

POSSIBLE SHIPWRECK AND ABORIGINAL SITES ON SUBMERGED LAND  
SALEM, MASSACHUSETTS

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### ABSTRACT

A proposed dredging of Salem Harbor could adversely affect significant underwater archaeological sites unless those sites are located and avoided or mitigated. Prehistoric sites may be present, but almost impossible to detect. Historical research indicates, because of centuries of intense maritime activity in the bay and harbor, there were at least 298 historically significant small and large vessels lost in the general area that includes the proposed disposal sites. Any dredging or disposal in the area might disturb one or more of the shipwreck sites.

Therefore, any dredging in Salem should be preceded by an archaeological remote sensing survey, to locate and identify by type, any significant sites within the proposed disturbance areas. Once any detectable cultural resources have been located and identified by type, decisions can be made to avoid or mitigate them.

## INTRODUCTION

The State of Massachusetts is currently planning to dredge the Salem Harbor shipping channel. As part of the project planning, local and federal statutes and regulations require the identification of significant cultural resources within the possible impact zone and either avoidance or mitigation of impacts to such resources, if identified. As this channel was dredged in the past, the impact zones will be areas chosen for dredge material disposal.

Massachusetts therefore contracted with the Maguire Group to 1) conduct preliminary background research to determine if undetected remains of prehistoric sites and shipwrecks may be in the project's possible disposal areas and, 2) recommend any necessary further research to meet local and federal cultural resource requirements. The Maguire Group conducted the study, in association with Dr. Warren Riess as maritime archaeologist.

## PROJECT DESCRIPTION

### *Area Description*

The project area is located in Salem Harbor and upper Massachusetts Bay. For millennia this part of the Atlantic Ocean has been a thoroughfare for numerous interests, including assumed prehistoric fishing, European exploration, general and military shipping, commercial fishing, and recreation.

### *Site Description*

The disposal sites being considered are generally two types. One is the area directly adjacent to both sides of the existing shipping channel. The other consists of discreet sites in

northern Massachusetts Bay. Each possible site has a different size and shape (Figure 1).

## BACKGROUND ANALYSIS

### *Methods*

In order to determine the probability of sites, the location of any known remains, and information about previously investigated sites, the research team conducted interviews and inspected secondary and some primary archival material. To research all available primary material would take many months of time without any guarantee of added information. Therefore, extensive primary research was not required for this study.

The research team interviewed staff at the Massachusetts Board of Underwater Archaeological Resources, the local (Beverly) dive shop operator, and a local avocational shipwreck diver. They also conducted limited primary and secondary research at the Cape Ann Historical Association Library.

Histories of the New England region, Massachusetts, the North Shore, and the individual municipalities were studied for background historical information, and published material on the prehistory of the area was read for pertinent information. In addition, eleven published and unpublished lists of shipwrecks were inspected to determine how many ships were lost in the study area. The references included an “encyclopedia” of shipwrecks with many inaccuracies, excerpts from a federal Bureau of Land Management study of some primary sources, and three lists compiled by amateur shipwreck historians from Massachusetts. Little primary research was conducted, except for the study of historic charts of the area at the Mystic Seaport Museum chart archives and the interviews mentioned above.

Since most shipwreck locations cited in contemporary newspapers were quite general, such as “lost off Marblehead,” and other sources gave exact locations, the team designated each

reported shipwreck as being at a specific location, "off" a municipality, or in the general area.

To determine significance for each site we used the Department of the Interior's definition for eligibility to the National Register of Historic Places -- generally sites over fifty years old. However, most of the shipwrecks were over one hundred years old. We have accepted the recorded locations and dates of the shipwrecks, without enough time to research each shipwreck in depth, therefore the information for any particular site might be inaccurate. However, the approximate number of significant shipwreck sites in the Salem study area is accurate enough to allow the determination of recommendations for dredging planning.

## HISTORICAL BACKGROUND

The history of the survey area is rich in maritime activities. Prehistoric Indians used the shore as a summer dwelling area to get away from the heat and bugs in the interior and to collect the bountiful food offered by the sea. Regionally, Indians were known to collect many types of shell fish which were smoked, dried, stored and traded for winter food. They used small dugout and bark canoes for fishing and hunting mammals, and for transportation along the shore and to nearby islands.

