

# A Contribution to the Marine Harpacticoid (Crustacea, Copepoda) Fauna of Turkey\*

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**Özet:** *Türkiye harpaktikoid (Crustacea, Copepoda) faunasına bir katkı.* Türkiye harpaktikoid faunasının açığa çıkartılmasına bir katkı olması açısından Balıkesir sınırları içerisinde kalan sahillerde fital ve bentik yaşayan harpaktikoid kopepod türleri teşhis edildi. Yapılan teşhisler sonucunda 16 familyaya ait 33 cins içerisinde 37 tür ve 1 alttür belirlenmiştir. Belirlenen taksonlardan 24 tür ve 1 alttür Türkiye denizlerinden ilk defa kayıt edilmektedir. Tür sayısı bakımından Diosaccidae ve Ameiridae (6'şar tür) familyaları ilk sırada yer alırken bu familyaları 4'er tür ile Paramesochridae ve Laophontidae, 3'er tür ile Ectinosomatidae ve Tetragnonipitidae, 2'şer tür ile Harpacticidae ve Tisbidae, 1'er tür ile Longipediidae, Canuellidae, Thalestridae, Parastheneliidae, Metidae, Orthopsyllidae, Leptastacidae ve Latiremidae familyaları takip etmiştir.

**Anahtar Kelimeler:** Copepoda, Harpacticoida, Marmara Denizi, Ege Denizi, Balıkesir.

**Abstract:** Phytal and interstitial harpacticoids inhabiting in the coasts which situated within the border of Balıkesir province were determined in order to contribute the Turkish harpacticoid fauna. As a result, 37 species and 1 subspecies belonging to 33 genera distributed within 16 families were identified. Twenty four species and 1 subspecies were recorded for the first time from the Turkish seas. According to the species numbers, the families Diosaccidae and Ameiridae ranked first with 6 species, Paramesochridae and Laophontidae with 4 species, Ectinosomatidae and Tetragnonipitidae with 3 species, Harpacticidae and Tisbidae with 2 species, Longipediidae, Canuellidae, Thalestridae, Parastheneliidae, Metidae, Orthopsyllidae, Leptastacidae and Latiremidae with 1 species.

**Key Words:** Copepoda, Harpacticoida, Sea of Marmara, Aegean Sea, Balıkesir.

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## Introduction

The order Harpacticoida of the class Copepoda contains over 3000 species. Harpacticoids are essentially marine but over 945 species are also found exclusively in freshwater. Marine harpacticoids are free-living benthic organisms, although a few are planktonic. In marine sediments they are usually the second most abundant meiofaunal taxon after nematodes, but they are often the dominant taxon in marine algae (Huys et al., 1996).

Marine harpacticoid fauna of Turkey is almost not known. The aim of this article is to contribute to marine harpacticoid fauna of Turkey.

## Material and Methods

Samples were collected from 19 stations (Figure 1 and Table 1) along the beaches of Sea of Marmara and Aegean Sea of Balıkesir Province, using the Karaman-Chauffuis method (Delamare Deboutteville 1954). Phytal samples were taken from the rocks.

Specimens were cleaned in lactic acid and dissected in lactophenol. Dissected parts were mounted on slides in lactophenol mounting medium. Broken glass fibres were added to prevent the animal and appendages from being compressed by the coverslip and to facilitate rotation and

manipulation, allowing observation from all angles. Preparations were sealed with entellan (Merck). All examinations have been made by using an Olympus BX-50 differential interference contrast microscope. Specimens were identified by using Lang (1948, 1965), Apostolov and Marinov (1988), Wells (1976), Huys et al., (1996), Bodin (1997) and relevant literatures.

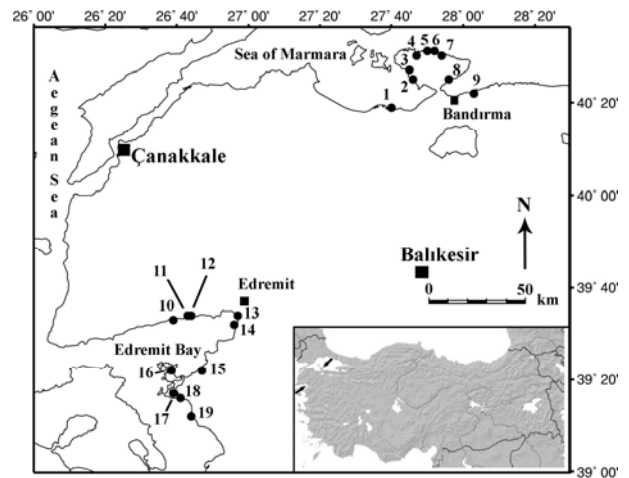


Figure 1. Map showing the sampling stations (1-19).

