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International Handbook of Underwater Archaeology

Edited by

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To those who have gone before

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INTRODUCTION

Egypt's rich maritime history has left a variety of archaeological remains and has made a great impact on seafaring and shipbuilding traditions in the ancient Near East. Yet modern Egyptians and scholars around the world know little about the ships, ports, and trade routes that helped maintain Egypt's relationships with other lands and peoples. Egypt's lucky year was 1994 because of the revival of Egyptian interest in its maritime heritage, although interest in Egypt's underwater archaeology, especially in Alexandria, started much earlier (Figure 31.1).

In 1910, while studying the possibility of expanding and improving Alexandria's Western Harbor, Gaston Jonet discovered piers of an entire seaport west of Pharos Island, completely submerged at a depth of about 8 m. The seaport consisted of an outer and inner breakwater, each about 2500 m long, placed 200 m apart, and measuring 10 m in height, 60 m across, and 12 m thick. Jonet regarded his find as evidence for the existence of a seaport predating the modern city of Alexandria, founded by Alexander. It was the first time that such gigantic submerged structures had been found.

Emad Khalil, Mohamed Mustafa.

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In 1933, accident again played a role in the discovery of a second underwater site, when a British Royal Air Force pilot saw a number of submerged ruins from his plane while flying over Abu-Qir Bay east of Alexandria. Prince Omar Tousson, a member of the Royal Archaeological Society in Alexandria, funded a research that led to the recovery of a larger-than-life-sized white marble head of Alexander the Great, now in Alexandria’s Greco–Roman Museum. Prince Tousson published his work in the Bulletin of the Archaeological Society of Alexandria.

In 1961, Kamel Abu El-Saadat, a sport diver and spear fisherman who knew of hundreds of submerged archaeological remains in Alexandria’s waters, drew maps of the Eastern Harbor, defining the site of Antirhodos Island and the archaeological remains around Cape Lochias outside the harbor (Figure 31.2). On a map of Abu-Qir Bay he defined the shipwrecks of Napoleon’s fleet, sunk in 1798 during the Battle of the Nile against the British fleet under Admiral Nelson. In April and November 1962, Abu El-Saadat participated with the Egyptian navy in recovering a male statue east of Cape Lochias, and a 6 m-tall royal female statue thought at the time to be the statue of the goddess Isis Pharia, from the Pharos site off Fort Qaitbay. Both granite statues are now in the National Maritime Museum in Alexandria.

In 1968, the Egyptian government, via UNESCO, invited Honor Frost to examine the site believed to be the remains of the Pharos lighthouse. Frost and Abu El-Saadat examined it and gave a list of 17 different items located there. Frost noted that such evidence would be multiplied a hundred-fold through a complete survey.

Finally, in 1986, the French navy, in cooperation with la Société Française de Recherché Archéologique Sous-marines (SOFRAS) with funding from Electricité de France (EDF), salvaged the shipwrecks of Napoleon’s fleet in Abu-Qir Bay. Objects such as cannons, military costumes, utensils for daily use, and coins were salvaged from the site. In the same season, the SOFRAS team defined the wreck of Le Patriote, a research vessel that accompanied Napoleon’s expedition and sunk off Al-Agami.
Figure 31.2. Abu El-Sisdar's map of Eastern Harbor archaeological remains.
Following the SOFRAS expedition, the development of Egyptian nautical archaeology remained dormant until April 1994, when the Centre d’Etudes Alexandrines (CEA), directed by Jean-Yves Empereur, decided to complete the Pharos surveys begun by Abu El-Saadat and Frost. At the same time, the Institute of Nautical Archaeology (INA) established a permanent branch in Alexandria, under the direction of its research associates Cheryl Ward and Douglas Haldane. INA-Egypt, dedicated to the exploration, protection, and preservation of Egypt’s maritime cultural heritage, started its first project, a coastal survey of the Red Sea, which led to the Sadana Island Shipwreck Excavation.

These two events mark the real beginnings of Egyptian marine archaeology. In response, in 1996 the Egyptian Supreme Council of Antiquities (SCA) established an Underwater Archaeology Department and certified Egyptian antiquities inspectors in scuba diving for advanced training in underwater excavation techniques with foreign missions working in Egypt.

