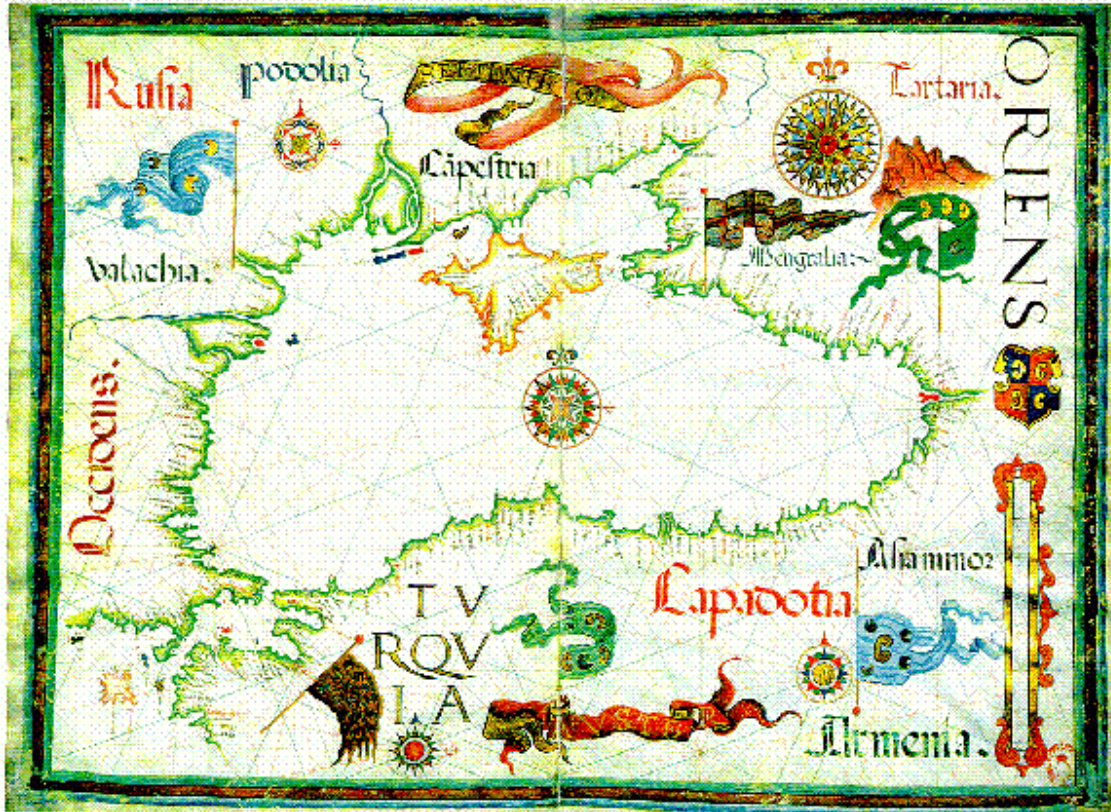


Underwater Archaeology of the Black Sea: Crimean Coastal Survey 1997



Underwater Archaeology Research and Training Center of Kiev University

Sergei Zelenko (director), et al.

Institute of Nautical Archaeology

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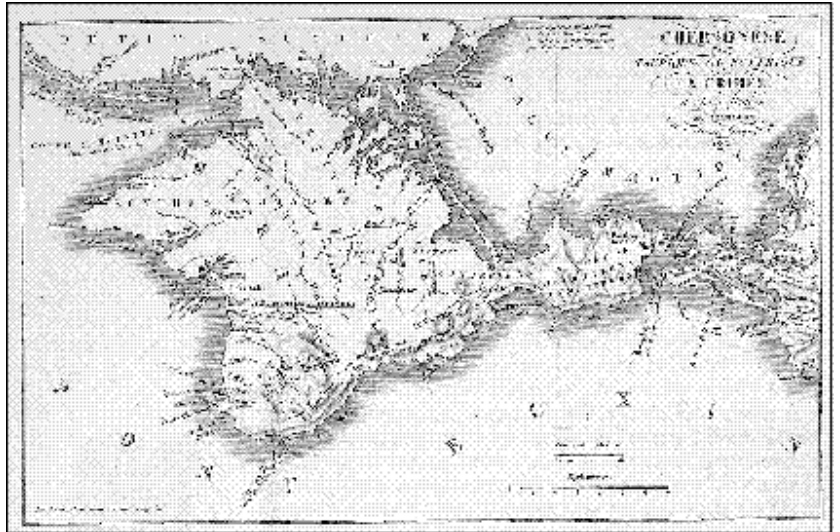
The Project

