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Diversity and New Records of Polychaetes (Annelida) in the Sinop Peninsula, Turkey (Southern Black Sea)

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ABSTRACT

Objective: This study determines the diversity of annelid polychaete species distributed around the coast of Sinop and to identify possible spatial and temporal variations of the Polychaeta community.

Materials and Methods: Benthic material was collected from 8 stations using Van Veen grab between October 2013 and July 2014 on the soft bottom of Sinop Peninsula.

Results: A total of 90 species belonging to 30 families were identified. Among them, *Galathowenia* cf. *oculata, Rhodine loveni* Malmgren, 1865, *Paradoneis armata* Glémarec, 1966, *Paralacydonia paradoxa* Fauvel, 1913 and *Syllis* cf. *amica* are new records for the Black Sea fauna and *Glycera tridactyla* Schmarda, 1861 is new for the Turkish coast of the Black Sea. *Prionospio (Minuspio) maciolekae* Dagli and Çinar, 2011, *Micronephthys longicornis* (Perejaslavtseva, 1891) and *Protodorvillea kefersteini* (McIntosh, 1869) were the most frequent and dominant species in the study area. The highest mean number of species (29 species) was found in spring at station G2; the lowest mean number of species (4 species) was determined at station G3 in winter. The highest mean density value (9470 ind. m^{-2}) was determined at G2 station in summer; the lowest mean density value (357 ind. m^{-2}) was calculated in autumn at station G5.

Conclusion: The Polychaeta diversity on the soft bottom of the Sinop Peninsula was analyzed and four species were newly recorded for the Black Sea fauna and one for the Turkish Black Sea fauna.

Keywords: Polychaeta, benthos, community, diversity, density

INTRODUCTION

Annelid polychaetes are the most diverse benthic invertebrates and they densely occur on the sea-floor. Although most of the polychaetes live in a marine environment, fresh and brackish water forms are also known. Up to date, more than 12,000 species of Polychaeta have been reported in the world oceans (1); from them, more than 1,100 species have been reported in the Mediterranean Sea (2). Nowadays, a total of 711 species have been reported on the coast of Turkey with 459 species in the Levantine Sea, 559 species in the Aegean Sea, 398 species in the Sea of Marmara, and 187 in the Black Sea (3-7).

Sinop Peninsula is located on the Black Sea with a salinity of about 18‰. The Black Sea is one of the largest semi-closed seas in the world with an area of approximately 4.2x105 km², an average depth of 2,212 m, and a water volume of 534,000 km (8). Due to the high rate of hydrogen sulphide (H_2S), most of the Black Sea basin (~ 87%) shows anoxic properties (8, 9). Anoxic conditions affect the vertical distribution of organisms at depths below 70-200 meters. The hydrographic regime is characterized by high salinity in the deep waters of the Mediterranean origin, which is covered by the low salinity surface waters of the river.

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The structure of the Black Sea ecosystem differs from the Mediterranean because of less diversity and dominant groups of species. However, productivity, total biomass and abundance values of the Black Sea are higher than those of the Mediterranean Sea (5, 9).

There are only a few investigations on polychaete diversity from the Black Sea (10-16). All the studies that addressed the Turkish Black Sea have focused on the pyrophosphoric region, (17-24) and some others on the Anatolian coasts (5-7, 25-28).

Hence, the aims of this study are to assess diversity of polychaetes in the soft bottoms of the Sinop Peninsula and to determine temporal and spatial variations in the community of polychaetes.

MATERIALS AND METHODS

Samplings were conducted between October 2013 and July 2014 to identify diversity and seasonal changes of polychaete species along the coast of Sinop. Benthic samples were collected seasonally from soft substratum using a Van Veen grab at 8 stations, each with 3 replicates (Figure 1; Table 1). The material was sieved on board by using a 0.5 mm mesh sieve, and seawater for dilution. The organisms were fixed with 4% formaldehyde and placed in containing plastic bags. In the laboratory, the fixed material was washed off with tap water using a 0.5 mm mesh and sorted into major taxonomic groups using a light and stereomicroscope and each sample was preserved into tubes containing 70% ethanol. Polychaetes were determined at species level, although those undetermined were kept at genus level, and the numbers of individuals were counted. The material was deposited in the Hydrobiology Laboratory of the Biology Department of Sinop University, Turkey.

