

Note

A Preliminary Report of Investigations on the 18th-Century Pillar Dollar Wreck, Biscayne Bay, Florida, USA

The Pillar Dollar Wreck (BISC0035) is located within the boundaries of Biscayne National Park (BNP), Homestead, Florida (Fig. 1). Known locally since the 1960s, it is believed to be a wrecked Spanish galleon that sank sometime in the 18th century. The shipwreck has sparked the interest of adventure seekers, looters, treasure hunters, researchers, and managers who have undertaken a range of activities on site. Its colloquial name is attributed to a type of Spanish coin that was found on site by local adventure seekers who visited the site prior to the implementation of protective legislation and the state of Florida's 1A-31 permit system, which allows for the commercial exploitation of historic shipwrecks. Despite the fact that BNP manages the site and has continuously monitored the location since the 1980s, looting continues today and has irrevocably affected the site. Nevertheless, there is still much to learn about the Pillar Dollar Wreck, particularly about the vessel's origin and construction.

In September 2014, a team from East Carolina University's Program in Maritime Studies conducted archaeological investigations at the site. Among the basic goals of the project were determining the vessel type, period, and cultural affiliation; examining site distribution and site formation processes including looting and treasure hunting impacts; and suggesting management recommendations for future research and protection. Investigations included a full pre-disturbance survey and excavation of selected areas of the site. Although a large portion of the wooden hull remains buried below sediments, little material culture in the form of artefacts were uncovered; this is likely due to the unchecked treasure hunting and looting that has occurred at this site for decades. What follows is a preliminary report of archaeological data recovered during the 2014 field season, as well as, a discussion of the depth and breadth of impact that looting and treasure hunting in the Florida Keys has on our shared colonial heritage.

Historical background

For over 200 years Florida was claimed as a colony of the Spanish Crown. Florida was strategically important to the Spanish as it was centrally located alongside the Gulf Stream, an important maritime highway that linked Spain and its colonies (Smith

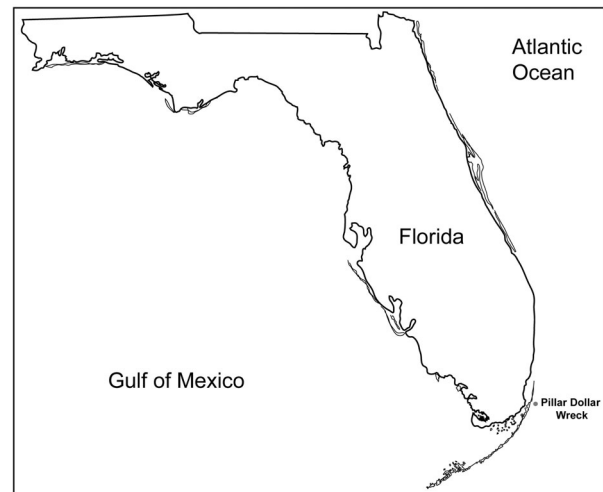


Figure 1. General location of the Pillar Dollar wreck-site. (McKinnon 2016).

et al., 1997). Colonial trade routes were established to bring important materials and goods such as cotton, tallow, indigo, maize, silver, gold, and spices from *Nueva España* back to Spain. The *flotas*, or flotillas, by which this resource extraction took place, followed two principal routes: New Spain (Mexico) and *Terra Firme* (South America) (Fig. 2). Both the New Spain and *Terra Firme* flotillas sailed south from Spain, passed through Dominica and then split, with the New Spain fleet travelling to Veracruz in Mexico and the other sailing to South America. The two flotillas met again months later in Havana, Cuba to make the return journey to Spain. Laden with cargo, both legal and contraband, the vessels took advantage of the Gulf Stream and slowly made their way along the eastern coast of Florida (Phillips, 1986: 45; Smith *et al.*, 1997). During this part of the journey, hurricanes, coral reefs, shifting sandbars, and human error wreaked havoc on the flotillas, some of which were lost entirely during the years of 1622, 1715, and 1733 (Smith *et al.*, 1997: 36–7). Flotillas consisted mostly of galleons, particularly toward the end of the 17th century; however, they could consist of any number of vessel types depending on their origin of build. In fact, of the 13 known shipwrecks related to the 1733 Spanish fleet disaster, none have been identified specifically as a Spanish-built

(that is on the Iberian Peninsula or in the colonies) galleon (Smith and Dunbar, 1977).

Galleons were developed in the mid 16th century in response to the need for transatlantic speed and security (Smith *et al.*, 1997: 9). They were representative of Spanish, Italian, and Portuguese shipbuilding traditions, and as a throwback from medieval times, they incorporated a beak below the bowsprit and forecastles that were short and aft of the stem, thus making their stern superstructure appear that much more elevated (Elbl and Phillips, 1994: 101). Early galleons were structurally similar to merchant vessels or *naos*, except that galleons were more heavily armed; as a result many were top heavy and capsized in storms (Phillips, 1986: 45; Smith *et al.*, 1997: 26). With two upper decks loaded with cannon, galleons also had a half-deck, quarterdeck, and poop deck that could be armed. Galleons reached a top speed of 4–5 knots in favourable winds; however, they traded speed for cargo space (Smith *et al.*, 1997: 26). One of the most important characteristics of galleons was their strong hull and heavy internal bracing that could support the transatlantic journey, as well as helping with defence and surviving the tropical shipworms of the Caribbean (Elbl and Phillips, 1994: 99). By the 17th century, the galleon could carry upwards of 1200 tons of cargo; however, few were over 500 tons (Haring, 1918: 263).

