

Ships And Maritime Landscapes

*Proceedings of the Thirteenth International Symposium
on Boat and Ship Archaeology, Amsterdam 2012*

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ISBSA 13

Hosted by

Het Scheepvaartmuseum Amsterdam
Netherlands Cultural Heritage Agency
Monuments & Archaeology, City of Amsterdam
University of Groningen

With support from

Province of Flevoland
Royal Dutch Navy



Barkhuis Publishing
Eelde 2017

26. The harbour landscape of Aegina (Greece)

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Introduction

In the 1st century BC Strabo (viii. 6. 16) exclaims with regard to the island of Aegina: "Now what need have I to say that the island is one of the most famous? For it is said that both Aeacus and his subjects were from there. And this is the island that was once actually mistress of the sea and disputed with the Athenians for the prize of valour in the sea-fight at Salamis at the time of the Persian

War". The islanders of Aegina controlled a supreme naval power that dominated the seas of the Greek world, and far beyond that, before the Classical period and up until its defeat under the Athenian might. Ancient references alone give us evidence about Aeginetan 'Thalassocracy', but also the material remains offer clear evidence of a thriving maritime society, adapted to the needs of sea-life, a society which after adapting to its environment transformed its natural environment to its needs.

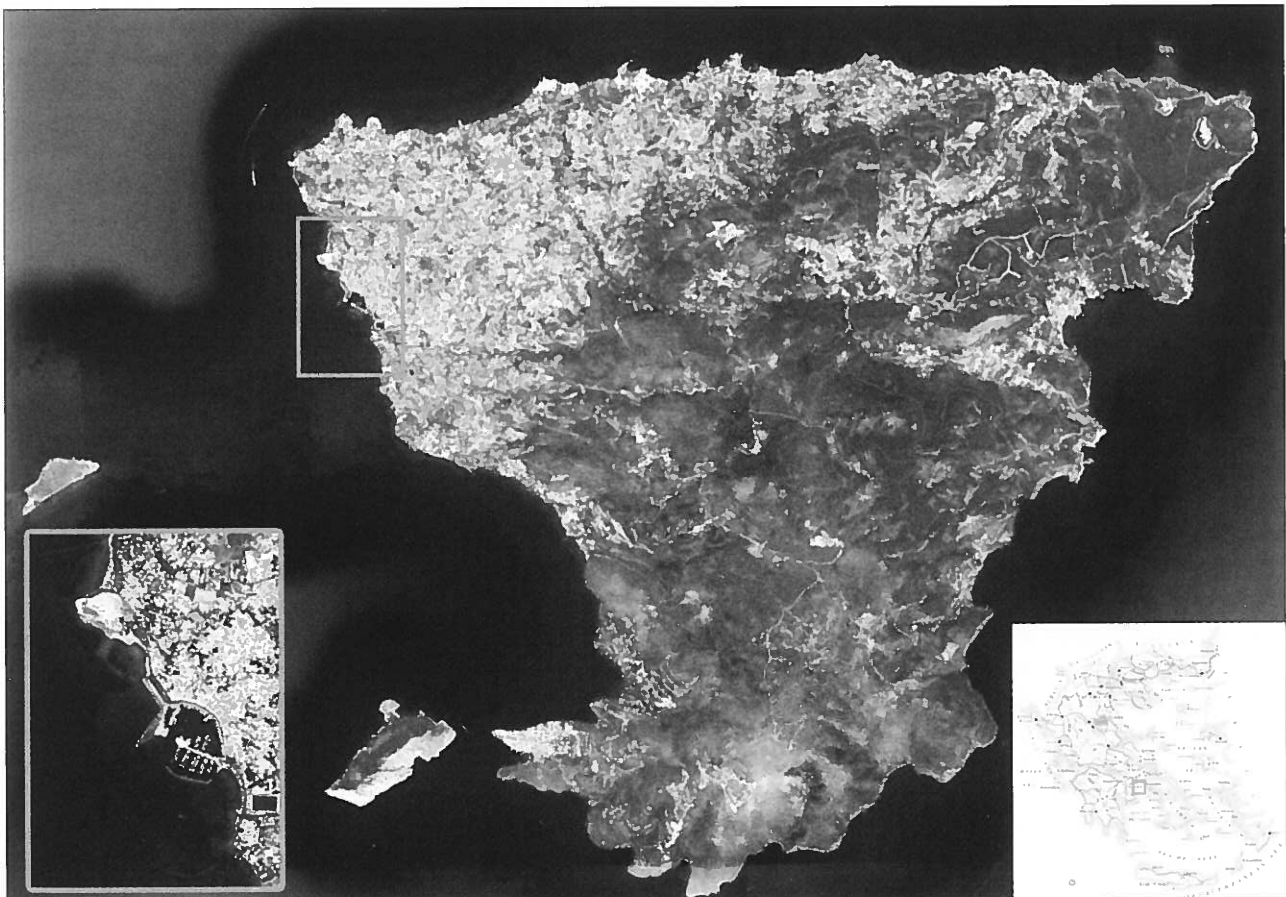


Fig. 1. The Island of Aegina and the location of the underwater archaeological site in front of the town Aegina.

Right in front of the modern town of Aegina, which is built on top of the ancient town, both at the coast and mainly underwater numerous remains of the ancient commercial and naval harbour infrastructures are a testimony to a highly sophisticated and advanced maritime society (fig. 1). A fortified naval harbour with ship sheds, a commercial harbour, breakwaters and underwater reefs are part of an elaborated and multifunctional harbour complex that has not yet been studied thoroughly. It is promising numerous answers to accordingly numerous questions about harbour facilities, their architecture, technology, topography, logistics and a series of other social, economical and technological aspects.

References of various travellers about the harbour and its underwater structures offer the some concise information for research into the history of the harbour of Aegina. In the 1960s, Paul Knoblauch visited Aegina four times (1964, 1965, 1966 and 1969) and surveyed the visible remains underwater and above water. His work covers a territory of approximately 2,700 m². His findings have been very significant although he did only surface surveys and did not proceed