The following biotic indices were used to assess the structure of polychaete communities in the research area: Dominance Index of Bellan-Santini (29), Shannon-Wiener's diversity index (H'), Pielou's evenness index (J') and, Soyer's frequency index (30). All were performed by using PRIMER 5 and STATISTICA 7.0.

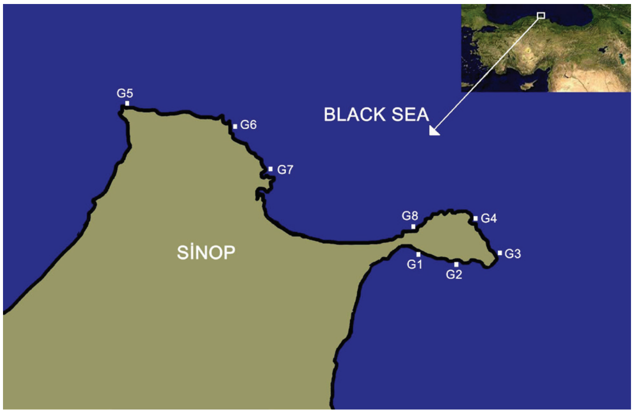

Figure 1. Sampling stations at Sinop Peninsula, Turkey (Black Sea).

The identified species were also classified according to the ecological groups mentioned by Çınar et al. (31). The first ecological group includes sensitive and insensitive species (GI and GII), the second ecological group includes tolerant species (GIII), and the third ecological group includes first and second order opportunistic species (GIV and GV) (31).

Table 1. Coordinates, depth, and sediment type of sampling stations at Sinop Peninsula.

Station	Coordinates	Depth (m)	Sediment type
G1	42° 02 ' 030 " N 35° 15 ' 060 " E	14	Mud and shell fragments
G2	42° 01 ' 329 " N 35° 18 ' 371 " E	15	Mud and shell fragments
G3	42° 02 ' 166 " N 35° 21 ' 077 " E	20	Fine sand
G4	42° 03 ' 804 " N 35° 19 ' 353 " E	21	Fine sand
G5	42° 09 ' 936 " N 34° 94 ' 968 " E	14	Silt
G6	42° 08 ' 497 " N 35° 02 ' 176 " E	20	Fine sand, mud and shell fragments
G7	42° 06 ' 300 " N 35° 04 ' 548 " E	20	Sand, Fine sand and Mud
G8	42° 03 ' 121 " N 35°15 ' 344 " E	14	Sand

RESULTS

A total of 90 species belonging to 30 families and 63 genera were determined in the study area (Table 2). *Galathowenia* cf. *oculata*, *Rhodine loveni* Malmgren 1865, *Paradoneis armata* Glémarec, 1966, *Paralacydonia paradoxa* Fauvel, 1913 and *Syllis* cf. *amica* were new records for the Black Sea fauna and *Glycera tridactyla* Schmarda, 1861 was a new record for the Turkish coast of the Black Sea.

According to frequency index values, 40 species were distributed as constant (50<F≤100), 15 as common (25>F≤50), and 35 species as rare (0>F≤25) (Table 2). Among them, *Micronephthys longicornis*, *Prionospio maciolekae*, *Spio decoratus*, *Heteromastus filiformis* and *Melinna palmata* were found at all stations (100%). Syllidae (13 species) was the most diverse family in the area, followed by Spionidae (8 species), Paraonidae (8 species) and Nereididae (7 species). According to the number of individuals, the most dominant families were identified as Spionidae, Nephtyidae and Dorvilleidae, and these families were found during all sampling periods. The most dominant species were *P. maciolekae*, *M. longicornis*, *P. kefersteini*, *H. filiformis* and *S. decoratus*.

Table 2. List of species collected during the study and their maximum densities (ind. m^{-2}) per station (A: autumn, W: winter, Sp: spring, S: summer, F: Frequency values (%)).

