The Ancient Harbor and Quarry of Cunill(i)ere or Palleo / Palormo (?)[1]

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Keywords: Mysia, Ancient Harbor, Underwater Archaeology, Ancient Quarry, Byzantine Period

This article focuses on the ancient harbor and quarry that we have identified on the coastal line of Şirinçavuş of Bandırma district. According to the fifteenth century portulans, the bathymetric maps and (Digital Elevation Model) 3D Modelings (Digital Terrain Model) of the harbor of Cunill(i)ere or Palleo/Palormo (?) ancient city were prepared. Bathymetric map revealed that the ancient harbor had lost its function over time. It has been identified that the stones extracted from the ancient quarry were used in Valens Aqueduct of İstanbul (364-378 AD), on the outer courtyard of the Sultan Ahmet Mosque, on the outer walls of the Dolmabahçe Palace, in the many monumental buildings in Istanbul, in Erdek Castle and in the Cyzicus Hadrian Temple. The ceramic fragments found during the surveys and the results obtained from archaeological surveys show that the ancient quarry was actively used from the Roman Period until the 19th century.

Anahtar Kelimeler: Mysia, Antik Liman, Sualtı Arkeolojisi, Antik Taş Ocağı, Bizans Dönemi

Bu makale, Bandırma ilçesi, Şirinçavuş mahallesinin sahil şeridinde yer alan antik liman ve taş ocağını konu edinmektedir. 15. yüzyıl portulanlarında Cunill(i)ere veya Palleo / Palormo (?) olduğu belirtilen antik kentin limanının batimetrik haritaları ve (Dijital Yükseklik Modeli) 3D Modellemeleri (Dijital Arazi Modeli) tamamlanmıştır. Batimetrik harita, antik limanın zamanla işlevini kaybettiğini ortaya koymaktadır. Limanın yakınlarında yer alan antik taş ocağından çıkarılan taşların İstanbul Valens Su Kemer'inde (MS 364-378), Sultan Ahmet Camii'nin dış avlusunda, Dolmabahçe Sarayı'nın dış duvarlarında, İstanbul, Erdek Kalesi ve Cyzicus Hadrian Tapınağı gibi birçok anıtsal yapıda kullanıldığı tespit edilmiştir. Arkeolojik araştırmalardan elde edilen sonuçlar, antik taş ocağının Roma Dönemi'nden 19. yüzyıla kadar aktif olarak kullanıldığını göstermektedir.

[1] Hakeme Gönderilme Tarihi: 18.06.2019 Kabul Tarihi: 04.10.2019.

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Fig. 1. *Mysia Region*

The subject of our article is ancient harbor and quarry which are located in the ancient north Mysia Region[1] (Fig. 1). Mysia Region is surrounded by Phrygia on the east, Aiolia on the west, Bithynia on the northeast and Troas on the northwest. Although Mysia region hosted to many important ancient cities in the south of the Marmara Sea, the geographic boundaries of it could not be fully defined. All land of Balıkesir province, southwest of Bursa, northwest of İzmir, north of Manisa, west of Kütahya and east of Çanakkale are considered as the region of Mysia (Schwertheim 2000: 608-610; Sevin 2001: 44-47). In terms of geopolitical location, Mysia had been the center of trade and cultural interaction between the Near East and Europe during the Ancient. Mysia region hosting many civilizations thanks to the strategic important has saved this importance throughout history. in the region, there are borders of three different provinces (Çanakkale, Balıkesir, Bursa) called North Mysia, and archaeological research and excavations are continuing in many ancient places in these provinces. On the Marmara coast of Balıkesir, which is our survey

[1] Determination of Antique Harbor Settlement and Shipwreck Potential in Balıkesir Province, Marmara Coast: Republic Of Turkey Ministry of Culture and Tourism Project No: SA011001-2017. The survey was supported by the Scientific Research Projects Coordination Unit (BAP) of Kahramanmaraş Sütçü İmam University. Project No: 2017/4-38 M. Bursa Uludağ University Archaeology Department Asst. Prof. Dr. Serkan Gündüz, Ege University Archaeology Department Research Assistant Evren Açar, Sinop University Boyabat Vocational Academy Mapping and Cadastre Department Academician İlke Ekizoğlu, Archaeologist Mustafa Uğur Ekmekçi contributed to this survey as team members. I would like to express my gratitude to the General Directorate of Cultural Heritage and Museums, the Head of Excavations Department Melik Ayaz, the Director of Excavations Umut Görgülü, the archaeologist İlknur Subaşı, ministry representative and archaeologist Mehmet Yıldız and all the team members.