in any excavations. In 1988, the Greek Underwater Archaeological Service conducted an underwater survey under the direction of Demetrios Chaniotis, who mentions in his report the ancient harbour's remains that Knoblauch's survey did not bring up. This paper focuses on a 19th-century Admiralty Chart by the Hydrographical Office of the UK (UKHO), one of the oldest detailed depictions of the harbour, and a satellite picture in order to discuss the Aegina harbour landscape and the underwater structures in front comprising it (fig. 2).

Brief history of Aegina's town and port

The town of Aegina has a human presence from the Neolithic period evident at Kolona hill, with a period of prosperity in the Bronze Age 2600-2500 BC (Welter, 1938b). Consecutive periods of habitation are present up to the 7th century BC, when the Kolona hill became a religious centre, the Acropolis of Aegina, while the town was relocated south to it next to the harbours. This period constituted the highest point of prosperity for Aegina. The golden era of Aegina lasted until 458 BC when the Athenian supremacy brought an end to it at the naval battle of Kekryfaleia, consequently destroying Aegina's fleet, fortifications and harbour facilities (Thucid.1.105). During the late 4th century BC the town underwent a short revival with some reconstructions of the infrastructure, possibly including some port facilities (Demosthenes: 211). In the Hellenistic Period the town of Aegina must have had a short revival under the Pergammene rule, but no clear evidence exist for the state of the harbour. In all probability, during early Roman times the harbour still existed (Welter, 1938a: 484). Then, for centuries, reuse of the material was common practice until around the end of the first

millennium, when the site was finally abandoned and the settlement was moved further inland. The harbour has been in use from 15th century onwards – however without any evidence of a harbour settlement. The area has been repopulated since the beginning of the 19th century, having less than a dozen buildings in the Port in 1810. After the Greek War of Independence against the Ottoman Empire (1821-1830), the town started growing in numbers of people and buildings, reaching a climax in 1828 when it became the first capital of the Independent Greek State, with numerous architectural remains adorning the modern city. At this point, a radical change of the landscape took place, and during the short period that Aegina was Capital of Greece parts of the Temple of Apollo at Kolona and other ancient buildings had been used for modern harbour works and the creation of public buildings (How, 1971: 205 ff). After 1829, the Capital was moved to Nafplion and the town led a relatively quiet existence of a rural city.