In most areas of New England, seasonal Indian dwelling sites are typically found near a beach and a fresh water source with a southeast exposure to the sea. In addition, shell middens, created by Indians processing bivalves, are often found in similar areas without the need of running fresh water (Bourque, 1980, IV-45-49 & Riess, 1989, 12). Since the last ice age, the net sea level change has placed the coastline of 6,000 BP under approximately 25 feet of water in the Cape Ann area (Bourque, 1980, IV-229). Some of the islands now close to shore near Gloucester would have been small hills connected to the mainland by low strips of land as recently as 2,000 years ago. If they were close to a beach, which might have been part of the connecting strips, they would have been prime areas for prehistoric residential use.

When Europeans settled in the study area in the 1620s, they established fishing and timber businesses for regional and transatlantic commerce. The collection of natural harbors provided havens for inshore and offshore fishing vessels. The crews would fish for cod, mackerel, haddock and other species and bring their catch to port for processing. They would split and store the cod on salt in the ship or salt-dry the cod on stages and flakes set up on the slopes at the villages' shores (Lawson, 111-115 and Reynolds, 1856). Many types of historic vessels were used for fishing in the study area, including 1600s and 1700s shallops, ketches, pinkies, and schooners, plus 1800s schooners, Chebacco boats, and jiggers (Lawson, 1895; Reynolds, 1856). In the early 1800s, Jefferson's Embargo, the War of 1812, and other economic factors hurt the area's fishing industry. Gloucester remains a major fishing port to this day, while Manchester, Beverly, Salem and Marblehead continue some commercial fishing.

### *Salem*

Fishing in Salem probably began when the first group of humans settled in the area. Salem is a well-protected harbor with land on three sides and a short fetch at the northern entrance. Local, near shore, waters contained many edible species in quantities to sustain thousands of people, even with primitive fishing techniques. The area was called Naumkeag.

When English Puritan settlers came to Salem in the late 1620s they found few Agawams had survived the plagues which had decimated the local peoples. Large tracks of previously cleared and cultivated land were left for the Europeans to settle; so much so that in 1636 cutting trees for clapboards or cask staves was forbidden in Salem. The colonists were originally invited to settle in the area as protection from raids made by other tribes. They started a typical Massachusetts Puritan town based on religion, agriculture and fishing.

During the seventeenth century most Salem fishermen worked the near shore waters as far east as the settlers of New France (present day Canada) would let them. As markets and available capital expanded they used larger boats to fish the Grand Banks, as did most of the

North Shore fishermen. Throughout the colonial period Salem was an important fishing port of Massachusetts, yet its merchant trade developed to overshadow all else on the waterfront.

Salem's merchant trade in the colonial period was generally confined to coastal, West Indies, and English voyages. British Empire trade regulations kept them from trading outside of the Empire, except for wine and salt from the Iberian Peninsula and its eastern-atlantic islands. During the Revolution, Salem retained its maritime importance through fishing and privateering.

As soon as the Revolutionary War stopped, Salem merchants began trading voyages to the Far East, a region formerly forbidden by the British trade laws. Salem's immediate prominence in the trade remained throughout the early 1800s, providing much wealth and commerce for the growing port. Coastal and West Indies trade and fishing also increased in Salem to support the Far East trade and growing population. However, forces were in motion to shift Salem away from the merchant trade.

With the advent of the railroads and steam tugs and ships, Boston, with its deeper channel, was able to gather much of the shipping away from smaller New England ports. Merchants left Salem to set up their business in Boston, while others began investing in manufacturing plants in and near Salem. Merchant ships continued to sail from Salem throughout the 1800s, but very few called there by the twentieth century. In the past one hundred years, the Salem waterfront mostly has been used by fishing and recreation boats.