Fig. 2. *Localization.*

area, there are ancient cities and settlements of Kyzikos (Belkıs), Artake (Erdek), Kere Panagia (Zeytinli Island). But among these cities archaeological excavations are continuing only in Kyzikos and Zeytinli Island (Dumankaya 2018: 166). However, the history of the civilizations of the North Mysia in ancient Anatolia could not be fully clarified. For this reason, the survey was started from Balıkesir Province.

Cunill(i)ere or Palleo/Palormo (?)

The first information about the ancient cities in Şirinçavuş and its vicinity was given in portulans drawn by Graziosus Benincasa[2] in 1463, a sailor and cartographer of the fifteenth century. In this portulan this geography was called as Cunill(i)ere or Palleo / Palormo ancient cities[3] (Almagià 1944: Taf. 14, 17, 20; Dimitrov 1984: Taf. 21, 27, 41; Belke 2016: 167).

Although the location of this ancient city was included in the Graziosus Benincasa's portulan, no ancient sources about the ancient harbor and quarry have been obtained. For this reason, the information about the ancient harbor is limited with the archaeological findings we obtained from the survey.

[2] For detailed information about the portulans of Graziosus Benincasa. See. Kretschmer 1909: 358-420.

[3] Cunill(i)ere or Palleo/Palormo recommendation was provided by Klaus Belke.

Fig. 3. *Şirinçavuş Harbor.*

Ancient Harbor

The harbor is called as "Stone Harbor" by the people in the region. It is located in the coordinates of 40.308671 ° N - 27.725418 ° E (Fig. 2). The ancient harbor was built with stacking large-scale polygonal stones. In a concave form, arc-shaped breakwaters surround the harbor basin from both east and west. The stones used in the breakwater consist of volcanic tuffs called trachytic tuffs and have gray, pink, brown and sour cherry color layers (Acun-Özgünler 2007: 7; Angı 2010: 33, Tab. 1, 35). The structural characteristics of the stones are the same with the stones used in the ancient quarry detailed below.

The west breakwater has approximately 200 m. length and the east breakwater has 110 m. length. In the harbor basin, there is a smaller breakwater having 45 m. length, made from rubble stones. This breakwater seems to have been used for smaller vessels (Fig. 3). The west breakwater is larger and longer than the eastern breakwater. The reason of that is arrival directions of the waves. It means that the west and the northwest winds are more dangerous than the other winds for the harbor[4]. As a matter of fact, in order to make the harbor safer during stormy times, the harbor entrance was narrowed and the breakwaters were raised in the range of 1-2.5 m above sea level. The deepest part of the harbor, which has an area of 650 m2, is approximately 3 m. and the shallowest part of the harbor is 0.7 m (Figs. 4-5).

In the Microstructure (XRD SEM-EDS) Analysis, it was determined that the stones used in breakwaters consist of volcanic tuff rocks and these stones are not resistant to water

[4] For Turkey seas, waves and climate models. See. Yüksel et al. 2011: Fig. 9, 12.

