

## New records of anthozoan species (Cnidaria, Octocorallia, Hexacorallia) for the Turkish Straits System

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DOI: 10.1515/ohs-2015-0019

Category: Original research paper

Received: December 01, 2014

Accepted: February 26, 2015

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### Abstract

This study includes new records of soft corals found in the Turkish Straits System (Dardanelles) between 2013-2014. In the above-mentioned area, 50 stations were searched by scientific divers from the intertidal zone to a depth of over 45 m and the ecological characteristics with substrate differences were also recorded. A total of 47 cnidarians were examined during the surveys. Eleven anthozoan species (*Aiptasia mutabilis*, *Alcyonium acaule*, *Andresia parthenopea*, *Calliactis parasitica*, *Cereus pedunculatus*, *Condylactis aurantiaca*, *Epizoanthus couchii*, *Maasella edwardsi*, *Pteroeides spinosum*, *Sarcodictyon roseum*, *Veretillum cynomorium*) belonging to 4 orders are new to the Dardanelles strait, one of which is reported from the Marmara Sea. The current data contributed to the advancement of the knowledge about anthozoan species in the Turkish Seas.

**Key words:** Octocorallia, Hexacorallia, anthozoa, Dardanelles, Marmara Sea, Turkish Straits System

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## Introduction

In the last decade, our knowledge of Anthozoa in the Mediterranean Sea has greatly increased (Vafidis 1995). According to the recent benthos studies, 164 Anthozoans have been reported from the Mediterranean Sea to date, 37 of which are endemic (Vafidis 2010). Coll et al. (2010) reported 90 species from the Aegean Sea. The available data on soft corals in the Turkish Straits System are very limited compared with data from other parts of the Mediterranean. Formerly, a total of 75 Anthozoan species were recorded from the coasts of Turkey (Çınar et al. 2014). The first fragmentary information on anthozoans of the Turkish coast was provided by Forbes (1844) from the Aegean Sea coasts. The existing data on the soft corals from the Turkish Mediterranean coast were non-progressive until the 1950s. Later, a total of 10 octocoral species were reported from the Bosphorus by Demir (1952). After the surveys on benthos, Tixier-Durivolt (1961) reported a new species with a description from the same area. The first remarkable data regarding the taxonomy and ecology of Actinarians on the northern Aegean coasts of Turkey was presented from the Izmir Bay (Coşar 1974).

The number of surveys increased between 1990 and 2013 because of the improvement in scientific diving techniques used in sampling and the new data were added to the faunal inventory (Öztürk & Bourguet 1990, Uysal et al. 1998, Topaloğlu et al. 2004, Öztürk et al. 2004, Gökalp 2011, Topçu & Öztürk 2013). The most recent data on the Turkish Anthozoan fauna with new records were provided by Çınar et al. (2014). Despite those valuable scientific surveys performed to date, the available detailed data are still scarce when considering about 8000 km of the Turkish coastline and they need to be completed with further benthic researches. Yet, recent new data on zoogeography of anthozoans occurring on the Turkish coast were also presented.

The Dardanelles, which connects the Aegean Sea and the Sea of Marmara, is a complex and important waterway system circulating the flows of the Mediterranean and the Black Sea (Kanarska & Maderich 2008) and is connected with other marine waters of regions through the Aegean Sea. The bottom forms a typical “V” shape canal type, which has an average depth of 50 m. The deepest point of

the strait is 113 m in the Nara region and becoming wider to the northernmost entrance it is reaching out 1200 m in the Marmara basin. The average depth values are higher here compared to those in the Bosphorus strait. The current speed, which is mainly influenced by the wind strengths at some localities, can range within 1-5 kn at the surface waters (Gökaşan et al. 2008, Meriç et al. 2009). The maximum and minimum fluctuations of temperature of surface waters and salinity at a depth from 1 to 20 m range within 6.5-22°C and 20-39PSU throughout the year, respectively (Büyükeş & İnanmaz 2007). The surface temperature can reach 25.8°C at some points (Harbor regions) in the Dardanelles during the summer season (Beşiktepe 2003, Özalp 2012).