### *Beverly, Manchester, and Gloucester*

Early Beverly, like Salem, focused most of its maritime interests on trade, especially to the West Indies. The majority of colonial Massachusetts' cross-atlantic trade funneled through Boston. However, the smaller ketches, schooners, and brigs of the North Shore towns continued a brisk trade with the Caribbean, sending lumber and salted fish for sugar, molasses, and rum. When independence from the British Empire allowed trading with other countries, Beverly also quickly engaged in the lucrative Orient trade. This trade required larger, three-masted cargo

ships. However, it should be noted that the American terminus for North Shore-owned ships was often New York or Boston because of the nature of the American domestic merchandising.

Manchester produced wood products since its early years, but in the 1800s cabinet making became a major industry for the town. With the use of water power and the development of John P. Allen's veneering mills, Manchester was able to import logs and export a greater quantity of furniture and a high volume of furniture veneer relative to the size of the town. This industry was serviced by ships and later the railroad.

Gloucester grew through the colonial period as a fishing town, specializing in the offshore cod fishery, but it was also active in the inshore fisheries. In the 1800s Gloucester fishermen expanded their lobster fishing and successfully ventured into the mackerel industry, following the mackerel schools from Nova Scotia to Boston. By the mid-1800s it was the busiest fishing town in New England.

In the mid-1800s, the North Shore towns were discovered by the well-to-do of Massachusetts and other states. Along with the industrial revolution came the wealth and time for many to enjoy vacations at summer homes along the North Shore. With the new, faster steamboats and trains, year-round living in the area was also feasible for some who worked in the greater Boston area. The new popularity and population of the area brought many passenger steamboats and summer pleasure boats to the harbors, and brought boating activity in the bay. With pleasure boating, the continued commercial uses of fishing, and the transportation of general cargo, the study area has remained active through the present day.

#### POTENTIAL FOR ARCHAEOLOGICAL SITES

Since little is known of the prehistoric Indians of the study area, any remains, whether a village, fish processing site, or sunken canoe, would be of great importance. However, previous sub

bottom profiling data indicate that the area has an irregular bed rock which is typically covered by 0-30 feet of glacially deposited medium sand and some organic and clay sediment. Remains of any sites would be extremely hard to locate under the sediment in the survey area. Remote sensing surveys will generally not indicate a prehistoric site in this type of topography. Locating prehistoric Indian sites would require archaeological trenching of each proposed impact area. Spot inspection by archaeological divers, while investigating remote sensing targets of possible historic remains, would be useful, but probably not productive.

In contrast, historic shipwreck sites are known to exist in the study area and are easier to detect. The number of vessel losses found in this study is smaller than the total losses that would be located with a complete study, but the results found are indicative of a large number of probable shipwreck sites in the study area. The lack of complete recorded evidence is typical for any locality along the New England shores. Until recently the loss of a vessel, even with the loss of life, was not considered newsworthy enough for the ubiquitous 4-page weekly newspaper in the 1700s and 1800s. State and federal government compilations of vessel losses, which are incomplete, date only from the very late 1800s. In addition, the parameters of this study only included some primary research with mostly the inspection of secondary compilations of data from the primary sources. The data located in this study indicate that there is a probability of encountering the remains of an historic vessel in most sections of the project area.

The survey-level historical research located a total of 349 shipwrecks in the Salem study area, including vessels listed lost in Salem Harbor, or “off” Salem, Marblehead, Beverly, Manchester, or Gloucester. Eliminating those vessels known to be outside of the disposal sites presently considered, we are left with 9 shipwreck sites known to be in, or close to, one of the possible disposal sites and 303 at some unknown spot in the general study area. Of the latter two groups, 298 would fit the Department of the Interior’s eligibility for the National Register of Historic Places. Located wrecks are shown in Table 1 and Figure 2.

### Table of Shipwrecks with Known Locations Within the Study Area

(Locations are approximate)

<u>Vessel Name</u>	<u>Date</u>	<u>Latitude</u>	<u>Longitude</u>
AVALON	1899	4,613,760	352,460
CITY OF ROCKLAND	1924	4,711,750	352,360
COLLYRIA	1839	4,708,700	345,240
GLANCE	1834	7,706,750	354,200
HARRIOT	1805	4,709,500	346,480
MAHONEY	1898	4,709,150	347,050
MAY QUEEN	1877	4,709,640	349,500
MARGUERITE	1897	4,712,560	350,720
NANCY	1813	4,712,220	349,380
NORTHERN LIGHT	1867	4,707,100	354,200
PEIRCE	1876	4,710,100	349,020
R.B. PITTS	1866	4,709,400	349,400
SAMUEL	1835	4,706,900	354,200
TWO BROTHERS	1831	4,711,820	351,900
VESPER	1827	4,712,140	349,140