Spanish ships and shipping dominated Florida waters, particularly as a result of the *flota* system, from the age of exploration until the final quarter of the 17th century when other European powers such as the Dutch, French, and British began breaking down Spain's stronghold in the Americas while expanding their own colonial interests. The British wrested control

of Florida as a territory from 1763–1783 further altering the homogeneity of Spanish ships and shipping in Florida's waters. British shipping increased in the region during this period but dipped back down in the 1780s after the American Revolutionary War and Florida's return to Spain. Spain's dominance in shipping never fully recovered in the region and with the close of the second Spanish period in 1821, Spanish shipping in Florida's waters was nothing but a distant memory.

Site history and activities

Published documentation pertaining to the Pillar Dollar Wreck first appears in Martin Meylach's *Diving to a Flash of Gold* (1971), in which the author provides directions to the site and describes artefacts recovered in 1963. Noted artefacts include two cannon, 'a quantity of Spanish pillar dollars', a boarding cutlass, a pair of slave bracelets, a matched pair of pewter candlestick holders, iron spikes and hinges, spoons, pottery sherds, and glass (Meylach, 1971: 293). Meylach does not provide details about who recovered the artefacts but gives dates for the pillar dollars, ranging from 1770 to 1778, and proclaims 'she is a treasure galleon in every respect' (Meylach, 1971: 293).

Another description of the site was published in 2001 by Bob 'Frogfoot' Weller in his book *Galleon Alley*. Weller relates that the ship dates to approximately 1768 and was located in 1965 by Art Sapp and Bobby Savage using a magnetometer (Weller, 2001: 96–7). Sapp and Savage worked the site from their boat *Norma* using 4-inch airlifts and recovered a number of pillar dollars that dated to 1760–1764, 'but nothing else of great

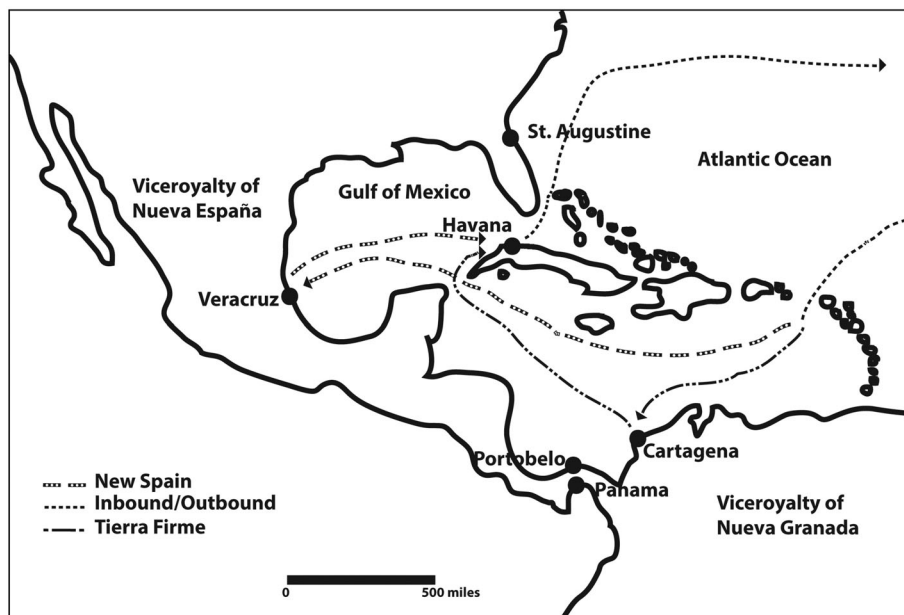


Figure 2. Flota System in New Spain. (McKinnon 2016).

artefactual value' was found (Weller, 2001: 96). Weller also indicates that Tom Gurr visited the site in 1967 using his salvage vessel *Parker* and 'found nothing on the site at all'.

The most recent mention of the site is found in Carl Ward's *Shipwreck in the Florida Keys* (2014: 11). Ward mentioned that he and others salvaged the shipwreck in 1966 but found 'nothing of interest'. He also recommended the site to other unnamed salvors who collected a number of 'spikes' in July 1967 (Ward, 2014).

From the mid 1960s to 1984 little is known about the activities that may have occurred at the site. Once BNP was established and received jurisdiction over the site in 1984, the wreck fell under a management plan and received semi-regular condition assessments. An initial survey of resources within park boundaries provided the first official site report for the wreck. The report categorized the Pillar Dollar Wreck as 'significant' and in need of further archaeological assessment (Brewer and Wild, 1985: iii).

