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Amphipod Fauna of the Turkish Central Black Sea Region

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Abstract: Following research into amphipod fauna in the central Black Sea region of Turkey, forty-two species of benthic amphipod were recorded. Of these, *Ampelisca pseudospinimana, Gammarellus angulosus, Hyale crassipes, Leptocheirus pilosus, Orchestia mediterranea* and *Orchestia stephenseni* are reported from the Turkish Black Sea for the first time, and *Microdeutopus versiculatus* and *Nannonyx propinquus* are new records for Turkish waters. With this study, the number of amphipod species known from the Turkish Black Sea coast has increased from fifty-seven to sixty-five.

Key Words: Crustacea Amphipoda, Sinop Peninsula, Black Sea, Turkey

Türkiye'nin Orta Karadeniz Bölgesi Amphipod Faunası

Özet: Türkiye'nin Orta Karadeniz bölgesi amphipod faunasının araştırılmasına yönelik çalışmada 42 bentik amphipod türü saptanmıştır. Bunlardan *Ampelisca pseudospinimana, Gammarellus angulosus, Hyale crassipes, Leptocheirus pilosus, Orchestia mediterranea* ve *Orchestia stephenseni* Türkiye'nin Karadeniz sahillerinden ve *Microdeutopus versiculatus* ve *Nannonyx propinquus* tüm Türkiye denizlerinden ilk defa rapor edilmektedir. Bu çalışmayla Türkiye'nin Karadeniz sahillerinden bilinen 57 amphipod türünün sayısı 65'e yükselmiş bulunmaktadır.

Anahtar Sözcükler: Crustacea Amphipoda, Sinop Yarımadası, Karadeniz, Türkiye

Introduction

The Sinop peninsula in the central Black Sea region of Turkey is a transition zone between the east and the west of the Turkish Black Sea. The faunistic structure of the region, therefore, sheds light on all the Turkish Black Sea biota. The aim of the present study was to identify the amphipod species of the region.

In spite of the fact that Turkey has a long coastline (nearly 1695 km) in the Black Sea region, there have been few studies of the benthic communities of the region. Moreover there is little information avaliable on the amphipod fauna of the Turkish Black Sea. Stock (1967,1968) reported 5 Gammarids from the Turkish Black Sea in his revision of the species of the European genera *Gammarus* and *Echinogammarus* (1,2), and Casper (1968) found 1 amphipod species in the same area during his investigations of the benthic organisms of the Bosphorus (3). Kocataş and Katağan (1980) reported a total of 41 species in a study of the carcinological fauna of the Turkish Black Sea shores (4), while Mutlu et al. (1992) reported 14 amphipod species from the Turkish Black Sea (5).

In addition, Topaloğlu and Kihara (1993) listed 13 species from the Bosphorus, which is intensely affected by Black Sea currents (6); Balkıs and Albayrak (1994) found 20 amphipod species in the same area (7). Although the number of studies of the Turkish shoreline of the Black Sea is limited, in other parts of the Black Sea many studies have been carried out on the amphipods: on the coasts of Bulgaria, Romania and Russia (8-19). Of these, Greze (1977), in his study of the taxonomy and biology of the region's amphipod fauna, reported 116 species from the Black Sea (19).

The aim of the present study was to identify the amphipod species of the Sinop peninsula, which is situated on the Anatolian coast of the Black Sea, and to provide new data which would be useful in the process of characterizing the amphipod fauna of the entire Turkish Black Sea.

Materials and Methods

Samples were taken at six stations on the Sinop coast during the period June 1996 to June 1997 (Figure 1). The material was taken monthly from the supra-, medio- and infralittoral zones (Table 1). The specimens were collected by hand in the supra and mediolittoral zones, while a grab was employed in the infralittoral zone. The samples were fixed with 4% formalin immediately after collection.

Table 1. Zones, depths and biotope structures of the stations.