Both the long history of nautical activity and the presence of so many different maritime cultures make the Black Sea an ideal location for underwater archaeological research. A considerable amount of archaeological investigation has been conducted along the southern coast of Ukraine, revealing intensive settlement dating back more than three millennia. Reliance on the sea, both for communication and trade, is an element common to all periods of this region's history. The historical importance of the extensive river systems of central and eastern Europe is well established. The Black Sea, into which many of these rivers flow, has served as a conduit for trade and communication between Europe, Central Asia and the Mediterranean. With its central location in the Black Sea, Crimea has frequently been the focus of maritime activity in this region (**Map 1**).

The cultural development of this region is inextricably linked to maritime activity. The information recovered from shipwrecks and harbors is critical to the study of the history of the Black Sea region. The recovery and interpretation of this information is the focus of nautical archaeology. Ukrainian and Russian researchers have only just begun to take advantage of the potential for nautical archaeology of the Black Sea in recent decades. Given the vast amount of work to be done and limited resources, however, they have barely scratched the

surface of what should be a highly promising region. Recent developments in the political arena have opened up this area to Western scholars in a way never before possible. The opportunity for collaborative work between Ukrainian and American nautical archaeologists has never been better.

Nautical archaeology is a new discipline, but it has already made an enormous impact. Through the work of Dr. George Bass, founder of the Institute of Nautical Archaeology (INA), and other pioneers, this field has demonstrated its importance to the larger archaeological community and has consequently enjoyed rapid growth in recent years. INA has encouraged the growth of nautical archaeology, conducting and



Map 1 19th century map of Crimea based on the geography of Strabo.

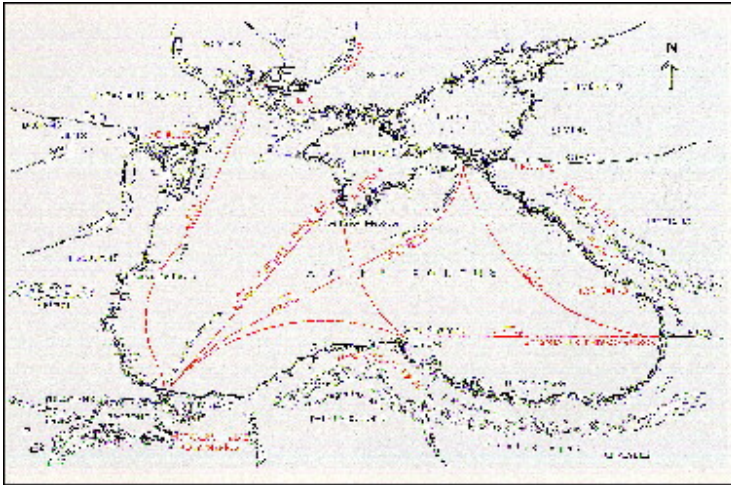
supporting projects around the world. For example, INA has developed a close, working relationship with the Turkish Ministry of Culture. This relationship has led to several underwater excavations and surveys as well as the construction of permanent exhibits in the Bodrum Museum of Underwater Archaeology in Bodrum, Turkey. Through the cooperative efforts of Turkish archaeologists and INA, the maritime history of Turkey is being recorded and presented both to the academic community and the general public.

On a recent trip to Ukraine, Mr. Gidden made contact with Sergei Zelenko, director of the Underwater Archaeology Research and Training Center of Kiev University (UARTC). Mr. Zelenko and his colleagues have been carrying out preliminary coastal surveys in Crimea since 1991. The initial results of these surveys, including the preliminary identification of the ancient port of Lampas, mentioned in "Periplus Ponti Euxini" by Ps.-Arrian (2nd century AD), well illustrate the enormous potential of this region. At the invitation of Zelenko and his colleagues, we are preparing for a joint project with the UARTC commencing the summer of 1997. This project could form the basis for long-term cooperation in nautical archaeology between INA and UARTC throughout the greater Black Sea region. We believe this will eventually facilitate a relationship between INA and Ukraine analogous to the institute's role in Turkey.