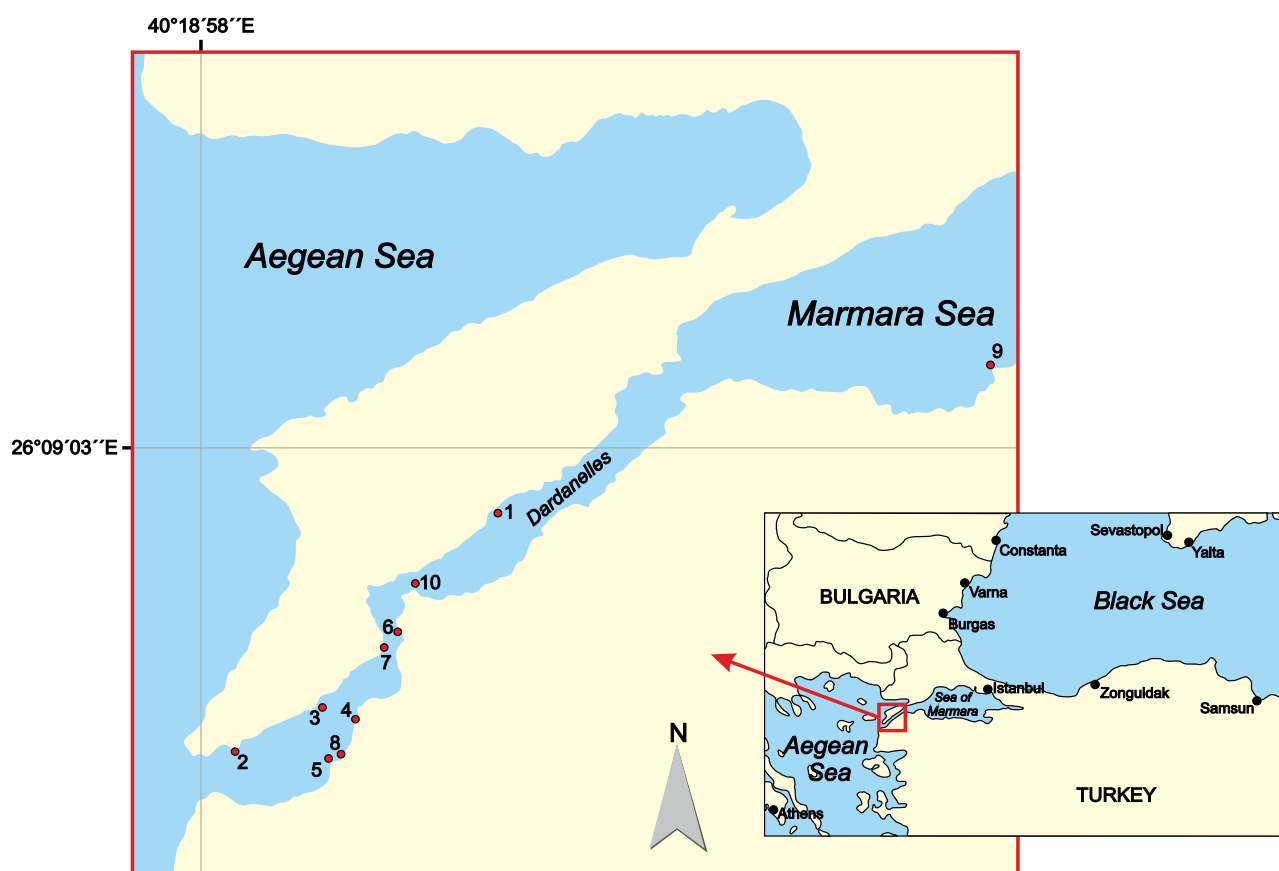
The sea bottom type in the Dardanelles consists mainly of sand, gravel and muddy sand. There are sharp rock ridges and rough areas in some places. The eastern site has more sandbars compared to the Asian site (Artüz 2007, Meriç 2009, Ilgar 2011). The strait's rocky substrates represent a suitable area especially for benthic biota and allows the development of several kinds of biotopes. There are dense communities of algae, scleractinian bioconstructions, sponges and complex coralligenous communities in the structure defined as well developed as those living in the Mediterranean Sea (Çelik et al. 2007, Özalp & Alparslan 2011, Özalp & Alparslan 2015).

The biological diversity is substantial in the region due to the impact of saline waters at deeper zones and the special physico-chemical characteristics (Ateş et al. 2007, Surugiu et al. 2010).

This paper provides new information on the octocoral and hexacoral fauna of the Turkish Straits System and the first check list of octocorals and hexacorals in the area. We report on a collection of soft coral species found in the Dardanelles and the Sea of Marmara (the Turkish Straits System) with new records.

## Materials and methods

Samples were collected by a Scuba diver at depths of up to 45 m from 50 stations of the Dardanelles (Fig. 1), the northern Aegean and the Sea of Marmara between May 2012 and August 2013. A square system of 10 × 10 cm was used to determine the number of individuals. Furthermore, a ruler was used for size measurements and examination of morphological

**Figure 1**

The map showing the sampling sites

characteristics of specimens. The site characteristics and the substrate on which the species existed were also determined and recorded with an underwater camera. The material was transported alive in seawater to a laboratory and deposited in the Piri Reis Museum of the Faculty of Marine Sciences and Technology (OM/PRM).

## Results and discussion

A total of 11 soft and octocoral species (*Aiptasia mutabilis*, *Alcyonium acaule*, *Andresia parthenopea*, *Calliactis parasitica*, *Cereus pedunculatus*, *Condylactis aurantiaca*, *Epizoanthus couchii*, *Maasella edwardsi*, *Pteroeides spinosum*, *Sarcodictyon roseum*, *Veretillum cynomorium*, *Maasella edwardsi*, *Andresia parthenopea*) are reported for the first time for the Turkish Straits System (Dardanelles). *Calliactis parasitica* was found after the octocorallian surveys and it was included in the faunal inventory of the Marmara Sea. The ecological characteristics

of species are also discussed (Table 1). The following 11 species were found in the Turkish Straits System during the present study.

Order: **Actiniaria**

Suborder: **Nyantheae**

Family: **Andresiidae**

*Andresia parthenopea* Andres, 1884

(Fig. 2/A)

**Material examined:** Dardanelles, the Sea of Marmara, OM/PRM-CR, 2013-3, 1 specimen, Soğandere (St. 3), 40°05'24" N – 26°18'26" E, 24 m, 20 January 2013, sandy bottom.