Species	**G1**	**G2**	**G3**	**G4**	**G5**	**G6**	**G7**	**G8**	**F**
Ampharetidae									
Melinna palmata Grube, 1870	80/Sp	100/S	290/Sp	510/Sp	440/S	330/W	1120/W	300/S	100
Capitellidae									
Capitella cf. _capitata_	60/W	-	10/Sp	10/S	20/S	30/Sp	140/Sp	20/Sp-S	87.5
Capitomastus minima (Langerhans, 1881)	-	-	150/Sp	-	-	120/Sp	10/W-S	250/W	50
Heteromastus filiformis (Claparède, 1864)	950/Sp	730/Sp	10/A-Sp	390/W	50/Sp	870/W	340/W	50/Sp	100
Mediomastus sp.	-	-	10/Sp	-	-	-	60/S	-	25
Notomastus latericeus Sars, 1851	690/Sp	570/S	10/Sp	190/W	60/Sp	110/W	80/Sp-W	-	87.5
Notomastus sp.	130/A	20/S	-	10/A	-	-	10/S	-	50
Cirratulidae									
Chaetozone sp.	10/Sp	-	-	10/A	-	-	-	-	25
Cirriformia tentaculata (Montagu, 1808)	-	-	-	10/A	-	-	-	-	12.5
Dorvilleidae									
Dorvillea rubrovittata (Grube, 1855)	10/Sp	130/W	-	-	-	-	-	-	25
Protodorvillea kefersteini (McIntosh, 1869)	570/Sp	940/Sp	540/Sp	1810/A	-	4150/A	2310/Sp	-	75
Schistomeringos rudolphi (Delle Chiaje, 1828)	500/A	310/Sp	10/S	50/W	-	150/A	10/A	-	
Eunicidae									
Eunice vittata (delle Chiaje, 1828)	90/W	70/S	-	20/A	-	-	-	-	37.5
Lysidice ninetta Audouin-Milne Edwards, 1833	-	10/Sp-W	-	-	-	-	-	-	12.5
Glyceridae									
Glycera alba Grube, 1840	-	-	-	30/A	40/A	10/A	20/A	-	50
Glycera tesselata Grube, 1863	-	-	-	40/W	50/W	-	-	-	25
Glycera tridactyla Schmarda, 1861**	10/Sp	10/Sp-W	-	10/S	50/Sp	30/Sp	10/Sp-S	10/W	87.5
Glycera sp.	-	20/S	-	10/A	80/S	10/Sp	10/W-S	10/W-S	75
Hesionidae									
Microphthalmus sp.	20/Sp	-	60/Sp	100/A	-	90/W	90/Sp-S	10/Sp	75
Lacydoniidae									
*Paralacydonia paradoxa Fauvel, 1913	-	10/S	-	-	-	-	10/Sp	-	25
Lumbrineridae									
Lumbrinereis sp.	-	10/S	-	-	-	-	-	-	12.5

Tablo 2 (Continued)

Magelonidae									
***Magelona mirabilis* (Johnston, 1865)**	-	10/Sp-W	30/Sp-W	170/S	310/ Sp-W	20/Sp-W-S	100/ Sp-W	90/Sp-W	87.5
Maldanidae									
***Leiochone leiopygos* (Grube, 1860)**	10/Sp-W	-	10/Sp	100/Sp	110/Sp	120/W	60/Sp	10/Sp-S	87.5
****Rhodine loveni* Malmgren, 1865**	-	40/Sp	-	70/A	30/S	-	70/S	-	50
Nephtyidae									
***Micronephthys longicornis* (Perejaslavtseva, 1891)**	4290/W	2570 /Sp	260/Sp	3830/W	310/Sp	1470/W	1430/A	530/W	100
***Nephtys hombergii* Savigny *in* Lamarck, 1818**	-	-	-	10/A	20/Sp	10/W	10/A-S	20/W	62.5
***Nephtys* sp.**	-	-	20/W	40/W	200/W	90/W	20/W	130/Sp	75
Nereididae									
***Ceratonereis* sp.**	-	50/S	-	-	-	-	-	-	12.5
***Eunereis longissima* (Johnston, 1840)**	20/W	10/Sp	-	-	-	-	-	-	25
Nereis* cf. *zonata	20/A-Sp-S	110/S	-	10/S	-	10/Sp	-	-	50
***Perinereis cultrifera* (Grube, 1840)**	170/W	180/A	-	70/W	-	30/W	10/Sp-W	-	62.5
***Platynereis dumerilii* (Audouin-Milne Edwards, 1833)**	90/A	80/W	-	30/A	-	10/A	40/A	-	62.5
***Websterinereis glauca* (Claparède, 1870)**	-	10/A	-	-	-	-	-	-	12.5
Nereididae (sp.)	60/W	120/S	210/S	10/A-S	-	-	10/A-W	-	62.5
Opheliidae									
***Polyophthalmus pictus* (Dujardin, 1839)**	-	-	-	-	-	10/A	10/W-Sp	-	25
Orbiniidae									75
***Phylo foetida* (Claparède, 1868)**	-	-	-	10/A-W-S	50/Sp	-	-	-	25
Oweniidae									
****Galathowenia* cf. *oculata***		540/Sp	10/S	-	-	10/A	40/W	-	50
Paraonidae									
***Aricidea* (*Acmira*) *catherinae* Laubier, 1967**	50/A	20/A-S	-	450/A	20/Sp	200/A	80/Sp	70/Sp	87.5
***Aricidea* (*Strelzovia*) *claudiae* Laubier, 1967**	650/S	80/W	20/Sp	50/S	-	10/Sp	-	10/Sp	75
***Aricidea* (*Aricidea*) *pseudoarticulata* Hobson, 1972**	-	-	-	-	10/A	-	20/A	-	25
***Aricidea* (*Acmira*) *simonae* Laubier & Ramos, 1974**	-	-	-	10/W	-	-	-	10/Sp	25

