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Günay DÖNMEZ, Hakan KAYA

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Pre-Historical Submerged Settlements in the Sea of Marmara Coasts

Günay Dönmez¹  Hakan Kaya² 

¹ Akdeniz University, Mediterranean Civilizations Research Institute

² Istanbul University, Institute of Marine Sciences and Management, Department of Marine Environment (Lecturer)

E-mail gunaydonmez@gmail.com

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Abstract

Parallel to the development of underwater archeology, sunken cities have been discovered in many parts of the world. These discovered settlements provide us not only with many archaeological data, but also many scientific data such as geological, geomorphological, climatological, oceanography. Thanks to these data, besides the information about past lives, changes in sea and lake levels have shed light on many unknowns such as the reasons for these changes, floods, drought, earthquakes and volcanic activities in the past. In this context, the archaeological artifacts and structures obtained from the Marmara Sea and its surroundings, Istanbul - Selimpaşa Mound, Istanbul - Fenerbahçe Bay, Çanakkale - Işıldak Tepealtı Mound, Marmaray / Yenikapı Excavations, Avşa Island Archeological Underwater Studies were examined. In addition to this examination, the geographical locations of the artifacts in these settlements and the geoarchaeological characteristics of the area where they are located are also examined. In this way, not only the geoarchaeological features of the study area were revealed, but also the environmental conditions and sea level changes were tried to shed light. The settlements mentioned in our study provided important data on sea level changes. In the light of archaeological, geoarchaeological and climatological data, a new evaluation has been made by taking into account the other views on current sea level changes.

Keywords: Geoarchaeology, Coast, Pre-historical, Underwater

Introduction

Coastal areas are natural environments where land, water and air interact with each other, shaped by the influence of internal and external forces. Geological, geomorphological, hydrological and meteorological processes come to the force in shaping a coastline. Level changes in the shoreline affect the placement process has occurred most Holocene Period (Kayan, 1997). It has been seen that the changes in coastal areas are mostly due to the Holocene Period water rises depending on climatic changes. Rising water levels with the temperature increase play a crucial role on changing coasts. Besides, many factors such as earthquakes, erosions, streams and alluvium fillings brought by the streams have also been effective in changing the coastline of Anatolia (Jordan and Maschner, 2000; Kayan, 1997; Dumankaya, 2015).

The sea level, which was low at the beginning of the Holocene period, has gone up both generally and regionally in the last 10-12 thousand years. These rises were of great importance for the human communities settled in the coastal areas, and small-scale sea level changes and differences in coastal geomorphology occurred over the centuries have been influential in the lifestyles of coastal cultures (Kayan, 2020). In this process, many coastal areas were flooded due to the rising water level in the Aegean and Adriatic seas (Van

Andel and Shackleton, 1982; Erol, 1979). A similar process had taken place in the Sea of Marmara and the waters of the Aegean Sea had turned Marmara from a freshwater lake into a sea around 6000 BC through the Dardanelles Strait. In this way, the large planes in the Marmara Region were quickly submerged (Ardel, 1960; Kunter, 1973; Öviz et al., 2015) (Fig.1). The reason for these rises is shown as melting of glaciers together with the calescence, tectonic movements and increasing precipitation. During this period, sea levels appeared to rise, while there was a decrease in the water levels and an increase in salinity rates of some lakes in the inland areas (Burroughs, 2005). These water level changes have also greatly affected the Marmara Sea and its surroundings.

Methodology

In order to analyze the sea level changes in the Marmara Sea, five archaeological sites in the field have been studied so far. The work was carried out in five stages: first, the field study was carried out. Subsequently, extensive survey was carried out to determine the archaeological material, ancient sources were researched, the environment was examined geomorphological, geological, climatological and underwater scan sonar was researched.