In addition to those vessels found in the historical records, we must assume many others were lost in the study area and not recorded. Before radios and radar, vessels were surely lost with all hands on the numerous ledges in the area during storms and fogs. Others could only record them as missing at sea, whether they had just left the harbor, were returning after a long voyage, or were blown in while trying to sail past the shore. No one would know what happened to them. They would include small and large fishing boats, coasters, and transoceanic merchantmen and warships.

Besides those vessels lost while underway, a number would have been lost at their moorings or abandoned in shallow water, such as the abandoned 1800s fishing vessel seen at low

tide on the western shore of Manchester Harbor and the 1690s Hart's Cove shallop in Newcastle, New Hampshire. Some of the shipwrecks would have been salvaged shortly after wrecking or more recently.

Since we know so little of the early vessels, the onboard fishing processes, and life aboard the early merchant vessels, the remains of any historic ship or boat would be archaeologically and historically significant on a local, regional, and national level. Locating remains of these vessels with remote sensing will require a precise survey because of their peaceful utilization. Warships, and larger merchantmen sailing to dangerous places, carried many iron guns and a large quantity of iron shot. The iron disturbs the earth's magnetic field and can usually be detected with a magnetometer survey. Most of the vessels which might have been lost in the study area would have had few, if any, large guns or ammunition. However, they had iron anchors and sometimes small iron guns which produce a smaller magnetic anomaly. Therefore, they can only be detected with a careful and precise magnetometer survey.

## RECOMMENDATIONS

The number of historic shipwrecks “found” by historical research indicates that there is a strong possibility that dredge disposal will impact historic shipwreck sites unless the planned site(s) is cleared by survey or avoidance is practiced after a survey. Depending on the planned method of anchoring the dredge and disposal vessels, disturbances from large anchors can be 500 to 1,000 ft. away from a barge. To clear the proposed disposal sites we recommend the following tasks be completed:

1. A remote sensing survey, including precise navigation, magnetometer, side scan sonar, and subbottom profiler of all possible impact areas.
2. Analysis of the gathered data to determine the location of possible sites.
3. Visual inspection of possible sites, suggested by the remote sensing, that might be impacted if not avoided.
4. A report on the above.

More specifically:

### 1. Remote Sensing Survey

A precise archaeological remote sensing survey of the proposed disposal sites, including any peripheral impact zones, should extend beyond any planned disturbance. Otherwise, last minute, small location changes might require a new survey at an inconvenient time. A series of 50 ft.

(15 m) tracklines should be planned. The marine magnetometer and side scan sonar should be used on each track line, while the subbottom profiler should be used on at least every other trackline. The archaeologist should plan and supervise the field work, analysis, and report.

The marine magnetometer should be capable of reading 1 gamma differences in the magnetic field. Magnetic data should include date, time, navigation events, heading, depth of sensor, and strength of field.

A 600 KHz side scan sonar survey of the sites should be conducted to locate possible cultural resources which do not have a significant amount of iron in them, and which are near the water/sediment interface. Presently, maximum resolution is gained with a range of 67 ft. (20 m). Therefore, gathering data on every 50-ft. trackline will provide 200 % coverage, enabling a "view" of any target from two sides.

High resolution subbottom profilers, such as CHIRP systems, provide detailed information about the sediment and bedrock on the sea bottom. This information is helpful when analyzing the side scan and magnetometer data. Occasionally they can indicate possible vessel timbers buried in the sediment.

For any formerly dredged channel areas, there is much less chance of finding an undisturbed site in the dredged channel, but a number of sites have been located and held up construction in other "dredged" channels. Since it is not a large area, and the survey vessel must go near the channel anyway if disposal sites on the sides of the channel are being considered, we suggest that the survey include any such areas.

In order to tie all of this data together, a precise DGPS navigation system should be used and the magnetometer, side scan sonar, and subbottom profiler synchronized with it in the field.