**Ecology:** It lives on sandy and muddy bottoms (Bergbauer&Humberg 2000).

**Zoogeography:** This species is known from the western and eastern Mediterranean, the Adriatic and the Atlantic coasts of France (den Hartog & Ates 2011).

**Previous records:** The species was reported from

Table 1

## List of anthozoans reported for the first time in the present study

| Species                         | Previous records | Substrate | Association status   |
|---------------------------------|------------------|-----------|--|
| <i>Alcyonium acaule</i> *       | M, a             | R, S, G   | -  |
| <i>Maasella edwardsi</i> *      | M, b             | Por       | -  |
| <i>Veretillum cynomorium</i> *  | SM, a            | C, S, G   | -  |
| <i>Sarcodictyon roseum</i> **   | AO, c            | R, Co     | associated with calcareous algae and scleractinian corals              |
| <i>Andresia partenopea</i> *    | AS, c            | S         |  |
| <i>Pteroeides spinosum</i> **   | M, d             | C, S, G   | associated with decapod crustaceans ( <i>Inachus phalangium</i> )      |
| <i>Calliactis parasitica</i> *  | AS, e            | GS        | symbiosis with <i>Dardanus calidus</i>                                 |
| <i>Condylactis aurantiaca</i> * | M, e             | S, G      | associated with decapod anomuran <i>Periclimenes aegylios</i>          |
| <i>Aiptasia mutabilis</i> *     | M, d             | S         | associated with polychaeta masses                                      |
| <i>Cereus pedunculatus</i> *    | SM, e            | R, S, G   | associated with algae substratums                                      |
| <i>Epizoanthus couchii</i> **   | SM, e            | R, Co     | associated with calcareous algae and sponges ( <i>Agelas oroides</i> ) |

a: Topçu ve Öztürk 2013; b: Ponti et al. 2011; c: Vafidis 2010; d: Çınar et al. 2014; e: Gökulp 2011

\*: Hexacorallia; \*\*: Octocorallia

AO: Atlantic Ocean, SM: Sea of Marmara, D: Dardanelles, AS: Aegean Sea, M: Mediterranean Sea

R: rock, S: sand, G: gravel, Por: Posidonia oceanica roots, Co: coralligenous, C: clay, GS: gastropod shell

the Mediterranean (van Ofwegen et al. 2001), the Adriatic Sea (Vafidis et al. 1997) and the Aegean Sea (Doumenc et al. 1985, Vafidis et al. 1997, Vafidis 2010). The first record from the Turkish coast was reported by Gökulp (2011) from the Aegean Sea coasts.

Family: **Actiniidae**

***Condylactis aurantiaca*** Delle-Chiaje, 1825  
(Fig. 2/B,C)

**Material examined:** Dardanelles, OM/PRM-CR, 2013-101, 2 specimens, Dardanos (St. 4), 40°02'47" N – 26°12'41" E, 12 m, 1 January 2013, sandy bottom, symbiosis with Paguroids, OM/PRM-CR, 2013-102, 5 specimens, Çanakkale (St. 6), 40°09'57" N – 26°23'57" E, 7 m, 1 January 2013, sandy and gravelly bottom, OM/PRM-CR, 2013-103, 1 specimen, Kilitbahir (St. 7), 40°09'57" N – 26°22'23" E, 3 m, 14 January 2013, rocky substrate, symbiosis with Paguroid crabs.

**Ecology:** It lives on muddy, sandy and gravelly bottoms (Kruzic 2007).

**Zoogeography:** It is found in the Mediterranean Sea (van Ofwegen et al. 2001, Koukouras 2010).

**Previous records:** This species was reported from the Mediterranean Sea (van Ofwegen et al. 2001), the Adriatic Sea (Vafidis et al. 1997) and the Aegean Sea (Doumenc et al. 1985, Vafidis et al. 1997, Koukouras 2010). The first record of the species for the Aegean Sea coast of Turkey was reported by Gökulp (2011).

Gözcüoğlu (2011) reported this species from the Turkish Straits System. Lately, it was recorded from the Levantine Basin of Turkey by Çınar et al. (2014).

Family: **Aiptasiidae**

***Aiptasia mutabilis*** Gravenhorst, 1831  
(Fig. 2/D)

**Material examined:** Dardanelles, OM/PRM-CR, 2013-40, 1 specimen, Güzelyalı (St. 8), 40°03'46" N – 26°21'03" E, 2 m, 1 January 2013, sandy bottom.

**Ecology:** It occurs on sandy, gravelly and clayish substrates (den Hartog & Ates 2011) and rocky bottoms of shallow waters (Ocaña et al. 1994).

**Zoogeography:** The species occurs in the entire Mediterranean, in the neighboring Atlantic and in the Azores and the southern Island (den Hartog & Ates 2011).

**Previous records:** The species are known from the Mediterranean Sea (van Ofwegen et al. 2001). It also occurs in the Aegean Sea (Doumenc et al. 1985, Koukouras 2010) and was lately recorded from the central Mediterranean Sea (Çınar et al. 2014).