ARCHAEOLOGICAL PROJECTS ON EGYPT’S MEDITERRANEAN COAST

Pharos

The ancient harbor of Alexandria was dominated by the Pharos Lighthouse, the Seventh Wonder of the World. Built on the eastern end of Pharos Island by Ptolemy II Philadelphus in 280 B.C., the lighthouse was more than 130 m high, and its light could be seen 50 km out at sea. For about 16 centuries, the Pharos light guided ships in and out of Alexandria’s Portus Magnus, or Eastern Harbor. Writers and travelers from the Ptolemaic to medieval periods described the Pharos and the damage it received in successive earthquakes. It was completely destroyed in the earthquake of A.D. 1303 and, in 1477, Mamluk Sultan Al-Ashraf Abu Al-Nasr Qaitbay ordered a fort built on the ruins.

For many years in Alexandria, tales were told of fabulous statues and engraved blocks scattered across the sea floor just outside the Eastern Harbor. But the area was a military zone and considered off-limits to scientific investigation.

In 1993, the SCA stopped a project adopted by the Egyptian Coasts Protection Agency to protect Fort Qaitbay from waves and marine factors. The project called for throwing 20-ton concrete blocks off the fort to weaken wave action and protect the fort’s walls. But the blocks were falling over hundreds of submerged archaeological remains near the fort. In fall 1994, a team of CEA archaeologists, in cooperation with the SCA, began an extensive survey to determine the extent of the Pharos site, and the number, size, and importance of the pieces.

As with any archaeological site, plotting a detailed, accurate map is a necessity. The mapmaking for Pharos has been a major undertaking for two reasons. The field of ruins extends over 2,250 hectares at a depth of 6–18 m, making it one of the largest underwater archaeological sites in the Mediterranean. In addition, pieces often lie on top of each other. To map the site effectively, the team created a detailed database, the like of which has never before been used in archaeology (Figure 31.3).

In addition to using the traditional method of triangulation for measuring the site, work depended on establishing a fixed Electronic Distance Measurement (EDM) using an electronic theodolite on shore to “spot” the underwater blocks, which were indicated by a reflector mounted on a floating mast. The mast was connected to a lead line placed against the four corners of the submerged block and held in position by a diver. Another
Figure 31.3. Pharaonic Topographic plan of Qaitbay, Status as of July 1, 1998.
diver on the surface ensured that correct tension was maintained and that the floating mast did not move too much. Depending on sea conditions, this technique was accurate to between 10–30 cm. It was the sole option, given the need to relate the underwater site to other Alexandrian archaeological sites.

At the end of each day, information stored in the EDM’s memory was imported into computers and combined with triangulation and Global Positioning System (GPS) data to plot the overall site map. Partial charts were given to divers the following day to orient them underwater and help them add complementary features of the blocks. This method has contributed enormously to the progress of the excavation and could be applied to other underwater sites around the world.

During 14-plus months of diving, more than 3000 artifacts were documented, from pharaonic, papyroform columns, obelisks, sphinxes, and lintels to an enormous collection of Greco–Roman columns, capitals, bases, and statues in granite, quartzite, diorite, basalt, and marble. Weights ranged from 100 kg to 75 tons. Forty pieces were raised and conserved and are now exhibited in the Roman Theater in Alexandria.

Empereur concluded that the site contained blocks (90 percent of which are granite) that once belonged to the lighthouse, and remains of some other buildings that existed on the island of Pharos, such as the temple of Isis Pharos. Most pieces were recycled from pre-existing structures in the Nile Delta and Heliopolis. There are clear signs of the application of Greco–Macedonian technology to thoroughly Egyptian architectural materials, throwing light upon both architectural styles and construction methods of the Pharos. It is likely that the Pharos was not built in purely Greek style but also depended on Egyptian technical expertise. On the other hand, the Pharos would not have been purely Egyptian, because the Greeks commissioned it. Significant amounts of statuary discovered and evidence of other complete structures underwater may lead to conclusions that the Pharos was part of a larger complex.

Architectural analysis of the Pharos site presents a formidable challenge. The only blocks that can be dated even approximately are those bearing decorations, such as moldings, inscriptions, and statuary, and there are relatively few of these. Because the major portion of the material was recycled, this, also, presents a challenge, since any traces of construction techniques could be from either the original structure or from the Pharos itself.

The project’s main and continuing objectives are to advance a clear hypothesis about the arrangement of the site and to produce a hand-drawn and computer-generated architectural reconstruction of the buildings, whose elements now lie on the floor of the Mediterranean.