Table 1. Sampling localities between Dutımanı Beach and Misakça Village beach (Balıkesir), and between Küçükuyu and Ayvalık (Balıkesir).

St. No	Locality	Coordinates	Date
1	Misakça Village Beach	N 40° 18' 648" E 27° 39' 735"	18.09.2001
2	Erdek (Arteka Hotel Beach)	N 40° 24' 858" E 27° 46' 352"	18.09.2001
3	Ocaklar Beach	N 40° 26' 536" E 27° 45' 325"	18.09.2001
4	Turan Village Beach	N 40° 30' 389" E 27° 46' 944"	18.09.2001
5	Ormanlı Village Beach	N 40° 30' 582" E 27° 50' 228"	18.09.2001
6	Ormanlı-Çayağzı Beach	N 40° 30' 738" E 27° 52' 429"	18.09.2001
7	Ballıpınar Village Beach	N 40° 30' 405" E 27° 53' 923"	18.09.2001
8	Büyükbakraç Village Beach	N 40° 24' 729" E 27° 55' 823"	18.09.2001
9	Dutımanı Beach	N 40° 22' 479" E 28° 03' 080"	18.09.2001
10	Küçükuyu Beach	N 39° 33' 243" E 26° 39' 129"	12.07.2002
11	Altınoluk Beach	N 39° 33' 932" E 26° 43' 346"	12.07.2002
12	Altınoluk Beach	N 39° 34' 034" E 26° 44' 217"	12.07.2002
13	Akçay Beach	N 39° 33' 666" E 26° 56' 964"	12.07.2002
14	Ören Beach	N 39° 31' 939" E 26° 56' 404"	12.07.2002
15	Gömeç (Keremköy) Beach	N 39° 22' 185" E 26° 46' 607"	12.07.2002
16	Cunda Beach	-----	29.09.2002
17	Cennet Creek Beach	N 39° 17' 176" E 26° 39' 250"	12.07.2002
18	Sarımsaklı Beach	N 39° 15' 972" E 26° 41' 371"	12.07.2002
19	Altınova Beach	N 39° 12' 069" E 26° 44' 348"	12.07.2002

Table 2. List of harpacticoid taxa identified in this study and comparison with Noodt (1955). Data from: A – Noodt (1955).