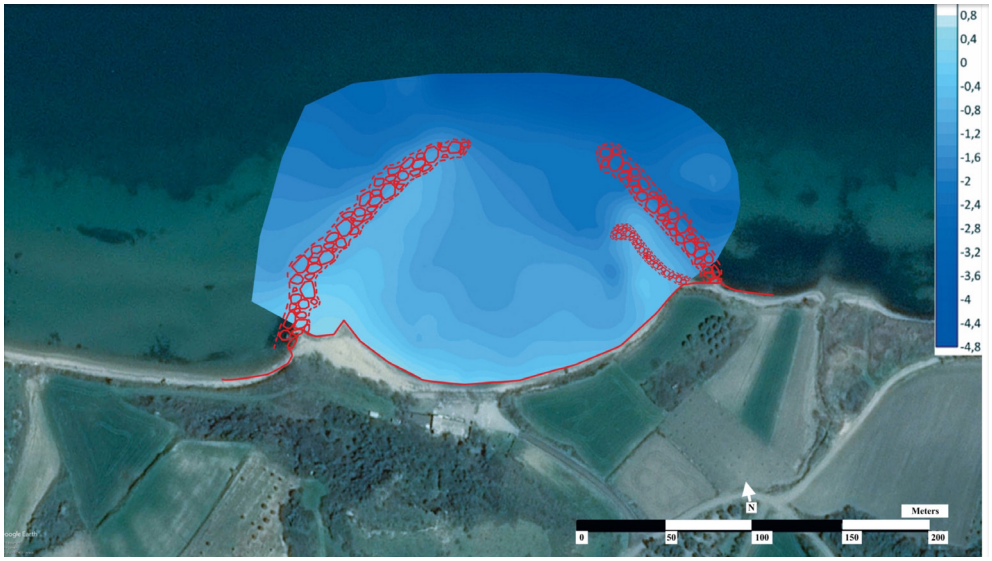

Fig. 4. *Bathymetric Map. (Digital Elevation Model).*

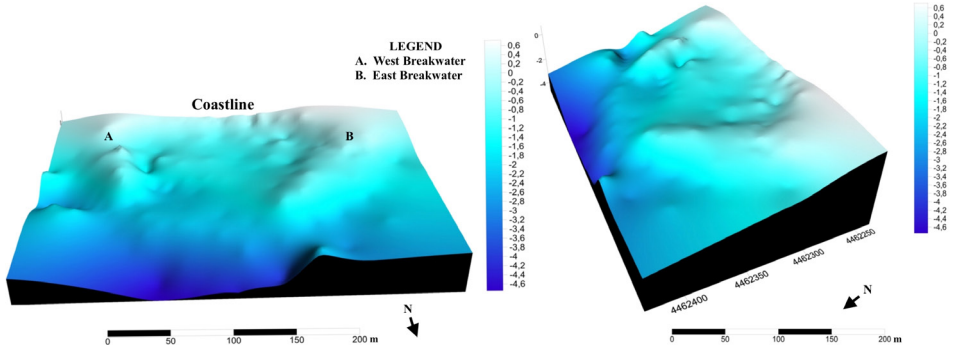

Fig. 5. *3D Modelling. (Digital Terrain Model).*

(Acun – Güleç – Ersen 2003; Acun-Özgünler 2007: 8, Tab. 2.2; Acun-Özgünler – Ersen 2010: 41-48). This situation caused the breakwater to lose its function rapidly. That the west and the northwest winds are stronger caused that more stones were used in designing and constructing the western breakwater. However, narrowing the harbor entrance and raising the breakwaters caused to decrease of water circulation and to make harbor shallow. As a result of the underwater survey conducted at the harbor, any cultural assets couldn't be identified. This is probably the result of shallowing. We haven't got any knowledge about the capacities of the ancient ships moored in this harbor yet. According to the information obtained from shipwrecks, it is understood that ancient merchant ships were between 8 m and 40 m in average (Parker 1992a: 89). And also, it's known that the merchant ships used from 5th century BC to 12th century AD could carry nearly 400 tons of cargo[5]. Besides

[5] For the capacities of the ancient ships. See. Casson 1971: 182-201; Parker 1990: 341-343, Fig. 7; 1992a: 89 et al.; 1992b: 26 et al.; Turfa – Steinmayer 1999: 106-112; Wilson 2011: 33-42; Russel 2011: 140-141, Tab. 8.1.