The rapid urbanization of the last 50 years (related to Aegina's proximity to Athens) not only covered the ancient site both at land and at the coast, but outreached it in a great extent. At present, the modern town of Aegina covers the site of the ancient town entirely, as well as some of the harbour structures close to the coast. By the fluctuation of the sea level urban features have disappeared underwater and the landscape has changed significantly. This is a crucial issue when studying ancient ports and coastal areas. In Aegina's case in all probability we have to take a sea level rise into account of c. 1cm every 10 years for the last 5,000 years, according to recent geological research (Poulos *et al.*, 2009). So far, no geophysical research has been published on Aegina.

The Thomas Graves UK Admiralty Chart

Ancient Aegina's harbour facilities have been included in numerous local publications of varying scientific level which often contain only a poor quality map of the town and its coast. During our research in the local library the reference to the map (in reality a chart) that has been the source (directly or through other reprints) of most of the above-mentioned maps was traced. What was discovered is a reference to a rather precise chart which was purchased from the Hydrographical Office of the UK (UKHO) (fig. 2). The chart is entitled "Town and Ports of Aegina" and was produced in 1839. It is signed by Thomas Graves, Commander of H.M.S. *Beacon*, and compiled as the result of a surveying expedition by the British Royal Navy in the Aegean Sea. The chart was initially published by the Hydrographic Office of the Admiralty in 1843 and later a corrected edition was published in 1861.

On the left side it has the view of Aegina from the anchorage, as it was used in those times by captains in order to understand the landscape from the site that they approach. On the left part of the chart is the compass

