

HIGHBOURNE CAY WRECK, c. 1525

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Country: Bahamas

Place: North of Highbourne Cay, Exuma Islands, in a swift channel known as Allen's Cut, approximately 35 nautical miles southeast of the capital city of Nassau.

Coordinates (approximate): *Lat. 24°44'10.87"N; Long. 76°49'10.08"W*

Type: Unknown

Identified: No

Dated: Circa 1525. The ship most likely wrecked during the first half of the 16th century, however it is thought to date as early as 1500 – 1525 A.D. It was initially dated between 1500 and 1570 by Mendel Peterson, based on the wrought iron ordnance and the lead-cored iron shot. The date was further refined through comparative analysis of similar sites, as well as through a study of the artifact collection retrieved by the INA team in the 1980s.

Beam: Estimated 5 to 5.7 m.

Keel Length: Estimated 12.6 m.

Length Overall: Estimated 19 m.

Number of Masts: Unknown, possibly three plus bowsprit.

History of the wreck

The identity of the ship is unknown, and is thought to date from the first quarter of the 16th century. It was found in 1965 by three American spear fishermen, Robert Wilkie, Jack Robinson, and Clint Hinchman, who contacted Mendel Peterson of the Smithsonian Institute for assistance (Peterson 1974). Peterson, in turn, contacted Teddy Tucker and Robert Canton of Bermuda, and the team salvaged all visible artifacts between 1966 and 1967 (Peterson 1972a, 1972b, 1973; Smith 1978; Smith et al. 1985; Smith and Keith 1986). The Institute of Nautical Archaeology (INA) conducted a survey on the site in 1983, and a partial excavation was performed in 1986 (Keith and Smith 1983; Oertling 1987). The ends of the ballast mound were exposed and partially recorded in 1967, and were re-exposed in 1986. A two meter transversal trench was dug amidships, and all areas excavated were backfilled at the end of the work.

The site was visited in 2015 by a Texas A&M team directed by Nicholas Budsberg, and a 1.5 meter longitudinal test trench was dug on the southeastern side amidships and backfilled as well (Budsberg et al. forthcoming).

Description of the site

The shipwreck rests on a scoured bed of limestone in approximately 6 to 8 meters of depth. It covers an area roughly 20 m x 15 m. In 1965 the concreted ballast pile formed a raised mound with a sharp undercut along the perimeter. The undercut has been continuously forming since the vessel wrecked due to the swift, alternating current that passes back and forth through the channel. As of May 2015, the site has no visible artifacts with the exception of a few examples of overlooked shot and fasteners. The mound is low and undulating, and extends for approximately 10 meters in length, 4 meters in breadth, and 1.2 meters in height at the tallest point. Timbers from the ships lower hull have been documented in 1967, 1986, and 2015.

Cargo

No remains of a cargo were documented, and only one knife was found that could be associated with personal affects. This led Peterson to assume the ship was either a slaver, or possibly it carried another lightweight or organic cargo that had since broken up. Peterson also presented the theory that the crew had time to abandon the vessel, perhaps transfer the cargo to another vessel, and may have scuttled the ship intentionally. The full extent of the artifacts once present and now recovered from the site is unknown, however the majority of the artifacts brought up in the 1960's have had partial publication. All visible artifacts were recovered by the salvage team in 1967, and a limited number of artifacts were documented and recovered in 1986. Small portions of the assemblage ended up at the Newport News Mariner's Museum in Virginia, and at the Smithsonian Institute in Washington D.C., although the majority have yet to be relocated, studied, or published (Keith 1988). No complete vessels were found, although four sherds are known to have been recovered from the site in 1967, and were later identified as belonging to two types of early-16th century Hispanic earthenware. Three fragments were identified as lead-glazed *melado* ware, and the fourth was identified as an example of unglazed biscuit ware (Oertling 1988, 1989).

Ballast

The ballast pile was one large concretion when discovered in 1965. However, after intensive salvage and excavation, and probably periodic looting over the past five decades, the extents of the ballast have been reduced, and much of the once-protective layer of concreted stones is now a porous layer of loose rock. Two areas fore and aft of the midship trench remain concreted together, and represent the areas where no intensive excavations have taken place. Peterson estimated the ship's ballast to weigh approximately 50 tons, and Keith reported the Highbourne Cay shipwreck's ballast to be close to 70 metric tons, approximately twice as much as that found on Molasses Reef, a contemporary shipwreck in the Turks and Caicos (Keith 1998).

Anchors

The site was marked by a wrought-iron anchor lying on top of the ballast. In total, three wrought iron anchors are assumed to belong to the shipwreck. One anchor was found lying directly on top of the ballast mound, and two others were found approximately 150 meters to the north of the site. Two of the three anchors were the same size and weight; the anchor found on top of the site and one of the two anchors found to the north. The other anchor found to the north was the largest of the complement, and is considered to be the sheet anchor that had been rigged as a bower. A fourth anchor, not currently believed to belong to the Highbourne Cay shipwreck, was found in 1973 or 1974 by Jack Robinson, and was removed from Allen's Cut and redeposited in the Highbourne Cay Marina where it remains today (Oertling 1989). A wrought iron harpoon was also recovered in 1967, and represents a unique artifact not usually found on 15th or 16th century shipwrecks.