Seafaring in the Northern Black Sea: A Historical Overview

The southern coast of the Crimean peninsula has been the focus of intense maritime activity for nearly three millennia. From the earliest historical references to Greek colonization of the Crimean coast in the 8th century BC, Crimea has been home to numerous cultures: ancient Greeks, Scythians, Byzantines, Goths, Genoese, Turks, Russians, and Ukrainians, among others. The location of Crimea provided its masters with an excellent base from which to exploit the resources of the Black Sea and its hinterland as well as defend access to these resources from outsiders. Due to the mountainous nature of the peninsula's interior, most of the occupation of Crimea was focused on the coast until recent times. This history provides an excellent potential for dramatic discoveries along the Crimean coast.

The Black Sea features prominently in the earliest histories and legends of the Mediterranean world. Ancient authors and storytellers set their tales of gods and heroes in the Black Sea - a region on the fringe of their known world (**Map 2**). The perils and riches which these early stories attribute to the region reflect the mystique which surrounded the Black Sea in ancient times. The Greeks originally referred to the Black Sea as *Pontos Axeinos* - the Inhospitable Sea - for good reason. Large sections of the southern and Crimean coasts are mountainous and offer few protected anchorages. Violent storms and dangerous winds from both north and south made navigation treacherous for ancient mariners. Despite these hazards, however, the Mediterranean cultures were drawn to the Black Sea by its enormous economic potential. The story of Jason and the Golden Fleece, while fictional, illustrates the great value placed on the resources of the Black Sea by the ancient Greeks. The lure of mineral



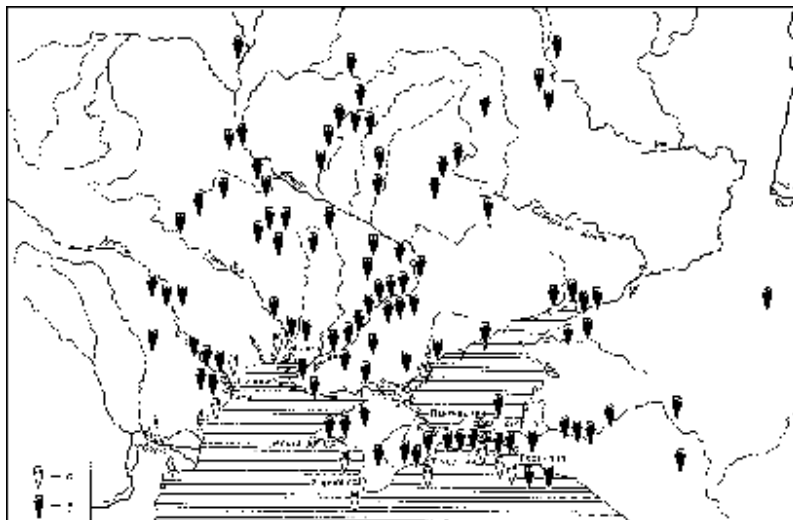
Map 2 *Heroes and legends of antiquity associated with the Black Sea.*

and agricultural wealth offset the dangers of sailing into these uncharted waters.