Fig. 6. *Prehistoric Stone Tools.*

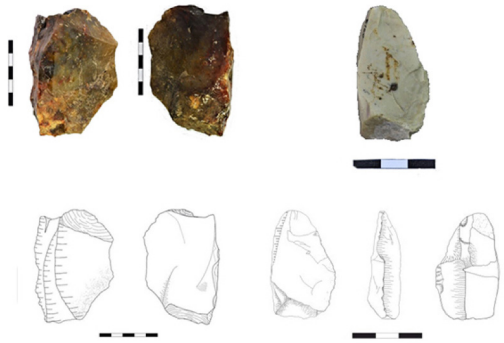

Fig. 7. *Prehistoric Stone Tools.*

Fig. 8. *Hellenistic Ceramic*

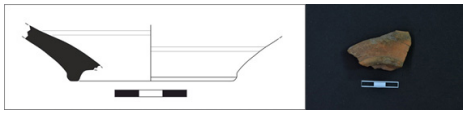

Fig. 9. *Hellenistic Ceramic*

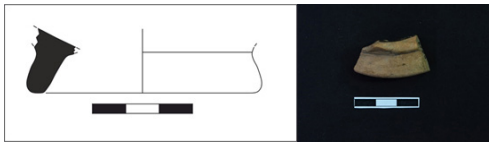

Fig. 10. *Hellenistic Ceramics*

Fig. 11. *Classical Ceramic*

Hieron of Syracuse's super freighter, the Syracusia, has been estimated at over 4,000 tons displacement including nearly 2,000 tons of cargo (Casson 1971: 185–186; Turfa – Steinmayer 1999). Considering the capacity of ancient ships, it is possible to say that the harbor is shallow and the depth of the ships is too low to maneuver. In the harbor, neither mooring[6] nor mooring ring could be determined for anchoring of ships. Therefore, ships in the harbor must have carried out loading and unloading operations on the quay on the shore line. But there is a still active restaurant in the area where we think it is a quay. The concrete wall of this restaurant prevents determination of possible quay.

The earliest archaeological finds around the harbor are stone tools from the Prehistoric Period (Figs. 6-7). Similar examples of these stone tools were found in the prehistoric settlements located in Yılanlı, Taraççı, Çalça and Musluçeşme districts in Balıkesir[7]

[6] Mooring: The ropes, chains, or anchors by or to which a boat, ship, or buoy is moored. For etymological evaluations. See. Kahane et al. 1988: 552-554. For the examples of mooring stone or mooring ring. See. Pulak et al. 1987: 40, Fig. 8-9; Şahin et al. 2011: 228, Fig. 7; Büyüközer 2012: 57-60, Plat. 21.2-23.2; Sarti et al. 2013: 3, Fig. 3/A, 5, Fig. 4/D; Theodoulou 2014: 497, Fig. 4; Dumankaya 2015a: 42, Fig. 6-7; Gündüz 2015: 114-117.

[7] The descriptions of these stone tools were made by Prof. Dr. Necmi Karul, Assoc. Prof. Dr. C. Merih Erek and Assoc. Prof. Dr. Berkay Dinçer. I would like to thank them for their contributions.

(Özdoğan – Gatsov 1998: 209-232, Fig.1a) These findings show us that this region was a suitable settlement area in terms of water and food resources in the Prehistoric Period, too.

The earliest ceramic findings are dated to the Classical and Hellenistic Periods (Cat. 1-3; Figs. 8-10). Similar examples of the partially-glazed bowls dated to the second quarter of the 4th century BC, were found in Sardis and Daskyleion (Bulut 2009: 60-62, Figs. 3, 5-10; Figs. 4, 11-18), (Cat. 4; Fig. 11). In addition, Roman and Byzantine ceramics, sarcophagi of the Roman Period, sarcophagus lid and Ionic column capital, Corinthian column capital, Ion-Impost capital and Postament dated from the 4th to 6th centuries AD were found around the harbor (Figs. 12-16). These artifacts provide important clues about the use of the ancient harbor.

