

The Molasses Reef Wreck

Donald H. Keith

Archaeologist

Ships of Discovery

USA

Named for the reef in the Turks & Caicos Islands on which it was found, the Molasses Reef wreck is thought to be the oldest shipwreck discovered in the Western Hemisphere. Complete excavation of the site produced Spanish ceramics typical of the late 15th- and early 16th-centuries as well as early-style wrought-iron, breech-loading ordnance. Most of the hull of the ship had disintegrated in the shallow, wave-swept waters of the reef, but about 2% remained trapped beneath the stone ballast. In a better state of preservation were the ship's armaments: swivel guns, cannons, shoulder arms, crossbows, swords, shot and grenades. Following cleaning, conservation and analysis in the US, the entire artifact collection was returned to the Islands where it forms the nuclear exhibit of the Turks & Caicos National Museum.

Discovery of the Site

Like many other Caribbean shipwreck sites, the Molasses Reef wreck was discovered serendipitously by treasure-hunters rather than by archaeologists. Although fishermen from the Caicos Islands, who free-dive for conch and lobster must have passed through the site many times over the years, its flattened condition, camouflaged by nearly five centuries of marine growth prevented them from recognizing it as the remains of a shipwreck. In 1976 a pair of underwater explorers methodically searching Molasses Reef for salvageable material spotted the site and realized that it was an early shipwreck. They stayed long enough to illegally raise a few artifacts, then returned to Miami.

Four years later in 1980, under the name of "Caribbean Ventures," the men applied to the government of the Turks & Caicos, a British Crown Colony, seeking permission to prospect for and salvage shipwrecks on the Caicos Bank. When permission was granted they announced that they had found the wreck of Columbus' caravel, *Pinta*, and that they expected to make US \$100,000,000 from marketing it and from mining other treasure-bearing shipwrecks they said lay nearby. The salvors' argument that the wreck was Columbus' *Pinta* was, at best, thinly supported. Not at all convinced by the Caribbean Ventures prospectus, the Governor of the Turks & Caicos invited Dr. Colin Martin of the Scottish Institute of Maritime Sciences to visit the site and offer a second opinion on its scientific significance. Dr. Martin's report urged the government to insist that an archaeologist be present during the salvage, and suggested the Texas A&M-based Institute of Nautical Archaeology. The Institute sent a two-man reconnaissance team to inspect and map the site. A year later, another band of salvors calling itself "Nomad



Figure 1: Location of the Turks & Caicos Islands with approximate positions of late 15th- and early 16th-century shipwrecks mentioned in historical references

Treasure Seekers" showed up claiming it had "inherited" the site from the original discoverers — who had been jailed in the US for poaching on another treasure hunter's site. The government gave Nomad permission to cruise its waters and to "look but don't touch," but forbade it to visit Molasses Reef. After a few weeks, when it became apparent that not only had Nomad been indiscriminately hauling up cannons, anchors and other artifacts from various sites at random and without permission, but also had attempted to steal artifacts from the Molasses Reef Wreck, the government had had enough of treasure hunters. It revoked the Caribbean Ventures salvage permit and invited archaeologists from the Institute to excavate the Molasses Reef wreck.

Excavation

The reef's remote location, more than 26 km from the nearest inhabited island, meant that a sea-going vessel would be necessary to work the site. Captain Sumner Gerard made his Miami-based 33 m research vessel *Morning Watch* available to serve as the mother ship. Funding was solicited from the Institute's Board of Directors and a volunteer excavation team of graduate students was hastily assembled. Arriving at Molasses Reef on April 4, 1982, the archaeologists met an unpleasant surprise: a huge crater, made by explosives and enlarged by frenzied digging, occupied the center of the ballast mound. The remains of homemade pipe bombs and intentionally mutilated artifacts lay scattered across the sea bed. Fortunately, the original provenances of the most salient artifacts had been accurately mapped two years previously by the reconnaissance team. Most of the wreck lay in water less than 6 m deep, in a depression between "fingers" of the reef covering an area of some 6,000 m². A natural ship trap, Molasses Reef had captured other victims as well, and the remains of several later maritime disasters overlay parts of the site.

Conservation and Analysis

Six months of excavation on the reef, spread over three years, produced more than ten tons of artifacts, all of which were shipped more than 4,000 km back to Texas. Texas A&M University loaned the project use of an old firehouse located on its Research Extension Annex. Over the next several years graduate students and volunteers cobbled together a conservation laboratory for the Molasses Reef Wreck artifacts, making efficient use of well-used, but still serviceable equipment acquired from the State's surplus equipment depots. Pioneering studies in ballast analysis, ordnance design and manufacture, metalography, and sclerochronology were undertaken during the artifact cleaning, documentation, conservation and analysis phase of the project, which consumed seven years.

An intensive study of the ship's ballast undertaken by geologist William R. Lamb managed to trace some of the stones from the ship to their most likely place of origin: Lisbon, Portugal. Experiments carried out by Joe J. Simmons III, discovered how the wrought-iron breech-loading artillery was constructed and how the mysterious lead-iron "composite" shot were made. Sclerochronologist Dr. Dick Dodge of Nova University attempted to date the site by counting the accumulation of annual growth rings in core samples extracted from a large *Montastraea annularis* coral head growing on top of the ballast mound, but the coral head proved to be only about 250 years old — centuries younger than the site.