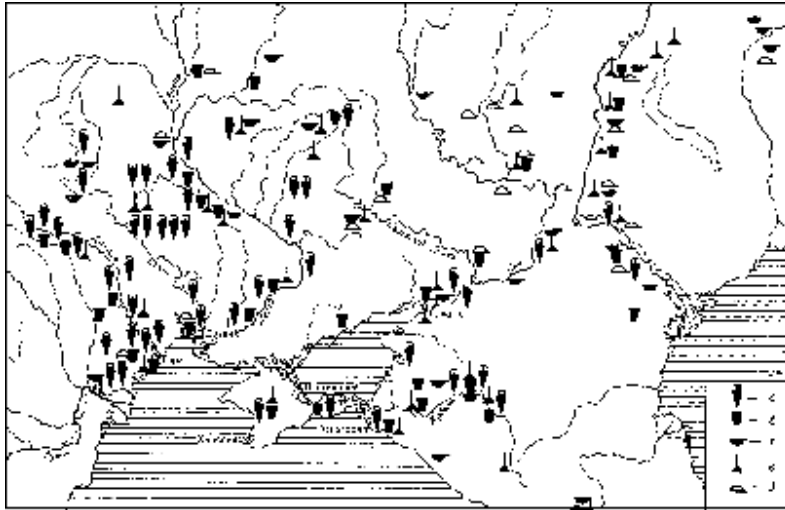
The evidence for Bronze Age Mediterranean seafarers in the Black Sea is not limited to mythology. Mycenaean anchors and oxhide-shaped copper ingots have been found off the western coast of the Black Sea. This aspect of Bronze Age seafaring, however, remains largely unexplored. The discovery and excavation of a Bronze Age shipwreck in these waters would revolutionize our knowledge of Bronze Age trade and shipbuilding. INA has considerable experience in Bronze Age nautical archaeology, having excavated two of the most important shipwrecks from this period at Cape Gelidonya

and Ulu Burun, Turkey.

While the possibility of finding a coherent Bronze Age wreck in Crimea is somewhat remote, the potential for shipwrecks from the beginnings of Greek colonization (7th - 5th c. BC) onwards is much greater. In order to better exploit the resources of the region, trade centers were established by several Greek cities along the Black Sea littoral. Colonization generated a dramatic increase in maritime activity, both for trade and communication. Despite major disruptions in the interior, Crimea persisted as a center for trade between the Mediterranean and Eurasian steppe for more than 2000 years due to its favorable geographical location. The best evidence for the extent of maritime activity on the northern Black Sea coast comes from terrestrial archaeology. The distribution of imported goods from the Mediterranean (**Maps 3, 4**) clearly illustrates the volume of Mediterranean trade in the Black Sea from the 6th century BC through the 4th century AD.



Map 3 *Finds of imported Greek amphorae in Ukraine and Russia, 6th - 1st c. BC. Light amphorae indicate primary import centers, dark amphorae indicate areas of secondary distribution.*



Map 4 Distribution of Greek imports in Ukraine and Russia from the 1st - 4th c. AD. a - oil/wine amphorae; b - ceramic wares; c - metal goods; d - glassware; e - fibulae (cloak pins).

Both the ancient Greeks and Romans relied heavily on grain, fish, salt, and other resources from the Black Sea hinterland to satisfy the needs of their large urban populations. In exchange, oil, wine, and finished products were imported for consumption by the colonists and native population. These bulk food products were carried in amphorae, two-handled transport jars. Amphorae are important to archaeologists for several reasons. The shape and size of amphorae are highly distinctive, often indicating the place and date of their manufacture. Stamps on handles and etched graffiti provide data on merchants and manufacturers. This information can be used to reconstruct economic history. Texas A&M Professor Fred van Doorninck's studies of amphora capacities revealed a previously unknown standardization of measurement in the Byzantine period. Amphorae of both local and foreign manufacture have been found in the Crimea, reflecting the volume and breadth of trade on the peninsula over more than 1500 years. **Figures 1** and **2** are examples of amphorae from land sites on the section of the Crimean coast along which the team will be surveying.



Figure 1 Sketch of cargo amphora from Chersonesos, 3rd to 4th c. AD.

Complete amphorae are infrequently found in land archaeology, and often only in small numbers. Hundreds of intact amphorae are found on individual shipwrecks, thus providing a unique resource for the study of economic history. Amphora mounds on the sea floor frequently mark the location of shipwrecks. Along with the accumulation of sediment, the amphorae help protect the wooden hull and fragile artifacts which would otherwise be lost. The 4th-century BC wreck excavated off Kyrenia, Cyprus well illustrates the potential of underwater archaeology. Marked by its large amphora mound (**Figure 3**), the Kyrenia shipwreck was well protected by a layer of sediment which quickly covered the wreck following its sinking. Beneath the amphorae and sediment, nearly 60 per cent of the wooden hull was preserved (**Figure 4**). This degree of preservation is rare in the eastern Mediterranean. Slow sedimentation rates and a rocky bottom prevent preservation of wooden material on the sea floor.