Other findings that will contribute to the dating of the ancient harbor were found on the hill called Kaletepe or Yalı Mound, 100 m away behind the harbor. In this area where Early Bronze Age ceramics (Özdoğan 1991: 348; Divarcı 2015: 90) were determined, there is a ruined castle (Rose – Körpe 2008: 106; Belke 2016: 167). The castle, which was built in 13th century AD, is named as *"Kale - Kale Hill"* in Ottoman maps (Fig. 17). It is thought that this castle is contemporary with Priapos Castle in Karabiga and protected the southern Marmara coast (Aylward 2006: 179-203; Rose – Körpe 2008: 106). Although it is known that it is a castle, there is an apse in the eastern wall of the structure and a cruciform pit (baptismal pool?) in the structure (Fig. 18). This indicates that the structure might have been a church at first but later it was transformed into a castle or watchtower. In addition, the fact that this structure is located on a hill dominating the environment indicates that it may have been built to protect the harbor.

Breakwater and Coastal Structures

Another breakwater which was completely submerged, located about 600 m east of the harbor. The length of the breakwater is 125 m and the maximum width is 4 m. In addition, a warehouses or various commercial structures which have about 200 meters length and are related to the harbor were determined on the coastal line[8] (Dumankaya 2018: 166), (Fig. 19). The concave form breakwater must have protected the structures on the shore line against the nort-east wind. Another survey and archaeological excavation on the ancient harbor of Şirinçavuş were carried out in 2014 by the Bandırma Museum Directorate. In the archaeological excavations carried out in nine parcels (2261 - 2260 - 2203 - 2198

[8] The contemporary remains of these structures have been determined in Ancient City of Aspat Strabilos and Salih Island in the Bodrum Peninsula. Aspat Strobilos harbor had maintained its commercial importance during the Byzantine and Ottoman Period. See. Foss 1988: 147-174; Diler 2010: 143-144; 2012: 155-174; Dumankaya 2015b: Figs. 20-21. Similar harbor structures determined on the Anatolian coasts indicate that there was intensive maritime trade from the Roman Period to the Byzantine Period. See. Foss 1988: 170-174; Dumankaya 2015b: 42-69, Figs. 2-16.