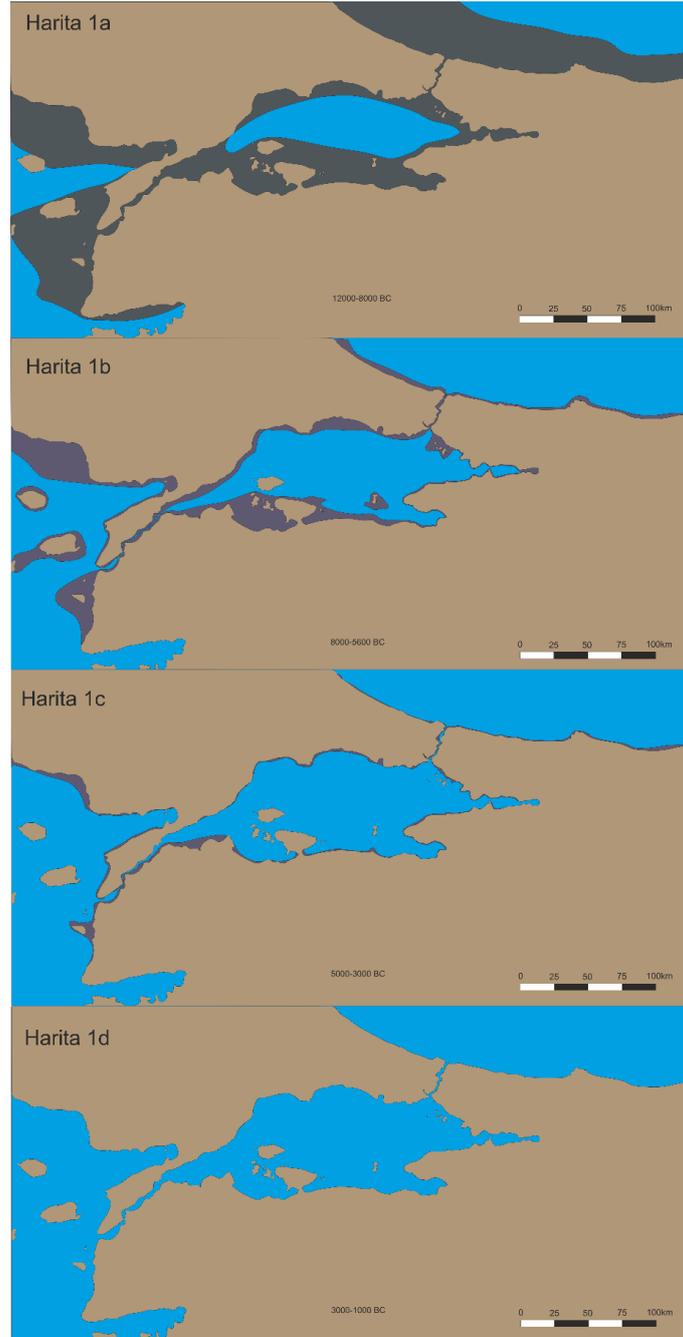


Fig.1: Sea level changes started with Holocene Period on Marmara Sea (Özdoğan, 2011).

Istanbul - Selimpaşa Mound

Selimpaşa Mound, located within the borders of Silivri district in the Thrace part of Istanbul, is 55 kilometres away from the center of Istanbul. The mound shows itself in the form of an elevation located in the west of the point, where Kavaklıdere comes from the north and reaches the Sea of Marmara. The beach lying in front of the mound was formed by the alluviums brought by Kavaklıdere and Kocadere, which also empties into the Sea of Marmara at 800 meters east. The mound remains as the last big mound in Thracian part of the west of Istanbul. Within the scope of the Istanbul Prehistoric surface studies conducted under the Leadership of Assoc. Prof. Dr. Ş. Aydıngün, studies on sea and river

in Selimpaşa have been carried out by a team including Assoc. Dr. H. Öniz as well. These studies have shown that the traces of settlements of Selimpaşa Mound dating back to the Early Bronze Age remain below sea level. As a result of the georadar studies, anomalies containing sand traces and then cultural soil traces 2 meters below the mound were observed. Researches that were conducted in Küçükçekmece along with Marmaray -Yenikapı excavations in Istanbul have shown that the sea level has changed several times. It is understood by these studies that the Chalcolithic and Neolithic settlements that should have been on the Marmara shores are a few meters below sea level (Aydıngün et al., 2014) (Fig. 2).