Figure 2 Sketch of amphora from Ai-Todor, 3rd to 4th c. AD.



Figure 3 Amphora mound of a 4th-century BC wreck off Kyrenia, Cyprus.

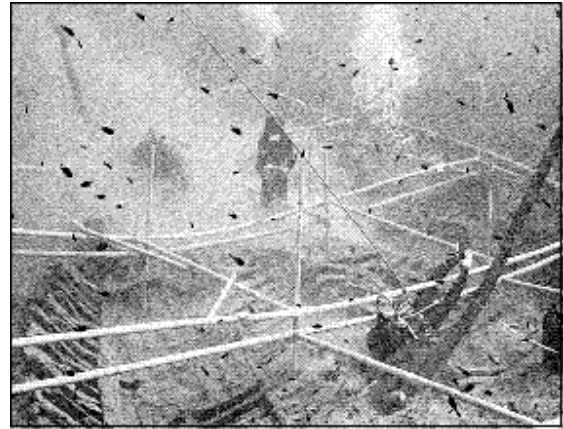


Figure 4 Hull remains of the Kyrenia shipwreck.

Conditions in the Black Sea, however, offer the potential for excellent preservation. The sea bottom along the Crimean shore is primarily composed of silty clay deposits. Organic preservation in this matrix is known to be exceptionally high. The navigational and geographic hazards mentioned above undoubtedly contributed to numerous shipwrecks along the Black Sea coast; records from the historic period document hundreds of shipwrecks. Combined with the crucial role of the Black Sea in maritime history, these factors offer a high potential for significant discoveries.

The commerce and colonization of Crimea would have been impossible without ships. Today, as in antiquity, ships are the most economical and safest form of transportation for large cargoes. Despite the importance of seafaring to the history of the Black Sea, however, our knowledge of the types of vessels which sailed the Black Sea is very limited. The seafarers who traded in and colonized the Black Sea sailed ships of Mediterranean design. A limited number of representations depicting galleys and sailed vessels have been found in Ukraine. Although not from the northern Black Sea, an ancient coin found in Kallatis (**Figure 5**) illustrates a ship type which must have played an important role in the commercial life of the colony. Most of these representations are very crude and provide little specific information other than the general ship types which sailed in the region.



Figure 5 Merchant ship representation on coin from Kallatis, on the western shore of Black Sea.

The ancient pattern of colonization and trade in the Black Sea continued through the Byzantine period and into the Middle Ages. Many scholars have relegated the Black Sea to the periphery of the Byzantine world, but historical sources contradict this view. The economic importance of the Black Sea grew dramatically during the early medieval period as a result of the Arab invasions of the eastern Mediterranean in the seventh century. To avoid the hazards of piracy and war in the Mediterranean, the lucrative trade between Europe and the Near East was redirected through the Black Sea and the land and riverine trade routes of eastern Europe. The enormous wealth generated by this commerce attracted the attention of newcomers to the Black Sea region - Scandinavian merchant-mercenaries.



Figure 6 Scene of a naval battle between Rus' and Byzantines, from the 13th c. Skylitzes manuscript.

The commercial interests of these merchant-mercenaries were integral in the early development of the Rus state. Byzantine, Rus and Arabic sources document the extensive commercial and military activity of the Rus throughout the northern Black Sea region. Competition for access to the commercial wealth of the Black Sea quickly brought the Rus and Byzantines into conflict. Several seaborne attacks were launched by the Rus across the Black Sea against Constantinople (**Figures 6, 7 and 8**). The essentially commercial nature of this rivalry is demonstrated by the trade treaties which concluded these conflicts regardless of the success or failure of the Rus attacks.



Figure 7 Byzantines repelling a Rus' naval attack with Greek fire.



Figure 8 Oleg attacking Constantinople in converted ships.

Rus leaders were well aware of the importance of the Black Sea to the economic welfare of their state. While quite remote from the Black Sea, Kiev rose to preeminence among the Rus principalities through its strong links with Black Sea trade. Prince Svyatoslav even attempted to relocate his capital to the Black Sea, at the mouth of the Danube, to improve the commercial position of his state.

