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Preliminary Investigations of Two Shipwreck Sites in Cahuita National Park, Costa Rica

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Recent underwater archaeological investigations in Costa Rica focused on two sites as potential candidates for Danish West Indies slave ships wrecked in 1710. Historical research suggests a landmark wrecking event associated with a large infusion of Africans, many who remained in Central America. This paper is the first interim report of two fieldwork seasons combining field methods, research, and preliminary interpretation of the findings with voyage history. Context within the broader theme of slave-ship archaeology and Costa Rica Caribbean landscape is addressed. An integral part of the initiative is community memory, stewardship, and education.

Key words: Costa Rica, Caribbean, slave trade, community maritime archaeology, shipwrecks.

In 2015 and 2016 East Carolina University (ECU) field-school participants investigated two wrecks in Cahuita National Park, on the Caribbean coast of Costa Rica. The aim was to map the sites and begin the process to verify or refute compelling historical research, material culture evidence and oral testimonies that these sites are candidates for two Danish slave ships wrecked in the area in 1710 (Fig. 1). If proven to be the wrecks in question, further research could potentially contribute toward slave-ship archaeology studies and the history of Cahuita's Afro-Caribbean population. The sites, near Cahuita Point (or Punta Cahuita), are popular public snorkelling areas, permitted only if a group is accompanied by approved local Costa Rica guides. Park tour guides and websites either refer to the sites as the wrecks of pirate ships, Spanish galleons, or slave traders based on community memory and folklore (Table 1). No scuba diving is allowed, unless the goals are scientific and any project requires a research permit from the Costa Rica Park Service. Oral testimonies reveal the local community has engaged with the sites continuously since the early 1800s. Currently, Cahuitans serve actively as maritime heritage stewards and tour guides on the sites.

The site, collectors, and previous work

In 1828 an Afro-Caribbean family, the Smiths, settled at Cahuita Point after years of using the area for seasonal turtle-hunting camps. Selles Johnson, a founder of Cahuita, told a story to researcher Paula Palmer (1993: 20) about his adventures with his grandfather 'Old Smith' on the shipwreck sites. They frequently visited the wrecks on the north side of Cahuita Point fitting the descriptions of the two sites investigated here. Based on his own experiences and the artefacts his grandfather recovered, Johnson believed that these wrecks were two pirate ships—one French and one Spanish. Johnson's story about what happened to the two alleged pirate ships off Cahuita Point is detailed. He explained that they were hiding in Puerto Vargas, just south of Cahuita. Rounding the point, the captains noted smoke from an English vessel patrolling the area and tried to hide away, in the process striking a reef and wrecking. As a child, Johnson recalls free diving on the wreck and finding all sorts of objects, besides several large cannon. He continually mentioned bottles he recovered, bearing French and Spanish inscriptions, leading him to his conclusions about the nationalities of the wrecks (Palmer, 1993: 20–21). Whether or not Johnson's story of how the ships wrecked is true, it does correspond to historical fact: sparsely populated by its Spanish colonizers, the Costa Rican coastline was a haven for pirates (Holm 1978: 17, 34–35, 39).

As part of the first phase of the project and for use in a forthcoming publication, Maria Suárez Toro and Sigrid Lahman, representing a local Costa Rica maritime stewardship group, Centro de Buceo

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Figure 1. Locations of the two archaeological sites in Cahuita National Park, Costa Rica (ECU image by Jeremy Borrelli).

Embajadores y Embajadoras del Mar (Centro), gathered further community information that complements some of the oral history that Palmer (1993) published in the book *What Happen*. Suárez's information expands the narrative of community connections to the shipwrecks into the 20th century. For example, a 70-year-old fisherman in the Cahuita community described diving on 'fourteen cannons, three anchors, and many glass bottles, and also 5-gallon demi-johns' (Maria Suárez Toro and Sigrid Lahman, 2016, 2017, pers. comm.). He sold the bottles collected from the site to a Panamanian collector for $5 each.

There was mention of an Englishman who visited the area and the shipwreck in 1968. This visitor was a researcher who helped local divers to identify 'medals' from the shipwreck with inscriptions for turtle hunting and the official stamps of the local authorities to perform slave-trade transactions. To date, no photographs, descriptions, or drawings of these medals have been found, despite historical evidence for turtle hunting in Cahuita. The visitor's conclusion was that the ship at Cahuita Point initially brought slaves, but was later used for turtle-hunting expeditions.