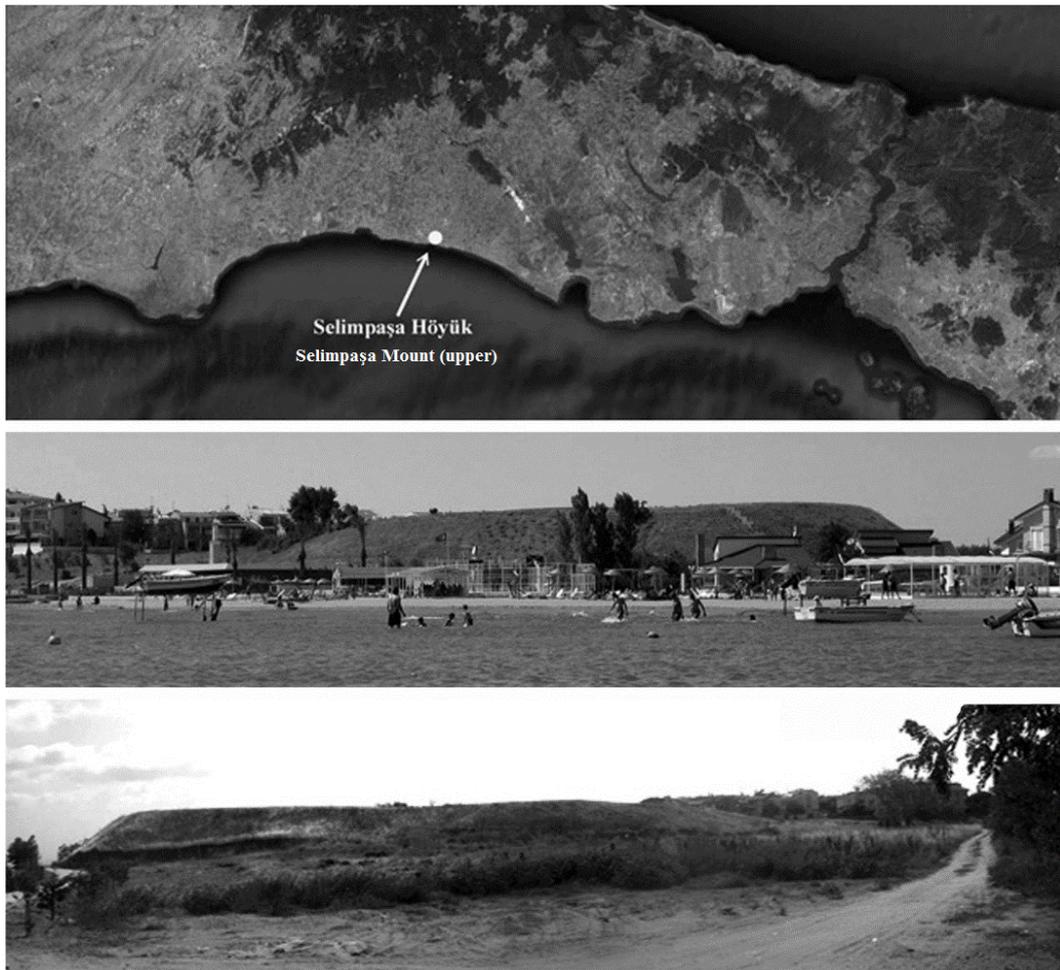


Fig. 2: Selimpaşa Mount (Upper) and view of mount (Aydingün et al., 2014: 47-55).

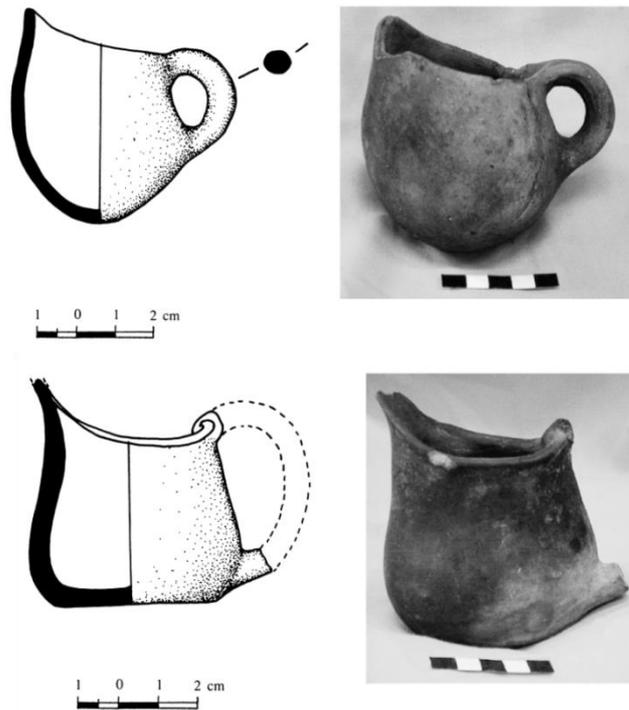


Fig. 3: (Dönmez, 2006, Fig. 3b). Cups found in Fenerbahçe Yacht Harbour. Has dark grey, non-glossy polished, dated in Early Bronze Age II – III (Dönmez, 2006 Fig. 3b).

Istanbul - Fenerbahçe Yatch Harbour

Two dippers and two pitchers have been found during the riverbed studies of Kurbağalı Dere Creek in Fenerbahçe Yatch Harbour at the Kalamış Bay on the Anatolian side of Istanbul. Afterwards, underwater researches were carried out in the region, but no sufficient results were achieved due to the limited visibility. During these works, some architectural remains that are considered to be walls have been found and the period to which they belong has not been fully established yet. The ceramics found are dated to the Early Bronze Age II- III. Although they have similarities with Yortan and Thrace cultures, it has been considered that they are the pots of local production (Dönmez, 2006: 245-246.) (Fig. 3).

Çanakkale- Işıldak Tepealtı Mound

Within the scope of the surface studies conducted by Prof. Dr. Rüstem Aslan about the Prehistoric Period of Bozköy-Hanaytepe and Its Surroundings, some

examinations have been made on the Işıldak Tepealtı Mound. As a result of these studies, it is thought that the mound was built on the bedrock on the sea shore and it was then covered with landfill came from higher places due to landslide and earthquake occurred in later periods (Aslan, 2011:7). In the first investigations on the remains, it has been observed that the ceramics in the lower layers date back to the Middle Chalcolithic Period. On the other hand, the remains in the upper levels date back to the Late Chalcolithic Period. The mound that is seafront has shown a profile of 40 m length and 7 m height. It has been seen that the mound, which dates back to the Chalcolithic Period, is mostly submerged. This situation was documented once again in the master thesis study carried out by Mehmet Can Üstünel in 2018. With the Holocene Period, waters of the Dardanelles started to rise around 6000 BC. As a result, it is considered that the majority of the mound is flooded (Fig. 4a, b).



Fig. 4a: Işıldak Tepealtı Mound upper view (Aslan, 2012).