The site became the first and only instance of prosecution for breach of heritage legislation in BNP in 1986. On 28 June 1986, National Park Service Ranger Matthew Fulmer stopped three sport divers, Sidney Monroe Hood, William Hood, and Eric G. Hampton for a routine fisheries check. Fulmer noted several SCUBA tanks, dive gear, an underwater metal detector, yellow mesh catch bags, and a white bucket 'containing what appeared to be metal objects encrusted with coral and marine growth' (National Park Service, 1986: 2). When Fulmer inquired about the location of where they had taken the artefacts, the divers produced a NOAA nautical chart with red, hand-drawn circles and numbers located throughout the reef areas of BNP. The location indicated by the divers had a 'red circle with the number 37 on it, a location just south of Pacific Reef Light in 16' depth' (National Park Service, 1986: 2). Ranger Fulmer placed the divers under arrest. A thorough search of the vessel revealed approximately 50 suspected artefacts including hull spikes from ship's timbers, a coral encrusted pocket watch, and a padlock, all of which were typical of the 17th and 18th centuries (National Park Service, 1986: 3). Although the divers were obstructive in relating the exact location of where they took the artefacts, it was likely the Pillar Dollar Wreck. Ultimately they pleaded guilty, were charged a fine, and lost all of their dive equipment, boat, and trailer. Today the site is visited as part of a regular condition assessment programme conducted by resource managers.

The site

The Pillar Dollar Wreck lies just to the east of Key Largo, Florida, not far from the southern boundary of BNP. Resting in approximately 6.5 m of water (Fig. 3), the shipwreck is buried in the sand and oriented



Figure 3. Site photograph of Pillar Dollar Wreck prior to excavation. (McKinnon 2014).

along a bearing of 260–80 degrees. The vessel's keel lists approximately 45 degrees to the north, with no discernible bow or stern. The wreck lies approximately 18 m from the south-western edge of a small patch reef, which rises to approximately 4 m of water. The shallow patch reef was likely the cause of this ship's demise and artefacts reported to have been located on and around the reef substantiate this interpretation. The location of the site has heavy traffic from commercial fishing boats and private vessels, thus making it easily accessible to the general public.

The timbers on site consist of the keel, planking, floors, and futtocks. No ceiling was identified. Small scatters of ballast stone lie to the west and north of the site; however, it is uncertain if this is a primary deposition or if the ballast was moved during the numerous treasure hunting and looting endeavours.

In 2014 during the ECU field school, a baseline was established along the centreline of the vessel and four excavation units were established over the exposed frames. A total of 28 m² was excavated to reveal the hull structure or to a depth of 0.60 m (Fig. 4). The depth of 0.60 m was chosen due to slumping of sand, which occurred any deeper. No effort to hold back slump was used on site due to the lack of original context, which resulted from looting and treasure hunting activities.

Keel

Though the original length of the keel remains unknown, 6.75 m was exposed during excavation and an additional 4 m was detected via probing to the east of the excavation units. The keel lists north at an average angle of 45 degrees and its shape can be described as square, with the top surface forming the top edge of the rabbet. It is constructed of two pieces of wood joined with a large horizontal Z-scarf fastened by iron bolts (Fig. 5). The moulded dimension averages 0.44 m, while the sided dimension averages 0.27 m. Both the port and starboard sides feature a layer of soft sacrificial wood,