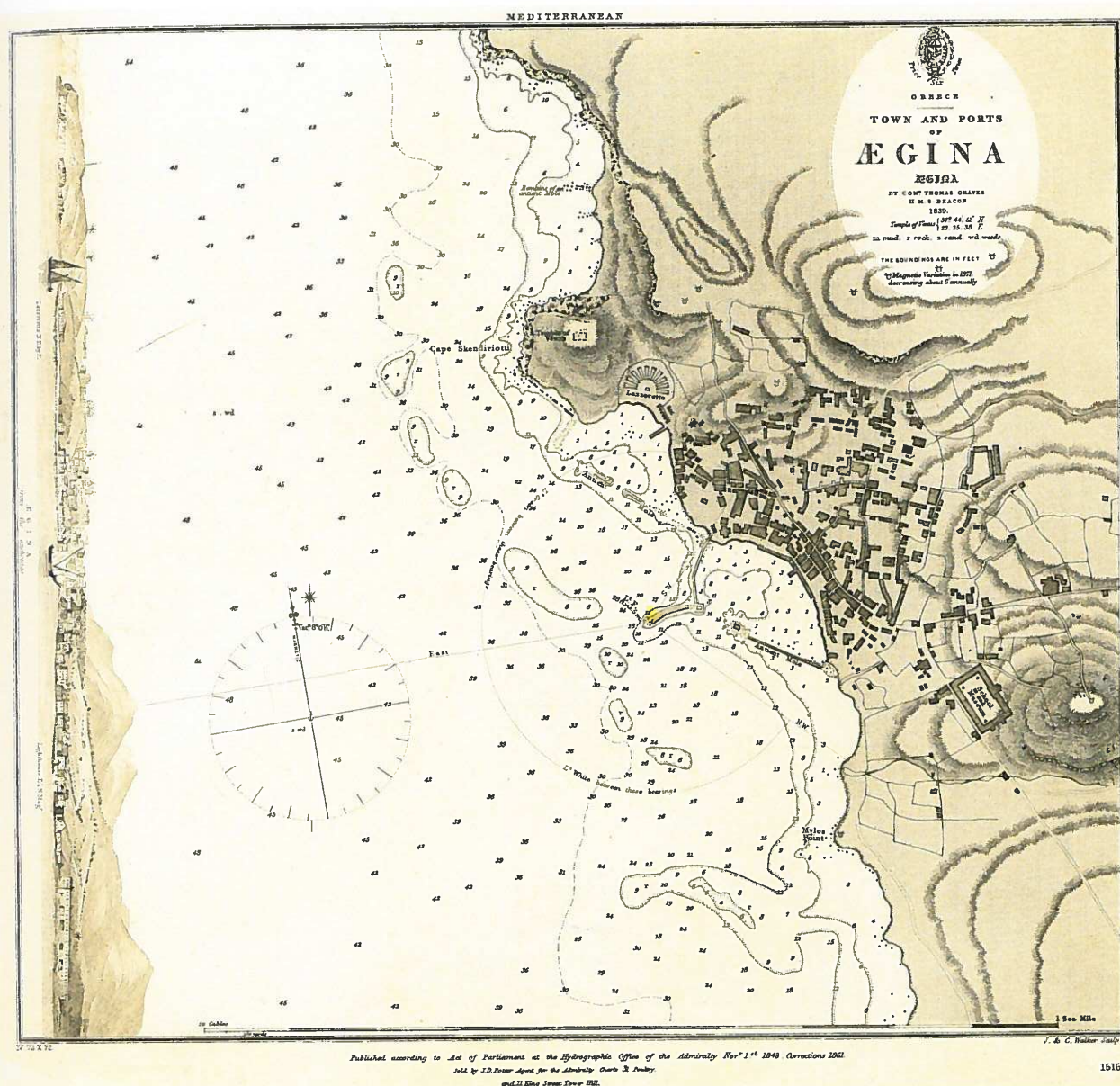


Fig. 2. Chart of the harbour of Aegina from 1838 (OCB 1515 A2/ Courtesy of Hydrographic Office of United Kingdom).

pointing north and at lower part of the chart one sees the map scale, which is divided in cables, yards and sea mile. The key on the upper right part shows the coordinates of the Temple of Venus and the explanation of the metadata in the chart: 'm' stands for mud, 'r' for rock, 's' for sand and 'wd' for weeds. There are three fathoms lines for 1, 2 and 5 fathoms. Finally, bathymetry is given in feet. The other part of the map is covered by the plan of the city of Aegina, the coastline and the underwater environment. Except for the bathymetry and the metadata, the chart also includes seven land marks from North to South written as follows:

- 1 Remains of an ancient mole
- 2 Cape Skendiriotti/ Temple of Venus
- 3 Lazzeretto
- 4 Ancient Mole 2
- 5 Lighthouse

- 6 Ancient Mole 3
- 7 School/Museum

Interrelation of Antiquities in Chart with attested antiquities

This chart is probably the most detailed chart of the area up to the present day, revealing important traces of the ancient harbour landscape. Two further elements of maritime significance that do not exist anymore are surviving in this chart, a) the Lazzeretto, i.e. the quarantine building of Aegina which was built in the period when Aegina was the capital of the Greek state, and b) a ruined tower, demolished in late 19th century, the latest phase of which belonged to the Venetian Period because it was rebuilt by Morosini (Chandler, 1817: 17). The tower