Station	Zones	Substrate
1a	supralittoral	sandy
1b	mediolittoral	sandy
1c	infralittoral (17m)	muddy sand
2a	supralittoral	rocky and sandy
2b	mediolittoral	algae and rocky
2c	infralittoral (16m)	algae
3a	supralittoral	rocky
3b	mediolittoral	algae and rocky
3c	infralittoral (18m)	algae
4a	supralittoral	rocky
4b	mediolittoral	rocky and sandy
4c	infralittoral (21m)	algae
5a	supralittoral	sandy
5b	mediolittoral	muddy sand
5c	infralittoral (10m)	algae
6a	supralitttoral	rocky
6b	mediolittoral	rocky and algae
6c	infralittoral (8m)	algae

Results and Discussion

The material examined consisted 42 amphipod species (Table 2). The number of species per station varied. The greatest number was at station 4c (30 species), followed by stations 3c (25 species) and 2c (20 species). The fewest species were found at stations 3a and 6a, in the rocky substrates of the supralittoral zone. According to this data, 6 species were found in the supralittoral zone, 12 in the mediolittoral and 36 in the infralittoral.

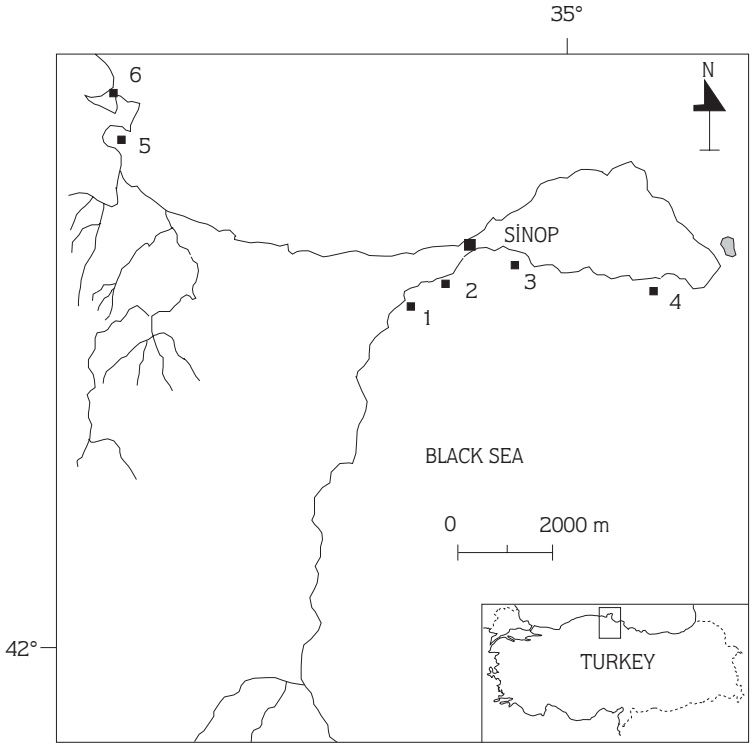

Figure 1. Sampling stations

When the results of earlier studies (1,2,4,5) and the present study are taken into consideration, it can be seen that a total of 65 amphipod species have been reported from the Black Sea coasts of Turkey. Of these, *Ampelisca pseudospinimana, Gammarellus angulosus, Hyale crassipes, Leptocheirus pilosus, Orchestia mediterranea* and *Orchestia stephenseni* are new records for the Turkish Black Sea, and *Microdeutopus versiculatus* and *Nannonyx propinquus* are new records for the entire Turkish Sea fauna.

In total, 42 species of Crustacea amphipoda were identified. Most of the species were found in substrates with a biocenosis of photophilic algae in the infralittoral zone. This is because of the positive effect on species diversity of substratum heterogeneity. The paucity of the number of known species in the Turkish Black Sea fauna is due to the small number of investigations.

In conclusion, Table 3 indicates that a total of 65 species belonging to the order amphipoda are known to occur in the Turkish Black Sea.

Table 2. List of species found at the stations (a: supralittoral, b: mediolittoral, c: infralittoral; * species new to the Turkish Black Sea fauna, ** species new to the Turkish fauna).