Family: **Hormathiidae**

***Calliactis parasitica*** Couch, 1842  
(Fig. 2/E)

**Material examined:** Dardanelles, the Sea of Marmara, OM/PRM-CR, 2013-12, 5 colonies, Abide (St. 2), 40°02'47" N – 26°12'41" E, 12 m, 1 January

2013, sandy and gravelly bottom, symbiosis with Paguroid anomurans, OM/PRM-CR, 2013-33, 1 colony, Kilitbahir (St. 7), 40°09'57" N – 26°22'23" E, 3 m, 14 January 2013, rocky bottom, symbiosis with Paguroids, OM/PRM-CR, 2013-56, 1 colony, Karabiga (St. 9), 40°25'52" N – 27°03'12" E, 21 m, 20 November 2013, rocky bottom, symbiosis with Paguroid decapods.

**Ecology:** The species is usually observed as associated with Paguroid anomurans and it also lives on stones and rocks (Kruzic 2007).

**Zoogeography:** It is known as the Atlanto-Mediterranean species and widespread in the Mediterranean, the Aegean Sea and the Atlantic ocean (Vafidis 1995, Dimitris&Chariton 2002).

**Previous records:** It is reported from the Mediterranean Sea (van Ofwegen et al. 2001; Koukouras 2010) and Aegean Sea (Doumenc et al. 1985, Vafidis et al. 1997). The species was reported for the first time by Geldiay&Kocataş (1972) from the Turkish coast of the Aegean Sea. Recently, its second record for the Aegean Sea coasts of Turkey was presented by Gökarp (2011).

Family: **Sagartiidae**

*Cereus pedunculatus* Pennant, 1777  
(Fig. 2/F,G,H,I)

**Material examined:** Dardanelles, OM/PRM-CR, 2013-60, 1 specimen, Kilya (St. 1), 40°16'09" N – 26°29'47" E, 9 m, 17 August 2013, sandy bottom, OM/PRM-CR, 2013-61, 1 specimen, Soğandere (St. 3), 40°05'24" N – 26°18'26" E, 7 m, 17 August 2013, sandy and gravelly bottom, OM/PRM-CR, 2013-62, 1 specimen, Dardanos (St. 4), 40°02'47" N – 26°12'41" E, 4 m, 17 August 2013, sandy and gravelly bottom, OM/PRM-CR, 2013-63, 1 specimen, Güzelyalı (St. 8), 40°03'46" N – 26°21'03" E, 2 m, 17 August 2013, sandy bottom.

**Ecology:** It lives on sandy and muddy bottoms (Kruzic 2007) and in shallow waters, typically in pools (Wirtz et al. 1983).

**Zoogeography:** It is commonly found in the Mediterranean Sea (van Ofwegen et al. 2001), the Aegean (Doumenc et al. 1985, Vafidis et al. 1997, Koukouras 2010) and the Sea of Marmara (Gökarp 2011).

**Previous records:** It was recorded from the Mediterranean Sea by Riedl (1983). The species

was recorded for the first time from the Aegean Sea by Çoşar (1974). Its latest record was reported by Gökarp (2011) from the Sea of Marmara.

Order: **Zoanthidea**

Suborder: **Macrocnemina**

Family: **Epizoanthidae**

*Epizoanthus couchii* Johnston, 1844  
(Fig. 2/J,K)

**Material examined:** Dardanelles, OM/PRM-CR, 2013-84, 4 polyps, Kilitbahir (St. 7), 40°09'57" N – 26°22'23" E, 23 m, 6 January 2013, under crevices and on the sunlit coralligenous substrate, OM/PRM-CR, 2013-85; 2 polyps, Nara Cape (St. 10), 40°12'06" N – 26°24'46" E, 27 m, 6 January 2013, under crevices.

**Ecology:** It is found on shaded hard and coralligenous substrates (Weinberg 1994). It was also observed in deep waters up to 200 m deep (Duncan 2011).

**Zoogeography:** It occurs in the Mediterranean waters (van Ofwegen et al. 2001), the Atlantic (Hyward & Ryland 1990) and the Sea of Marmara (Minguell 2011).

**Previous records:** This species was recorded from the Mediterranean Sea (Minguell 2011), the northeastern Atlantic (Hayward&Ryland 1990) and the Sea of Marmara by Gökarp (2011).