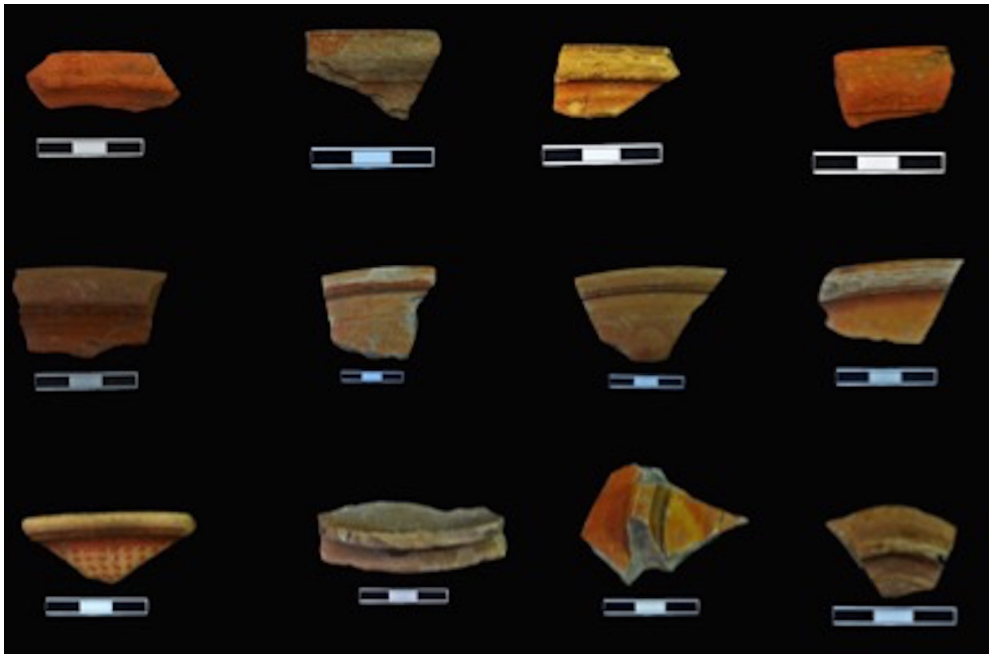

Fig. 12. *Examples of Roman Ceramics*

- 2197 - 2196 - 2195 - 2193 - 2192 parcels) in the hinterland of the harbor, the remains of the Byzantine Period were unearthed[9] (Fig. 20). Ceramics determined in the result of the survey and archaeological excavations in the area proved the existence of a continuous life around the ancient harbor from the Early Byzantine Period to the Islamic Period[10].

Şirinçavuş Ancient Quarry

The ancient quarry is in the coordinates of 40 ° 18'42.65 "N 27 ° 41'57.76" E and is approximately 20,000 - 25,000 m² (Fig. 21). The whole quarry is made of volcanic tuff[11] and same rocks with ones used in the harbor. There is a quay made from polygonal stones on the coastline of the ancient quarry. Many blocks of stone extracted from the quarry were found at a depth of 2-6 m. during the underwater surveys. The existence of the quay and underwater findings indicate that volcanic rocks were transported by merchant ships (Figs. 22-24). In additon many remains of structures and ceramics from the Roman and

[9] These parcel numbers were changed in 2018.

[10] This information was taken from the excavation result report 2014/286 of the Bandırma Museum Directorate.

[11] Volcanic tuff: It is a light colored porous sedimentary stone. It is composed of ash, sand and lava particles that are sprayed by volcanoes. See. Bayırlı – Pekin 2016: 67. Volcanic tuffs observed in our survey area are gray, pink, brown and cherry decay. In addition, these volcanic rocks contain trachytic and basic-volcanic rock fragments. See. Acun et al. 2003: 363 ff.; Acun-Özgünler 2007: 7.

Byzantine Periods were found around the quarry. These remains show that there was a life around the ancient quarry. The geological surveys carried out in recent years indicate that the stones extracted from the ancient quarry were used in the Valens Aqueduct of İstanbul (364-378 AD), (Angı 2010: 33-35; Yüzer 2017: 174) on the outer courtyard of the Sultan Ahmet Mosque, on the outer walls of the Dolmabahçe Palace, in the many monumental buildings in Istanbul, in Erdek Castle and in the Cyzicus Hadrian Temple (Acun-Özgünler 2007: 7-8; 2014: 53-67). The results of these archaeological surveys show that the ancient quarry was actively used from the Roman Period to the 19th century.

Evaluation and Conclusion

The harbor and quarry in question give important clues about the movement patterns of ancient societies. The Early Bronze Age Yalı Mound, located in the hinterland of the ancient harbor, represents the existence of a life intertwined with the sea. It is known that the commercial relations were established between the Cyclades Islands (Cycladic Culture), Crete Island (Minoan Civilization) (Stampolidis – Sotirakopoulou 2011a: 18-25, Figs. 1-2; 2011b: 26-31; 2011c: 58-63) and Western Anatolia during the Early Bronze Age (Erkanal 2011a: 230-231; 2011b: 116-122; Şahoğlu 2011: 136-143). Various wall paintings and archaeological findings detected from these islands provide information about the capacities and technologies of ships[12] (Wachsmann 1998: 69-122). However, our knowledge about the Early Bronze Age ships and technologies of Anatolia is quite insufficient. Therefore, considering the size of this harbor and the characteristics of the ships of that age, it is not possible to say that it could be a Bronze Age harbor. The Classical, Hellenistic, Roman and Byzantine ceramics around the harbor indicate the existence of a continuous settlement in this region (Fig. 25). In ancient times, rivers are known to be the most ideal and shortest way to reach inner cities. It is highly possible that commercial relations have been established between the ancient cities of Daskyleion and Cunill(i)ere or Palleo / Palormo (?) via Kavaklı, Azmak and Sazlıdere rivers located to the east of the harbor. This harbor has suitable location for the trade of olive oil, wine, timber or mines (Pericharaxis/Ergasteria – Balya Mine[13]) (Kovenko 1940: 587-593; Oy 2017: 13). Byzantine remains found around the harbor reinforce the suggestion that Şirinçavuş could be Ancient City of Cunill(i)ere or Palleo / Palormo in Ancient time. With the excavations to be carried out in and around the harbor, it will be possible to obtain detailed information about the ancient city.