Alexandria Shipwrecks Survey

A number of ancient sources mention the hazardous entries to the Eastern Harbor of Alexandria as well as several shipwreck sites in the vicinity of the city or at the harbor entrance. But these sources do not define the exact location of shipwreck sites, and they often formulate the accidents in a literary manner.

In 1996, CEA/SCA undertook an underwater survey to locate shipwrecks outside the ancient harbor of Alexandria for a better understanding of Greco–Roman trade routes and international relations prevailing in the Mediterranean. The surveyed area extended from Fort Qaitbay on the west to Cape Lochias on the east and about 4 km to the north. Work began by combining the map drawn for the area by Abu El-Saadat in the 1960s with present marine charts. The combination enabled the team to relocate and record sites
Abu El-Saadat had mentioned earlier. Using the GPS, six points were confirmed, two of which were found to have concentrations of amphorae. The site was studied further during winter 1998.

The survey used two search methods. Initially, diving groups surveyed around the Diamond Rock at the entrance of the harbor between 2–16 m. The survey team located several sites.

**Qaitbay 1.** One hundred meters north of Fort Qaitbay, at a depth of about 11 m, the site contains a large number of broken Lamboglia II, stamped Rhodian, and Cretan amphorae, and stone anchors. A detailed site map, made by triangulation, was put on the general map using GPS.

**Qaitbay 1 East.** Lying about 50 m to the east of Qaitbay 1, Qaitbay 1 East has the same characteristics as the first site but with a lower concentration of artifacts. The two sites may belong to the same shipwreck; most discovered artifacts are utensils used daily by seamen and sailors.

**Qaitbay 2.** Located about 650 m northeast of Fort Qaitbay on a submerged reef, at 15–18 m deep, the wreck contains scattered amphora fragments, about 100 mostly-intact, stamped Rhodian amphorae (2nd-to 1st-century B.C.), stone and iron anchors, and lead anchor stocks. The area with the highest concentration of artifacts was drawn, mapped, and added to the general map using GPS.

**Qaitbay 3.** About 450 m north of Fort Qaitbay, Qaitbay 3 lies in 17–20 m of water. Divers discovered a large number of type LRI amphorae scattered over a wide area, along with a number of stone and iron anchors and lead anchor stocks.

The rocky seabed in these relatively shallow areas does not provide a good environment for hull preservation. Therefore, survey work shifted to deeper water, starting from 30 m depth, where the seabed consists of rocky hills separated by wide, sandy areas more suitable for preserving wood. In this area, the survey team used a Zodiac to tow divers who searched visually for shipwreck remains and located stone and iron grapnel anchors. The site will be explored further.

**Portus Magnus**

In the 1992 and 1996–1998 seasons, Franck Goddio, founder of the Paris-based l’Institut Européen d’Archéologie Sous-Marine (IEASM), surveyed and excavated in the Eastern Harbor. Goddio’s discoveries confirmed that much of the Ptolemaic Royal Quarter of Alexandria, once east of the harbor within sight of the city center, was now in the Eastern Harbor. His team of French divers and Egyptian archaeologists rediscovered and mapped the outlines of the sunken royal quarters and the ancient shoreline of Alexandria (Figure 31.4).

Goddio’s team confirmed Strabo’s description of Antirhodos Island, on which stood Cleopatra’s palace, as the only natural island in the harbor. However, they located it near the shore in front of the harbor mouth, as one enters the harbor, rather than to the left where later geographers placed the island. The island is about 350 m long and lies at 4.5 m depth southwest of the submerged royal quarter. Limestone and marble paving blocks mostly cover the island, which features in its center a large court measuring 6000 m². If, as Strabo says, the island was covered with buildings, the paving blocks must have acted as a foundation, since no building foundations have been found.
However, wall foundations for marine constructions, and the peninsula bearing the Timonium of Mark Anthony, have been found connected to the ancient coastline.

Goddio made accurate drawings and maps of all discoveries using differential GPS, magnetometers, and side-scan sonar. The team located, identified, and cleaned 1065 artifacts and architectural features including pharaonic sphinxes, Greco-Roman columns, capitals, lintels, and blocks inscribed with hieroglyphs, which were submerged in a series of earthquakes and a tidal wave in A.D. 365, and through slow subsidence.

The IEASM team found concentrations of remains on Antirhodos Island and along the ancient shoreline. These artifacts fit descriptions in ancient sources of dazzling architecture and give a more complete picture of the Portus Magnus. Goddio’s team also located four inner harbors, including the royal harbor, inside the Portus Magnus, and maps resulting from this mission will form the basis for future archaeological work in this zone.