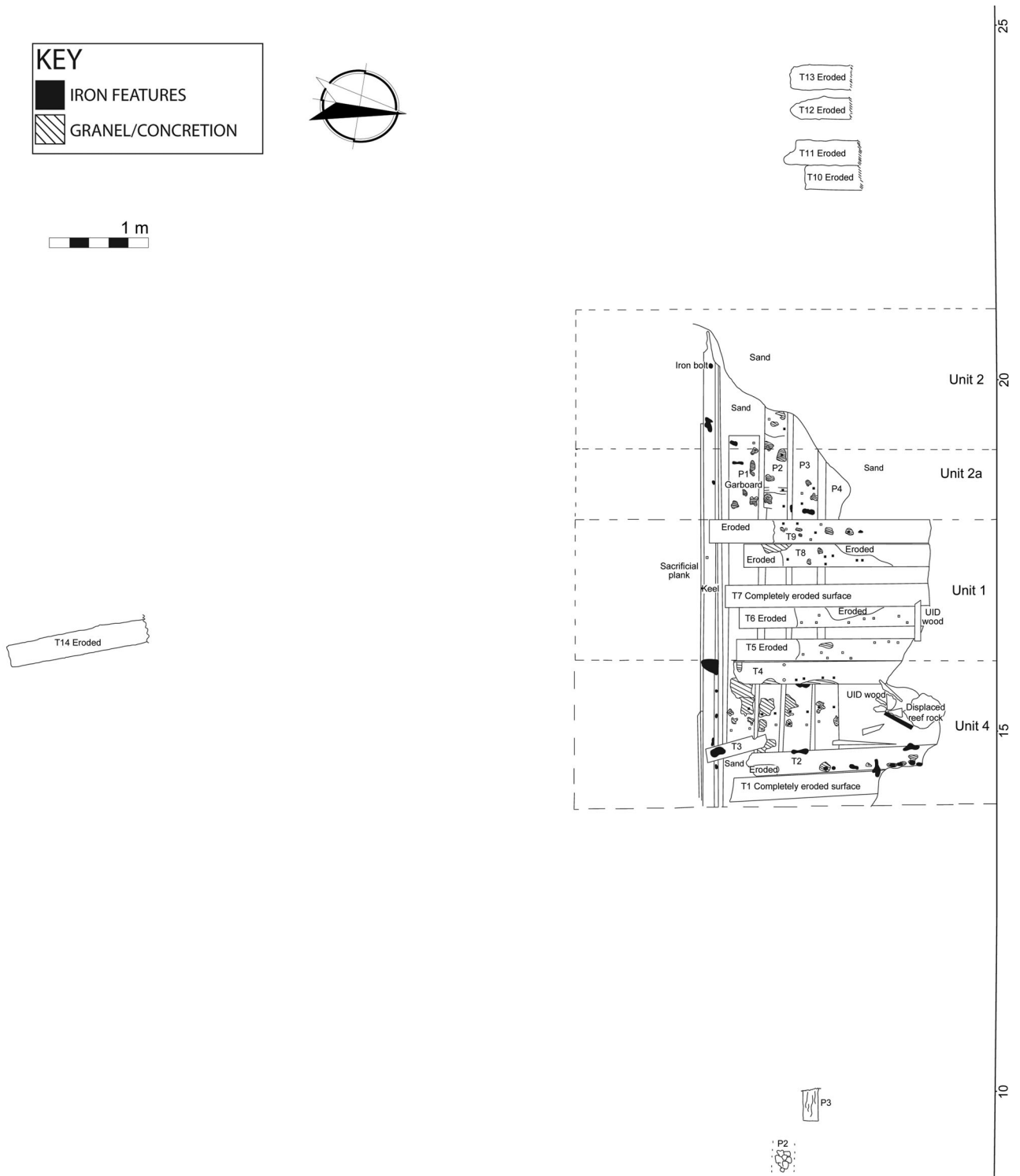


Figure 4. Site plan of Pillar Dollar Wreck. (East Carolina University)

30–40 mm thick, beginning 30 mm below the rabbet and ending the same distance from the bottom of the keel (see Table 1 for scantlings). Notable features on the keel include a large iron pin or bolt approximately 30 mm in

diameter on the top interior surface on the west end of the keel and a small Dutchman repair on the bottom of the keel. A Dutchman repair consists of a piece of timber that has been removed due to a weakness

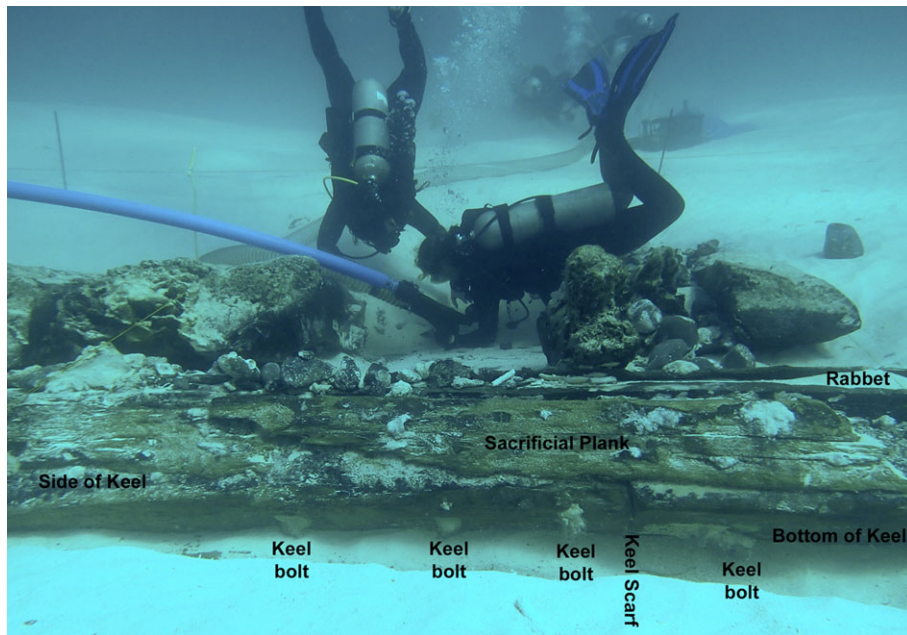


Figure 5. Keel scarf. (McKinnon 2014).