Tablo 2 (Continued)

***Aricidea* sp.**	10/W	-	-	-	-	-	10/S	-	25
****Paradoneis armata* Glémarec, 1966**	-	-	-	-	80/Sp	10/Sp	-	-	25
***Paradoneis lyra* (Southern, 1914)**	-	-	-	-	50/A	-	-	-	12.5
***Paradoneis* sp.**	-	-	-	-	10/S	-	-	-	12.5
Pectinariidae									
***Lagis koreni* Malmgren, 1866**	70/Sp	80/Sp	-	20/W	-	20/A	10/A-W	-	62.5
Pholoidae									
***Pholoe inornata* Johnston, 1839**	170/Sp-W	320/A	30/Sp	450/A	-	150/Sp	530/A	-	75
Phyllodocidae									
Eumida* cf. *sanguinea	70/W	160/W	10/Sp	20/A-W	-	40/A	20/A-Sp	20/W	87.5
***Mysta picta* (Quatrefages, 1866)**	20/Sp	30/Sp-W	10/S	20/W	-	60/W	40/Sp	10/Sp	87.5
***Nereiphylla rubiginosa* (Saint-Joseph, 1888)**	10/Sp	30/Sp	-	20/A-W	-	50/Sp	10/W	-	62.5
***Phyllodoce (Anaitides) rosea* (McIntosh, 1877)**	-	20/Sp	-	-	10/S	-	10/W	-	37.5
***Phyllodoce* sp.**	-	-	-	10/Sp	-	10/Sp-S	10/A	-	37.5
***Pterocirrus macroceros* (Grube, 1860)**	-	20/Sp-S	-	30/A	-	10/Sp	10/S	-	50
Pilargidae									
***Sigambra tentaculata* (Treadwell, 1941)**	610/A	1110/W	10/Sp	40/A	-	270/A	360/A	-	75
***Sigambra* sp.**	-	20/W	-	-	-	-	-	-	12.5
Pisionidae									
***Pisione remota* (Southern, 1914)**	-	-	10/S	-	-	-	-	-	12.5
Polygordiidae									
***Polygordius lacteus* Schneider, 1868**	-	-	-	-	-	-	30/Sp	-	12.5
Polynoidae									
***Harmothoe imbricata* (Linnaeus, 1767)**	40/W	30/A-W	-	40/W	-	20/W	10/A	-	75
***Harmothoe* sp.**	150/Sp	240/Sp-S	20/Sp	130/W	-	40/W	80/Sp	10/Sp	87,5
***Malmgrenia lilianae* (Pettibone, 1993)**	20/Sp	-	10/S	-	-	-	-	-	25
***Malmgreniella* sp.**	10/W	20/A	-	-	-	-	-	-	25
Serpulidae									
***Pileolaria militaris* Claparède, 1870**	210/Sp	1170/S	-	290/W	-	-	10/Sp	-	50