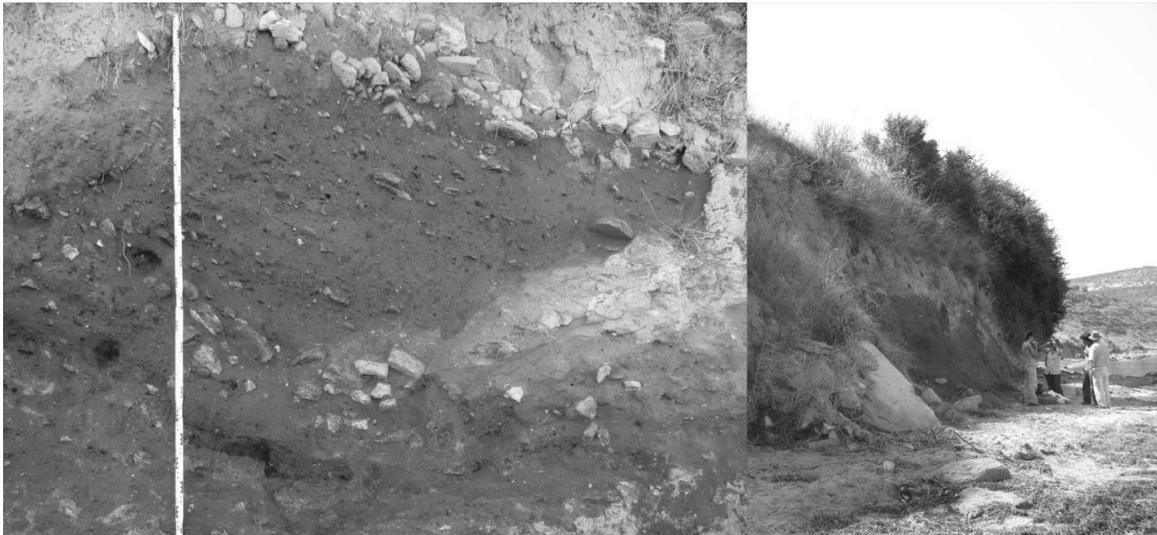


Fig. 4b: Işıldak Tepealtı Mound plates (Left), mounds general view (Right) (Aslan, 2012).

Marmaray / Yenikapı Excavations

Byzantine Theodosian Port was unearthed during the Metro excavations carried out within the Marmaray Project connecting Europe and Asia under the Bosphorus. 34 Byzantine wrecks, Classical and Archaic

remains from Hellenistic, Roman, Ottoman times that can be dated back to a period covering the 5th and 11th centuries have been found (Kocabaş, 2008) in the rescue excavations carried out by experts from Istanbul Archeology Museum and teams led by Cemal Pulak and

Ufuk Kocabaş. During these excavations, a settlement dating back to the Neolithic Period has been found (Kızıltan, 2008; Perincek, 2008; Algan et al., 2011).



Fig. 5: Wooden paddles from Neolithic Period (Kızıltan, 2008, fig. 19)

The figurines, tombs and architectural elements from the first settlers of Istanbul are dated to the Neolithic Period, based on the similar found in Yarimbürgaz Cave and Fikirtepe excavations. And also it was understood that the animals such as sheep, goats and pigs were raised here from their bone samples found in the settlement in question. Additionally, there was a good

level of agriculture based on the archaeobotanical researches made on the wheat samples. Besides these various finds such as obsidian and wooden canoe paddles from the period are also seen here (Fig. 5). Furthermore 2080 footprints belonging to this period is reached which dated back to 8000 years when the Marmara Sea was a large lake, and it was understood that the footprints were covered with mud and natural factors are helped for preserving them (Pekin 2007).

Avşa Island Archaeological Underwater Studies

Avşa Island, located within the borders of Marmara Region as a part of Balıkesir province, is located in the southwest of the Sea of Marmara and is one of the islands forming the archipelago called Marmara Islands (Fig.6,7). Written information about the first indigenous people of the island can be accessed from geographer Strabon and historian Plinius. Tools made of flint, obsidian, bone, etc., loom weights, figures and stone axes located in Avşa beaches in recent years has shown that the settlements on the island date back to much older periods.

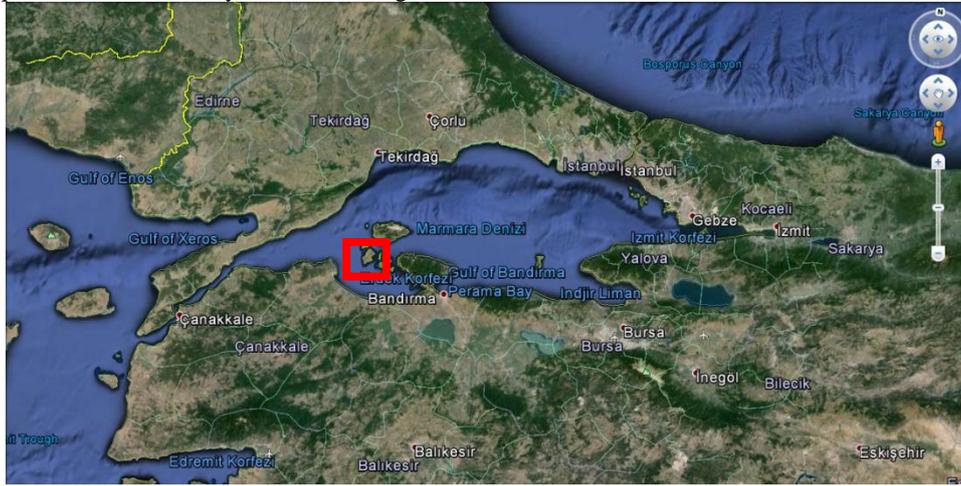


Fig. 6: Marmara Region and Marmara Islands (Google Earth, 2020)



