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The submerged ancient architectural elements and structural remains of the Eastern Coast of Alexandria, Egypt: an underwater survey of the Greek Mission

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Abstract

From 1998 to nowadays 29 underwater archaeological, geological and geophysical campaigns have been conducted by the Geek Mission in Alexandria, on a wide area of the eastern littoral extending for over 13km bringing important information to the topography of what was known in antiquity as “I pros Elefsini Thalassa”, Mare Eleusinium, Juliopolis and Nicopolis.

Besides remains of maritime activities – shipwrecks and anchors – expected to be found in the vicinity of two important ports, numerous architectural elements as well as submerged ancient foundations and structures were traced. This is the result of the rise of the level of the Mediterranean Sea but is also due to the subsidence of some parts of the coast.

Remains of large buildings once standing on Acra Lochias, that was part of the Royal Ptolemaic Quarters were found lying on the sea floor, as well as numerous architectural elements that could possibly be attributed to the first Church of St. Mark standing on its alleged martyrium. The site of a large submerged stone quarry as well as remains of parts of extended necropolises that lie today under sea level were surveyed.

At the Sidi Bishr Promontory large, semi submerged, hypogeum burials which bear marks of quarrying activities were spotted, while on the neighboring islet of Gezireh Garbr el-Khour, today’s Miami Island, remains of burials coexist with a slightly submerged fish tank and impressive deep couloirs carved in the rock.

The survey and excavations are continuing.

1 The submerged ancient architectural elements and structural remains of the Eastern Coast of Alexandria, Egypt: an underwater survey of the Greek Mission

In 1998 the Greek Mission conducted its first underwater campaign, following the granting of a concession to the Hellenic Institute of Ancient and Mediaeval Alexandrian Studies for the survey of the eastern littoral of Alexandria. Twenty eight campaigns were to follow. Nowadays the area of the Greek Mission concession, known in antiquity as “I pros Elefsini Thalassa”,¹ *Mare Eleusinium*, Juliopolis and Nicopolis, extends from the Silsileh Promontory up to Mandara Bay along 13.5km of littoral and covers a sea surface of some 14 square kilometers (Figure 1).

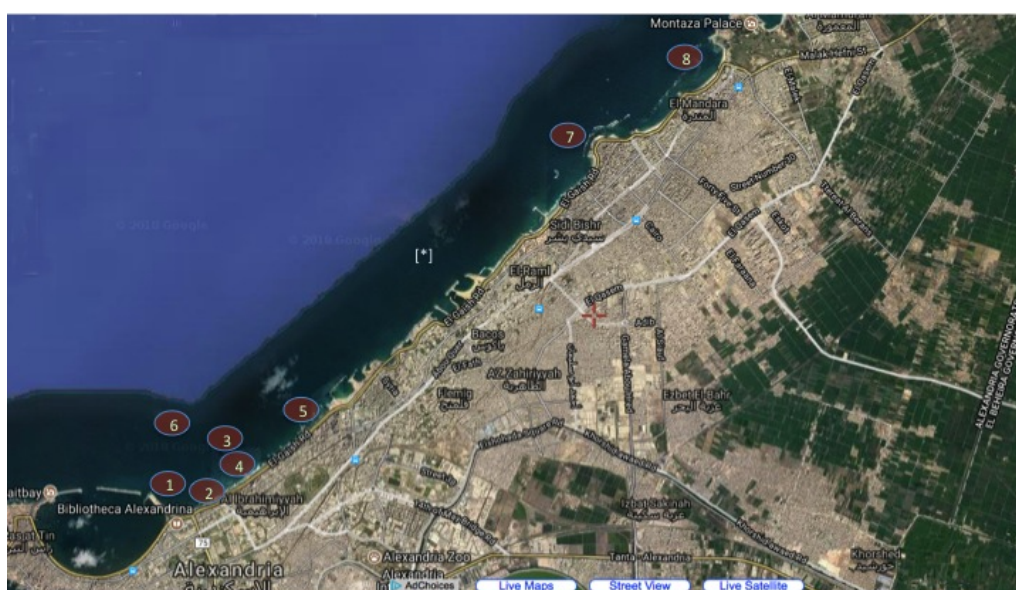


Figure 1: Map of the Greek Mission concession area. The eight subsites are marked with numerals.

As expected, in the vicinity of two important harbors, the Eunostos and the Megas Limin,² remains of maritime activities scatter the sea floor at several locations. However due to the rise of the Mediterranean Sea level³ and the subsidence of the coast there are also a wide variety of submerged ancient remains ranging from extended paved surfaces, foundations of large structures, architectural elements, some of colossal dimensions, necropolises, stone quarries and fisheries. We will focus on those submerged remains.

Starting from the westernmost point and moving eastwards this area has been divided into 8 sub-sites bearing the today's names of the suburbs where they are located and of a reef.

At **Chatby 1** nowadays submerged, once stood Akra Lochias that formed the eastern boundary of the Eastern Port and was part of the Royal quarters (Figures 2–4). According

¹Athenaeus, *The Deipnosophists*, 982.

²Eunostos is the port of the “good return”, today's main commercial harbor, while the Megas Limin, *Portus Magnus* of the Romans, Mina el Sharky during the Islamic period gradually fell in disuse.