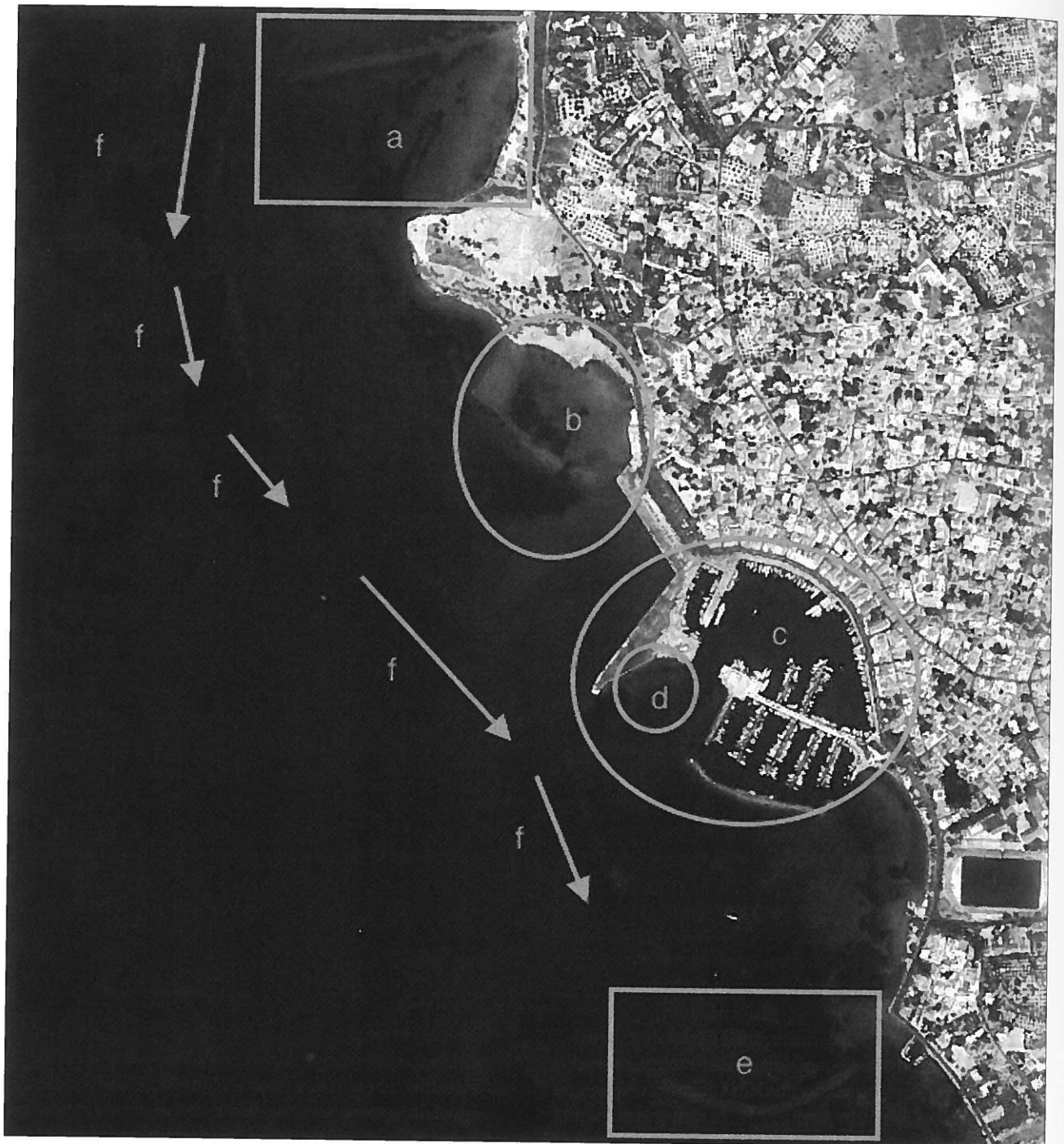


Fig. 3. Aerial picture of the archaeological remains at the harbour of Aegina. a: Northern Breakwater; b: Naval Harbour (*Kryptos Limen*), c: Commercial Harbour; d: Quay built in 1828-9; e: Southern Breakwater; f: Manmade Reefs.

foundations are probably surviving under the building currently hosting the Sailing Club of Aegina. Our focus will be on the ancient harbour elements that are found underwater. As it is obvious from the landmarks, in three cases features in the water are marked as ancient moles, two correctly and one incorrectly. Those three features together with other features of the sea bed are going to be interrelated to satellite pictures and archaeological research that took place the last 50 years.

Naval Harbour

Starting with the most recognizable remains, in front of the town of Aegina and a bit to the north one sees the remains of the naval harbour (figs 2, 3.b), obviously the harbour referred as *Kryptos Limen* by Pausanias (II, 29, 6 ff). According to Knoblauch (1973: 73-79), it is a fortified harbour, the walls of which have an average of 2.8 m, with two square towers protecting the entrance.

The bases of those towers are still to be seen and their exact measurement is not clearly determined. At the north-west corner six ship sheds have been identified. They are 6.6 m wide, while the interior width varies from 5.75 to 6.17 m (mostly 5.77 m), and their back end was found intact. There are indications from an *in situ* observation while snorkelling that the ends of these ship sheds may be preserved. The harbour basin varies from 0.10 m to 2.3 m in the centre. The curved coast from the ship sheds at the north-west corner and clock-wise to the southeast mole are no more than 1 m on average. The whole area is covered by mortar, stones and ceramic sherds, in all probability remains of the ship sheds. Knoblauch (1973: 83) dates this harbour to 480 BC with a reconstruction phase in AD 750.