Fig. 7: Avşa Island (Google Earth, 2020)

The first studies in the region were carried out by Prof. Dr. Mehmet Özdoğan in 1993 (Özdoğan, 2003). In 1994, the residential area was also examined by Prof. Dr. Nergis Günsenin (Fig. 8) (Günsenin, 1995). Underwater archaeology studies were carried out on the mound as part of the master thesis project by the author

with the permission of the Ministry of Culture and Tourism in 2015. The ruins can be easily seen from the shore at a depth of 1.50 - 2.00 m. In these studies, which were carried out on Avşa Island, Neolithic, Chalcolithic and intensely Bronze and cube grave samples belonging to the Bronze Age have been seen in

the submerged part of the mound (Fig. 9). In addition to this, various ceramic samples and remains dating back to a period between the Hellenistic Period and the end

of the Late Antiquity have been identified. This indicates that the island remained as a residential area without any interruption since the Prehistoric Period.

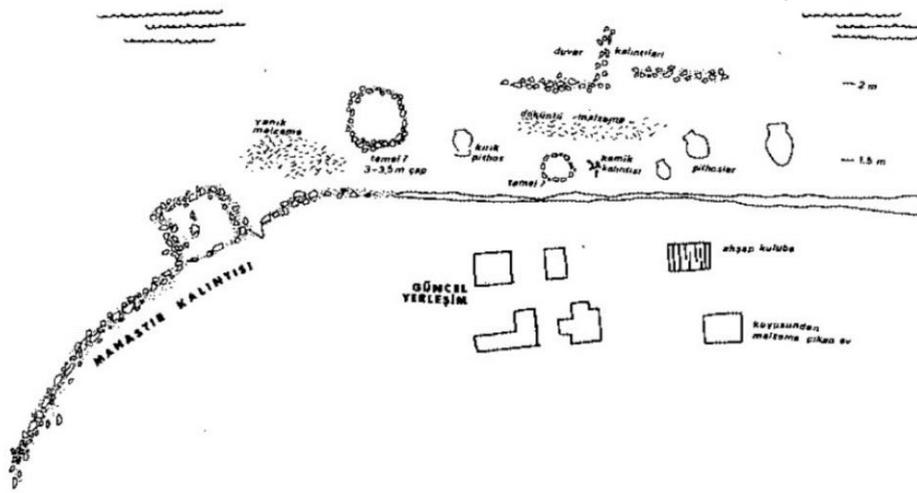


Fig. 8: Sketch of Avşa Island Monastery mount possible remainings and shoreline by Prof. Dr. Nergis Günsenin. (Günsenin, 1995).



Fig. 9: Possible shoreline and prehistoric settlement in Avşa island (Prepared by Assoc. Dr. Hakan Öviz).

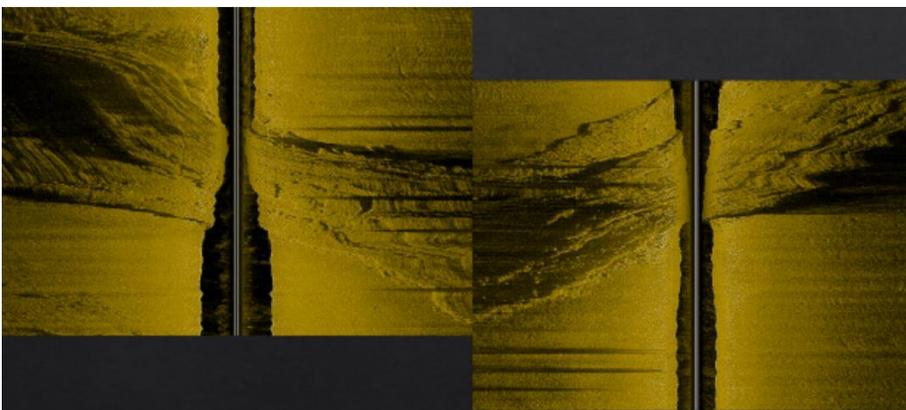


Fig. 10: Possible prehistoric shoreline seen in sonar studies.

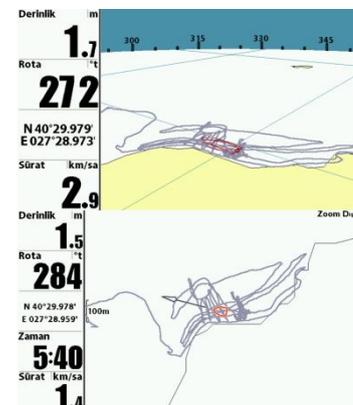


Fig. 11: Avşa Island monastery sonar working areas.