[12] For examples of Cycladic vessels. See. Erkut 2011: 178-183.

[13] Balya is known to be the largest mining region in northwestern Anatolia. It is known that it was used during the Hellenistic and Roman Periods. See. Magie 1950: 803-804. The fact that 400,000 tons of course, 1000 tons of silver and 3 tons of gold were produced from 1880 to 1935 underlines the importance of this deposit. See. Wagner et al. 1983/1984: 105-108.

Fig. 13. *Examples of Byzantine Ceramics*

Fig. 14. *Early Byzantine Elements*

Fig. 15. *Sarcophagus and Sarcophagus Lid.*

Fig. 16. *Examples of Stone Elements.*

Fig. 17. *Ottoman Map.*

Fig. 18. *Ancient Harbor-The View from Castle (Baptismal Pool?).*

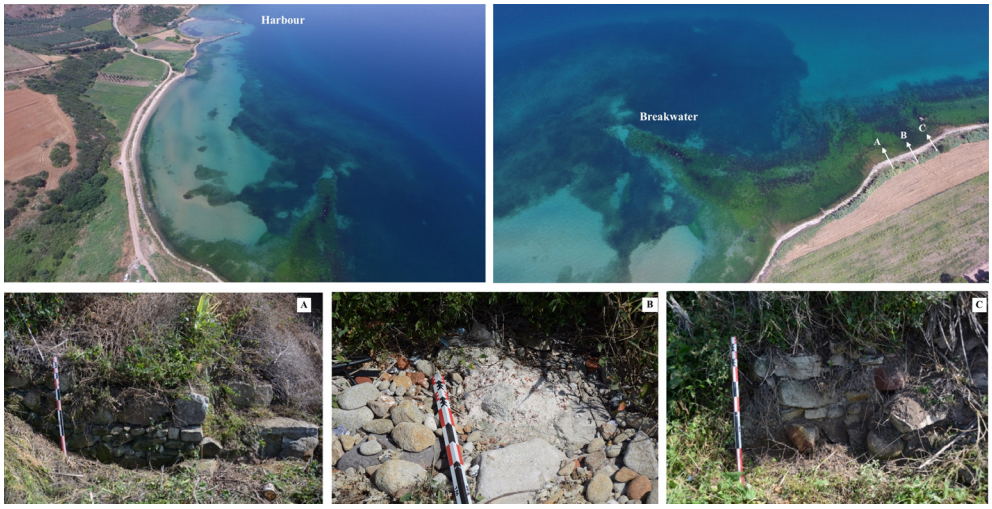

Fig. 19. *The View from Breakwater and Coastline Ruins.*

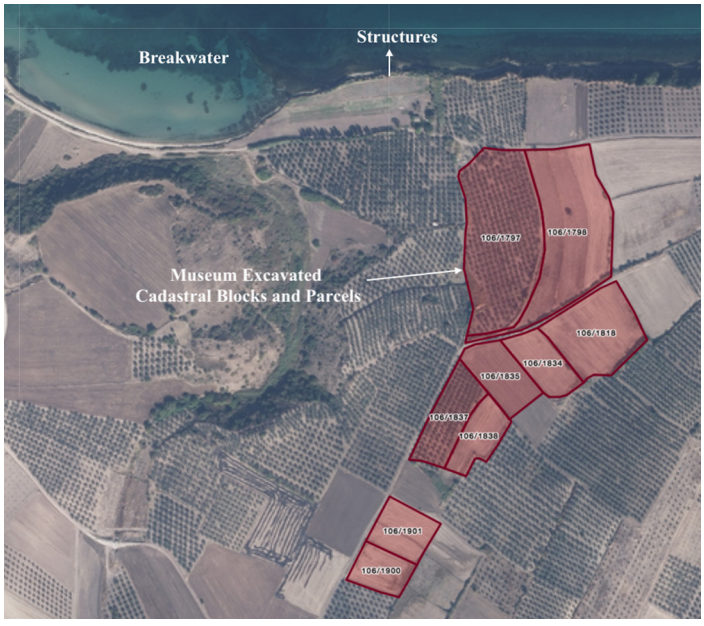

Fig. 20. *Excavation of Museum and Localization of Coastline Ruins.*

Fig. 21. *Location of Ancient Quarry and Harbor.*

Fig. 22. *Detail of Ancient Quarry and Quay.*

Fig. 23. *Examples of Ashlars.*

Fig. 24. *The View from the Coastline of Ancient Quarry.*

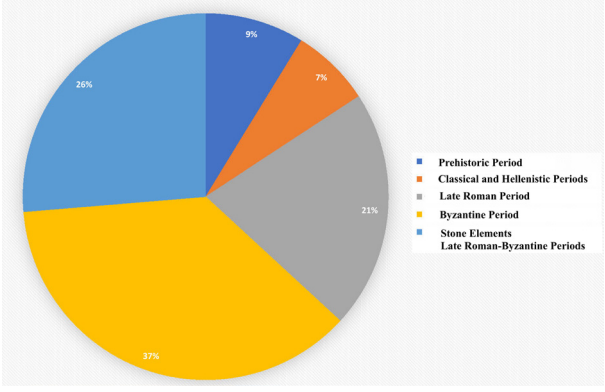

Fig. 25. *The Percentage of Archaeological Findings Detected in Survey.*

CATALOG

(Cat. No. 1, Fig. 8)
Finding location and year: Harbor of the Şirincavuş coastline, 2017.
Name: Bowl
Description: Incurving rim and body fragment, interior and exterior pale glazed
Clay: 10 R 6/3 pale red
Glaze: 2.5 YR 2.5/2 very dusky red
Diam. of rim: --
Diam. of base: --