Table 1. Scantlings

Timber	Moulded/width average (m/in.)	Sided/thickness average (m/in.)
K1 (Keel)	0.44/17.3	0.33/13
P1 (Garboard)	0.11/4.3	0.44/17.3
P2 (Plank)	0.11/4.3	0.35/13.8
P3 (Plank)	0.11/4.3	0.38/15
P4 (Plank)	0.11/4.3	0.36/14.1
P5 (Plank)	0.12/4.7	0.36/14.1
T1 (Futtock)	–	0.33/13
T2 (Floor-timber)	–	0.34/13.4
T3 (Chock)	0.30/11.8	0.20/7.9
T4 (Futtock)	0.36/14.1	0.33/13
T5 (Floor-timber)	0.36/14.1	0.34/13.4
T6 (Futtock)	0.36/14.1	0.33/13
T7 (Floor-timber)	0.36/14.1	0.32/15.5
T8 (Futtock)	0.30/11.8	0.30/11.8
T9 (Floor-timber)	0.39/15.3	0.33/13
T10 (?Frame)	–	0.33/13
T11 (?Frame)	–	0.30/11.8
T12 (?Frame)	–	0.31/12.2
T13 (?Frame)	–	0.33/13
T14 (?Frame)	0.30/11.8	0.33/13

(for example, rot) and a solid piece of replacement wood fastened to fill the hole. It appears that the floor-timbers were attached to the keel using large iron pins or bolts, although no measurements of the fasteners were discernible due to concretion.

Frames

Six floor-timbers/futtock pairs were identified—12 framing timbers in total—on the site (Table 2). One

Table 2. Distance between frames (see Fig. 4)

Frames	Average spacing (m/in.)
T5-T7 (Floor-timbers)	0.85/33.5
T4-T6 (Futtocks)	0.80/31.5
T6-T8 (Futtocks)	0.95/37.4
T7-T9 (Floor-timbers)	0.90/35.4
T10-T12 (?)	0.90/35.4
T11-T13 (?)	0.90/35.4

additional heavily eroded timber could possibly be a chock, spacer frame, or mast support. The first futtocks feature a butt end and many still exhibit tool marks from being hewn. The matching floor-timbers are eroded where they would be fastened through the keel. The floor-timber and futtock pairs are fastened laterally together by large square iron bolts. The lengths of the floors and futtocks remain unknown because they continue into the sand beyond the depth (~0.60 m) of excavation. Limber holes run through all of the floors and average 70×40 mm (Fig. 6).

Planking

Five hull planks exist beneath the frames. The garboard is easily identifiable as it lies closest to the keel and has an average width of 0.44 m, while the other planks average 0.36 m. The hull planks average 0.11 m thick, while the garboard has an average thickness of 0.12 m. The garboard is not articulated but demonstrates the original rabbet edge. The western edge of the garboard is a butt joint, suggesting the western edge of the exposed site is an extremity of the vessel, bow or stern. As with the frames, the planks continue to run under the

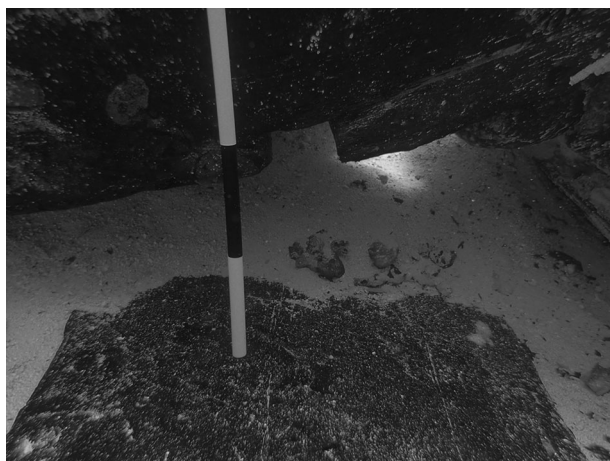


Figure 6. Limber holes. (McKinnon 2014).

sand in an east–west orientation beyond the excavation limits. Due to the depositional environment, fasteners and fastener patterns could not be obtained for the hull planking.

Ceiling

While there is no ceiling present, the fastener patterns on the surface of the frames indicate small (20 mm) square iron nails were used in pairs to attach planks. Each nail pair is separated by approximately 100–130 mm, which may indicate the minimum width of the ceiling planking.

Gravel and waterproofing

It appears as if some form of *gravel*—a lime-based mixture similar to concrete used by the Spanish as both permanent ballast and to protect the hull from cargo (McKinnon and Scott-Ireton, 2006)—may have been used on this vessel since remnants of a hard, grey concrete-like layer exists on sections of the frames and hull planking. A fibrous caulking material is found between all hull planks. Additionally, a black substance that may be tar or pitch was identified between the sacrificial planking and the keel. No samples were collected of any of these materials during the 2014 field season; however, future investigations are planned to sample them in an effort to determine their composition.

Timber and ballast sampling

Ten timber samples were collected from the site, based on the function of the timbers (Table 3). The keel was identified as shagbark hickory (*Carya ovata*); planks and garboard as maple (*Acer* sp.); floors and futtocks as hickory (*Cary* sp. and *Carya ovata*); and sacrificial planking on keel as pine or red pine (*Pinus* sp. or *Pinus resinosa*). These results indicate that the vessel was built in the Americas.

A representative sample of ballast stones was collected, photographed with a geologic scale, and

examined for characteristics on both weathered and fresh (that is broken) faces. Of the 16 samples recorded, five were retained for further analysis in the laboratory.