While early Rus-Byzantine relations were essentially military and commercial in nature, they eventually expanded into the cultural sphere as well, as reflected in the Byzantine influence on Rus architecture as well as the Rus conversion to Christianity in AD 988. These ties secured continuous trade relations between the two states until the fall of Kiev in the mid-13th century.

As in antiquity, a lively trade between the Mediterranean and Black Sea continued through the Middle Ages, as demonstrated by finds of cargo amphorae in Crimea (**Figures 9 and 10**). In addition, locally manufactured amphorae and trade goods were being shipped abroad from Crimea. INA's excavation of a 9th-century Byzantine merchant ship (**Figure 11**) off the southwestern coast of Turkey, under the direction of Texas A&M University

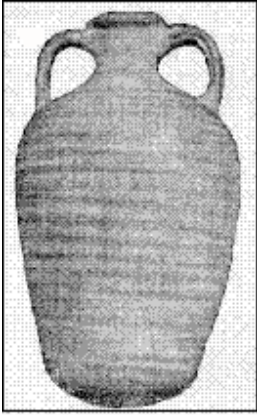


Figure 9 Amphora from Cherson, 9th c.

Professor Frederick Hocker, has revealed a cargo of more than 1000 wine amphorae whose closest parallels were manufactured in Crimea (**Figure 9**).

Despite the collapse of the Rus state and the waning of Byzantium's influence in the Black Sea in the 13th century, the Black Sea remained a center of maritime trade. Italian merchants, primarily Genoese and Venetian traders, continued a lucrative trade in luxury goods from the Near East, as well as agricultural goods and slaves from the Eurasian steppe. The Italian trading centers in Crimea thrived on this trade and became quite prosperous. For example, contemporary sources claim that the Genoese colony at Kaffa in Crimea became so prosperous through Black Sea trade that it rivaled Genoa itself in wealth. Some of the hundreds of



Figure 10 Crimean amphora, 13th c.

Italian ships that carried this trade invariably were lost along the Crimean coast through shipwreck. The potential for finding a well preserved late-medieval shipwreck in Crimea is quite good. A discovery of this kind would be quite important as there are very few wrecks from this period excavated in the Mediterranean.



Figure 11 Amphora mound from 9th - 10th c. shipwreck off Selimiye, Turkey.

Genoese merchants remained in Crimea until the last quarter of the 15th century, some 20 years after the fall of Constantinople. The departure of the last European merchants did not mean the end of seafaring in the Black Sea, however. Kaffa remained an important center for the slave trade during the Tatar and later Ottoman occupations of Crimea (**Figure 12**). Ukrainian Cossacks launched several seaborne attacks on Ottoman ports throughout the Black Sea during the late-16th and 17th centuries. Their disruption of Black Sea trade was a source of major concern for the Ottomans. **Figure 13** illustrates Cossack *chaikas* attacking Turkish vessels in Kaffa harbor.