Guns

Over a dozen wrought-iron artillery, breech chambers, and shot lay off of the northeast end (bow) of the ship. The artillery and shot known to have been recovered include two wrought iron *bombardetas* and two compatible breech chambers. At least 13 wrought iron *versos* – two of which thought to be *versodobles*, a longer type of swivel gun – and eighteen compatible breech chambers (one loaded with powder and sealed with a wooden plug) were also removed from the site in the 1960s. Iron wedges for the locking the breech chambers into the back of the artillery were also found, although the exact number is unknown. Lead-cored iron shot of predominantly three sizes (3.5 – 6.3 cm) were documented in both 1967, 1986, and in 2015.

Iron concretions

Fragments of the ship's rigging were recovered in 1967. Three sections of chainplates with deadeye straps linked to three pieces of forged chain and bolt that were found articulated near the ballast mound. The fragmentary remains of a wooden deadeye were also found adhered to one of the chainplates. One other rigging assembly was found comprised of a forged ring and two lengths of chain. Parts of a sheave and line associated with a fairlead were also recovered along with a bronze coak (Oertling 1989).

Numerous fasteners of different types were found in 1967, 1986, and 2015. These include examples of square-headed wrought iron nails, forelock bolts with washers and key wedges, and eye bolts. At least three pintles were also found, including one attached to a gudgeon ring.

Hull Remains

The ship wrecked in relatively fast current and shallow water, and as a result not much of the structure of the vessel has survived. During both the 1967 and 1986 investigations, sections of the wooden vessel survived exterior to the ballast mound pinched between the artillery and the sea bed. In 2015 only timbers trapped beneath the ballast mound were preserved. The ship settled upright but with a slight list to port, preserving the central construction features of the main mast step and lower, central hull.