Artefacts

Artefacts recovered from the site and chosen for analysis and curation included the following categories: glass, brick, ceramic, glass slag, fired clay, bone, stone, charcoal, lead, unidentified iron, and iron fasteners. The artefacts underwent a range of analysis from basic identification to elemental analysis using Scanning Electron Microscopy (SEM).

Bone, glass, brick

Five pieces of bone were recovered from the site; all of these are awaiting species identification and anatomical function. Thirty-eight pieces of brick were recovered ranging in colour from reddish to cream to black. Only a few have original surfaces and none revealed overall brick thickness or width measurements. Two pieces of light buff-coloured clay were also recovered from the site and may be raw rather than fired or baked.

Twelve pieces of glass slag were recovered from the site. One bottle lip/rim was recovered and underwent conservation, however it remains very fragile and could not be deconcreted, nor could the colour be determined.

Iron

As there was some question regarding whether the ARPA violators in the 1980s collected the artefacts from the Pillar Dollar Wreck, a comparison of fasteners archaeologically recovered with those confiscated could provide evidence for questions of context. As a result, 15 suspected fastener concretions were recovered from the site. All fasteners underwent X-ray analysis prior to their conservation treatment, which allowed for the identification of residual metal. Those with enough metal to deconcrete were selected for that process, while the remainder were kept for casting.

Stone, charcoal, lead

One piece of quartz with gold inclusions was recovered from the site. The quartz may have been part of the ballast or an artefact of greater interest. Three pieces of charcoal were inadvertently collected, despite efforts to rebury all specimens on site. A piece of lead slag was also recovered. Although the function of this piece is unknown, lead was used for a variety of purposes on board a ship of this period, including sheathing and repair. Lead slag may also indicate evidence of a burning episode.

Ceramic

A total of 33 ceramic sherds were recovered from the Pillar Dollar Wreck. Although only five pieces were positively identified as olive jar fragments, other coarse earthenware sherds may also be olive jar or a similar

Table 3. *Timber sample identification*

Sample #	Timber	Genus	Species	Common name	Notes
1	Keel	<i>Carya</i>	<i>ovata</i>	shagbark hickory	–
2	P2	<i>Acer</i>	sp.	maple	cf. <i>pensylvanicum</i> (striped maple)/cf. <i>rubrum</i> (soft maple)
3	T5 (floor)	<i>Carya</i>	sp.	hickory	–
4	T1 (futtock)	<i>Carya</i>	<i>ovata</i>	shagbark hickory	–
5	T6 (futtock)	<i>Carya</i>	<i>ovata</i>	shagbark hickory	–
6	T9 (floor)	<i>Carya</i>	sp.	hickory	–
7	Sacrificial plank on keel (north)	<i>Pinus</i>	sp.	pine	–
8	Garboard	<i>Acer</i>	sp.	maple	cf. <i>pensylvanicum</i> (striped maple)/cf. <i>rubrum</i> (soft maple)
9	P3	<i>Acer</i>	sp.	maple	cf. <i>pensylvanicum</i> (striped maple)/cf. <i>rubrum</i> (soft maple)
10	Sacrificial plank on keel (north)	<i>Pinus</i>	<i>resinosa</i>	red pine	–



Figure 7. Guadalajara polychrome sherd. (McKinnon 2014).

type of storage jar. One piece of tin-enamelled coarse earthenware, possibly majolica, with a blue-on-white or blue-on-blue linear design was recovered. Five pieces of Guadalajara polychrome—three of which come from the same ceramic vessel—were identified by their paste and decoration (Fig. 7). Guadalajara polychrome, also known as Mexican Type-A ware, Aztec IV, Tonalá ware, Tonalá Bruñida ware, or ‘native Aztec pottery’, was manufactured in central Mexico (Fairbanks, 1972). The dates for its production are disputed, with Charlton and Katz (1979) indicating 1650–1810 and Barnes (1980) stating 1780–1830. It was a slipped, burnished coarse earthenware used mostly for storing and serving food and beverages, and in particular was commonly used for storing water due to the porosity of the clay that allowed for evaporation and kept the water cooler

(Charlton and Katz, 1979: 47). Records from the 17th and 18th centuries indicate that Spaniards in both Mexico and Europe highly appreciated the ceramic. An Italian traveller, Gemelli Careri, in 1697 noted the presence of Guadalajara *búcaros* or vases among the merchandise exported to Spain from Mexico. Later, in 1742, the historian Matias de la Mota-Padilla wrote more specifically about the ware:

Tonalá has mines of a clay so special that in all the world there is nothing similar, and for this reason there is so much esteem for their vases, jars, water jugs, urns, tankards, and various kinds of animal figures, large and small, so polished and perfect that in many parts of Europe women carry them as amulets, so soft are they as to aroma and taste that often women eat such clay; for this reason the ware is sold by *arrobas* . . . in Jalapa, Veracruz, and Acapulco even when it is broken; it is more esteemed than crystal, than china, and more than vases of Alcorza; that is, the very delicate things are. (quoted in Charlton and Katz, 1979: 52)

During the 18th century it was believed that these ceramics had beneficial cosmetic and medicinal properties because of their clay. As the above quotation indicates, some women were known to eat the clay and drink water from the ceramics to benefit from these properties, and the ceramics were shipped back to Spain for this express purpose (Newman, 2014: 178). SEM analysis was undertaken to provide elemental data, and research into the origin of the cultural practice of ingesting the clay (known as geophagia), the frequency of the ceramics aboard Spanish shipwrecks, and the elemental analysis and efficacy of the practice is underway.