³The Mediterranean Sea level rises by approximately one meter every 1000 years, starting from the melting of the glaciers some 10.000 years ago.

to ancient sources a small temple dedicated to Isis Lochias, the Mausoleum built by Cleopatra VII, and a Palace stood on that headland.⁴ At depths varying from 2m to 10m some 400 architectural elements of different sizes were found. It is difficult to ascertain which are *in situ* and which were brought at different times from the neighboring littoral and dumped there in a desperate attempt to keep above water level the gradually disappearing eastern breakwater of the port. It is witnessed on all maps of the 18th, 19th, century up to the early 20th century that the Silsileh promontory was not a unified wide surface, as it is today, but a series of minuscule islets, just at sea level, which were connected by narrow couloirs (earlier by wooden bridges) that allowed access to the derelict little fort on its tip.⁵ It is only in the 1910s during the construction of the Corniche that this promontory was widened to its today's dimensions by dumping heteroclite stones, including numerous ancient remains scattered on the neighboring coast.⁶

We have also to bear in mind that the action of the waves, the swell, as well as some intense tsunamis that hit Alexandria with tragic consequences have certainly affected the position of those ancient architectural elements on the sea floor.⁷

Because of their weight and as they were found at greater depths we believe that the tower of a dwarf pylon (Figure 5) and its monolithic flight of steps (Figure 6), a monumental base (Figure 7) as well as the architrave or threshold of an oversized door (Figure 8), all made of red granite, lie very near to their original location. It is most probable that the pylon was part of the entrance of the Temple of Isis Lochias⁸ and that the threshold/architrave could have been part of the monumental door of Cleopatra's mausoleum where she met her tragic death with Mark Anthony.⁹

It is difficult to ascertain if the 7 large blocks of calcite, which once formed part of a Sed-ceremony monument, with pharonic representations and hieroglyphs (Figures 9, 10), including the name of Amasis a Pharaoh of the XXVIth dynasty, as well as an 8th made of red granite representing a headless torso, stood originally on Akra Lochias or if they were brought from an unknown location in the town.¹⁰ Same question as to their provenance arises for the remains of three mutilated "naiskoi" made of black granite. Two which are nearly complete bear perforations at their lower part, (Figures 11, 12) a clear indication of having been re-used as tannery basins during the Islamic times.¹¹ Besides those heavy artifacts which were raised up, photographed, drawn and studied there are some 400 blocks and slabs that once pertained to imposing structures as well as some catapult stone balls and a few mediaeval stone anchors found at the eastern boundaries of that submerged promontory.

Except for the pylon tower and its flight of steps that went through a long conservation process and are now exhibited in the archaeological site of Kom el Dikka (Figure 13) all

⁴Strabo, *Geography*, 28,9; Plutarch, *Lives. Anthony*, 74.1 and 77.

⁵See plan de la Ville d'Alexandrie, dressé par les services de la Municipalité, 1902, in Jondet Pl. L.

⁶The divers of the Greek Mission have repeatedly seen large broken ancient architectural elements in cavities under the eastern side of Silsileh Promontory, beyond the protective line of modern cement blocks which were dumped in the 1960's .

⁷As the tsunami of the 365 AD. reported by Ammianus Marcellinus.

⁸Fragaki 2011. The pylon tower as well as the monolithic flight of five steps are exhibited today at the Kom el Dikka archaeological site.

⁹Plutarch, *Lives. Anthony*; Dion Cassius, *Hist. Rom. L I.8*.

¹⁰Gallo 2010, 64-88.

¹¹The area of Chatby and Ibrahimieh, extending outside the eastern walls was used in the mediaeval times for tannery activities.