Order: **Alcyonacea**

Suborder: **Alcyoniina**

Family: **Paralcyoniidae**

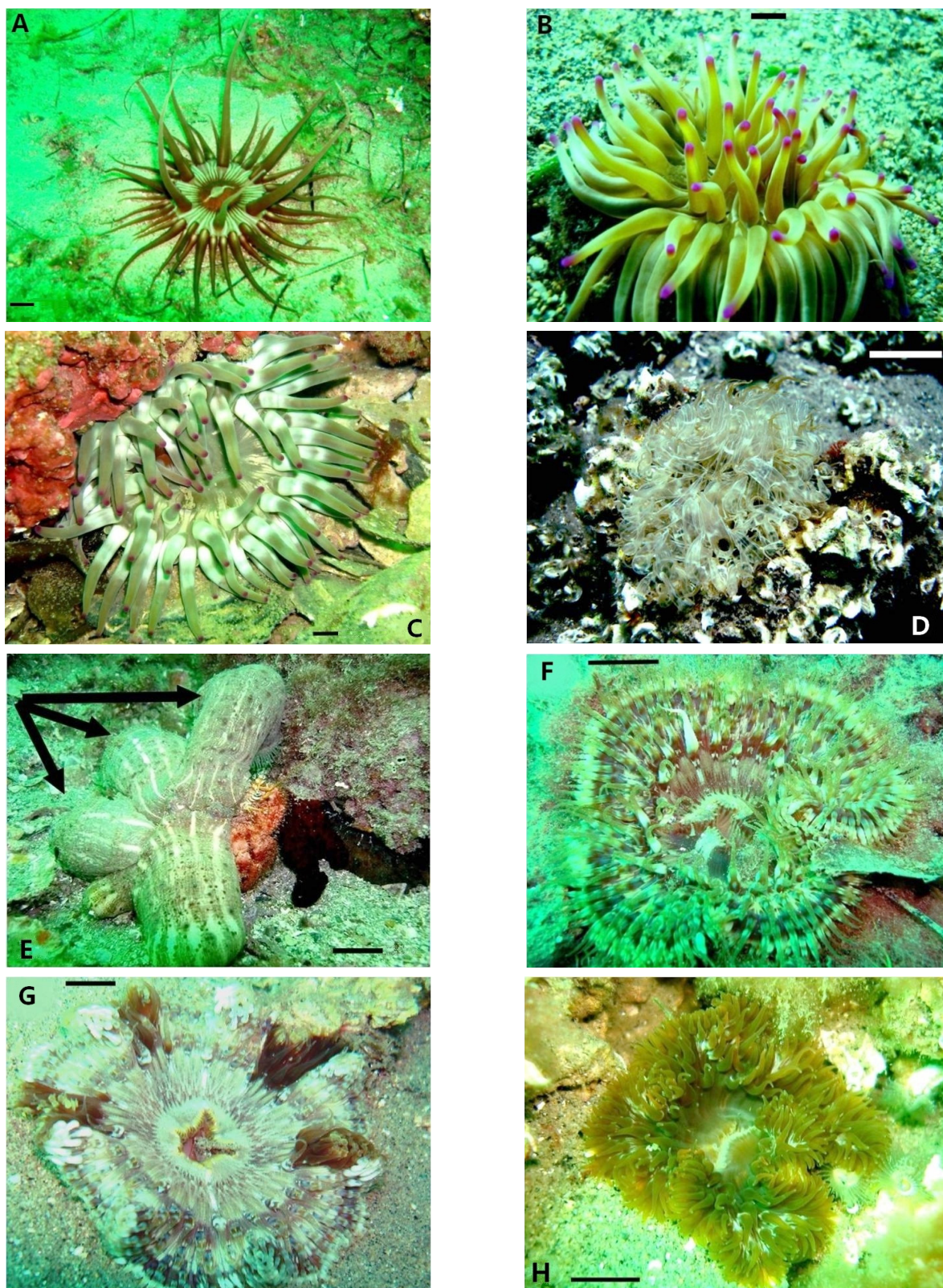
*Maasella edwardsi* de Lacaze-Duthiers, 1888  
(Fig. 2/L,M)

**Material examined:** Dardanelles, OM/PRM-CR, 2013-2, 3 colonies, Güzelyalı (St. 8), 40°03'46" N – 26°21'03" E, 12 m, 14 January 2013, found associated with *Posidonia oceanica* roots and on *Eunicella cavolini* colonies; OM/PRM-CR, 2014-17, 1 colony, Dardanos (St. 4), 40°02'47" N – 26°12'41" E, 16 m, 10 November 2014, found associated with *Posidonia oceanica* roots.

**Ecology:** It lives on coralligenous habitats, rocks and rhizomes of *Posidonia oceanica* (Weinberg & Corolla 2011).

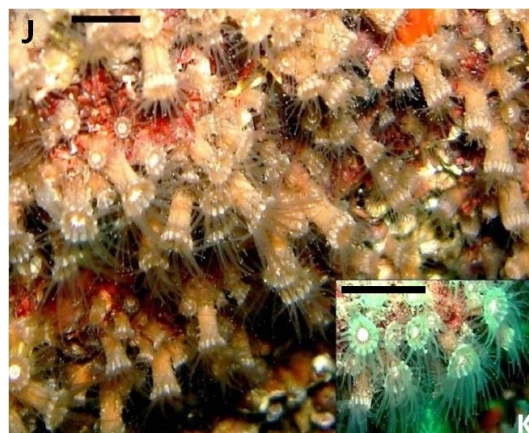
**Zoogeography:** It occurs in the Mediterranean Sea and the northern Atlantic (van Ofwegen et al. 2001).



**Figure 2**

Soft coral species recorded during the present study. All bars are 2 cm in diameter.





A - *Andresia parthenopea*  
 B,C - *Condylactis aurantiaca*  
 D - *Aiptasia mutabilis*  
 E - *Calliactis parasitica*  
 F,G,H,I - *Cereus pedunculatus*  
 J - *Epizoanthus couchii* colony  
 K - Polyps of *E. couchii*

L - *Maasella edwardsi* colony  
 M - Polyps of *M. edwardsi*  
 N - *Alcyonium acaule*  
 O - Polyps of *A. acaule*  
 P - *Sarcodictyon roseum*  
 Q - *Pteroeides spinosum*  
 R - *Veretillum cynomorium*

**Previous records:** The species was recorded for the first time from the Mediterranean Sea by Koch (1891). Its newest record was provided by Ponti et al. (2011) from the northern Adriatic Sea.