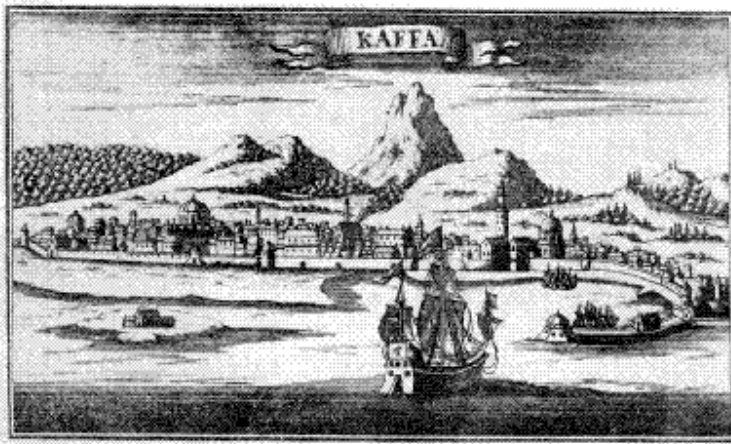


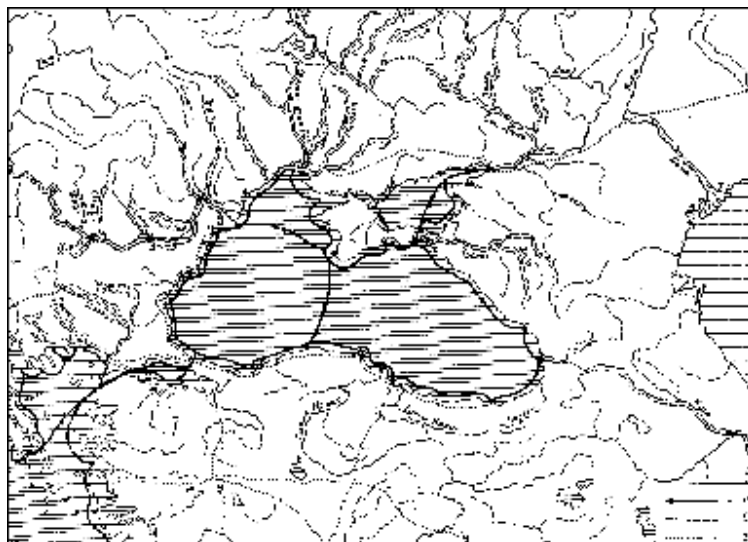
Figure 12 17th-century woodcut of *Kaffa*.

While Greeks and other Europeans continued to live in Crimea throughout the period of Ottoman occupation, European traders no longer played an active role in Black Sea seafaring. The Black Sea became an 'Ottoman lake' and knowledge of the region among Europeans began to fade. The highly accurate, detailed Italian maps of the 13th through 15th centuries (see **cover plate**) reflect a deep familiarity with the Black Sea - the product of intensive maritime activity. In contrast, maps of the 17th century are crudely executed and contain numerous inaccuracies. These inaccuracies remained unchanged until 1700 when Cornelius Cruys, a Dutchman serving as admiral of the new Russian fleet in the Sea of Azov, corrected the maps.



Figure 13 *Cossack chaikas assaulting Turkish galleys in Kaffa.*

This brief survey of the history of seafaring in the northern Black Sea illustrates the great potential for underwater archaeology in the region. Wind and current patterns, as well as a central geographic position, make Crimea an ideal location to search for shipwrecks. Maritime trade routes have crossed Crimea since antiquity (**Map 5**). For more than 2000 years, ships of every design have sailed along the peninsula; many of these voyages ended disastrously in shipwreck. These ancient tragedies have left a remarkable, and largely untapped, archaeological resource.



Map 5 *Principal Black Sea trade routes from antiquity through the Middle Ages.*

Research Goals and Methodology

The primary research goal of this project is to evaluate the underwater archaeological resources of the southern coast of the Crimean peninsula, specifically in the area between Sevastopol and Fedosia. The scope of the project is limited to the period between the Bronze Age and the late Middle Ages. The joint survey phase of the project will last from July 1 through September 5, 1997. The joint project field team will be comprised of 7-10 members, including Mr. Gidden, Mr. Pevny, Ms. Romey, Mr. Zelenko, and several Ukrainian archaeologists and students. The survey methodology for the initial season will be limited to diving investigation; the use of remote sensing equipment in future seasons is being considered. Large sections of the coast are free of submerged rock formations, making the use of remote sensing equipment highly suitable. In addition to a general survey of the coastline, project participants will investigate six specific sites, both ports and shipwrecks, for further in-depth research. These sites include the ancient port of Amphineon, mentioned in "Periplus Ponti Euxini"; areas around Cape Ai-Todor (site of the ancient Roman fortress of Charas); and Karantinnaya Haven (ancient Chersonesos). The sites will be evaluated for possible excavation; the team hopes to begin excavation of the most significant site during the summer 1998 season.

Through association of archaeological resources with known sites from historical sources, this project intends to develop a broader understanding of the maritime cultural landscape of southern Crimea and the role of the Black Sea and Crimea in the economic and political development of larger, neighboring systems. In addition to underwater investigation, project members will attempt to locate and evaluate museum and archival data pertaining to the maritime history of the region to supplement material identified during the survey. Following completion of the initial season of fieldwork, the project members intend to publish their findings in an appropriate format.