SUBMERGED REMAINS OF THE EASTERN COAST OF ALEXANDRIA

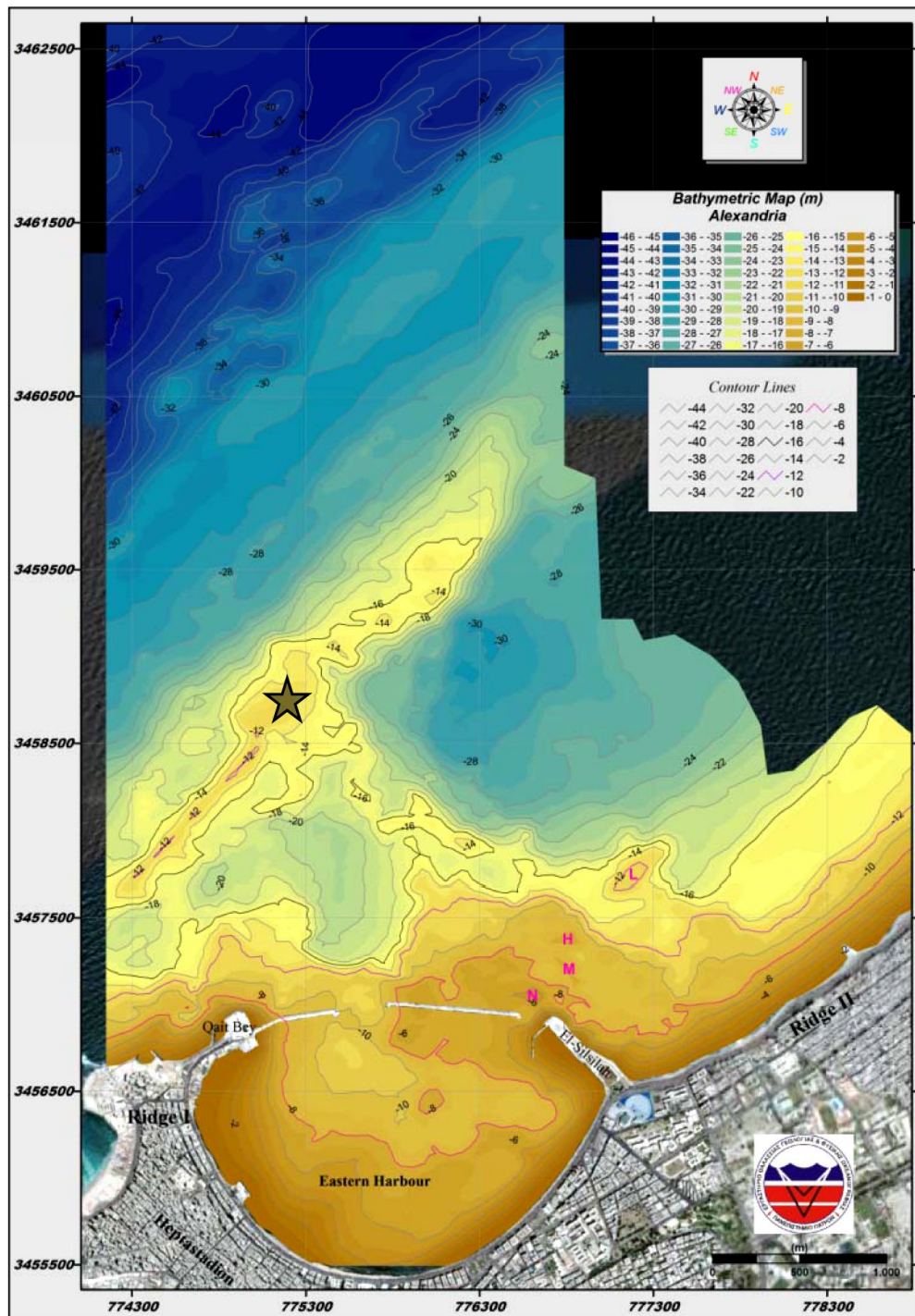


Figure 2: Map showing the side scan sonar survey conducted by the Department of Marine Geology of the Patras University in the wider area of the approaches of Alexandria Eastern Port.

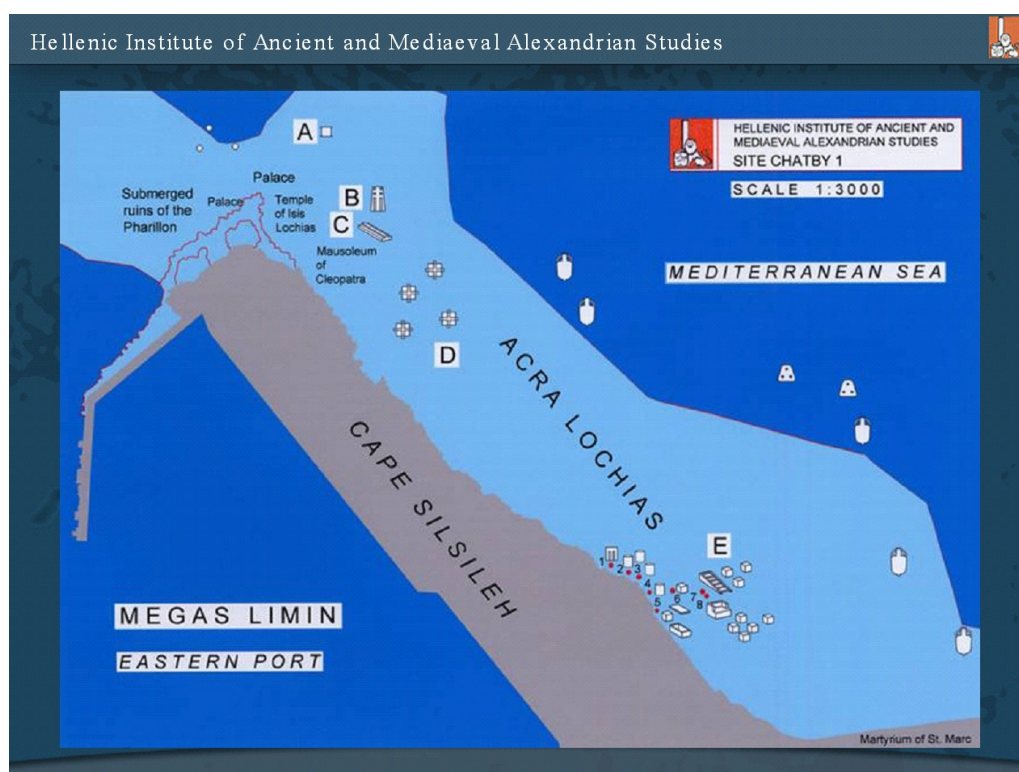


Figure 3: Map of submerged Akra Lochias based on the Greek Mission surveys.

other architectural elements were placed again on the sea floor due to lack of space for a permanent exhibition.¹²

At **Chatby 2** we have traced a variety of submerged ancient remains, most foundations of buildings, paved areas, some architectural elements as well as a few stone anchors. The fact that in the early Christian times there was a large complex of buildings that included the assumed *Martyrium* of Evangelist Mark¹³ is attested by two proto-Christian capitals (Figures 14, 15), some *columelae* as well as a most interesting nearly complete “Sygma table” made of red granite.