Per local memory, in 1969 divers first used SCUBA to explore the site and brought it to the international attention of the Smithsonian Museum in the United States. Local newspapers, such as the Costa Rica *Grapevine* (January 1970) published photographs of recovered items, which included slave-trade manillas. It is presumed that the Smithsonian representative was curator Mendel Peterson (now deceased), who worked closely with many salvors in the 1960s and 1970s to identify shipwreck assemblages. The museum report has not been located and research is ongoing (Palmer, 1993: 15, 21–25; Harris *et al.*, 2016: 8–13; Maria Suárez Toro and Sigrid Lahman, 2016 and 2017, pers. comm.).

In June 1981, archaeologist Stephen Gluckman of the University of Florida received an invitation from the University of Costa Rica seeking guidance for the protection of two shipwrecks in one of Costa Rica's Caribbean National Parks. In September, he mounted a 10-day expedition to document the shipwrecks (Gluckman, 1982: 453, 456–457). They identified one site comprising two anchors and at least ten cannon on a shallow reef. A second site near Punta Cahuita was identified as a cargo/ballast area, containing a floor of yellow brick ballast, manillas and two cannon. The cargo/ballast site was located closer to shore, and Gluckman speculated that it represented either part of the original site or a second shipwreck. The team published two very basic sketch maps of the site. A Costa Rican Park Service report about the brick site stated that 'cannon, cannon balls, copper or bronze manacles or armbands used in slave trade, a grindstone under the bricks, and another wooden object also under bricks, several swords, a glass, two plummet stones, a barrel, a glass, and piece of a bottle' were recovered (Boza and Mendoza, 1981: 279–280).

In 2015, an ECU field-school expedition team conducted archaeological survey work to create an accurate map of surface finds as a basis for future work and management of the site, and documented marine life with specific focus on examining site formation processes. The team engaged closely with the community, interviewing fishermen about their knowledge of site history and hiring boat crew and local captains to support the venture. In September 2016, ECU established a partnership with a local Costa Rica maritime stewardship group Centro de Buceo Embajadores y Embajadoras del Mar (Centro). In conjunction with a field school, ECU offered NAS introduction and Part I training as part of a sustainable capacity-building initiative. The primary

Table 1. *Tourist agency perceptions of shipwreck sites on websites (compiled by Allyson Ropp)*

Tourist Agency	Perception	Quotes
Costa Rica Paradise Adventure Tours/Rough Guide	French and Spanish pirate ships	'. . . two shiprecks in the bay off of the north side of Punta Cahuita that are believed to be Spanish and French pirate wrecks.'
Sustainable Tourism	Slave or pirate ships	'The wrecks of two ships, possibly slave or pirate ships, are located at the edge of the reef.'
Transportation Costa Rica	French and Spanish pirate ships	'There are two shipwrecks in the bay off of the north side of Punta Cahuita that are believed to be Spanish and French pirate wrecks.'
CRS-Tours	18th-century Spanish galleon	'The second one is a part of Cahuita National Park and shelters a 242 HA coral reef and an 18th-century Spanish galleon whose guns are now home to corals and fish.'
Caribbean Beat	18th-century galleon	'Just offshore lies the wreck of a shipwrecked 18th-century galleon, a fascinating throwback to the region's more turbulent era of slavery and piracy.'
Costa Rica Scuba	1700s Spanish galleon	'The more spectacular shipwreck is a Spanish galleon from the 1700s, only 6m below the surface.'
YourTravelMap.com	18th-century galleon	'Another attraction at the outside reef is a shipwreck from the 18th century. The wreck is equipped with cannon and 6m below the surface.'
CentralAmerica.com	—	'Besides what remains of the beautiful coral, there are two old shipwrecks about 7m below the surface, both with visible ballast and cannon; one wreck has two cannon and the second, a more exposed site, has 13.'
Costa Rica Bureau	18th-century slave ships	'This most interesting feature of the park is a shipwreck located on the north of the mouth of the river Perezoso, which sank in the 18th century and was used to transport slaves.'
Costa Rica Guide	—	'If the corals, lobsters and clams don't hold your attention, there are also two sunken ships to explore. They are well known and in shallow water so the likelihood of treasure is low, but the exposed cannon insinuate they are protecting something secret.'
OSA Travel/Tierra Verde Aventuras	18th-century slave ship	'A shipwreck located at the mouth of the Perezoso River was used to transport slaves in the 18th century.'
Manuel Antoino Park/ Costa Rica Tourism/Select Costa Rica	18th-century slave ship	'The remains of a slave ship that sank in the second half of the 18th century comprise the most valuable cultural feature of the park. The shipwreck can be seen at the mouth of the river Perezoso.'
Cahuita National Park	18th-century slave ship	'One common attraction is the shipwreck near the mouth of the river Perezoso. The ship used to carry and transport slaves in the 18th century.'
Viva Tropical	1700s Spanish galleon	'Within the nearly 600 acres in the National Park are two shipwrecks. The premier attraction is the Spanish galleon from the 1700s, a scant 6m below the water's surface.'
Tripatini.com	18th-century slave ship bound for Límon	'Another attraction at the outside reef is a shipwreck from the 18th century—a slave ship bound for Límon that didn't make it. The broken-up ship, complete with cannon, now sits conveniently in about 20ft of water at the mouth of the Perezoso River covered in crustaceans and other marine life.'