Commercial Harbour

The commercial harbour (fig. 3.c) has not been studied because it is covered by modern harbour works from the late 1960s. It was oval shaped and probably had two towers securing the entrance, similar to the naval harbour. Physical proof is difficult to obtain, since their possible location is under a church on the northwest quay and under a modern building on the southwest, at the location where the Venetian tower once stood. The 1960s major construction works also covered the ancient quays. Thus the south, east and north quays may be preserved almost intact while the southwest partially lays under the modern harbour. In Grave's Chart the southern mole is referred to as ancient. The later had also a Venetian phase evident from the tower of Morosini mentioned above. The southern quay wall that has been destroyed during those works is the one connecting the commercial harbour with the naval one. This part had our particular interest, since in the early 19th century a number of small basins were observed behind it: a possible connecting channel and a site dock, according to Cockerel (1860: 1), who included this feature in his plan of the city of Aegina at the port. The proposed date for the commercial harbour by Knoblauch (1973: 81) is 480 BC.

Breakwaters

There are two underwater structures missing from the chart. While in the bay north of Kolona a fortification wall is mistakenly mentioned as remains of an ancient mole, a substantial structure of 241 m was not included in the soundings by Thomas Graves. It stretches some 300 m into the sea, its foot being c. 67 m away from the coast at a depth not exceeding 2 m. The first 55 m of the mole is horizontal, then the mole declines and ends at a depth of 4.15 m. Its construction consists of stones and blocks of various shapes with sizes up to 0.5 m x 0.4 m.

Ceramic shreds are scattered all over the structure (fig. 3.a) (Knoblauch, 1973: 59-68).

A second underwater structure has been located by the Ephorate of Underwater Antiquities south of the modern harbour. Its course can be vaguely traced in the chart and is visible in the satellite picture. It has an ellipsoid shaped curving to the south, the edges of it pointing northwest and northeast. It is built in the same manner with the breakwater in the North Bay. Its foot is circa 100 m from the coast and stretches around 350 m into the sea. Its width varies between 20 and 26.5 m (Chaniotis, 1988). The measurements are approximate, since the structure has not been surveyed (fig. 3.e). The above two structures seem to have been functioning as breakwaters. The northern one is dated by Knoblauch (1973: 83) in the last quarter of the 19th century BC, while the southern is still undated but in all probability seems contemporary to the northern breakwater.

Manmade reefs

Pausanias (II, 29, 6 ff.) mentions how difficult it is to reach Aegina, due to underwater rocks and round shaped reefs, which he attributes to Aeacus, the mythical founder of Aegina, who built them on purpose as a defence against the pirates and the enemies who may have tried to attack them. In this case the chart gives a very interesting hint (yet not very accurate and thus a bit misleading) about those reefs, which have similar heights between 2.4 m to 3 m under the sea surface. Knoblauch considered them as rocky reefs and did not investigate them during his underwater expeditions. Their existence, however, had been known to the locals; especially to mariners, fishermen and divers who had troubles with them and in various cases could see them through the glass bottom bucket from their boats, or while diving. The Underwater Archaeological Service had already located them and surveyed them in 1988 but the sudden death of chief investigator, Mr. Chaniotis, left them unpublished until now. After this investigation the Underwater Archaeological Service declared the whole area a protected archaeological site.