Family	Taxon (own data)	Localities (own data)	A
Longipediidae	<i>Longipedia weberi</i> Scott, 1909	16	+
Canuelliidae	<i>Canuella perplexa</i> T&A, Scott, 1983	2	
Ectinosomatiidae	<i>Ectinosoma melaniceps</i> Boeck 1865	4; 6; 14; 16; 17	+
	<i>Arenosetella germanica</i> Kunz, 1937	18	
	<i>Hastigerella psammae</i> (Noodt, 1955)	4; 10	
Harpacticidae	<i>Harpacticus gracilis</i> Claus, 1863	1; 9; 13; 16	+
	<i>Harpacticus littoralis</i> Sars, 1910	3; 4; 12; 19	
Tisbidae	<i>Tisbe furcata</i> (Baird, 1837)	1; 3; 16	+
	<i>Scutellidium arthuri</i> Poppe, 1884	19	
Thalestridae	<i>Dactylopusia micronyx</i> Sars, 1905	16	
Parastenheliidae	<i>Parastenhelia homelli</i> T.&A. Scott, 1903	16; 19	+
Diosaccidae	<i>Amphiascus minutus</i> (Claus, 1863)	7	+
	<i>Amonardia perturbata</i> Lang, 1965	16	
	<i>Amphiascopsis cinctus</i> (Claus, 1866)	16	
	<i>Schizopera (S.) brucinae</i> Petkovski, 1954	13; 17; 18	
	<i>Eoschizopera (P.) gligici</i> (Petkovski, 1957)	14	
	<i>Bulbamphiascus imus</i> (Brady, 1872)	3	
Metidae	<i>Metis ignea</i> Philippi, 1843	16	
Ameiridae	<i>Ameira longipes</i> Boeck, 1865	3-5; 15; 17-19	
	<i>Ameira parvula</i> (Claus, 1866)	2; 5; 6; 8; 14	+
	<i>Nitocra spinipes</i> Boeck, 1865	6; 7; 10; 12; 17	+
	<i>Psyllocamptus (P.) minutus</i> Sars, 1911	15	+
	<i>Flexiella attenuata</i> (Thompson, 1893)	18	
	<i>Interleptomesochra attenuata</i> (A Scott, 1896)	18	
Paramesochridae	<i>Apodopsyllus reductus</i> (Petkovski, 1955)	3; 9	
	<i>Kliopsyllus holsaticus</i> (Klie, 1929)	5; 7; 18; 19	
	<i>Kliopsyllus constrictus</i> (Nicholls, 1935)	5; 9	
	<i>Scottopsyllus (S.) robertsoni</i> (T&A Scott, 1895)	3	
Tetragonicipitidae	<i>Phyllopodopsyllus briani</i> Petkovski, 1955	3-5; 7; 8; 15; 17; 18	
	<i>Phyllopodopsyllus thiebaudi</i> Petkovski, 1955	6; 8	
	<i>Phyllopodopsyllus pauli</i> Crisafi, 1960	15	
Orthopsyllidae	<i>Orthopsyllus linearis</i> (Claus, 1866)	16	+
Leptastacidae	<i>Paraleptastacus kliei</i> (Gagem, 1923)	10	
Laophontidae	<i>Laophonte inornata</i> A. Scott, 1902	16; 19	+
	<i>Heterolaophonte stroemi stroemi</i> (Baird, 1934)	13; 16	
	<i>Paralaophonte brevisrostris</i> (Claus, 1863)	16	+
	<i>Klieonychocamptus kliei</i> (Monard, 1935)	4-7; 18	
Latiremidae	<i>Delameralla obscura</i> Huys, Karayutug & Cottarelli, 2005	18	

## Results

As a result of our study 37 species and 1 subspecies were identified and given in Table 2. According to the species numbers, the families Diosaccidae and Ameiridae ranked first with 6 species, these two families followed by Paramesochridae and Laophontidae with 4 species, Ectinosomatidae and Tetragnonipitidae with 3 species, Harpacticidae and Tisbidae with 2 species, Longipediidae, Canuellidae, Thalestridae, Parastenheliidae, Metidae, Orthopsyllidae, Leptastacidae and Latiremididae with 1 species.

## Discussion

Although copepod studies on Turkish inland waters were started by the early 1900's (Ustaoglu 2004), it was Noodt (1955) who carried out the first study on Turkish marine harpacticoids and reported 52 species and subspecies from the littoral and subtidal zones in the Marmara Sea. Later Gündüz (1989) recorded *Mesochra aestuarii* Gurney, 1921 from Bafra Balıkgölü, a coastal lagoon near the Black Sea. Toklu and Sarihan (2003) reported *Euterpina acutifrons* Dana, 1852 from İskenderun Bay in Mediterranean coast of Turkey. Recently three new species were described from the Turkish Black Sea coast (Karaytuğ and Huys 2004, Huys et al., 2005, Karaytuğ and Sak 2005). Pulat (2006) reported 84 species from İzmir Bay and claimed that 67 species were new records for the Turkish Seas, unfortunately no further comparison can be made since Pulat (2006) did not include names of the species within the abstract. Pulat et.al. (2006) determined 6 species (3 thalestrid and 3 laophontid) from Gümüldür beach and they reported that *Phyllothalestris mysis* (Claus, 1863) and *Paralaophonte quaterspinata* (Brian, 1917) were new records for the Turkish Seas.

Examination of copepod specimens in this study revealed 37 species and 1 subspecies, 12 of which were also reported by Noodt (1955) from the Sea of Marmara (Table 2). *Delameralla obscura* was originally described from the Turkish Black Sea coast by Karaytuğ and Huys (2004) and it was also found in this study (Table 2). Remaining 24 species and 1 subspecies identified in our samples have not been reported yet therefore they are new records for the Turkish Seas (Table 2).

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