goal was to initiate a community nautical archaeology project.

Important elements of the project were two local events given following the project. All NAS students prepared presentations about the training received and the project findings, and some made additional efforts to share their interpretive perspective on the site. Approximately 60 people from the communities of Puerto Viejo and Cahuita attended the presentations, with the audiences comprising fellow students, parents, community members, tourists, journalists, and officials from the Ministry of Culture. ECU created a website and blog to showcase the project to the public (Expedition Costa Rica, 2015 and 2016).

Fieldwork methodology

On the Brick Site a dive team laid a 54m baseline transecting the main concentration of bricks. Either end of the line was secured in proximity to prominent coral heads that served as primary datum points for the site. The areas adjacent to the baseline were gridded

Figure 2. Divers taking offsets from the Brick Site baseline (ECU image by Jeremy Borrelli).

into 22 5m^2 units. On both the brick and the cannon sites the team also mapped the reefs around the site, and took bathymetry measurements using 90° offsets from the baseline (Fig. 2), and depth readings with a Shearwater Petrel 2 dive computer. Participants also used this method to take depth readings for the cannon, placing the computer at the two extremities of the artefact (Harris *et al.*, 2015: 39).

The shipwreck sites as *in situ* substrates for marine life or 'living museum' was an important consideration in a park that showcases both cultural and biological assets. The team created two marine-life recording forms for diver slates: one contained images of common Caribbean reef fish likely to be encountered on the two sites; the other depicted images of common corals, such as lettuce coral, fire coral, and sea fans. A blank area allowed divers to add descriptions of corals or fish not listed on the form. The marine-life survey was a combination of controlled and random fish and coral counts. Two snorkellers swam along the baseline and circled the reefs surrounding or on the sites. Each count lasted 15 minutes. Two snorkellers swam for 20 minutes recording coral and fish species encountered, while taking photos and video around the reef system. An estuary and marine monitoring kit was used to take water samples. Tests measured salinity, dissolved oxygen, pH, phosphate, turbidity, and the presence of coliform bacteria and nitrates (Harris *et al.*, 2015: 34–36, 40–42, 2016: 56–64).

The Cannon Site is spread over a wide area with many coral heads. The team selected trilateration as the most appropriate method for mapping the site. Measurements were recorded between the cannon cascabel and muzzle extremities and between those of surrounding cannon. Trilateration measurements taken to eight major coral heads on the site were later included on the final site plan. The team also created a video tour of the site that is available to the public (Cahuita Shipwreck Site Video Tour, 2015). The NAS Big Anchor Project's stocked anchor recording guide was used to document the anchors. The large anchor is the most visible and accessible artefact on the site to the public (Harris *et al.*, 2015: 51–54, 2016: 84).

In 2016 an ECU-Centro team mapped the Cahuita Bay shoreline and major site features using a total station. The operation involved splitting up into two teams to conduct the survey; a mapping team hiking into Cahuita Park with the total station to set up datum points on the beach, while an in-water team of divers held a prism pole steadily over submerged features. Once the angle and distance of these features were successfully recorded, the mapping team projected coordinates into Geographic Information System software. Bearings and distances were reduced using a free coordinate geometry program, *Free COGO* (Version 3.25) to x-, y-, and z-coordinates (Universal Transverse Mercator coordinates in WGS1984 datum), and exported as a comma delimited (csv) file. These positions could read and edited in Microsoft *Excel*, and then projected in ESRI's *ArcGIS* and used in map making. Additionally, all GPS data from the 2015 and 2016 ECU field schools were compiled and projected as layers in *ArcGIS*. As a final stage, simplified site maps from the 2015 field school of the Brick Site and Cannon Site were georeferenced and overlaid (Harris *et al.*, 2016: 27–29).