Pausanias in this case seems to be half correct. It may have been not Aeacus who built those reefs, but in any case they are indeed built on purpose and are not natural rock formations. They extend for a length of c. 1,700 m, starting from the axis of the North breakwater and stretch in south-southeast direction to a point c. 245 m north of the seaward edge of the south breakwater (fig. 3.f). Chaniotis (1988) identified 45 individual constructions in five groups. The depiction of long reefs in Graves' chart is due to missing the gaps between the reefs during the collection of soundings. They have the shape of truncated cones. Moreover, they appear to be constructed without use of a hydraulic mortar used in Roman times. Finally, we see no similarities with

elements of other artificial harbours, like Caesarea Maritima or Cosa (Raban, 1992; Lewis, 1973). Its building material is similar to the material used to build the two breakwaters, comprising small and large stones of irregular shapes, with sizes varying from 20 to 90 cm. Their height from the seabed varies between 3.3 to 4.6 m. while their perimeter is c. 25 m- 20 m- 15 m from their base upwards with a flat top (Chaniotis, 1988). The fact that on average their tops are at 2.7 m leads us to think that they were built in a period when they were slightly below water so they could function effectively as underwater obstacles. This leads to their dating around 6th and 5th century BC, probably in the same period the two harbours were built, or a bit later when the Aeginitans felt the harbours were threatened. If the latter is the case, then they would be built sometime between 491-459 BC, the period the Athenians were a serious threat for Aegina. The possibility of them being part of a breakwater is impossible since they could not function as such due to their ineffective distribution, with gaps between them. This construction is very interesting and seemingly unique.

Conclusion

We are indebted to the work of P. Knoblauch that put a strong basis to the study of this beautiful and magnificent site, and to D. Chaniotis for his discoveries. The chart of UKHO offers a view of the site before modern urbanization and radical transformation of the seafront took place. Furthermore, it is the only evidence until now of a rather precise source for the *Kryptos Limen* and the commercial harbour before their modern development. The above information will be an invaluable guide for future research to locate ancient structures under the overlaying streets and other surface constructions. The harbour complex of Aegina is a maritime landscape that has attested human presence through a series of chronological events from Prehistory, to the Archaic, the Classical, the Hellenistic, the Roman, the Byzantine, the Frankish, the Catalan, the Ottoman and the Venetian period. Moreover, it was redeveloped since the time of the modern Greek State's foundation (1830) and up to

the present, with the harbour of Aegina being currently the second most busy passengers' port in Greece with around 2,000,000 passengers every year. Studying this massive harbour landscape will enable us to have a good understanding of the site, aiming to obtain valuable data for the archaeological research of the ancient Town of Aegina and the history of its harbour. Our research will also contribute to the creation of a unique underwater archaeological site both comprehensible and reachable to the general public and to the local community.

References

- Chandler, R., 1817. *Travels in Asia Minor and Greece* (Vol. II, 3rd edition). London.
- Chaniotis, D., 1988. *Dienergeia prokattartikis ypovrychias ereunas sto thalassio choro anoichta tou archaiou kai Emborikou limaniou tis Aeginas*. Report to the Ephorate of Underwater Antiquities Protocol Number 2385/14.7.1988, unpublished.
- Cockerell, C.R., 1860. *The Temples of Jupiter Panhellenius at Aegina, and of Apollo Epicurius at Bassae near Phigaleia in Arcadia*. London.
- Demosthenes. In *Aristocratem*. http://www.poesialatina.it/_ns/Greek/testi/Demosthenes/In_Aristocratem.html.
- How, S.G., 1971. *Imerologio apo ton Agona 1825-1829*. Karavias, Athens.
- Knoblauch, P., 1973. Die Hafenenlagen der Stadt Ägina. *Archaiologikon Deltion* 27: 50-85.
- Lewis, J.D., 1973. Cosa: an early Roman harbour. In: D.J. Blackman (ed.), *Marine Archaeology*. Colston Papers: 233-259.
- Pausanias, Book II. Zacharopoulos, Athens.
- Poulos, S.E., Ghionis, G. & Maroukian, H., 2009. Sea-level rise trends in the Attico-Cycladic region (Aegean Sea) during the last 5000 years. *Geomorphology* 107: 10-17.
- Raban, A., 1992. Sebastos: the royal harbour at Caesarea Maritima — a short-lived giant. *The International Journal of Nautical Archaeology* 21: 111-124.
- Strabo. *Geographica* Book VIII. Zacharopoulos, Athens.
- Thucydides, 1942. *Historiae in two volumes*. Oxford University Press, Oxford.
- Welter, G., 1938a. Aeginetica XIII-XXIV. *Archäologischer Anzeiger*: 480-540.
- Welter, G., 1938b. *Aigina*. Berlin.