Tablo 2 (Continued)									
***Spirobranchus triqueter* (Linnaeus, 1758)**	100/S	290/W	10/S	230/W	-	30/W	-	-	62.5
***Vermiliopsis striaticeps* (Grube, 1862)**	-	10/A	-	-	-	-	-	-	12.5
Spionidae									
***Aonides paucibranchiata* Southern, 1914**	-	350/Sp	1820/S	1040/Sp	20/S	130/A	1200/Sp	-	75
***Aonides* sp.**	10/S	-	-	-	-	-	-	-	12.5
***Prionospio* (*Minuspio*) *maciolekae* Dagli & Çinar, 2011**	4400/Sp	5080/Sp	460/Sp	6790/W	50/A	7480/A	3140/A	30/Sp-W	100
***Prionospio* sp.**	30/W	60/S	20/S	20/W	10/A	-	20/Sp	10/W	87.5
***Pygospio elegans* Claparède, 1863**	-	-	20/Sp	10/Sp	20/Sp	-	10/A	10/Sp-W	62.5
***Pseudopolydora* sp.**	-	-	10/S	-	-	-	-	-	12.5
***Spio decoratus* Bobretzky, 1870**	30/Sp	110/Sp	390/S	500/S	780/S	530/A	700/S	470/S	100
Spio* cf. *filicornis	-	-	10/A	-	-	-	-	-	12.5
Syllidae									
***Exogone naidina* Örsted, 1845**	870/Sp	470/Sp	40/Sp	30/W	-	30/Sp	30/Sp	50/Sp	87.5
***Myrianida* sp.**	10/Sp	20/Sp	-	-	-	-	-	-	25
***Pionosyllis* sp.**	-	-	-	-	-	10/Sp	-		12.5
Salvatoria* cf. *dolichopoda	130/Sp	80/Sp	-	-	-	10/Sp	-	-	37.5
***Salvatoria clavata* (Claparède, 1863)**	290/W	40/Sp	60/Sp	20/W	-	100/W	-	-	62.5
***Salvatoria* sp.**	-	10/W	-	-	-	-	-	-	12.5
***Sphaerosyllis taylori* Perkins, 1981**	150/W	-	10/S	10/Sp	-	-	10/A	10/S	62.5
***Sphaerosyllis thomasi* San Martín, 1984**	-	-	-	10/A	-	-	30/Sp	-	25
Syllis* cf. *amica	10/W	30/W	10/A	20/A	-	-	-	-	50
***Syllis gracilis* Grube, 1840**	-	40/S	-	-	-	-	-	-	12.5
***Syllis krohnii* Ehlers, 1864**	20/A	-	-	10/A-W	-	-	10/A	-	37.5
***Syllis* sp.**	10/A	20/S	20/A	10/S	-	40/A	-	10/S	75
***Trypanosyllis zebra* (Grube, 1860)**	-	10/A-W	-	-	-	-	-	-	12.5
Terebellidae									
***Polycirrus jubatus* Bobretzky, 1868**	40/W	40/W	10/Sp	80/W	-	-	40/Sp	-	62.5
***Polycirrus* sp.**	20/W	30/S	-	70/S	-	10/A	10/A	-	62.5
Terebella* cf. *lapidaria	10/A	30/Sp	-	-	-	-	60/A	-	37.5
Terebellidae (sp.)	30/A	-	-	-	-	-	-	-	12.5
Trichobranchidae									
***Terebellides stroemii* Sars, 1835**	170/Sp	700/Sp	10/Sp	60/W	-	10/A-Sp-W	50/A	-	75

**New records for the Black Sea, ** New records for the Turkish coast of the Black Sea*

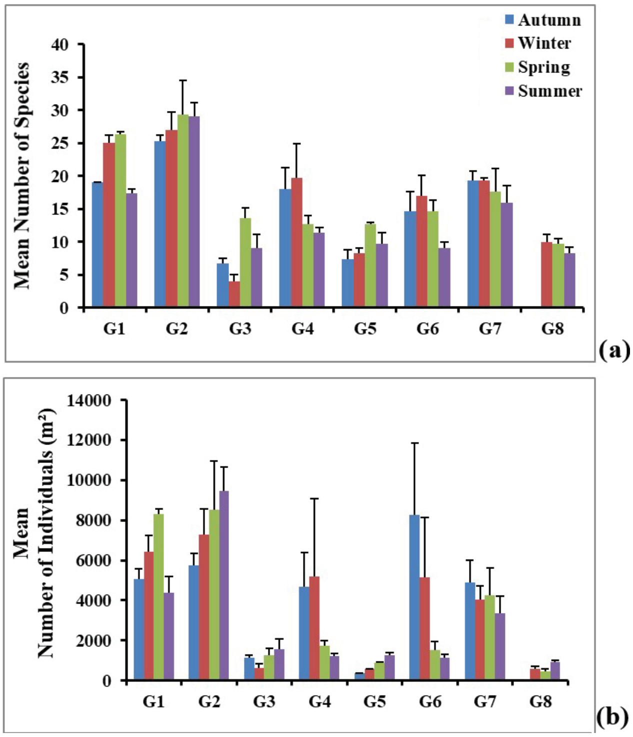

Figure 2. Seasonal distribution of the mean number of species (a) and individuals (m^2) (b).