During our 5th campaign of November 2000 and the 6th of June 2001 two trenches were opened on the sandy beach, west of the Chatby Casino and a large quantity of pottery sherds were found, all dating to the early Byzantine period. The church built on the alleged *martyrium* of evangelist Mark is represented on the earliest view we have of Alexandria, the Codex Urbinate 277 that dates to 1472 (Figure 16) as well as on the plan of Simacas dating to 1605.

There is an extended reef at sub-site **Ibrahimieh 3** at a depth of some 12m and approximately 500m distant from the shore. Some 70 stone anchors of different shapes and sizes resulting from fishing activities in Islamic times as well as a large composite dating to Late Hellenistic or early Roman Times were found entangled in cavities of this reef.¹⁴

Between the above mentioned reef and the shore lied, just under sea level, an extended

¹²We are permitted to raise and store any artifact weighing 100 kg or less.

¹³Martin 2002, 45-49.

¹⁴Tzalas 2015, 106-113.

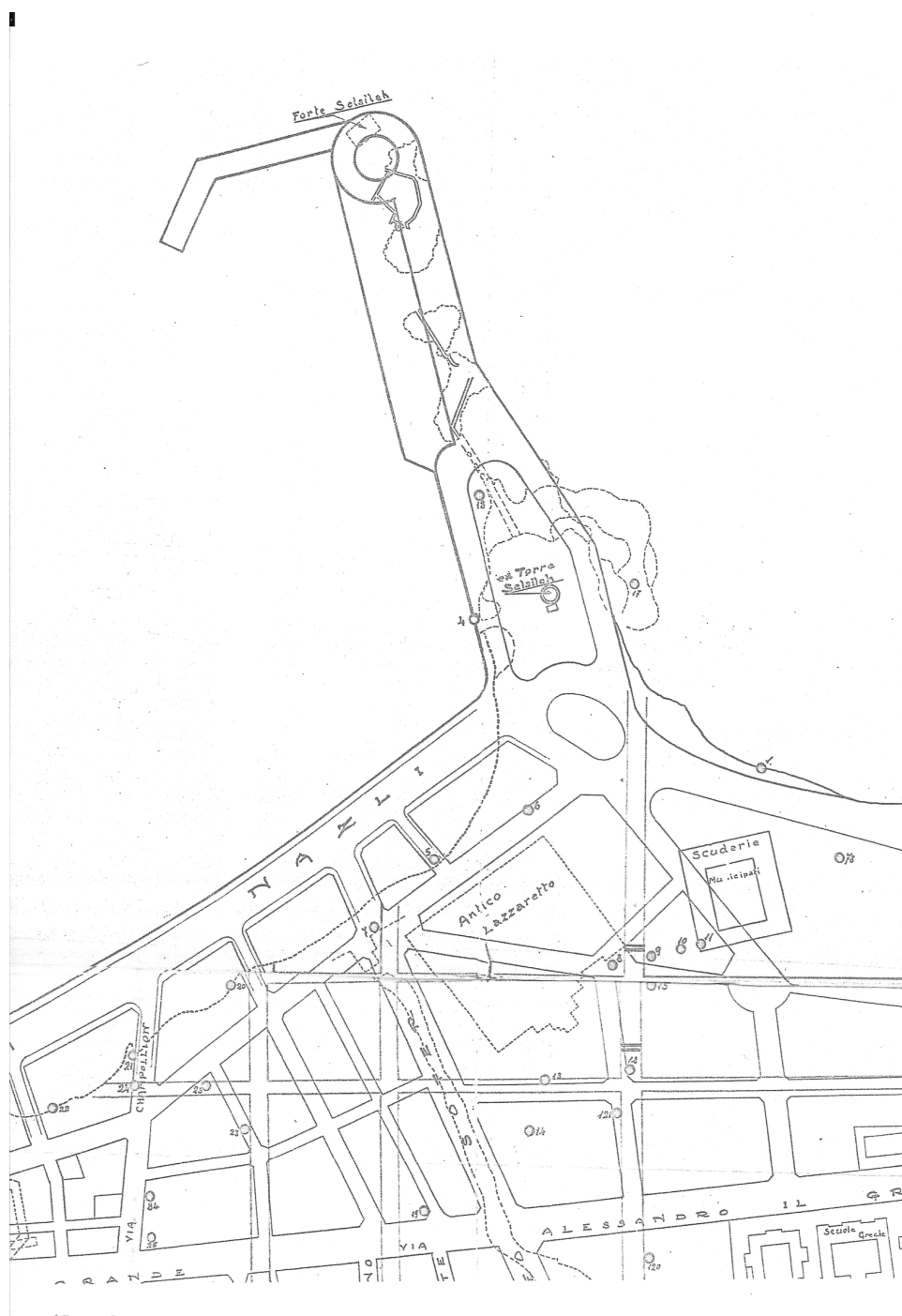


Figure 4: Map indicating the ancient remains of Akra Lochias and the modern Silsileh Promontory.
A. Adriani, *Annuario del Museo Gréco-Romano*, 1932-1933.