Diving with mask, fins and snorkel, scuba diving, surface inspection on the shore, sonar study and artifact inspection have been the study methods. These artifacts are the remains that can be observed on the municipal warehouse and on the shore and underwater. First, the mound has been scanned from the surface of the water with mask, fins and snorkel. In this study, the remains that were submerged were examined and the form of the mound and the change of the coastline were tried to be understood. Scuba dives have been made in deeper areas. Difficulties have been experienced due to the fact that the ground is partially or completely filled with mussel shells, and in some areas, adequate examinations have not been made. Another working method is studying sonar. An underwater map belonging to monastery region and the area, where mound was located, has been obtained thanks to the side scan sonar studies performed using the boat allocated by Avşa Municipality. During these studies, properly lined stone blocks have been detected by sonar (Fig. 10, 11, 12).

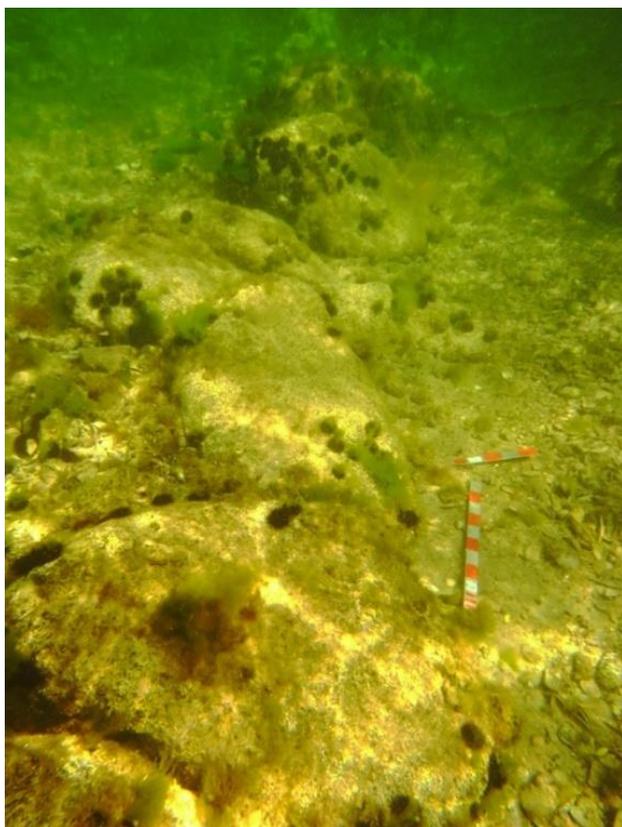


Fig. 12: Stone line seen in underwater.

It is known that obsidians on the coastal line have been used since prehistoric times in the mound's location. These are used especially to make weapons, tools and ornaments in the Neolithic, Chalcolithic and Early Bronze Ages (Fig. 13). It is known that flintstones have been used since prehistoric periods.



Fig.13: Flintstone found in 2015 Avşa Island Archaeological Research.



Fig.14: Obsidian arrowhead or spearhead and scrapper tool found in Avşa Island.

These were especially used in the Neolithic, Chalcolithic and Early Bronze Ages, and similar ones have been found in many mounds in Anatolia. During the studies carried out in 2015, obsidian and flintstones (Fig. 14) were documented to be both underwater and on the shoreline. Probably most of these and similar items must have been remained underwater due to the effects of the sea.



Fig. 15: Stone axe found in Avşa Island.

It is known that stone axes or hand axes had been used as stone tools with two surfaces sculpted in the simplest form since the Paleolithic Period. Although regional differences have been observed in the earliest examples, the most common raw material used had been the flint (Taşkıran, 2001). With the development of technology in the following periods, it continued to be used in the Neolithic, Chalcolithic and Early Bronze Age periods (Özdoğan, 2001).

A stone axe, which may belong to the Early Bronze Age, has been seen in the municipal warehouse on Avşa Island (Fig. 15).