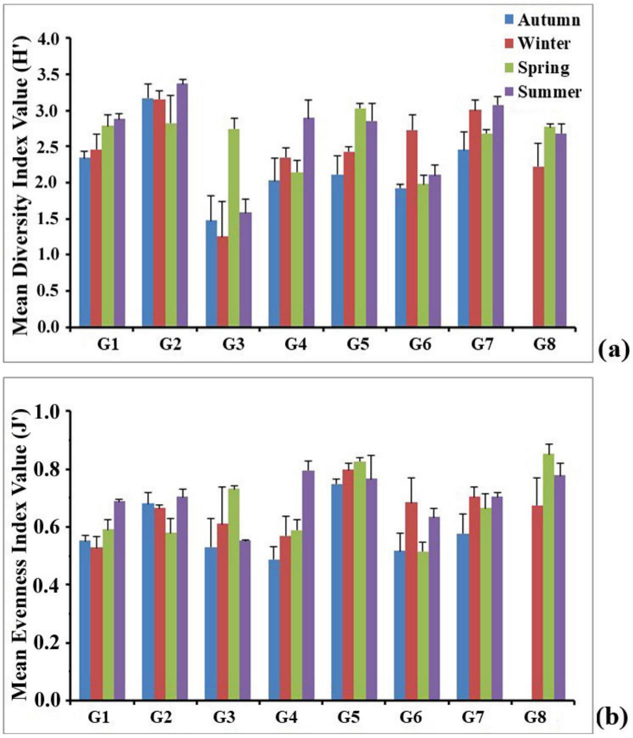

Figure 3. Seasonal distribution of the mean diversity (H') (a) and evenness (J') (b) index values.

Among dominant and constant species, *Prionospio maciolekae* was a sensitive species (GI), *Micronephthys longicornis, Protodorvillea kefersteini* and *Spio decoratus* were tolerant species (GIII), and *Heteromastus filiformis* (GV) was a first-order opportunistic species according to the five ecological groups.

The highest mean number of species for all seasons was determined at station G2 (Figure 2a). There was no significant difference between the stations in terms of the average number of individuals; the highest values were determined at G2 in all seasons just except G6 in autumn (Figure 2b). *Prionospio maciolekae*, *Micronephthys longicornis* and *Protodorvillea kefersteini* were the most dominant species in all seasons. The maximum density values for dominant species were *P. maciolekae* with 6,790 ind.m^{-2} in winter; *M. longicornis* with 4,290 ind.m^{-2} in winter; *P. kefersteini* with 4,150 ind.m^{-2} in autumn.

The highest mean H' value was determined in summer (H'=3.37) at station G2; whereas the lowest mean value was found at station G3 in winter (H'=1.25) (Figure 3a). The highest mean evenness index value was calculated in spring at station G8 (J'=0.85); and the lowest mean value was found at station G4 (J'=0.48) in autumn (Figure 3b).

DISCUSSION

The first detailed study on Polychaeta species of soft substratum around the Sinop Peninsula (southern Black Sea) was carried out by Kurt Sahin et al. (5). The present study was performed in the same area, but with different and deeper stations that represent both sides of the peninsula. Kurt-Sahin and colleagues reported *M. longicornis*, *P. kefersteini*, *P. maciolekae*, *H. filiformis* and *S. decoratus* as dominant and constant species. We also found these species as dominant and constant in the area. This is probably related to the sediment structure of the area.

Benthic communities were examined in five ecological groups according to their sensitivity to environmental factors. Of the dominant and constant species determined in the present study, *Prionospio maciolekae* was a sensitive species, *Micronephthys longicornis, Protodorvillea kefersteini* and *Spio decoratus* were tolerant species, and *Heteromastus filiformis* was a first-order opportunistic species. There were no dense populations of species identified as opportunistic in the research area. According to previous studies conducted on the Black Sea coast (32); (5, 6, 10, 28, 33) and the current research, they are typical species in soft bottoms of the Black Sea.