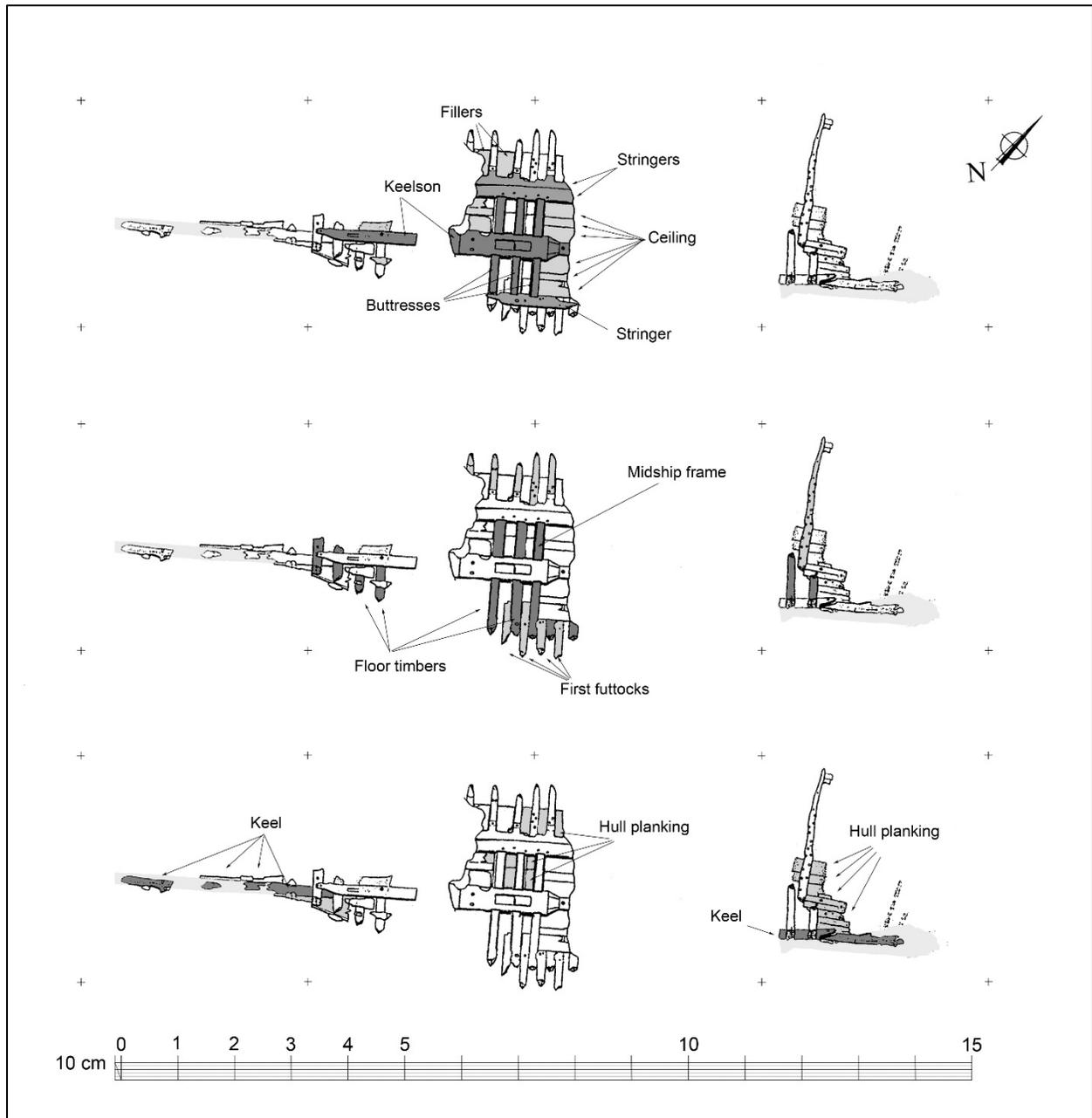


Figure 1. Site map (after Oertling 1989).

Keel, keelson and mast step

The keel was not preserved to its full length, but a trough worn into the limestone seabed left an impression of the full length of the keel. It was estimated to 12.6 m in original length, and the cross section measured 15-16.5 cm sided by 21 cm molded. The keel was joined to the stem by a flat vertical scarf with a 30 cm table. The curve of the stem was tangent to the keel.

The keelson was notched over the floors and bolted to the keel. Four such bolts were documented in 1986, and at least one of these passed through the space between the floor frames. The keelson had a section of 16-21 cm sided by 17 cm molded. The mast step consisted of an enlarged portion of the keelson approximately 2.25 meters in length, and had a section that measured 40 cm sided and 25 cm molded. The mortise for the main mast was 65 cm long, 17 cm wide, and 15 cm in deep, with a wooden chock inserted on the forward side that measured 30 cm in length and 15 cm in width.

The maststep was held in place by three pairs of buttresses that lay on top of the floor timbers. These were placed between notches in the maststep and foot wales (sometimes referred to as stringers in previous publications), and laterally supported the mast step assembly. The buttresses sloped downward from the mast step to the foot wales, and measured 13.5 cm sided by 21.9 cm molded on the maststep side and 11.8 cm sided by 16 cm molded on the foot wale side. These buttresses were not fastened to any other timbers, although they did have shallow rabbets along the upper edges to receive short planks that spanned the gaps between adjacent buttresses.

Two semicircular holes and a small mortise on the mast step indicated the location of at least one pump and pump well (Oertling 1996).

Frames

A single master frame was located under the maststep, just forward of the mortise. It was the only frame to have futtocks on both the fore and aft faces, although only the forward futtocks and frame face had a dovetail mortise and tenon joint fastening the timbers together. Three central frames – the master frame and the neighboring fore and aft frames – were spaced 30 cm center to center, which deviated from the average room-and-space of the other documented frames, which was 40 cm.

The floors were averaged 16.5cm sided by 17.5 cm molded. From an estimated total of 30 or 31 frames, it is not known how many were pre-assembled.

The futtocks were joined to the frames with dovetail joints. No fasteners were recorded, although the ends of the floors and futtocks were stepped, and may have been cut to reduce the amount of wood a nail would have to be hammered through. The trapezoidal mortises and tenons were wider on the lower side and narrower on top. Forward of the master frame the futtocks were joined to the forward face of the floors, and aft of the master frame the futtocks were joined to the aft face of the floors.

Planking

The planking averaged 6 cm in thickness, and ranged in width from 8 – 25 cm. The hull planks were fastened with trenails and iron nails to the frames with an average pattern of two trenails and three iron nails per frame/plank connection.

Ceiling, thick stuff, and wales

The ceiling averaged 3cm thick, and averaged 12-31cm in width. A foot wale ran along the turn of the bilge, and passed over the floor/futtock connection. There were three strakes of ceiling between the keelson and the foot wale. The first ceiling strake after the wale was notched to receive the filler planks; small boards that extended from the upper edge of the ceiling to the interior face of the hull planking. Short planks were placed into rabbets along the upper edges of neighboring buttresses to fill the space created between.

Caulking

No published information is available regarding the caulking of the vessel, however small bits of lead were documented near the central futtocks in 2015.

Size and scantlings

The Highborn Cay wreck is believed to have had a keel 12.6 m long, a beam 5 to 5.7 meters, and an overall length of 19 m (Oertling 1989).

Table 1. Scantling of the timber remains of the Highbourne Cay Shipwreck

Timber	Sided [cm]	Molded [cm]
Keel	15-16.5	21
Keelson	16-21	17
Maststep Mortise	40 15-17 x 65	25 13.5-15.5
Buttresses	11.8-13.5	16-21.9
Floor timbers	16.5	17.5
Futtocks	16.5	17.5
Room-and-space At central frames	40 30	-
Planking	8-25	6
Ceiling	12-31	3
Main mast Ø Chock	35 30	15

Wood

Of a set of fifteen samples taken from several timbers on the wreck, all but two were a species of oak (*Quercus sp.*). The two exceptions were planks from the pump well that were from the *Salicaceae* family (includes willows) and the *Cupressaceae* family (which includes cedars).

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