SPECIES	STATIONS					
	1	2	3	4	5	6
Ampelisca diadema (A. Costa,1853)	c	-	c	c	-	-
Ampelisca pseudospinimana (Bellan-Santini & Kaim Malka,1977)*	c	-	c	-	-	-
Amphithoe helleri G.Karaman,1975	c	-	-	c	-	c
Amphithoe ramondi Audouin,1826	c	c	c	c	c	c
Atylus massilensis Bellan-Santini,1975	-	-	-	c	-	-
Apherusa chiereghinii Giordani-Soika,1950	-	c	c	c	-	-
Bathypoeria guillliamsoniana (Bate,1857)	-	-	-	-	c	-
Caprella acanthifera Leach,1814	-	c	-	c	-	-
Caprella danilevskii Czerniavski,1868	-	-	c	c	c	c
Caprella liparotensis Haller,1879	-	c	c	c	c	c
Caprella rapax Mayer, 1890	-	c	-	c	-	-
Corophium acherisicum A.Costa,1851	-	b,c	-	c	-	-
Dexamine spinosa (Montagu,1813)	c	c	c	c	c	c
Ericthonius difformis (Dana,1855)	c	c	c	c	c	c
Ericthonius punctatus (Bate,1857)	-	c	c	-	-	c
Echinogammarus olivii (Milne Edwards,1830)	-	c	b,c	b,c	b,c	c
Gammarellus angulosus (Rathke,1843)*	c	c	c	c	c	c
Gammarus aequicauda (Martynov,1931)	b,c	b,c	b,c	b,c	b,c	b,c
Gammarus crinicornis Stock,1966	b,c	b,c	b,c	b,c	b,c	b,c
Gammarus insensibilis Stock,1966	-	c	c	c	-	c
Gammarus subtypicus Stock,1966	-	b,c	b,c	b,c	b,c	b,c
Hyale pontica Rathke,1837	c	c	c	c	-	c
Hyale crassipes (Heller,1866)*	c	b,c	b,c	b,c	-	-
Jassa marmorata Holmes,1913	c	c	c	c	c	c
Jassa ocia (Bate,1862)	-	c	-	-	-	-
Leptocheirus pilosus Zaddach,1844*	c	c	c	c	-	-
Melita palmata (Montagu,1804)	c	b,c	b,c	b,c	b,c	c
Microdeutopus gryllotalpa A.Costa,1853	-	-	c	c	-	-
Microdeutopus versiculatus (Bate,1856)**	-	-	-	c	-	-
Nannonyx propinquus Chevreux,1911**	-	-	-	c	-	-
Stenothoe monoculoides (Montagu,1813)	-	-	c	c	-	-
Orchemene sp.	-	-	-	-	c	-
Orchestia cavimana Heller,1865	-	-	a	-	a	a
Orchestia gammarella (Pallas,1766)	a	a	b,c	a	-	-
Orchestia mediterranea A.Costa,1853*	-	a,b	-	-	a,b	-
Orchestia montagui Audouin,1826	a	a	-	-	-	-
Orchestia platensis Kroyer,1845	a	-	-	-	a	-
Orchestia stephenseni Cecchini,1928*	-	a,b	-	-	a,b	-
Parhyale aqualina (A.Costa,1857)	-	-	-	b,c	-	b,c
Phtisica marina Slabber,1769	-	c	c	c	c	c
Talorchestia deshayesii (Audouin,1826)	a,b	-	-	-	a,b	-
Tritaeta gibbosa (Bate,1862)	-	-	c	c	-	-

Table 3. Amphipod species of the Turkish Black Sea coasts.