One ceramic object that cannot be identified by type was recovered and conserved. A Leica EZ4HD microscope was used to image the object and SEM analysis confirmed that it is ceramic. The best interpretation thus far is that it is part of a ceramic figurine because of its shape, the fact that it is hollow, and a hole in one side that indicates it would have been

attached to something. Figurines have been found on other 18th-century Spanish shipwrecks and in Spanish mission contexts (McKinnon, 2016).

Intrusive objects

A number of objects were collected or recorded during the excavation of the Pillar Dollar Wreck that relate to past treasure hunting and looting activities on the site. Two iron disc-shaped concretions were recovered from the site and later identified as tin can lids with the letters 'FOLGERS COFFEE' and 'CAN OPENER' stamped on the surface. The lid type dates to the late 1950s/early 1960s. Given that they were found at depth within the sediments they may be associated with some of the early treasure-hunting activity on site. In addition to the lids, a 1970s 'made-in-Japan' coffee mug, brown glass beer bottle fragments, a section of PVC pipe, a fishing reel lubrication tube, and an illegal mooring consisting of two cinder blocks tied together and attached to a rope were found on site.

Discussion and future research

While recognized as a significant site, little is known about the historical nature of the Pillar Dollar Wreck. As mentioned previously, the ship was carrying Spanish colonial material culture dating to the 18th century (Meylach, 1971; Weller, 2001); however, this does not require that the vessel be Spanish-built, nor does it suggest that it was part of a flotilla. Several aspects of research are still underway and future archaeological investigations are planned; as a result, the discussion below is preliminary and more will be learned over time as data analysis and research continues.

A review of the archaeological evidence alongside natural and cultural site formation suggests that the Pillar Dollar Wreck grounded on the nearby shallow patch reef and was unable to be recovered by the crew. The paucity of artefacts and their diminutive size, as well as 1960s treasure hunter reports of little to no artefacts being found, indicate that the shipwreck was likely salvaged at the time of wrecking or shortly thereafter. During the process of contemporary salvage, the Spanish often burned ships to access the hold, salvage metal fasteners for reuse, and hide vessels from others who might target them (McKinnon, 2007). The Pillar Dollar Wreck artefacts (glass slag, lead slag, charcoal) support a burning episode that may be the result of these activities.

The vessel may have been left to its own demise and eventually fell off the reef into deeper water and settled into the sand. Alternatively, it could have been kedged off the reef and sunk purposefully so that others could not find and access it. Some type of catastrophic event or events have impacted the hull structure itself, as the garboard, hull planking, frames, and keel are severely disjointed and no longer articulated. There are large gaps between the hull planking and garboard,

Table 4. *Date ranges for artefacts on Pillar Dollar Wreck*

Artefact	Date Range	Source
Pillar Dollar	1770–1778	(Meylach, 1971: 293)
Pillar Dollar	1760–1764	(Weller, 2001: 96–7)
Guadalajara polychrome	1650–1810; 1780–1830; 1650–1800	(Charlton and Katz, 1979: 45); (Barnes, 1980: 93); (http://www.flmnh.ufl.edu/histarch/gallery_types/)

and the floors are no longer attached to the keel. This activity could have occurred during the wrecking event, as a result of contemporaneous salvage or more recent treasure salvage activities, or a combination of all of the above.

The site has been impacted significantly by cultural activities, specifically those of looters and treasure hunters. No original context was encountered on the site despite the large area of excavation. Furthermore, refuse from these activities have been left on the site, sometimes buried at depth. Although it is illegal today to remove artefacts or disturb sites without a permit, this was not the case in the past, and thus, the history of treasure salvage should be considered alongside the history of the vessel itself.

Because of the folklore surrounding the site and its inclusion in three treasure hunting publications, the site continues to be impacted by weekend divers or looters looking for a place to find 'Spanish treasure'. This is evidenced by the more recent PVC pipe and cinder block buoy markers. Park cultural resources manager and archaeologists are well aware of the issue and continue to impress on law enforcement the importance of patrolling for illegal activities; so far these pleas have fallen on deaf ears.

Thus far no identification as to the cultural affiliation or name of the vessel can be made. Wood species identifications reveal that the ship was built of wood from the Americas. None of the proposed Iberian traits (Oertling, 1989, 2001, 2005; Castro, 2008), with the exception of being exclusively iron fastened, presented themselves during the investigation of the shipwreck.

That the ship was carrying Spanish-related material culture, such as the alleged treasure-hunted pillar dollars and archaeologically recovered olive jar, Guadalajara polychrome and majolica supports the idea that the ship was under Spanish command at some point or was trading Spanish goods. Date ranges for the shipwreck include a period of 1760–1830 based on purported and archaeologically recovered evidence (Table 4).