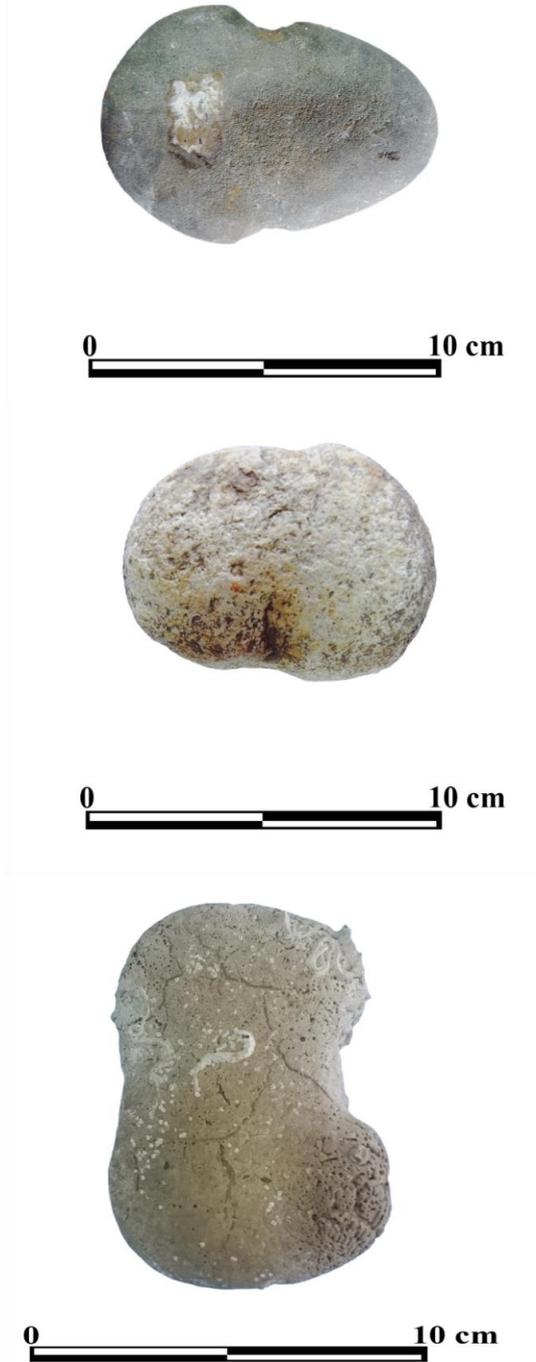


Fig. 16: Idols found in Avşa Island Monastery.

Three figures have also been found in the same warehouse, similar to the "Troia Type" or "8" formed figure samples (Fig. 16). It is known that similar figures were widely used in the Western Anatolian settlements such as Baklatepe and Limantepe; Yortan, Hanaytepe, Kumtepe, Troia in the Early Bronze Age. General features of this type of figures are that they were simply done by schematizing consisting of round head and round or rectangular sack bodies (Yılmaz, 2013; Aydingün, 2005; Eroğlu, 2014).



Fig. 17: Loom weight found in Avşa Island

During these studies, a loom weight was found on the coastal form of the mound. The loom weight has a rounded spindle hole, a pit around it, and a convex conical shape at the bottom. The spindle hole is opened vertically. There is no decoration on it. It has been known that this form type was used to a great extent especially in the Early Bronze Age compared to the spindle whorls in Western Anatolia and other regions of Anatolia (Fig. 17).

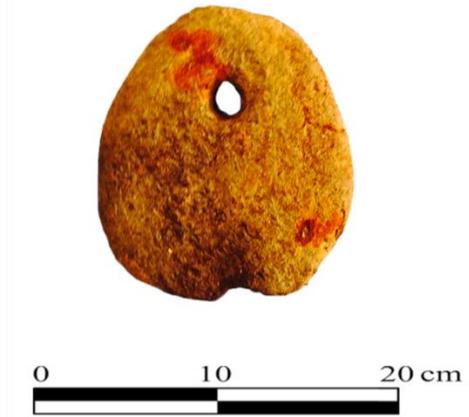


Fig. 18: Weaving weight found in Avşa Island

Among the ruins in the warehouse, there is also a weaving loom weight in the form of a round sphere (Fig. 18). Weaving loom weights ensure that the warp threads remain tight and do not intermingle during weaving (McLauchlin, 1981). It is known that this type of weaving weights has been used since the Late Chalcolithic Period.

Ceramic Finds

In one of today's settlements in the region, two ceramic pots were found while opening water well near the shore. One of these pots, which were found as a whole, has a polished thickened lip with dark colour. The other one has a form that expands outward. It is dark coloured and polished. This type of potteries can be seen in the Late Chalcolithic and Early Bronze Age in Western Anatolia and Northwest Anatolian Regions (Fig. 19). Another

ceramic piece that is in the warehouse has been taken out of water and glued by Bandırma Museum officials. The remnant has a dark and polished surface and it is decorated with scraped lines (Fig. 20). It has been known that there are dark colored and decorated pots in the Culture of Fikirtepe. Furthermore, such pots are found in

Northern Marmara, Thrace and Balkan cultures. Another possibility is that these ceramic finds may belong to Yortan Culture, which is one of the close surrounding cultures. Yortan Cemetery ceramics are generally date back to the 1st and 2nd periods of Early Bronze Age (Fig. 21).



Fig. 19: AA7 (Left) and AA8(Right) numbered wares.



Fig. 20: Sgraffito ceramic finding found in Ayşın Island. Finding no AA9.

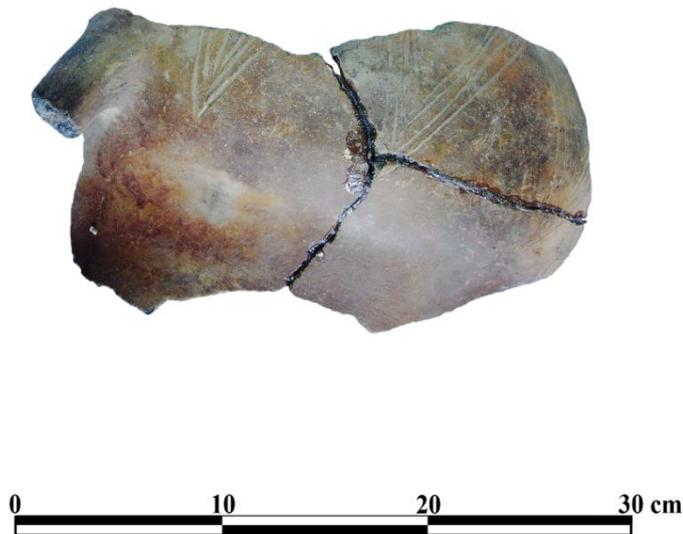


Fig. 21: Sgraffito ceramic finding found in Ayşın Island. Finding no AA10.