Figure 5: The Tower of the Pylon lying on the sea bed (Photograph HIAMAS).



Figure 6: The monolithic flight of steps leading to the pylon (Photograph HIAMAS).

SUBMERGED REMAINS OF THE EASTERN COAST OF ALEXANDRIA

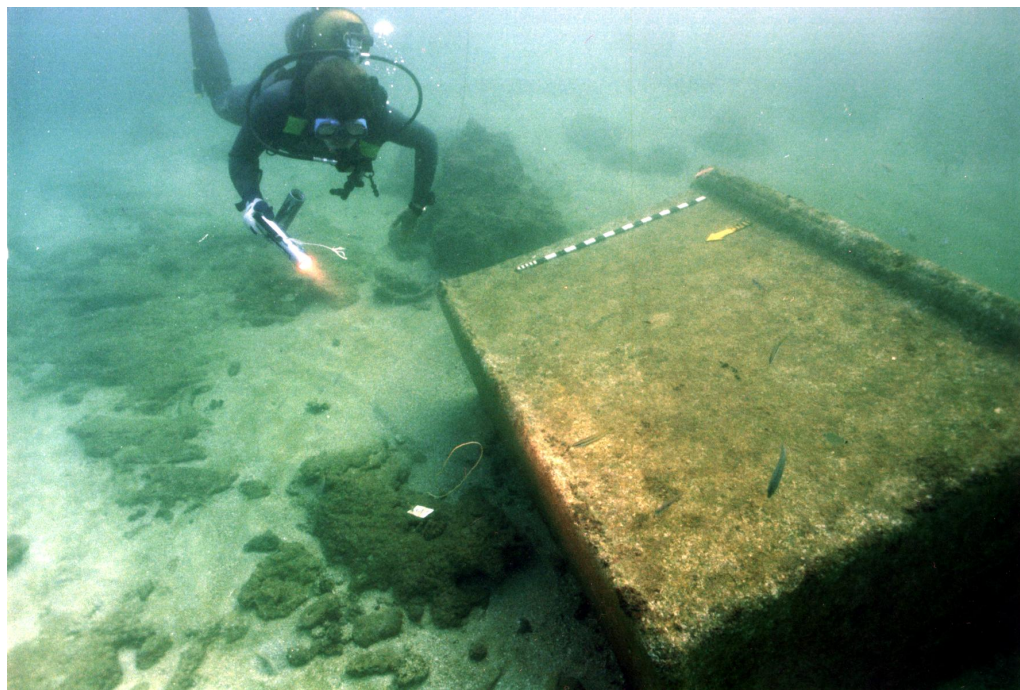


Figure 7: The monumental base lying on the sea bed (Photograph HIAMAS).



Figure 8: The oversized threshold or architrave while raised for study on a floating platform (Photograph HIAMAS).



Figure 9: Raising an inscribed block of calcite, part of a Sed ceremony monument (Photograph HIAMAS).

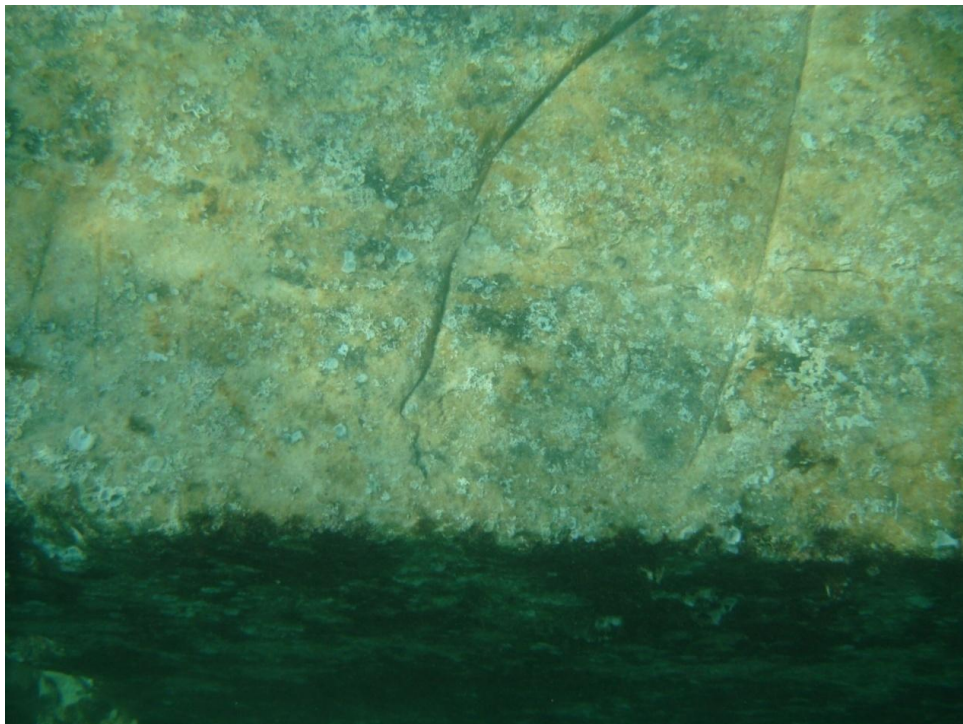


Figure 10: A block that formed part of a Sed ceremony monument, with a Pharaoh head wearing the white crown, raised for study (Photograph HIAMAS).



