SOFT BOTTOM SIPUNCULANS IN ILDIR AND GERENCE BAYS (AEGEAN SEA)

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Abstract
Soft bottom benthic samples were collected at 11 stations in Ildir and Gerence Bays at the depths 15-60 m between the years 2003 and 2006. A total of 480 individuals belonging to 3 species were encountered; *Aspidosiphon* (*Aspidosiphon*) *muelleri*, *Golfingia* (*Golfingia*) *vulgaris* and *Onchnesoma steenstrupii steenstrupii*. Among the biotopes, *Posidonia oceanica* was represented by the highest number of species (3 species). The most dominant and frequent species in the area was *Onchnesoma steenstrupii steenstrupii*. The biometrical features of specimens of the species found in this study were also given.
Keywords : Zoobenthos, Biometrics, Systematics, Aegean Sea, Eastern Mediterranean.

Introduction
Thirty-three sipunculan species are known from the Mediterranean Sea (3), but the Turkish fauna is poorly known: Demir (1) and Ergen et al. (2) reported 2 and 4 species in the Sea of Marmara and Aegean Sea, respectively. The aim of this study was to identify the soft bottom sipunculans in two neigbouring bays in the Aegean Sea, and to investigate their distributional and biometrical features.

Material and Methods
The benthic samples were collected by a dredge and Van Veen Grap at Ildir (5 stations) and Gerence Bays (6 stations) at depths ranging from 15 to 60 m, between 2003 and 2006 (Figure 1). The samples were sieved through a 0.5 mm mesh, fixed with 10% formalin. In the laboratory, sipunculans were identified, counted and preserved in 70% ethanol. A number of biometrical features (lengths of trunk and introvert etc.) of the smallest and largest individuals of each species were measured by using an ocular micrometer.

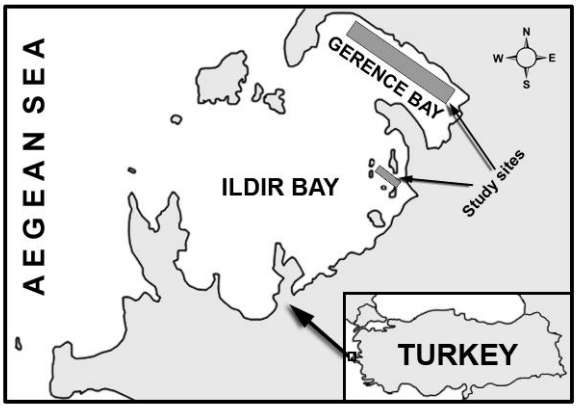

Fig. 1. Map of the investigated area with location of sampling sites.

Results and discussion
Faunistic analysis of 37 benthic samples collected in 11 stations in Ildir and Gerence Bays yielded a total of 480 specimens belonging to 3 species; *Aspidosiphon* (*Aspidosiphon*) *muelleri* Diesing, 1851 (Aspidosiphonidae), *Golfingia* (*Golfingia*) *vulgaris* (De Blainville, 1827) (Golfingiidae) and *Onchnesoma steenstrupii steenstrupii* Koren & Danielssen, 1875 (Phascolionidae). Phascolosomatidae was the dominant family in the area (348 specimens; 72.5% of the total), followed by Aspidosiphonidae (131 specimens, 27.3%) and Golfingiidae (1 specimens, 0.2%), respectively. Among the biotopes, *Posidonia oceanica* was represented by the highest number of species (3 species) and sandy mud had the highest number of individuals (45.2%) (Table 1). *Golfingia* (*G.*) *vulgaris* occurred only on *P. oceanica* at 35 m (Table 1). Only *Aspidosiphon* (*A.*) *muelleri* was found between 10 and 20 m depth on sand and *P. oceanica*. In terms of the frequency values of the species, *Onchnesoma steenstrupii steenstrupii* ranked first, occurring in 26 samples (70.3%), followed by *Aspidosiphon* (*A.*) *muelleri* (48.6%) and *Golfingia* (*G.*) *vulgaris* (2.7%). *Onchnesoma steenstrupii steenstrupii* had the highest frequency score between the depth interval 41-60 m (88%). The majority of specimens of sipunculans were determined between 41 and 60 m. In the shallow waters (10-40 m depth), *P. oceanica* had the highest number of specimens of the sipunculans. The Jaccard similarity index showed that there was a weak similarity between the co-occurrence of species in samples. The highest similarity score was found between *Aspidosiphon* (*A.*) *muelleri* and *Onchnesoma steenstrupii steenstrupii* (32%).

Tab. 1. List of sipuncula species found in Ildir and Gerence Bays with the total number of their individuals at the depth intervals and on biotopes (Po: *Posidonia oceanica*, S: Sand, Sm: Sandy mud, Ms: Muddy sand).

Depth Interval (m)	10-20				21-40				41-60			
Biotope	S	Sm	Ms	Po	S	Sm	Ms	Po	S	Sm	Ms	Po
Golfingia (G.) vulgaris	-	-	-	-	-	-	-	1	-	-	-	-
Aspidosiphon (A.) muelleri	12	-	-	73	-	-	-	19	15	4	8	-
Onchnesoma steenstrupii steenstrupii	-	-	-	-	12	-	-	2	52	213	69	-

The biometrical features of the specimen (1 specimen) of *Golfingia* (*Golfingia*) *vulgaris* in the area are; trunk 6 mm long, 1.4 mm wide; introvert 2.7 mm long, 0.7 mm wide; papillae on base of introvert 23-40 μm height, 18-35 μm in diameter; papillae on caudal end of trunk 38-45 μm in length, 25-33 μm in diameter; hooks 53-105 μm in height. This species is distributed in the Atlantic, Pacific and Indian Oceans and, Mediterranean Sea at depths ranging from 0 to 6000 m depths (see 4).
The biometrical features of specimens (131 specimens) of *Aspidosiphon* (*Aspidosiphon*) *muelleri* in the area are; trunk 2.9-5.6 mm long, 1.2-1.6 mm wide; introvert 3-6.8 mm long, 0.4-0.5 mm wide; introvert longer than trunk length; introvert with 30-50 rings; bidentate hooks 13-30 μm tall, 15-30 μm wide; unidentate hooks 15-25 μm long, 15-28 μm wide; longitudinal grooves on anal shield numbering 13-20; radial grooves on caudal shield numbering 18-24. This species was previously reported from the northeast Atlantic, Mediterranean, Red Sea, and Indian and Pacific Oceans at the depth interval 0-1470 m (see 4).
The biometrical features of the specimens (348 specimens) of *Onchnesoma steenstrupii steenstrupii* in the are; the spherical trunk, 0.7-1.2 mm long, 0.5-0.8 mm wide; introvert partly everted, 0.5-5 mm long, 0.2-0.4 mm wide; small wart-like papillae on surface of trunk 13-18 μm long, 15-25 μm in diameter; trunk has 20-24 keel-like structures; some specimens with elliptical eggs; longer axis 110-145 μm in diameter, smaller axis 90-120 μm in diameter. This species is distributed in the North Atlantic, south eastern Atlantic, western Pacific and south western Indian Ocean, Mediterranean Sea between 0 and 3362 m depths (see 4).
The future studies to be undertaken in the region will shed more light on the real biodiversity of sipunculan species and their functional roles in benthic communities.

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