In addition, the handle piece that belongs to the red-lined loop-handled cup that is located underwater during studies is especially dated to the Early Bronze Age II in Western Anatolia (Fig. 22). Another ceramic remnant in the warehouse has a volute-shaped handle and it is light buff colored. As it has the same properties with ceramic samples from the period corresponding to the Troy V layer, it can be said that these periods are contemporary. There are pithos tombs among the most important remnants seen underwater in Avşa Island (Fig. 23, 24, 25).



Fig. 22: Knot handled ceramic finding in Avşa Island.



Fig. 23: Submerged pithos grave dated to Early Bronze Age in Avşa Island.



Fig. 24: Submerged pithos grave dated to Early Bronze Age in Avşa Island.

Pithos graves are one of the methods frequently used as burial methods in the Early Bronze Age. Although the forms of pithos used vary, they are usually necked with 2 or 4 handles, flat or pointed bottomed, and wide mouthed (Uhri, 2006). The mouths of pithos graves are usually closed. Large sizes of stones or ceramic pots have been used to cover the mouths.

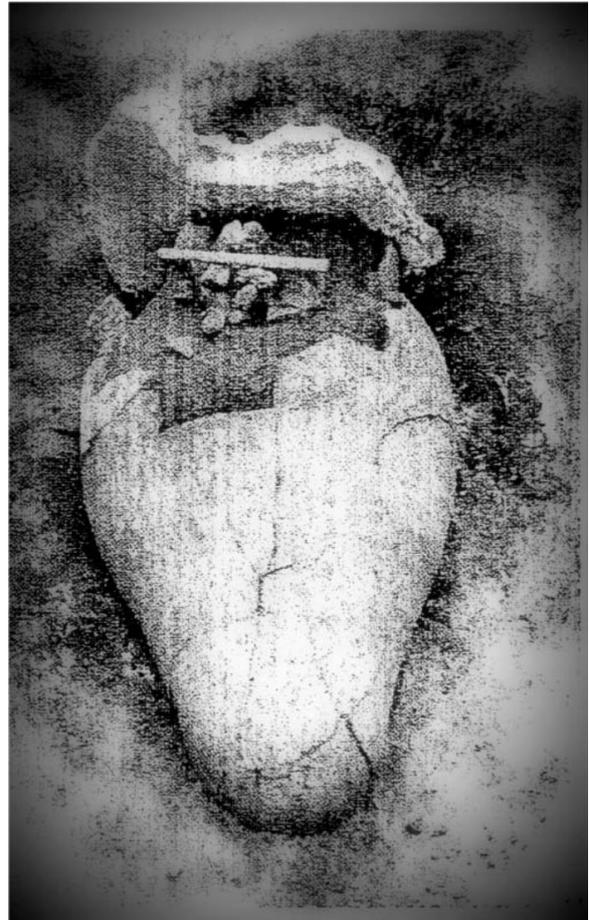


Fig. 25: Pithos Grave sample found in Balıkesir - Babaköy (Özgüç, 1948, Fig. 25).

It can be assumed that mouths have been deliberately left open or the material used to cover the mouth has disappeared from the mouths of the graves which were captured open. Some of the pithos tombs in dating back to the Early Bronze Age are located in Ahlatlı Tepecik (Mitten and Yükrüm, 1969), in Aphrodisias (Joukowsky, 1986), in Bakla Tepe (Özkan and Erkanal, 1999), in Harmanören (Özsait, 1995), in Küçükhöyük (Gürkan and Seeher, 1991) and Ulucak Höyük (Çilingiroğlu et al., 2004; Derin and Özkan, 1999) in Western Anatolia.

Pithos tombs in Avşa Island were found approximately 5 meters from the shore and at a depth of 2.50 meters. The tomb, thought to belong to the Early Bronze Age, is partially closed due to dense mussel shells. The upper part of Pithos is largely broken, but the lower part has been found intact. Bone fragments and amorphous ceramic pieces in the pithos remain in situ. These underwater remains in the region are at risk by natural and human influence and should be taken under protection.

Results

With its location in the northwest of Anatolia, the Marmara Region is of great importance in that it has three shores and a connection point between the two strait and the continents. The sea connections provided an advantage to Marmara Region in terms of establishing relations with an extensive geography. Besides, the richness of the region in terms of various natural resources increases its attractiveness. Owing to the underwater researches carried out in the region, many wrecks have been identified so far and the sea culture history of Marmara will be enlightened of these findings. Numerous prehistoric settlements, which have been inundated by the effects starting from the Holocene Period, are waiting to be discovered over the world. The studies on this field just the tip of the iceberg.

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