Brick Site

The first possible shipwreck site, known as the Brick Site, is located 310m west of Cahuita Point (Fig. 1). Sea conditions are generally calmer than the Cannon Site, with better underwater visibility. Occasionally there is some underwater surge. The shipwreck area encompasses a total of 1475m^2 spread over a predominantly flat, sandy bottom ranging 9–17m in depth, encircled by reefs (Fig. 3). A combination of scattered and stacked yellow bricks are oriented along a magnetic north-south axis that runs approximately 335°. On the eastern side of the site, the reef is 2m away at the southernmost point, and 15.8m from the northernmost point. The light layer of top sediment covering the brick consists of sand mixed with shell. Various types of algae grow on the bricks, with manatee grass coverage closer to the reef.

The bricks average approximately 210 × 110 × 40mm. Most bricks still within the pile are stacked in a generally north-south orientation. Based on bathymetric calculations at the top of the pile and at its perceived base, it is estimated that the entire stack is approximately 1.8m high. A scatter of bricks extends off the western edge of the pile that follows the flow of the current toward the reef to the south-west. Many of the bricks are underneath an intrusive, submerged tree trunk, about 7m long. Minor hand fanning on the top and bottom of the pile revealed that the bricks within the main stack are densely packed against one another. The bricks seem to be deliberately placed on the long side of the brick, or alternatively, this is a profile view of the stack as the hull of the vessel rolled to one side.