The American team brings a wide range of archaeological skills and experience to the project. Team members have worked in Israel, Turkey, and the United States, participating in coastal surveys, shipwreck and harbor excavations, and ship replica construction. In addition to field experience, team members have academic preparation in ancient and medieval history and seafaring, ship reconstruction, and nautical archaeology. All three members have been trained in artifact recording, site mapping, ship drafting and conservation. While removal of any material from Ukraine is neither feasible nor desirable, project members will assist in all aspects of the necessary conservation and research of any material recovered during the survey.

Goals of Preservation and Education

The team members share a common dedication to bringing the benefits of archaeology to the public. This mission includes two elements: preservation and education. The privilege of archaeological excavation brings the responsibility of recording and preserving the information and material that is recovered, insofar as it is feasible. This is, however, not enough. Excavation is the process of controlled destruction of archaeological sites. Without publication of results, archaeology cannot be distinguished from treasure hunting. Publication of scholarly and popular articles allow both scholars and the general reader to benefit from archaeology.

Education need not be limited to publication. INA archaeologists have worked closely with cultural ministries

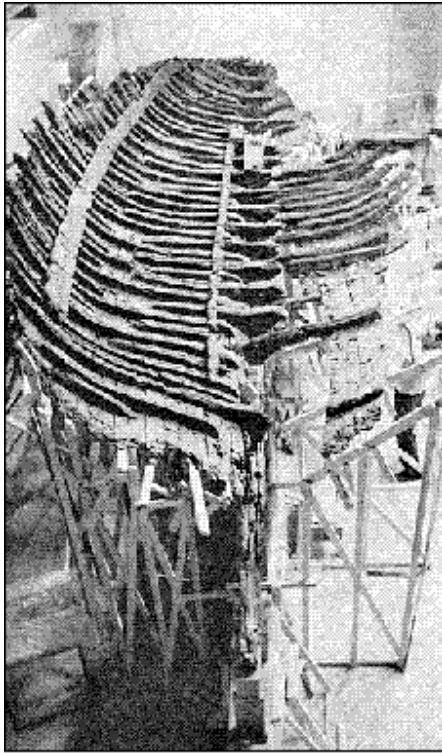


Figure 14 *Reconstruction of the Kyrenia ship.*

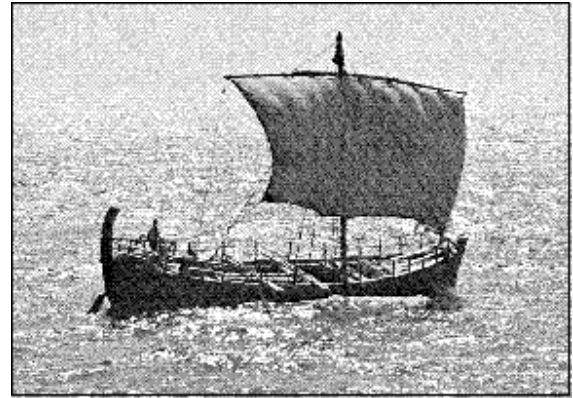


Figure 15 *Full-size, sailing replica of the Kyrenia ship.*

and museums to bring the results of their work to an international audience. The excavation of the Kyrenia shipwreck, mentioned above, led to a museum display of the ship's reconstructed hull and cargo (**Figure 14**). This reconstruction, directed by Texas A&M Professor Emeritus Richard Steffy, formed the basis for a full-size, sailing replica of this 4th-century BC vessel (**Figure 15**). Similarly, close cooperation with the Turkish Ministry of Culture has resulted in the development of the Mediterranean's premier museum for underwater archaeology in Bodrum, Turkey.

This museum, toured by thousands of visitors from around the world, houses artifacts from several shipwreck excavations as well as a full-size, partial replica of the 7th-century Byzantine merchant ship excavated off Yassi Ada, Turkey (**Figure 16**). Crimea, with its enormous potential for underwater archaeology, will some day, we hope, house a similar museum.



Figure 16 *Replica of the Yassi Ada ship in the Bodrum Museum of Underwater Archaeology.*

Any questions or comments regarding the project or this page should be directed to [Greg Gidden](#).

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