

RESEARCH ARTICLE

First Observation of Loggerhead Sea Turtle *Caretta caretta* (Linnaeus 1758) Around the Shipwreck Used as an Artificial Reef in the Coasts of Gokceada Island, North Aegean Sea

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ABSTRACT

In this study, loggerhead sea turtle *Caretta caretta* (Linnaeus 1758) was observed for the first time around the shipwreck of coast guard boat in Ördek Yalağı located at Gökçeada Island, North Aegean Sea. The shipwreck is at a depth of 24.8 m. The loggerhead sea turtle *Caretta caretta* was recorded exactly on the ground and 2 m away from the ship on the shore side of the ship. In this study, *Caretta caretta* was recorded for the first time in this water depth and around a shipwreck that was used as an artificial reef for Turkish waters.

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Introduction

Researches on artificial reef have been carried out for several years in Turkey (Lok et al., 2002; Altınagaç et al., 2010; Gul et al., 2011; Acarlı and Ayaz, 2015) and worldwide (Jensen, 2002; Simon et al., 2010, Honario et al., 2010; Krumholz and Brennan, 2015; Brennan et al.,

2015; Jimenez et al., 2016). These studies cover many issues such as construction materials of the reef, species composition around artificial reefs, species-specific artificial reefs, and protection of artificial reef areas. *Caretta caretta* (Linnaeus, 1758) is extensively distributed in tropical and subtropical waters in the Atlantic, Pacific and Indian Oceans, and Mediterranean Sea (Kelez et al., 2003; Özdilek

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et al., 2018). There are a total of eight species of sea turtles in the world. Among them, the species *Dermochelys coriacea*, *Ertmochelys imbricate*, and *Lepidochelys kempii* found in the Mediterranean Sea but not nesting; *Chelonia agassizii*, *Lepidochelys olivace*, and *Natator depressus* species that are not found in the Mediterranean Sea, and *Chelonia mydas* and *Caretta caretta* species prefer coasts of Turkey for laying eggs (DEKAMER, 2009). Würtz (2010) reported that sea turtles were found in 10 countries on the Mediterranean coasts for both feeding and spawning.



Figure 1. Spatial distribution of the *Caretta caretta* (Calim, 2010)

Sandy beaches where the sea turtles nest are slowly disappearing due to the increase in the human activities in the coastal areas (Fig 1). Hence, monitoring projects for sea turtles have increased in Turkish waters (Guzel, 2012; Akdeniz et al., 2012; Ergene et al., 2016; Özdilek et al., 2018; Esinliogulları Mete and Tosunoglu, 2019) as in the worldwide (Lara et al., 2016; Salmon et al., 2016).

Chelonia mydas and *Caretta caretta* are nesting regularly in the coasts of Turkey on the Mediterranean Sea. *Chelonia mydas* is listed as endangered and *Caretta caretta* is listed as vulnerable in the of The International Union for Conservation of Nature (IUCN) Red List of Threatened Species (Seminoff, 2004; Casale and Tucker, 2017). This is because the population of sea turtles has decreased and human activities have increased particularly in the coastal areas and therefore their stocks have been significantly damaged (Würtz, 2010). Their populations have decreased due to the pollution of the beaches where they lay eggs and obstacles encountered in these areas, increased sea traffic, human activities, ghost fishing and the selling of their shells as ornaments. Therefore, special efforts are made for the protection of these areas particularly during spawning periods in Turkey and the world.

Gokceada Island which is located in the Aegean Sea is an important fishing area (Esenlioglu Mete and Tosunoglu, 2019) and different fishing gears are used in fisheries in Gokceada Island. Öztekin et al. (2013) reported that sea turtle individuals were caught during longline fishing. On the other hand, sword fishing is one of the most interesting fishing methods since the spear is used. As fishermen travel long distances to catch the swordfish, their chances of seeing sea turtles increase. Therefore, the frequency of seeing sea turtles by fisherman was investigated. In this study, loggerhead sea turtle *Caretta caretta* species was observed for the first time around the shipwreck during underwater observations to determine the species composition on the artificial reef.