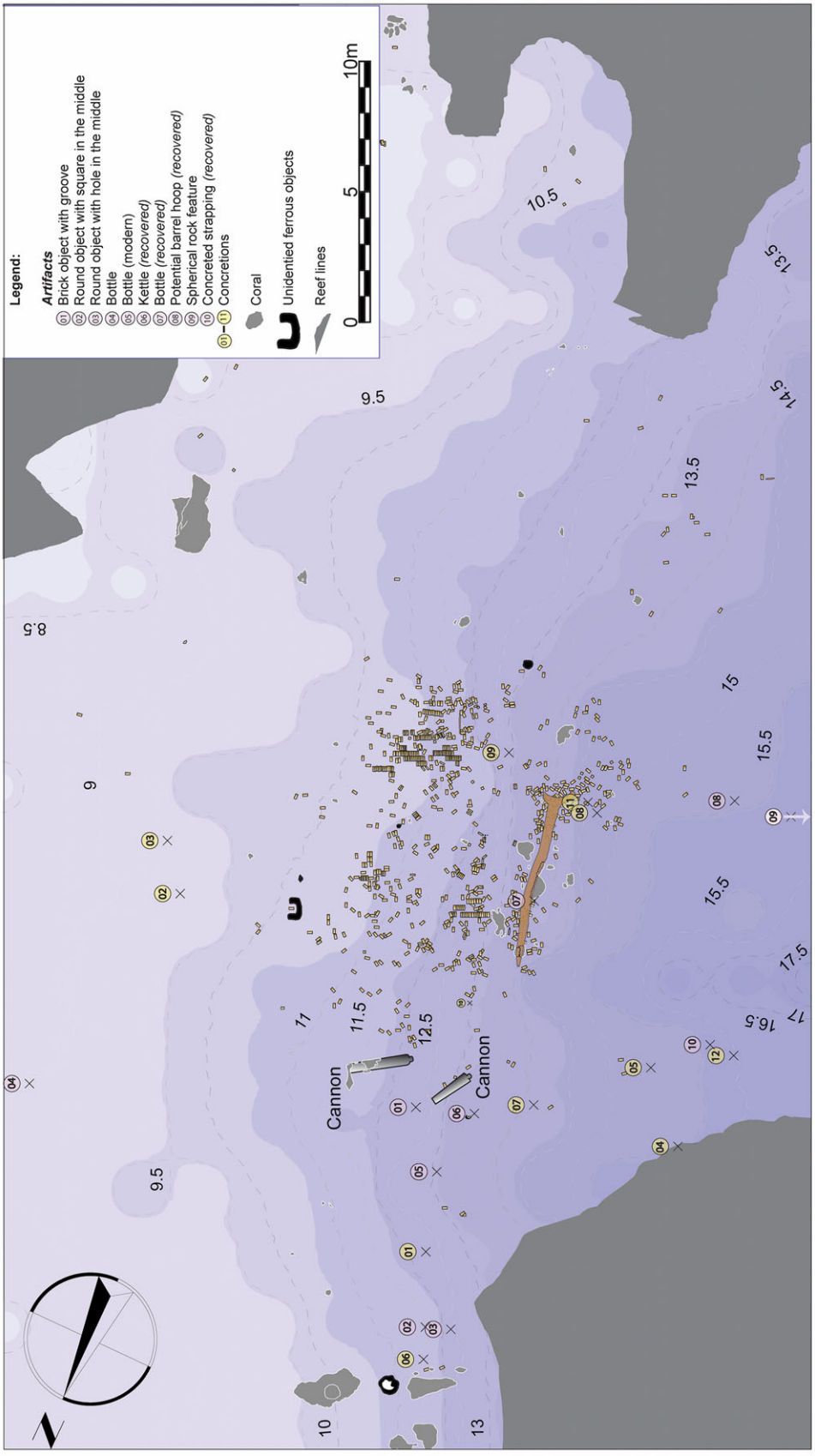

Figure 3. The Brick Site map showing artefact distribution and bathymetry (ECU image by Nathan Richards).

Figure 4. Grinding Stones, diameter 153mm (ECU image by Lynn Harris).

Additional historical research is needed to determine whether there was a specific manner of placing bricks in the hold of a ship and how this would affect balance and stability. Based on observations made during fieldwork, however, it can be presumed that these bricks were likely stowed in the ship's hull as part of the cargo of the vessel. Furthermore, due to the lack of additional stone or ballast found on the site, it is likely that these bricks functioned as the primary form of cargo and ballast for this vessel (Harris *et al.*, 2015: 116–123).

Other finds

In addition to bricks, there are two cannon and several unidentified concretions throughout the area of wreckage (Fig. 3) (Harris *et al.*, 2016: 21, table 1). Cannon 1 is oriented in an east-west direction and is 2.96m long, with a cascabel about 0.42m wide. The muzzle was too heavily concreted to measure. Cannon 2 is oriented north-east–south-west. The right side and muzzle are buried in sediment with 1.6m of the left side exposed, but heavily overgrown.

Three circular grinding stones concreted together, located during the 2015 expedition, are situated in the southern portion of the site on the reef. The diameter of one of the exposed stones is 153mm. The remaining stones are obscured by a large coral head that has enveloped the stone on two sides. (Fig. 4) (Harris *et al.*, 2015: 8). The ECU-Centro team located surface artefacts on site including a complete 19th-century glass bottle, and a crushed tea kettle of undetermined date (Fig. 5). Initial assessment of the bottle suggests it is a three-piece mould. This mould type, used during the 1800s, leaves a seam horizontally around the bottle and two vertical seams running up the neck. With a base kick-up of 72mm, the bottle appears to be made of blown glass with an olive/dark-green tint. Based on preliminary data, it appears that the bottle is of the 'Bordeaux style'. These bottles are characterized by a tall body with a deep kick-up in the base and the type dates back to at least 1840. A similar bottle found from the steamship *Republic* has been dated to the mid 1860s and is described as either free blown or dip moulded (Lindsay, 2016).

The dimensions of the tea kettle include a diameter of 0.28m; an approximate height of body of 0.16m; a thickness of kettle body of 2–4mm; and a height of spout of 135mm. Visual inspection suggests it is a pewter-alloy, based primarily on the colour of the metal and the density. Pewter is a tin-based alloy that could contain a variety of other metals: namely antimony, lead, and/or copper. It felt too heavy to be modern aluminium or tin.

Cannon Site

The second possible shipwreck site is known as the Cannon Site (Fig. 6). It is embedded in a coral reef, is located 257m from the nearest shoreline, and ranges in depth 3–5m. It is approximately 1km from the Brick

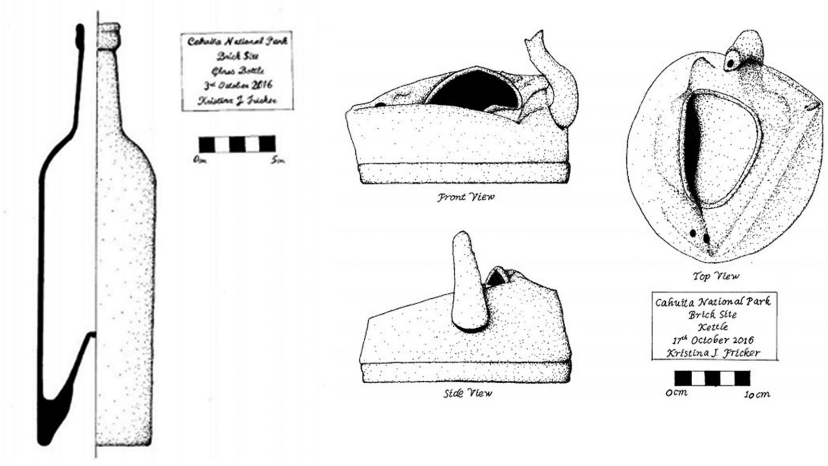

Figure 5. Bottle and kettle recovered from the Brick Site (ECU and Centro image by Kristina Fricker).