Species	REFERENCES			
	Stock (967, 1968)	Kocataş & Katağan (1980)	Mutlu et al., (1992)	This work
Ampelisca diadema (A. Costa,1853)	-	+	+	+
Ampelisca pseudospinimana (Bellan-Santini & Kaim Malka,1977)	-	-	-	+
Amphithoe helleri G.Karaman,1975	-	+	-	+
Amphithoe ramondi Audouin,1826	-	+	-	+
Atylus guttatus (A. Costa,1851)	-	-	+	-
Atylus massilensis Bellan-Santini,1975	-	-	-	+
Apherusa bispinosa (Bate,1857)	-	+	-	-
Apherusa chiereghinii Giordani-Soika,1950	-	+	-	+
Bathyporeia guilliamsoniana (Bate,1857)	-	+	-	+
Biancolina algicola Della Valle,1893	-	+	-	-
Caprella acanthifera Leach,1814	-	+	-	+
Caprella danilevskii Czerniavski,1868	-	+	-	+
Caprella liparotensis Haller,1879	-	+	-	+
Caprella mitis Mayer,1890	-	+	-	+
Caprella rapax Mayer, 1890	-	+	-	+
Cardophilus baeri G.O.Sars,1890	-	-	+	-
Corophium acherisicum A.Costa,1851	-	-	-	+
Corophium bonelli (Milne-Edwards,1830)	-	+	-	-
Corophium orientale Schellenberg,1928	-	-	+	-
Corophium runcicorne Della Valle,1893	-	+	-	-
Cymadusa crassicornis (A. Costa,1857)	-	+	-	-
Dexamine spinosa (Montagu,1813)	-	+	-	+
Echinogammarus foxi (Schellenberg,1928)	+	+	-	-
Echinogammarus olivii (Milne Edwards,1830)	-	+	-	+
Ericthonius difformis (Dana,1855)	-	+	-	+
Ericthonius punctatus (Bate,1857)	-	+	-	+
Gammarellus angulosus (Rathke,1843)	-	-	-	+
Gammarus aequicauda (Martynov,1931)	+	-	-	+
Gammarus crinicornis Stock,1966	+	+	-	+
Gammarus insensibilis Stock,1966	+	-	-	+
Gammarus subtypicus Stock,1966	+	-	-	+
Hyale crassipes (Heller,1866)	-	+	-	+
Hyale perieri (Lucas,1849)	-	-	-	-
Hyale pontica Rathke,1837	-	+	-	+
Hyale schmidti (Heller,1866)	-	+	-	-
Jassa dentex (Czerniavskı,1868)	-	+	-	-
Jassa marmorata Holmes,1913	-	+	+	+
Jassa ocia (Bate,1862)	-	+	-	+
Leptocheirus pilosus Zaddach,1844	-	+	-	+
Melita palmata (Montagu,1804)	-	-	+	+
Microdeutopus algicola Della Valle,1893	-	+	-	-
Microdeutopus gryllotalpa A.Costa,1853	-	+	+	+
Microdeutopus versiculatus (Bate,1856)	-	-	-	+
Monoculodes gibbosus Chevreux,1888	-	-	+	-
Nannonyx propinquus Chevreux,1911	-	-	-	+
Orchemene humilis (A. Costa,1853)	-	-	+	-
Orchemene sp.	-	-	-	+
Orchestia cavimana Heller,1865	-	-	-	+
Orchestia gammarella (Pallas,1766)	-	+	-	+
Orchestia mediterranea A.Costa,1853	-	-	-	+
Orchestia montagui Audouin,1826	-	+	-	+
Orchestia platensis Kroyer,1845	-	+	-	+
Orchestia stephenseni Cecchini,1928	-	-	-	+
Paracentromedon sp.	-	-	+	-
Parhyale aqualina (A.Costa,1857)	-	+	-	+
Perioculodes longimanus longimanus (Bate & Westwood,1868)	-	+	+	-
Perioculodes sp.	-	-	+	-
Phtisica marina Slabber,1769	-	+	+	+
Pontogammarus sp.	-	+	-	-
Stenothoe monoculoides (Montagu,1813)	-	+	-	+
Siphonoecetes dellavallei Stebbing,1899	-	+	-	-
Synchelidium maculatum Stebbing,1906	-	-	+	-
Talitrus saltator (Montagu,1808)	-	+	-	-
Talorchestia deshayesii (Audouin,1826)	-	+	-	+
Tritaeta gibbosa (Bate,1862)	-	-	-	+

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