Preserved height: 3.4 cm
Date: ca. 275 BC.
Publication: Rotroff 1997: 347, Fig. 65, Pl. 79, Draw. 1083.

(Cat. No. 2, Fig. 9)
Finding location and year: Harbor of the Şirincavuş coastline, 2017.
Name: Bowl
Description: base and body fragment of bowl, mica and lime, ring base, a groove interior and two groove exteriors on body.
Clay: 10 R 5/3 weak red
Glaze: Between 10 R 6/8 light red, 2.5 5/4 reddish brown
Diam. of rim: --
Diam. of base: 6.6 cm
Preserved height: 2.3 cm
Date: ca. 250-200 BC.
Publication: Rotroff 1997: 304, Fig. 9, Pl. 35, Draw. 976.

(Cat. No. 3, Fig. 10)
Finding location and year: Şirincavuş, breakwaters, 2017
Name: Bowl
Description: base and body fragment of bowl, traces of lime inclusions, ring base, interior pale glazed.
Clay: 2.5 YR 6/3 light reddish brown
Glaze: 2.5 YR 2.5/2 very dusky red
Diam. of rim: --
Diam. of base: 6.4 cm
Preserved height: 1.9 cm
Date: ca. 3rd-2nd Century BC.
Publication:

(Cat. No. 4, Fig. 11)
Finding location and year: Harbor of the Şirincavuş coastline, 2017.
Name: Bowl.
Description: mouth and body fragment of bowl, some mica and lime inclusions, round-mouthed, traces of wheel interior and exterior, two shallow groove exterior, black glaze interior, partially-glazed exterior.
Clay: 2.5 YR 7/3 light reddish brown
Glaze: 2.5 YR 2.5/1 black
Diam. of rim: 19 cm
Diam. of base: --
Preserved height: 3 cm
Date: ca. 4th Century BC.
Publication: Bulut 2009: 60-62, Figs. 3, 5-10; Figs. 4, 11-18

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