There exists potential to learn more about the Pillar Dollar Wreck through archaeological investigation of the site. More excavation will provide an accurate assessment of how much wooden structure is extant and add to the artefactual collection providing a narrower

date range for the vessel's use and wrecking. New information about the construction details could lead to an accurate identification of time period and origin of construction allowing us to answer larger questions related to the people who built and operated the vessel. Excavation will also reveal the full extent to which this site has been impacted by looting and treasure hunting activities, and what has been lost as a result of this illegal and sometimes state-sanctioned activity. Archival research will provide additional information about the role of shipping in the area, as well as a possible identification of the shipwreck. It is not

expected that on-site public outreach and interpretation would be a useful avenue to pursue because most of the site is covered in sand year-round and there are existing interpreted sites that provide the public with interesting and engaging shipwreck-diving experiences. However, a visitor centre display would demonstrate to the public that BNP is active in promoting scientific research for the benefit of all, not just the weekend treasure hunters.

Jennifer McKinnon
East Carolina University, Program in Maritime
Studies, Greenville, North Carolina, USA

Acknowledgements

The author would like to thank the ECU field school students and faculty who worked hard at gathering and processing data during the 2014 field school. Also, special thanks to fellow alumni Charles Lawson, Cultural Resource Manager at Biscayne National Park, for providing support and facilitating this project and Dr Kimberly Kasper for cut-rate wood analysis.

References

- Barnes, M. R., 1980, Mexican Lead-Glazed Earthenwares, in H. F. Dobyns (ed.), *Spanish Colonial Frontier Research*. Albuquerque.
- Brewer, D. M. and Wild, K. S., 1985, Underwater Archaeological Survey and Site Assessment of Biscayne National Park. Manuscript on file Southeast Archaeology Center, Tallahassee.
- Castro, F., 2008, In Search of Unique Iberian Ship Design Concepts. *Historical Archaeology* 42.2, 63–87.
- Charlton, T. H. and Katz, R. R., 1979, Tonalá Bruñida Ware: Past and Present. *Archaeology* 32.1, 45–53.
- Elbl, M. and Phillips, C. R., 1994, The Caravel and the Galleon, in R. W. Unger (ed.), *Cogs, Caravels, and Galleons*, 91–114. London.
- Fairbanks, C. H., 1972, The Cultural Significance of Spanish Ceramics, in I. Quimby (ed.), *Ceramics in America*, 141–74. Charlottesville.
- Haring, C. H., 1918, *Trade and Navigation between Spain and the Indies in the Time of the Hapsburgs*. Cambridge.
- McKinnon, J. F., 2007, Creating a Shipwreck Trail: Documenting the 1733 Spanish Plate Fleets, in J. Jameson and D. Scott-Ireton (eds), *Out of the Blue: Public Interpretation of Maritime Cultural Resources*, 85–94. New York.
- McKinnon, J. F., 2016, Spanish Use of Inland Waterways: A Case Study at the Spanish Landing Site, *Florida Anthropologist* 69.1.
- McKinnon, J. F. and Scott-Ireton, D., 2006, Florida's Mystery Wreck. *IJNA* 35.2, 187–94.
- Meylach, M., 1971, *Diving to a Flash of Gold*. New York.
- National Park Service, 1986, U.S. vs Hampton, S. Hood, and W. Hood. Case/Incident Report. #860295. Report on file at the Southeast Archaeological Center, Tallahassee.
- Newman, E.T., 2014, *Biography of a Hacienda: Work and Revolution in Rural Mexico*. Tuscon.
- Oertling, T. J., 1989, The Few Remaining Clues, in J. B. Arnold III (ed.), *Underwater Archaeology Proceedings for The Society for Historical Archaeology Conference*, 100–3. Baltimore.
- Oertling, T. J., 2001, The Concept of the Atlantic Vessel, in F. Alves (ed.) *Proceedings: International Symposium on Archaeology of Medieval and Modern Ships of Iberian-Atlantic Tradition*, 213–28. Lisbon.
- Oertling, T. J., 2005, Characteristics of Fifteenth- and Sixteenth-Century Iberian Ships, in F. M. Hocker and C. A. Ward (eds), *The Philosophy of Shipbuilding*, 129–36. College Station.
- Phillips, C. R., 1986, *Six Galleons for the King of Spain: Imperial Defense in the Early Seventeenth Century*. Baltimore.
- Smith, R. C. and Dunbar, J., 1977, *An Underwater Survey of Eight Merchant Naos of the 1733 New Spain Fleet*. Unpublished manuscript on file at Florida Division of Historical Resources, Tallahassee.
- Smith, R. C., Miller, J. J. Kelley, S. K. and Harbin, L. G., 1997, *An Atlas of Maritime Florida*. Gainesville.
- Ward, C., 2014, *Shipwreck in the Florida Keys*. Tecumseh.
- Weller, B., 2001, *Galleon Alley: The 1733 Spanish Treasure Fleet*. Lake Worth.