Family: **Alcyoniidae**

*Alcyonium acaule* Marion, 1878

(Fig. 2/N,O)

**Material examined:** Dardanelles, OM/PRM-CR, 2013-34; 4 specimens, Soğandere (St. 3), 40°11'49" N – 26°26'15" E, 26 m, 1 January 2013, rocky substrate, OM/PRM-CR, 2013-38, 2 specimens, Kilitbahir (St. 7), 40°09'57" N – 26°22'23" E, 24 m, 1 January 2013, sandy and gravelly bottom.

**Ecology:** This species lives on rocky substrates and coralligenous habitats (Vafidis et al. 1997, Garrabou 1999, Kruzic 2007).

**Zoogeography:** The species occurs in the entire Mediterranean Sea (Weinberg 1977), the Aegean Sea (Koukouras 2010) and the northern Atlantic (van Ofwegen et al. 2001).

**Previous records:** The species was reported from the Mediterranean Sea (Gili 1987, Watling & Auster 2005), the Adriatic Sea (Pax & Müller 1962) and the Aegean Sea (Peres & Picard 1958, Vafidis et al. 1994). Its first record for the Turkish shores is known from the Sea of Marmara (Topçu & Öztürk 2013).

Suborder: **Stolonifera**

Family: **Clavulariidae**

*Sarcodictyon roseum* Philippi, 1842

(Fig. 2/P)

**Material examined:** Dardanelles, OM/PRM-CR, 2013-33, 8 polyps, Kilitbahir (St. 7), 40°09'57" N – 26°22'23" E, 23 m, 1 January 2013, rocky bottom, OM/PRM-CR, 2013-34, 1 polyps, Nara Cape (St. 10), 40°12'06" N – 26°24'46" E, 27 m, 1 January 2013, rocky substrate.

**Ecology:** It lives on rocky and coralligenous habitats from intertidal to circalittoral bottoms (van Ofwegen et al. 2001) and in deeper waters up to 100 m deep (Vafidis et al. 1994, NRDC 2005).

**Zoogeography:** This species is known from the Mediterranean Sea (van Ofwegen et al. 2001, Watling & Auster 2005), the Adriatic Sea (Gili 1987), the Aegean (Peres & Picard 1958, Vafidis et al. 1994, Koukouras 2010) and the Sea of Marmara

(Ostroumoff 1896).

**Previous records:** It was reported previously from the Atlantic Ocean (Hayward & Ryland 1990), the Mediterranean Sea, the Aegean Sea (Koukouras 2010) and the Marmara Sea (Ostroumoff 1896).

Order: **Pennatulacea**

Suborder: **Subsessiliflorae**

Family: **Pennatulidae**

*Pteroeides spinosum* Ellis, 1764

(Fig. 2/Q)

**Material examined:** Dardanelles, OM/PRM-CR, 2013-13, 1 specimen, Abide (St. 2), 40°02'47" N – 26°12'41" E, 32 m, 1 January 2013, sandy bottom, OM/PRM-CR, 2013-14, 2 specimens, Soğandere (St. 3), 40°11'49" N – 26°26'15" E, 27 m, 20 January 2013, sandy bottom, OM/PRM-CR, 2013-15, 1 specimen, Soğandere (St. 3), 40°05'24" N – 26°18'26" E, 21 m, 20 January 2013, sandy bottom, OM/PRM-CR, 2013-16, 1 specimen, Dardanos (St. 4), 40°02'47" N – 26°12'41" E, 19 m, 1 January 2013, silty sand bottom, OM/PRM-CR, 2013-17, 1 specimen, Çanakkale (St. 6), 40°09'57" N – 26°23'57" E, 23 m, 20 January 2013, sandy bottom, OM/PRM-CR, 2013-18, 1 specimen, Kilitbahir (St. 7), 40°09'57" N – 26°22'23" E, 24 m, 1 January 2013, sandy bottom, OM/PRM-CR, 2013-19, 1 specimen, Karabiga (St. 9), 40°25'52" N – 27°03'12" E, 44 m, sandy and gravelly bottom, OM/PRM-CR, 2013-20, 1 specimen, Nara (St. 10), 40°12'06" N – 26°24'46" E, 25 m, 1 January 2013, sandy bottom.

**Ecology:** It occurs on sandy and muddy bottom down to 300 m depth (Kruzic 2007).

**Zoogeography:** It is distributed in the Mediterranean Sea (Williams & Van der Land 2001), the Aegean (Koukouras 2010), the Sea of Marmara (Colombo 1885).

**Previous records:** The species was recorded for the first time from the Sea of Marmara by Colombo (1885). The latest report of the species was presented by Çınar et al. (2014) from the eastern Mediterranean Sea coast of Turkey.