Figure 11: A mutilated “naiskos” with two perforations witnessing to its reuse as a tannery basin (Photograph HIAMAS).



Figure 12: A mutilated “naiskos” and other architectural elements raised for study on a floating platform (Photograph HIAMAS).



Figure 13: The pylon tower and its monolithic steps as exhibited at Kom el Dikka archaeological site (Photograph).



Figure 14: Raising a large byzantine capital from Chatby 2 sub-site (Photograph HIAMAS).



Figure 15: A smaller byzantine capital raised from Chatby 2 sub-site (Photograph HIAMAS).

stone quarry. This is sub-site **Ibrahimieh 4** that has been nearly totally reclaimed by the recent widening of the Corniche road. It was probably one of the largest stone quarries of Alexandria and its remains coexisted with a limited number of burials (Figures 17, 18). As for all costal quarries there is a gentle slope towards the sea and the submerged depths at the time of our survey varied from half a meter on the littoral to some two meters at the deeper ends followed by a sudden depression into the sea of some 4 meters.

The original quarrying activities must date to ancient times, possibly to the Hellenistic period and may have continued during the Roman years with an intricate system of quarrying basins and canals for the sea transportation of the extracted blocs. As the quarry remains continue under and beyond the old Corniche which was opened in the early 20th century it cannot be excluded that, as for other areas of the littoral, the quarrying activities were resumed at the time of Mohamed Ali, when cosmopolitan Alexandria started developing.¹⁵

Sub-site **Sporting 5** has been partially affected by the recent Corniche widening as concrete blocks were dumped in the sea as **buttresses** to the action of the waves, covering some 10% of the visible foundations of ancient structures. At a depth of some 2m the lower structure of a paved rectangular building divided in three parts can be seen, as well as the **remains of foundations of two semi-circular structures** –part carved in the rock and part built– adjacent to its western end (Figures 19, 20). The use of this complex has not yet been understood as the area was only superficially surveyed. It could well be possible that those are the remains of fish tanks.

El Hassan 6 is a **reef locate at some 500m Northeast of Cape Silsileh**, it represented in antiquity –with the El Nassar and other shoals in its vicinity, a hazard to navigation, as

¹⁵Neroutsos 1872, 24.

SUBMERGED REMAINS OF THE EASTERN COAST OF ALEXANDRIA



Figure 16: View of Alexandria on the Codex Urbinate 277.



Figure 17: Air photograph of the Ibrahimieh quarry (Photograph by K. Savvopoulos).



Figure 18: Artist impression of the Ibrahimieh quarry (Drawing by Y. Nakas).



Figure 19: Foundations of submerged structures at Sporting (Photograph HIAMAS).



Figure 20: Foundations of submerged structures at Sporting (Photograph HIAMAS).

it protruded on the course of ships entering and sailing out of the Eastern Port. El Hassan as well as the other eight adjoining reefs are drawn as shoals on the earliest cartographic document we have of Alexandria, the Codex Urbinatensis made in 1472. As nowadays the top of this reef lies at some 10m under sea level one wonders how in a matter of only 500 years such an important subsidence occurred! The rise of the Mediterranean Sea for those five centuries would not exceed 50cm and although it is most probable this late 15th century view draws on an older map still the subsidence is important and differs from the remaining submergence pattern of that littoral.

Sub-site **Sidi Bishr 7** starts westwards at the Bay of the Automobile Club; include the promontory known as Bir Masaoud, the devil's well –the ventilation shaft– of a large hypogeum tomb (Figures 21, 22) that was part of a today's submerged vast necropolis extending for some 200 meters into the sea. Eastwards it reaches the islet of Gezireh Gabriel-Khour now called Miami Island. Quarrying marks are noticeable all over Bir Masaoud promontory and its immediate vicinity witnessing to the fact that at an undetermined period all the area of this necropolis was used for stone extraction. On the islet a hypogeum tomb dating to Hellenistic times, with a courtyard, a burial chamber and steps, all carved in the rock was excavated (Figures 23–25). There are most impressive deep couloirs, partly submerged, carved in the rock of the northern side of this islet (Figure 26) and what is certainly a fish tank is visible at its eastern end (Figure 27). This fish tank is slightly submerged; just the rise of the sea is noticeable. That islet, and the protective cove it forms with the littoral, is first marked on a map of the Portolan of Piri Reis, the Kitaby-l Bahariyeh (Figure 28) compiled in 1513.¹⁶ Sidi Bishr is at some 10km distance from Cape Silsileh and the El Hassan Reef and its lack of significant submergence attests that there is no uniformity in the subsidence of the eastern Alexandrian coast.

The last sub-site **Mandara 8**, adjacent to Montaza promontory, was known in antiquity as Lesser Taposiris. It was recently dramatically affected by the dropping of large concrete blocks and is expected to be surveyed during one of our future campaigns.

It should be stressed that in between all those eight sub-sites there are extended sea areas that have not yet been searched.