Abu-Qir Bay

This ongoing IEASM project started June 1997 with plans to survey a 150-square-kilometer off Abu-Qir Bay, about 30 kilometers to the east of the Pharos site. The objective was to discover the submerged remains of the two long-lost cities of Menouthis and Heraclium, which disappeared more than 1000 years ago. These cities were renowned for their riches and lifestyle, as well as their temples dedicated to the gods Serapis, Isis, Anubis, and Hercules. IEASM conducted a geophysical bathymetric survey using the mapping techniques developed in the Eastern Harbor. Survey methods included side-scan sonar, subbottom profiler, and magnetometry.

In 1999, the discovery of Menouthis and Heraclium was announced. Several fractured columns and other architectural elements had been found submerged in silt fewer than 8 m below the sea surface. Many artifacts were discovered including several granite and marble statues ranging in date from the 25th pharaonic dynasty to the Byzantine period. In addition, a collection of jewelry, gems, and golden coins were found to date to Byzantine and early Islamic periods. In Menouthis, the remains of one of the famous Isis temples were discovered.

Earthquakes may be the principal cause for the destruction and sinking of those two great cities. In Alexandria itself both historical records and archaeological evidence have shown that the city was devastated by several earthquakes from A.D. 8–14 century.

But still, intensive research is being conducted in order to reveal the truth behind their demise. Moreover, studies attempt to determine the extent of the Canopic branch of the Nile, which passed to the east of Heraclium connecting the Nile to the Mediterranean Sea.

IEASM has also relocated the wrecks of Napoleon’s fleet sunk in 1798 and has added the discovery of the frigate La Sérieuse. In fall 1998 and 1999, IEASM worked to salvage the flagship L’Orient. So far, the IEASM team has recovered gold, silver, and bronze coins, ceramic, leather, wooden and metal artifacts from daily life, human and animal remains, weapons, and artillery. A large section of the ship’s hull was uncovered and is being studied by measurement and data collection.

Northwest Survey

INA-Egypt’s interest in the Egyptian Mediterranean coast has focused so far on the northwestern coastline. Directed by Douglas Haldane, in cooperation with SCA, INA-
Egypt conducted two shipwreck surveys, in March 1996, and April 1998. The surveys included an area 200 km long west of Alexandria between Sidi Abd Al-Rahman and Um el Rakham.

The survey teams investigated 17 reported sites, including six ancient harbors, for possible shipwreck remains. Some points have archaeological evidence on land such as the temple fortress of Ramses II and Roman tombs at Um El Rakham, 300 km west of Alexandria. Material evidence for seafaring discovered during the surveys ranges in dates primarily from the 4th century B.C. to A.D. 7th century.

At one site, Ras Gibesa, 130 km west of Alexandria, the team found a fragment of porcelain from a peony-scroll ware dish resembling many found on the 18th century shipwreck at Sadana Island in the Red Sea. The find indicates that the route followed by the Sadana ship also extended west to North Africa in addition to north to Istanbul. This information, together with the land sites, is datable evidence of seafaring. Since no shipwreck survey had been carried out on the Mediterranean coast previous to the INA-Egypt/SCA explorations, the earliest evidence for seafaring now based on survey results dates to the 4th century B.C.

However, the earliest archaeological evidence on land, Late Bronze Age Cypriot and Canaanite ware found at Marsa Matrouh and Um El-Rakham, and the Phoenician colonization of Carthage, all point to pre-Hellenistic seafaring in the area. Continued nautical archaeological exploration will push the boundaries of knowledge about seafaring along the Egyptian northwest Mediterranean coast to a much earlier period than the 4th century B.C.

**Alexandria Conservation Laboratory for Submerged Antiquities**

Conservation is an integral part of any archaeological research, especially since waterlogged artifacts require specialized conservation treatment. The existence of a laboratory devoted to the conservation of waterlogged artifacts was considered a priority and, in 1983, EDF donated a small metal conservation laboratory, located in the Roman Theatre (Kom El Dikka) in Alexandria, to the Egyptian Antiquities Organization for artifacts from the shipwrecks of Napoleon’s fleet. The lab also conserves metal artifacts from land excavations.

When INA set foot in Egypt, it had conservation in mind. Before beginning any archaeological projects, INA-Egypt wished to ensure the existence of a conservation facility to receive all types of waterlogged artifacts from surveys and excavations. In October 1994, the group submitted a plan to SCA for permission to convert five deserted outbuildings in Alexandria’s National Maritime Museum into a laboratory complex for conserving antiquities from INA-Egypt projects and for training Egyptian conservators. SCA granted permission in April 1995, and INA-Egypt began to create the Alexandria Conservation Laboratory for Submerged Antiquities.