In the current study, station G2 was represented with the highest value in all seasons in terms of mean number of species (Figure 2a). This is probably related to the sediment structure of station G2. The biotope consists of mud and shell fragments, whose may provide different habitats allowing settlement of diverse species. Station G1 followed station G2 in terms of the number of species in all seasons (Figure 2a). The highest number of species (67 species) was presented in spring and the lowest number of species (62 species) was found in summer and winter (Figure 2a). Considering the average number of individuals, there is significant difference between the seasons (Figure 2b). As a result of the analysis, it was determined that the average number of individuals was the highest at station G2 in three seasons (maximum density 9,740 ind.m^{-2} in summer) and the highest density was calculated at station G6 (2,470 ind.m^{-2} in autumn) (Figure 2b).

Syllidae, with 13 species, was the most diverse family in the area, followed by Spionidae, Nereididae and Paraonidae. Kurt Sahin and Çinar (4) stated that most of the species in the Black Sea dwell in soft bottoms. They reported Syllidae and Spionidae (32 and 31 species, respectively) as the most dominant families by means of number of species, followed by Phyllodocidae and Nereididiae. Kurt Sahin *et al*., (5) reported the most dominant families in the Sinop Peninsula as Syllidae (12 species), Spionidae (8 species) and Paraonidae (7 species).

Spionidae, Nephtyidae and Dorvilleidae were the families with the highest number of individuals and the best representative species were *Prionospio maciolekae*, *Micronephthys longicornis* and *Protodorvillea kefersteini*. Kurt Sahin *et al*., (5) reported that *P. kefersteini* has the highest population density (15,125 ind. m^{-2}) in winter, whereas *M. longicornis* (10,425 ind.m^{-2}) in summer. In the present study, the highest population density belonged to *P. maciolekae* (7,480 ind.m^{-2}) at station G6 in the autumn period. Subsequently, *M. longicornis* (4,290 ind.m^{-2}) had the highest density at station G1 in winter, and *P. kefersteini* (4,150 ind.m^{-2}) at station G6 in autumn.

The highest diversity index value (H'=3.37) was found in summer and the lowest (H'=1.25) in winter (Figure 3a). The highest evenness index value was calculated as J'=0.85 in spring and the lowest as J'=0.48 in autumn (Figure 3b). Kurt Sahin *et al*., (5) recorded the highest mean diversity index value (H'=3.05) in summer and the lowest (H'=0.3) in autumn, and the authors stated that high values were generally seen in summer in the Sinop Peninsula. In the present study, mean evenness index values were high in summer (J'= 0.88) and the lowest in winter (J'=0.2).

Polychaete of the soft bottom Turkish coasts of the Mediterranean Sea, the Aegean Sea, and the Sea of Marmara has been well studied, but in the Black Sea, the studies are limited. The first research conducted on Polychaeta biodiversity of Sinop Peninsula was carried out by Cinar and Gönlügür-Demirci (25) that reported 55 polychaete species associated with algae and mussel beds. Gozler *et al*., (27), reported 9 nereidid species associated with *Cystoseira barbata* and *Mytilaster lineatus* facies. Sezgin *et al*., (34) reported 50 polychaete species in the Anatolian coasts of the Black Sea. Polychaetes from other Black Sea coasts are relatively well known compared with those from Turkey (5). Soft bottom Polychaeta fauna of the Black Sea has been studied in Bulgaria (10), Crimea (12), Romania (13, 15, 16), and the Ukraine (14).

Kurt Sahin *et al*., (5) reported 76 species from the Sinop Peninsula and Kurt Sahin *et al*., (6) reported 58 species from the İğneada coast. Finally, Kurt Sahin *et al*., (7) reported 4 new records for the Black Sea coast of Turkey and 4 new species for the fauna of the Black Sea.

It is well known that the distribution of soft substratum polychaetes depends on depth, seasonal variables, and sediment structure (35-37). Gambi and Giangrande (38) and Mackie *et al*., (36) reported that both density and diversity of benthic communities were affected as depth increased. However, it is not possible to make a comparison because there is no significant difference.

CONCLUSION

The present study shows the current status of the soft substratum polychaetes along the Sinop Peninsula and provides new records for the Black Sea and the Turkish Black Sea coast.

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