1.1 Addendum

Realizing the importance of the geophysical phenomena, understanding their complexity became a priority for our surveys and led to a close cooperation with the Mariolopoulos-Kanaginis Foundation for Environmental Studies and our last six campaigns were jointly conducted. Leading scientists in the field of geophysics, including two members of the Academy of Athens, Prof. Christos Zerefos and Prof. Costas Synolakis as well as Dr. Christos Repapis and Prof. Niki Evelpidou cooperated with the Deputy leader Mr. George Nomikos, the responsible archaeologist Dr. Eirini Chryssocheri and the other members of the Greek Mission.

¹⁶Piri Reis, *Kitab-I Bahriye*, The Historical Research Foundation, Istanbul Research Centre, 1988.

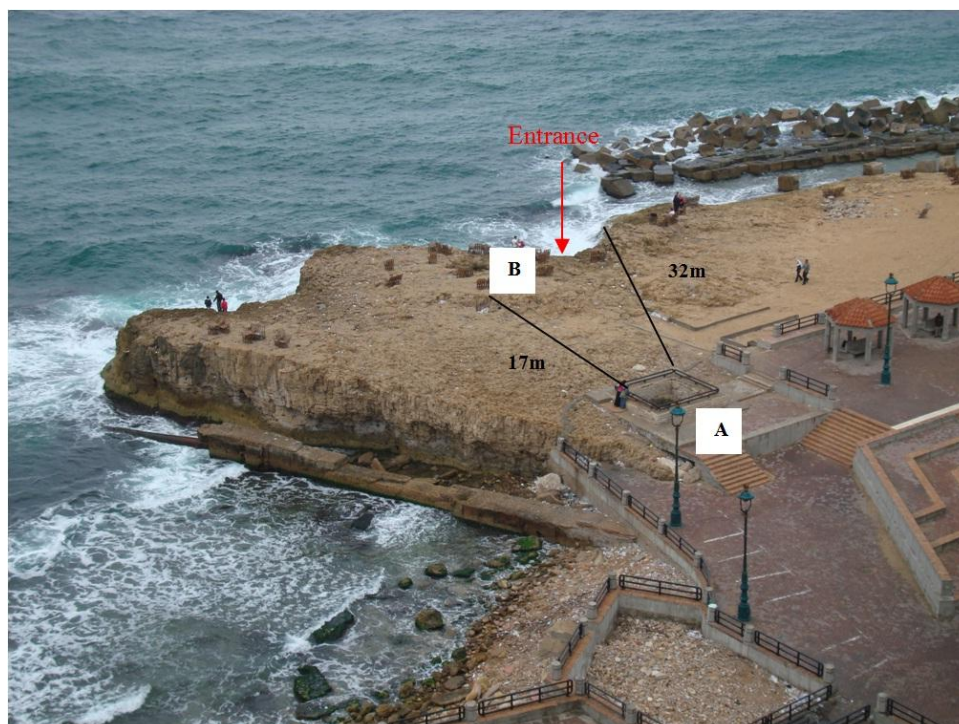


Figure 21: Bir Masaoud Promontory at Sidi Bishr: “A”.



Figure 22: Bir Masaoud Promontory at Sidi Bishr, sea access of the hypogeum tomb (Photograph HIAMAS).

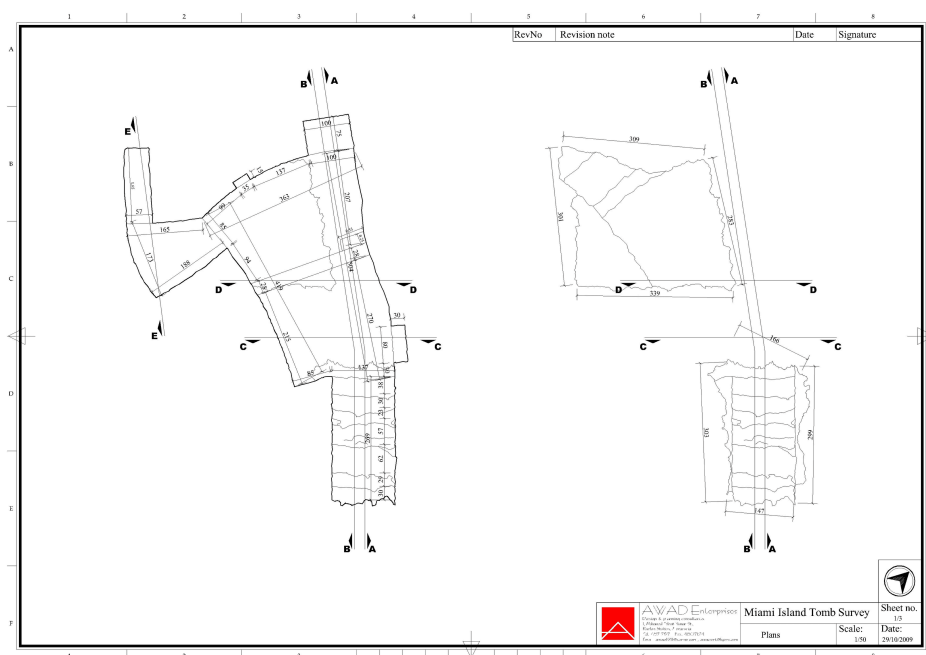


Figure 23: Gezireh Gabr el-Khour, plan of the excavated tomb (By Awad Enterprises).



Figure 24: Gezireh Gabr el-Khour, steps leading to the tomb after excavation (Photograph HIAMAS).