The vessel's gross dimensions were revealed by combining clues provided by the scant remains of the ship's wooden hull, the distribution of ballast, and curious grooves gouged into the seabed by structures which had entirely disintegrated. It was a medium-size ship of the period — about 19 m long, 5 to 6 m wide and 2 m or slightly more in draft. Preserved portions of the hull included ceiling planking, first futtocks, and hull planking from one side of the ship at about the level of the turn of the bilge. No traces of keel, keelson, or endposts survived. The fragmentary hull remains preserved several construction features commonly found on 15th- and 16th-century Spanish ships: dovetail-joined, transversely-treenailed floors and futtocks, "fillers" closing the gaps between floors and futtocks, and the use of white oak for every major component of the hull.

The presence of two different sizes of iron hearteye straps suggests that the ship had at least three masts: square-rigged fore and main masts and at least one other mast which likely carried a lateen sail. The ship's capacity is more difficult to estimate: The stone ballast in the ship's hold was carefully calculated at 40 metric tons, to which can be added the mass of the armaments, cargo, crew and ship's stores. The "permanent" ballast (large stones placed in the bottom of the ship when it was built to trim its balance) included black limestone originating near Bristol, England, and alkali-olivine basalt similar to that found in the mid-Atlantic islands; however one of the most prevalent types of stone, high alumina basalt, appears to have originated in Lisbon, Portugal. Another prevalent type, Miocene limestone, is



Figure 2: Mapping the locations of individual stones in the ballast mound transect profile before removing them for petrographical analysis

Figure 3: Surviving hull remains of the Molasses Reef Wreck *in situ*





Figure 4: An “exploded” view of one of the swivel guns from the wreck, showing all its associated parts including swivel, swivel “saddle,” breech chamber, breech wedge, projectile, and textile “gasket”

also found in the Lisbon area. The ballast study by itself may not furnish a definitive indicator of where the ship was built or precisely which ports it visited, but it does supply incontrovertible evidence of connections with Lisbon and Bristol.

The ship was heavily armed, but most of the armaments were stored and not loaded. A surprising dearth of ceramic sherds suggests that most of the ship’s provisions were carried in wooden casks and barrels. The crew’s modest amenities were predominantly utilitarian: even the tableware was Spartan. No coins or other absolutely datable objects were found, but the characteristics of the artifact assemblage, particularly the pottery and firearms, indicate that the ship ran aground on Molasses Reef in the second or third decade of the 16th-century (1510-1530). Tiny glass beads may be indicators of trade with the Indians. Several sets of leg irons, some of them locked, may have been part of the ship’s normal complement of disciplinary gear, or they may have been used to immobilize captives. The almost total absence of objects that might be considered personal possessions argues that the people on board survived the wreck and had sufficient time to organize its abandonment, but the fact that all the ordnance remains on the site suggests that no one ever returned to salvage the ship.

But even after analysis, the identity and mission of the ship that became the Molasses Reef wreck remain a mystery. The wreck does not appear to match any of the more than 120 European ships known to have been lost in the Americas before 1520. Early maps show that Spanish navigators knew of, and had often visited the Turks and Caicos Islands. The purpose of such voyages was to capture Lucayans, the Indians living in the Bahama and Turks & Caicos Islands when the first Europeans arrived, to work as slaves in the mines and fields of Spanish Hispaniola. It is highly probable that the ship which came to grief on Molasses Reef was engaged in this “grey market” enterprise. Departing from Santo Domingo or one of the other Spanish ports in the Greater Antilles, the ship left no record of its final voyage in Old World archives.

Creation of the Turks & Caicos National Museum

In 1988, responsibility for completing the project passed from the Institute of Nautical Archaeology to Ships of Discovery, a small, publicly-funded non-profit research institute formed by the graduate students who had initiated and carried out the project from the beginning. Two years later, prompted by the sure knowledge that the Molasses Reef Wreck artifact collection would soon be shipped to the Islands, concerned citizens banded together to form the Turks & Caicos National Museum, a publicly-funded, non-profit trust fully sanctioned by but independent of the government, authorized to collect, preserve and exhibit objects and examples of the cultural and natural history of the Turks & Caicos Islands. A Museum trustee donated the “Guinep Lodge,” one of the oldest houses on Grand Turk, to become the Museum’s home.

From its new base of operations in Dallas, Ships of Discovery completed conservation and study of the artifacts and designed the exhibits which would house them in the Turks & Caicos National Museum. All the artifacts and original data resulting from the excavation were shipped to the Museum in 1990 where they now occupy the entire ground floor, and comprise the Museum’s primary attraction. In spite of numerous impediments, the Molasses Reef wreck remains one of very few New World archaeological shipwreck projects actually carried through to completion.

Although scores of caravels and other types of exploratory vessels were wrecked in the Caribbean, only three have been located. Of these, the Molasses Reef Wreck is the oldest, the most complete, and the most carefully excavated. Had the excavation not been undertaken, the fate of the Molasses Reef wreck would have been the same as that of hundreds of other historic shipwrecks in Caribbean waters. Following the site’s initial discovery it would have been blasted and picked apart by curiosity-seekers, collectors, and professional treasure-hunters. One by one its artifacts would have disappeared only to grace a mantelpiece or coffee table for a few months, then be forgotten and eventually discarded. Nothing would have been learned and nothing would have been preserved for the entertainment and instruction of future generations.

In contrast, when archaeological finds are properly cared for and held responsibly in the public trust, everyone wins. The Molasses Reef wreck project provided the impetus for the formation of the Turks & Caicos National Museum, which now contains exhibits on the cultural and natural history of the Islands as well. A source of both pride and revenue for people of the Islands, the Museum can also be credited with awakening a new interest in their history. This, in turn, has spun off other endeavors such as strengthening legislation protecting sites of historical and archaeological interest, recording oral histories, repatriating artifacts taken from the Islands more than a century ago, identifying and registering the oldest structures in the Islands, and the collection, conservation, and rebinding of the nation’s archives.