Suborder: **Sessiliflorae**

Family: **Veretillidae**

*Veretillum cynomorium* Linnaeus, 1758

(Fig. 2/R)



**Material examined:** Dardanelles, OM/PRM-CR, 2013-26, 1 specimen, Abide (St. 2), 40°02'47" N – 26°12'41" E, 28 m, 10 January 2013, sandy gravelly bottom, OM/PRM-CR, 2013-27, 1 specimen, Soğandere (St. 3), 40°11'49" N – 26°26'15" E, 27 m, 10 January 2013, sandy bottom, OM/PRM-CR, 2013-28, 3 specimens, Dardanos (St. 4), 40°02'47" N – 26°12'41" E, 19 m, 10 January 2013, silty sand bottom.

**Ecology:** It lives on sandy and muddy bottoms down to 100 m depth (Bergbauer and Humburg, 2000) and is also found in silty bottoms (Vafidis et al. 1997, Kruzic 2007).

**Zoogeography:** It occurs in the Mediterranean Sea, the eastern Atlantic and the Indian Sea (Tixier-Durivault 1960), the Aegean Sea (Geldiay & Kocataş 1972, Vafidis et al. 1997, Koukouras 2010) and the Sea of Marmara (Topçu & Öztürk 2013).

**Previous records:** The occurrence of species was reported from the Mediterranean Sea for the first time by Williams (1995). The species was reported for the first time from the Aegean Sea by Geldiay & Kocataş (1972) and the Sea of Marmara by Ostroumoff (1894). Recently, it was recorded from the Sea of Marmara and Aegean Sea by Gökalp (2011).

In this study, a total of 11 anthozoan species are reported as new records for the Turkish coasts (Dardanelles) and these findings advance the knowledge about their distribution. *Andresia partenopea* was found on the sandy substrate. At sampling station (St. 3), there is a rocky habitat ranging between the depth of 1 and 12 m. The sandy bottom begins at a depth of 13 m and continues to 45 m. *Paramuricea clavata*, *Anemonia viridis*, *Actinia equina*, *Mytilus galloprovincialis* and *Rapana venosa* are species commonly found in the area. The surface current can vary between 2 and 3 kn and loses its effectiveness after a depth of 8 m.

*Condylactis aurantiaca* was observed on sandy and gravelly substrates. At station 4, it is rarely seen on sandy bottoms. At other stations (St. 6, St. 7) where the abundance is higher, the substrate consists of sand, rock, shingle and dead mussel shells. The highest average rate of individuals per square meter was specified as 6. *Parazoanthus axinella*, *Pinna nobilis*, *Rapana venosa* and *Zostera marina* are common species observed in the sites. During the

summer season, some specimens with eggs were recorded. *Aiptasia mutabilis* was found on the sandy substrate at sampling station 8. *Posidonia oceanica* is a very common seagrass in the area and Alcyonacean *M. edwardsi* is frequently seen on seagrass roots and leaves. The echinoderm *Paracentrous lividus* and *Caulerpa racemosa*, also known as killer algae, are another common species between the depth of 18 and 23 m and covered the whole bottom area extensively.

*Calliactis parasitica* was found on sandy, rocky and gravelly bottoms at the sampling stations (St. 2, St. 7, St. 9). At station 2, there is a strong surface current ranging within 2-5 kn and it continues its effect down to a depth of 17 m. At station 7, the substrate composed of dead mussel shells covers the whole bottom and there is a continuous current from the surface to a depth of 15 m. The average number of dead mussel shells per square meter was determined as 80 individuals. Rocky habitat covers a large area at station 9. At this location with an undercurrent effective all year round, *Caryophyllia smithii* is the most common scleractinian on sunlit, dimly-lit and dark points of rock surfaces between at a depth from 19 to 25 m. *Anemonia viridis*, *Cerianthus membranaceus*, *Savalia savaglia* and *Paralcyonium spinulosum* are another common anthozoans observed around the station. *Calliactis parasitica* is new to the Dardanelles and the Sea of Marmara and known as a parasitic anemone. *C. parasitica* lives in symbiosis with Paguroid decapods (Patzner 2004).

Dimitris & Chariton (2002) reported that *C. parasitica* was observed on rocks, stones, biogenic detritus, gastropod and bivalve shells until the depth of 160 m. We observed the same species on gastropod shells invaded by a paguroid anomuran, *Dardanus calidus* at the depths between 3 and 21 m. *Cereus pedunculatus* was commonly found on sandy and gravelly substrates at the stations in the Dardanelles. The species can form successive mounds and form dense populations between the depths of 3 and 10 m. At some stations (St. 4, St. 8), five separate individuals were seen attached to each other. *Epizoanthus couchii* was mainly recorded under crevices and sunlit coralligenous substrates around rocky areas. At the stations (St. 7, St. 10) where its existing points appear as cryptic habitats, it was observed as dense colonies even within very limited localities (< 100 cm<sup>2</sup>). At station 10, it was also

recorded on the sponge *Crambe crambe*. There is a continuous strong surface current all year round with the maximum strength of 3.5 kn. Formerly, *E. couchii* was reported to be a brown encrusting anemone and was reported from a rocky substrate at a depth of 28 m of the Bosphorus (Gökalp 2011). Duncan (2011) observed that the species was attached to dead coral rubble at a depth of 130-200 m in Scotland. From our observations it appears that the maximum depth for *E. couchii* was 27 m. *Sarcodictyon roseum* was found on rocky substrates, mostly around dimly-lit points. The coralligenous communities and calcareous algae are common at the stations where the species was recorded. *S. roseum*, also named as *Rhizoxenia rosea* by Ostroumoff (1896), is not widespread in the Dardanelles.