Figure 25: Gezireh Gabr el-Khour, interior of the tomb during the excavation (Photograph HIAMAS).



Figure 26: Deep couloirs carved on Gezireh Garb el-Khour (Photographs HIAMAS).

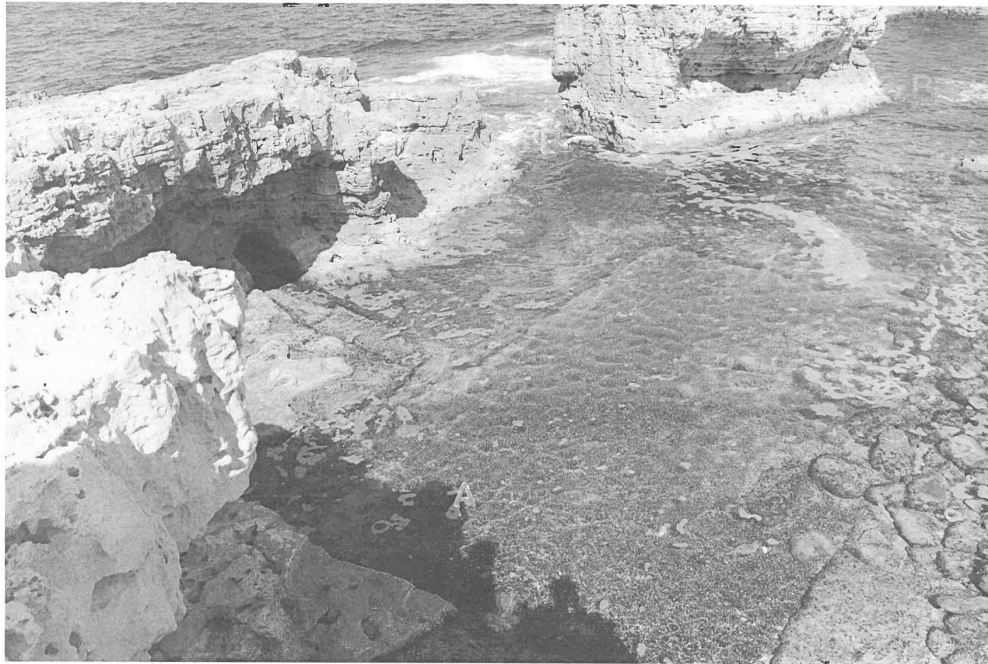


Fig.37. Fish tank Gezireh Gabr el-Kour

Figure 27: A fish-tank on Gezireh Gabr el-Kour (Photogrpah by Niki Evelpidou).

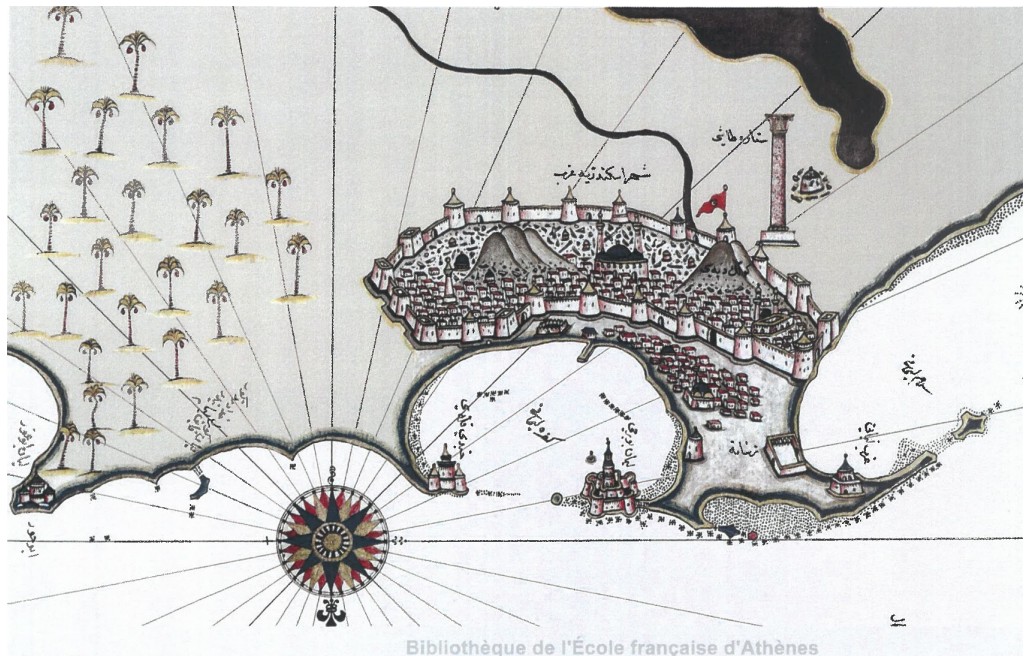


Figure 28: View of Alexandria of the portolan of Piri Reis showing Gezireh Gabr el-Kour, midway between the Eastern Port and Abu Kir.

Abbreviations

ENALIA = The Journal of the Hellenic Institute of Marine Archaeology.
HIAMAS = The Hellenic Institute of Ancient and Mediaeval Alexandrian Studies.
IFAO = Institut Français d'Archéologie Orientale.
Loeb = Loeb Classical Library, London, Cambridge.

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