Material and Methods

Caretta caretta species is one of the two species that prefer the coasts of Turkey for laying eggs (Würtz, 2010). *Caretta caretta* species was observed the first time around the shipwreck of coast guard boat in Ordek Yalağı located at Gokceada Island, North Aegean Sea (Fig. 2). This shipwreck artificial reef was sunk on October 2016 and found between the depths of 22.6 – 24.8 m parallel to the shore (Fig 3 and Fig 4). The name of the ship was TCSG 132 which scrapped from the coast guard. The length of the ship is 40.3 m and the width is 6.4 m.



Figure 2. The location of the shipwreck

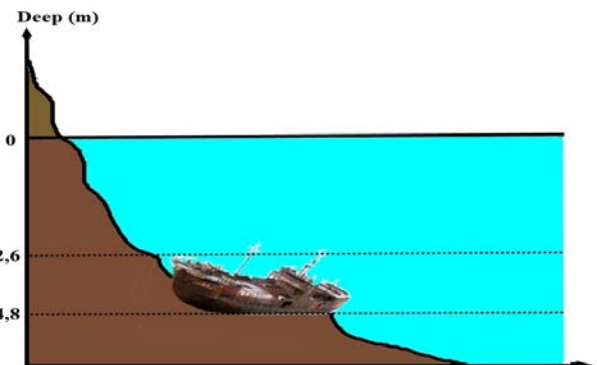


Figure 3. The depth of the shipwreck



Figure 4. Underwater view of the shipwreck

Underwater visual census methods, underwater photograph, and cameras are used to determine the species composition in artificial reefs (Acarlı and Ayaz, 2015). In this study, Quadrat methodology which is a method of visual census techniques was used. Underwater camera (GoPro Hero 4) was used in addition to visual census techniques to improve the efficiency of visual census. Data recorded underwater by divers were crosschecked with video records and underwater photographs to improve the reliability of the data.

Results

An adult male *Caretta caretta* species was recorded during underwater observations on January 2019 (Fig 5, Fig 6, and Fig 7). We observed *C. caretta* resting at a depth of 25 m and the water temperature was 13°C. The loggerhead sea turtle was disappeared after 5 minutes of observation. The estimated curve carapace length 60 cm and width 40 cm.



Figure 5. *Caretta caretta* and shipwreck



Figure 6. *Caretta caretta* species around the shipwreck



Figure 7. *Caretta caretta* in the *Posidonia* sp. seagrass

Discussion and Conclusion

In recent years, the deployment of wrecks of ships and planes on the seabed as artificial reef has increased remarkably. In addition, a total of 68 artificial reef projects were conducted in the coasts of Turkey. Özgül and Lök (2017) reported that a total of 14592 concrete blocks, 300 amphorae, 19 ships, 10 trolleybuses, 7 planes, 1 tank, and 8 floating artificial reefs for scientific purposes were deployed on the seabed within the scope of these projects. However, only the shipwreck named TCSG 132 which is located in Gokceada coasts has been scientifically examined for the first time.

According to conversations with fishermen, *Caretta caretta* species are seen as injured and/or dead on the coasts of Gokceada Island by fishermen. Sword fishing starts on March 15 and continues until June 15 in the coasts of Gokceada Island. Fishermen are fishing in the region 40 nautical miles from the shore during the fishing season. They informed that they saw several sea birds and sea turtles during the sword fishing (Y. Tokoglu, personal communication, June 10, 2019). The incidence of the sea turtles in the coasts of Gokceada Island in 2018 was 0.729 individuals/year (This result has been reached as number of sea turtles /number of fishermen).

Biodiversity studies in artificial reefs are among the oldest studied topics (Carlisle et al., 1963). Although there is generally a large majority of fish fauna around artificial reefs, bivalve species, gastropod, and crustacean species are also observed. Until nowadays, there is no report for the observation of *Caretta caretta* species around artificial reefs in Turkey. Therefore, this report has a great importance since it was the first observation.

Fishermen of sword fishing in Gokceada coasts have a long time at sea to find swordfish. Hence, they can see the sea turtles coming to the surface to breathe during this time period. In addition, sea turtle individuals were caught by using longline as discard (Öztekin et al., 2013).

In conclusion, this paper is the first record of loggerhead sea turtle *Caretta caretta* around the shipwreck that was used as an artificial reef in the coasts of Gokceada Island, North Aegean Sea. It is possible to record sea turtles and other rare species by photo-trap to be placed on the artificial reef in future studies.

Conflict of Interest

The authors declare that there is no conflict of interest.

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