The complex consists of two wet-artifact storage tanks, a main lab, a mechanical support building, a large artifact conservation area, illustration and photo documentation areas, and a storeroom. Creation and equipping of the lab was funded through grants from the Amoco, Bechtel, Chase Manhattan, and Mobil Foundations, the United States Agency for International Development-funded Egyptian Antiquities Project (administered through the American Research Center in Egypt), and private U.S. and Egyptian donors.
ARCHAEOLOGICAL PROJECTS ON EGYPT’S RED SEA COAST

Red Sea Survey

In June and July 1994, under the direction of Cheryl Ward, INA-Egypt conducted its first archaeological project, a shipwreck survey between Al Quseir and Hurghada, and the tip of Sinai Peninsula. The survey team visited 26 sites along 160 km of Red Sea coastline, discovering and excavating the Sadana Island shipwreck. The 1994 survey was the first scientific shipwreck exploration ever conducted in the Red Sea and was designed to evaluate known sites for future excavations in the area.

Sadana Island Shipwreck Excavation

The 1994, the INA-Egypt–SCA Red Sea Shipwreck Survey located an Ottoman-period vessel off Sadana Island near Safaga, about 40 km south of Hurghada and excavated the wreck during the 1995, 1996, and 1998 seasons. Sport divers in the Red Sea have known of the shipwreck for more than 10 years, and some reported that the wreck was being looted. INA-Egypt decided to excavate the wreck to protect the information that was being lost and to draw attention to its importance to the Egyptian authorities. The Sadana Island Shipwreck Excavation also provided an opportunity to train archaeology students and SCA inspectors from the SCA’s nascent Underwater Department on the aspects and techniques of nautical archaeology. The excavation’s primary goals were to remove visible, portable, and attractive objects to discourage looting, to document the ship’s structure, and to address questions related to number of objects of various classes, their stowage, and the ship’s origin. All excavated objects have been transferred to the INA/SCA Alexandria Conservation Laboratory for Submerged Antiquities in the National Maritime Museum.

During three excavation seasons, INA-Egypt–SCA logged slightly more than 4000 dives to depths of 22–45 m. Divers found that the Sadana ship is more than 50 m long and at least 15 m wide, and may have carried up to 900 tons of cargo. After the ship sank, it split open along its central longitudinal axis, making study of its interior construction relatively easy. The port side rests in sand 27 m deep at the base of the coral reef. Exposed frames along or near the keel mark where the starboard side broke away and fell downslope, and concerted frames mark the port side’s upslope edge. Three 4-m-long, stacked grapnel anchors mark the bow, and thousands of earthenware juglets (qulla in Arabic) cover the stern (Figure 31.5). Clusters of large storage and transport jars (zilla in Arabic) lay amidships. The zilla, which may have carried stores of dry foods and water for the crew and passengers, were closed with wooden lids, some of which have been recovered.

In the 17th and 18th centuries, Egypt and the Red Sea lay at the end of a major branch of the porcelain trade network in the Indian Ocean. Once the cargo reached Suez, it was transferred by land to Cairo, where part continued by river to Alexandria. From Alexandria, Ottoman and European ships carried it throughout the Mediterranean. More than 600 porcelain artifacts of the Chinese Qing Dynasty’s Kangxi period were excavated from the Sadana Island wreck (Figure 31.6). Because it was intended for the Middle Eastern Islamic market, the porcelain cargo is unique among Chinese export wares. The Sadana porcelains bear no human or figurative decoration, unlike porcelains found on a number of European ships excavated in the Pacific and Indian Oceans that bore cargoes
destined for western markets. In contrast, Sadana porcelains are decorated almost entirely with floral motifs (Figure 31.7). A coffee cup bearing a crane motif is the sole exception.

The ship's porcelain cargo included small and large bowls, white ware, peony-scrollware dishes, and a variety of handle-less coffee cups of about 20 different designs, including cobalt blue, celadon, blue-on-white, and monochrome brown-glazed examples. Besides the porcelain, more than 1500 earthenware objects were excavated and raised, including quillas, tobacco pipes (Figure 31.8), and bowls of different styles. Among the glass objects found onboard were three types of case bottles, a European-style liquor bottle, and a cut glass perfume bottle. More than 70 copper artifacts were excavated as well, including dishes, trays, basins, and cooking pots, one bearing an Arabic inscription dated to AH 1169 (A.D. 1755–56), thereby dating the ship to the second half of the 18th century.

