelli et al.'s study, the most abundant species recorded were the caridean shrimps, *Alpheus glaber* (16 specimens), *Processa canaliculata* Leach, 1815 (14), and the thalassinid ghost crab, *Gourretia denticulata*. However, the anomuran squat lobsters, *Galathea intermedia* and *Galathea bolivari* were reported as the most dominant on soft-bottom species this study. Fanelli et al.'s (2005) study showed a lower overall species diversity than the results presented here.

Only two studies on soft-bottom crustaceans of Turkish Seas have been published. Kırkım et al.'s (2006) which is one of these, includes the first data for soft-bottom crustaceans on the Anatolian coast of the Black Sea. In that study, the authors reported the hermit crab, *Diogenes pugilator* on sandy sediments, the brachyuran crab, *Liocarcinus depurator* on mud substrates, and another brachyuran crab, *Xantho poressa* on sandy mud bottoms. Previously, the hermit crab, *Diogenes pugilator* and the anomuran squat lobster, *Pisidia*

longimana were reported from soft-bottoms of the coastal area located in south Crimea, northern Black Sea (Revkov & Nikolaenko 2002). A study (Sezgin et al. 2007) regarding soft-sediment inhabiting crustaceans of the eastern Aegean Sea was conducted in Saros Bay, reporting that exposed that the caridean shrimp, *A. glaber* and other species (the thalassinid ghost crabs, *Callianassa subterranea* (Montagu, 1808), *Calocaris macandreae* (Bell, 1846) and *U. pusilla*, and the brachyuran crab, *D. thomsoni*) occurred on mud sediments. According to Harriague et al. (2006) soft-bottom macrofaunal assemblages were particularly dominated by polychaetes and crustaceans.

In this study it was seen that decapod crustacean communities of soft subtrates are dominated by brachyuran crabs. Manjón-Cabeza & García Raso (1998) stated that substrata such as sand, mud, and meadows determine the dominance and composition of species in the decapod community. These results presented here that further investigations will reveal more details about the distributions, abundances and ecological characteristics of many decapod species living on soft-sediments.

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