2. Processing of the survey data should be handled by the survey company, who provide post plot track lines, a magnetic contour chart(s), and all original data, so that their geophysicist and archaeologist can systematically inspect and analyze the data for possible cultural resources. In small areas, with fewer than six track lines, a magnetic contour chart may not be appropriate.

3. Archaeological inspection of any possible sites usually can be accomplished at three per day

in 0-to-60 feet of water, two per day in 60-to-100 ft, and one per day in water over 100 ft. (30 m). Inspection would include dropping an anchored buoy on each possible cultural resource and diving down to do a systematic search and recording of the target. If the target can not be located on the sea bottom surface, archaeologists should be able to find any target with a hand-held metal detector. Targets in water over 130 ft. deep are usually inspected with a remote operated vehicle (ROV).

Targets not located visually or with a metal detector should be few, if any. To core down to them or excavate to identify them is usually not justified. However, if there is such a target(s), a decision on the proper mitigation can be made at that time after consultation with state authorities.

## REFERENCES

Albion, Robert G., *et al.*

1972 *New England and the Sea*, Wesleyan U. Press, Middletown, Ct..

Bates, Raymond, Jr.

1988 *Shipwrecks of Boston's North Shore* (A chart), Raymond Bates, Jr., Marblehead, Mass.

Bates, Raymond Jr.

1988 *Shipwrecks of Boston's North Shore*, unpublished mans.

Bourque, Bruce

1979 *Summary and Analysis of Cultural Resource Information on the Continental Shelf from the Bay of Fundy to Cape Hatteras*, Vol. I-IV, BOURQUE, Cambridge, Mass.

Boyle, Robert

1998 Personal interview, Undersea Divers, Inc. (Dive Shop) Beverly, November 13, 1998.

Brown, Mrs. J. *et al.*

1970 *Manchester-by-the-Sea 1645-1970*, Town of Manchester.

Bushby, William

?? *A List of Shipwrecks on the North Shore from Newburyport to Nahant*. ms. Peabody Museum, Salem, Mass.

Connolly, James B.

1940 *The Port of Gloucester*, Doubleday, Doran, & Co., New York.

Duggan, William and William Bradbury

1964 *A Partial List of Known Shipwrecks Along the North Shore and in Boston Harbor*, ms. Peabody Museum, Salem, Mass.

Floyd, Frank L.

1945 *Manchester-by-the-Sea*, Floyd's News Store, Manchester (?).

Garman, James C. *et al.*

1998 *Archaeological Investigation at Derby and Central Wharves, Salem Maritime National Historic Site, Salem Massachusetts*, University of Massachusetts, Amherst.

Hawke, David

1966 *The Colonial Experience*, Bobbs-Merrill, Indianapolis.

Heyrman, Christine Leigh

1984 *Commerce and Culture, The Maritime Communities of Colonial Massachusetts 1690-1750*, W.W. Norton & Co., New York.

Lawson, D.F.

1895 *History of the Town of Manchester, Essex Co., Mass. 1645-1895*, Town of Manchester.

Labaree, Benjamin W.

1975 *The Atlantic World of Robert G. Albion*, Wesleyan U. Press, Middletown, Ct.

Morison, Samuel Eliot

1979 *The Maritime History of Massachusetts: 1783-1860*, Northeastern U. Press, Boston.

Phillips, James D.

1937 *Salem in the Eighteenth Century*, Houghton Mifflin Co., Boston.

Proctor, George H.

1873 *The Fishermen's Memorial and Record Book*, Proctor Brothers, Gloucester, Mass.

Proctor Brothers

1882 *The Fishermen's Own Book*, Proctor Brothers, Gloucester, Mass.

Riess, Warren C.

1989 *Lincoln County Coastal Survey of Historic Sites*, Maritime Archaeological and Historical Research Institute, Bristol, Me.

Russell, Howard S.

1980 *Indian New England Before the Mayflower*, University Press of New England, Hanover, N.H.

Snow, Dean R.

1972 "Rising Sea Level and Prehistoric Cultural Ecology in Northern New England," *American Antiquity* 37, pp. 211-221.