*Maasella edwardsi* was found attached to rhizomes and leaves of *Posidonia oceanica*. At the sampling stations (St. 4, St. 8) where seagrass beds are dense, a clay-like muddy swamp substrate was present. The average number of *P. oceanica* roots per square meter was determined as 198 between a depth of 13 and 17 m and *M. edwardsi* colonies were observed in one of every 20 roots. The Mediterranean endemic scleractinians *Cladocora caespitosa* and *Balanophyllia europaea* are the most common species in the studied areas. *C. caespitosa* colonies at the station form a patchy-like structure on the sandy bottom. In the infralittoral zone of the stations, *Posidonia oceanica*, *Zostera marina*, *Cymodocea nodosa* and *Cystoseira compressa* are commonly found. At some sites on the sandy bottom at a depth of 3-4 m, the polychaeta form mound-like compact sets on the sandy substrate. According to Casellato & Stefanon (2008), the coralligenous habitats are the main substrates for the species *M. edwardsi*, which is known as one of the uncommon Alcyonacean in the Mediterranean (Fava & Ponti 2007).

This species occurs in the form of dense colonies at several locations in the Salerno marine protection area (Giordano et al. 2012). Giordano et al. (2012) found that the colonies occurred on hard substrates at a depth of 1 m of the above-mentioned area. In the same study, the specimens were sampled at a depth of 7 m. Whereas our sampling was carried out in the roots of *Posidonia oceanica* observed at a depth of 22 m and we found that the upper depth limit for the colonies of *M. edwardsi* was between 5 and 12 m, respectively. In addition, Fava & Ponti (2007) found

the species at greater depths (30 m). When we review the recent list of Coll et al. (2010), we see that *M. edwardsi* is new to the Dardanelles anthozoan fauna. According to the reference quoted above, the species has not been reported from the Aegean Sea to date.

Considering the existence of species in the Dardanelles, it is more likely that *M. edwardsi* is distributed at a limited level also in the Northern Aegean Sea coasts of Turkey. Yet, this species is known to be endemic to the Mediterranean Sea and it is found in roots and rhizomes of *Posidonia oceanica*.

*Alcyonium acaule* was found on sandy and rocky substrates at the sampling stations (St. 3, St. 7). The species can also be seen on gravelly bottoms and its soft body might be used at some localities by some other marine animals as a shelter for their eggs. *Pteroeides spinosum* and *Veretillum cynomorium* were mainly observed on clay-like (silty) muddy swamp substrates, sandy and gravelly bottoms in the Dardanelles. Both species are commonly distributed on sandy substrates in the strait at a depth between 21 and 35 m.

At station 9, which is the deepest sampling location for species, *P. spinosum* was recorded at a depth of 44 m. Wirtz & Diesel (1983) reported that *Aiptasia mutabilis* recorded on sandy bottom at a depth of 2 m in the study area associated with the Inachiid crab, *Inachus phalangium* (Fabricius 1778). There is strong strait currents between 2 to 4 kn in the living habitats of species and thus turbidity was very low. At several sampling sites, *S. roseum* was observed to be attached to scleractinians corallites and *E. couchii* polyps. *Veretillum cynomorium* and *Alcyonium acaule* was previously observed on sandy, muddy and rocky bottoms at the maximum depth of 32 m and 38 m, respectively (Topçu & Öztürk 2013). Vafidis et al. (1997) indicated that *V. cynomorium* is a cosmopolitan species. Two species were recorded on sandy, muddy, silty and rocky substrates in the current study up to a depth of 28 m. At station 4, *V. cynomorium* was sampled from a dense muddy bottom and a measurement stick sunk below the substratum about 1.5 m. *Andresia parthenopea* is also known as an Actiniarian anemone and it was sampled from the Atlantic Ocean (Arosa Island) from grey-mud bottoms at a depth of 55-75 m by a dredge (Hartog and Ates 2011). We observed a specimen on the hard sandy bottom at a depth of 24 m. *Condylactis*

*aurantiaca* is commonly found at several sites of the Dardanelles. Kruzic (2007) recorded the species on muddy, sandy and gravelly bottoms down to a depth of 25 m in the Adriatic Sea. We also found specimens of *C. aurantiaca* on the rocky substrate at a depth of 3 m.

Although the Dardanelles area is related to the Mediterranean saline waters at deeper zones, it has mainly the characteristic features of the Marmara Sea (Özalp & Alparslan 2011). In terms of different physicochemical data, it appears that the coral species, also known as the Mediterranean anthozoans, studied in the current research started to spread in a different zone and expanded their range to the Marmara Sea. Since marine studies of ecology, biology and distributional patterns in regard to the Turkish anthozoan fauna are fairly new, the available data are still insufficient. We believe that more comprehensive studies, particularly on the population dynamics, will contribute to the advancement of the scientific knowledge.

## Acknowledgements

The authors are grateful to Kamil Emre Barış for his support during the field surveys. This study was financially supported by Canakkale Onsekiz Mart University BAP/061 project.

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