The wreck also contained a rich variety of organic remains, including aromatic resin tentatively identified as frankincense, charcoal, rope, birds' bones, seeds, pepper, coriander, coffee beans, and cardamom. About 60 coconuts were found, including a 33-cm-long, bilobed cocos de mer, valued as an aphrodisiac, that grows only in the Seychelles Archipelago. About 20 percent of the excavated area contained tree branches
intended either as firewood or cargo. The large amount of wood and its high position in the hull suggests that one of the Sadana ship’s last ports-of-call had ample supplies of such wood.
Through the cargo’s origins we can trace the ship’s last voyage. Porcelain and spices originating in China and the East Indies were trans-shipped at Aden or Jeddah, where the incense was also available. Coffee came from Mocha in Yemen, and the quillas from some still-unknown location in the Red Sea region. Since no cannon were found on board, it is likely that the vessel did not leave the Ottoman-controlled Red Sea and so did not require protection against piracy. It is possible the Sadana ship was one of six Indian ships described by Danish traveler Carsten Niebuhr in the mid-18th century. These ships plied the Red Sea pilgrim and trade routes from their base in Suez.

The Sadana ship herself is one of the most important artifacts on the site, since the construction style is undocumented: We only know what she is not. The construction style is non-European, non-Arab and non-Mediterranean, and the large amount of timber used to build her assists in discovering her origins and equating her with Niebuhr’s Indian ships. India was the closest source of the ample supplies of wood necessary to build a ship of such massive size.

The hull is characterized by large timbers joined with iron fastenings; no traces of sewing have been found. The iron fastenings have completely deteriorated, but measurements of their locations indicate that the ship was fastened rather lightly. Frames and floor timbers are widely spaced compared to other contemporary hulls, and stringers traversing the length of the hull from the keel to the upper deck are unusually robust. Three levels of knees indicate that the ship may have had three separate decks, but further study of the photodocumentation is necessary to clarify such construction details.
Through the study of the largest type of ship active in the Ottoman Red Sea in the second half of the 18th century, the Sadana Island Excavation has allowed a far better understanding of Red Sea trade, and it gives us a firm link for further exploration of this trade.

CONCLUSION

Seafaring along Egypt's Mediterranean and Red Sea coasts, her ancient Nile river traffic, her historically pivotal, regional role in ancient seafaring offer a unique opportunity for nautical archaeological exploration. In the 1960s, people did not believe Kamel Abu El-Sadaat when he said he had seen sphinxes and statues underwater. More than ten years ago, it was difficult to accept the idea of nautical archaeology and the possibility of retrieving more antiquities for a country with an abundance of archaeological remains. But times have changed, thanks to foreign nautical archaeological missions and a new, rising generation of Egyptian archaeologists convinced of the importance and value of Egypt's maritime heritage. In response, SCA has created an Underwater Archaeology Department to regulate and supervise nautical archaeological expeditions.

On the academic level, no nautical archaeology program exists at an Egyptian university so far, but the Archaeology Department of the University of Alexandria has shown great interest in cooperating with foreign missions offering field training in marine archaeology to its students. The university plans to offer an undergraduate level introductory course in marine archaeology and will require qualified Egyptian scholars to teach the course.

In April 1997, in response to public interest in Egypt's maritime heritage, UNESCO cooperated with the University of Alexandria and SCA to hold an International Workshop on Submarine Archaeology and Coastal Management. The workshop's objectives were to assess the pioneering efforts in surveying and studying archaeological sites in Alexandria's nearshore waters, to benefit from international experience in submarine archaeological detection, and to study the impact of urban development, pollution, erosion, and sediment accretion on submerged archaeological sites.

UNESCO currently is assisting with studies aimed at protecting Fort Qaitbay from wave damage, and in the creation of underwater archaeological museums at the Pharos site off Fort Qaitbay and in the Eastern Harbor. However, pollution in these areas remains a persistent problem. The Egyptian government is taking serious steps to remedy the situation.

Since its beginnings in 1910 with Jondet's study of Alexandria's harbors, nautical archaeology in Egypt has come through a series of stages, each building on the accomplishments of the last. We believe that in the next ten years, Egypt will take a role in the forefront of nautical archaeological exploration.

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