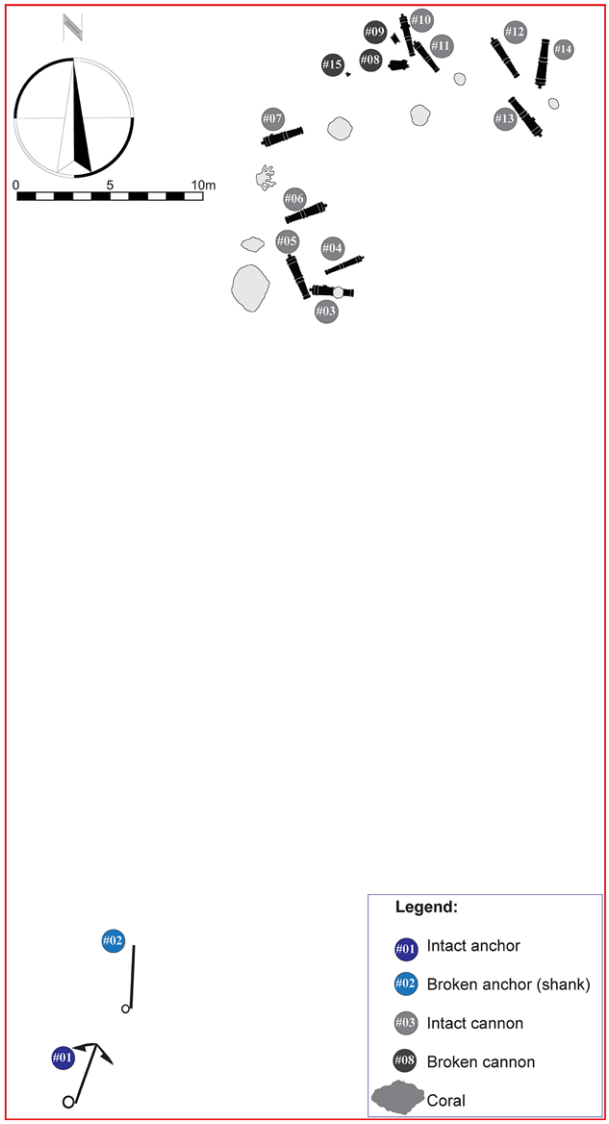

Figure 6. The Cannon Site (ECU image by Nathan Richards).

Site (Fig. 1). The cannon distribution pattern has a perimeter of 529m and an area of 9491m^2. A scatter of bricks, similar in colour and dimension to those of the Brick Site, extends from the cannon area to within 32.4m of the shore. The sea conditions vary from calm to rough, with large swells and heavy surge. Visibility in early June through mid September ranged daily 0.2–2m, and deteriorated rapidly with rainfall and river flow into the bay.

The site consists of a complete anchor (Anchor 1), an anchor shank and a ring (Anchor 2), ten complete heavily coral-encrusted cannon, and three broken pieces of cannon. Most the cannon are grouped closely together (Fig. 7). A few bricks litter the cannon cluster and one is concreted on top of a cannon, suggesting it is part of the site. The marine life and the concretions growing on the cannon substrate included blade fire coral, starlet coral, coral encrusting sponges, lettuce coral, three finger leaf algae, sponges, and sea urchins.

Anchor 1 is approximately 50m to the south of the southernmost cannon cluster. It is the only complete anchor on site. Anchor 2's ring is approximately 1.5m north-east of Anchor 1. The complete anchor had a shank length of 3.30m, shank width of 0.15m, ring diameter of 0.50m, bill length of 0.50m, and width of 0.82m. Anchor 2 is a heavily encrusted, broken shank and ring without visible flukes embedded in the reef.

There are various reports of more artefacts from this site. These artefacts might have been salvaged from the site itself at/or soon after the wrecking event, in modern times, or washed further away by waves and surge.

Artefact distribution

If the Cannon Site represents a single shipwreck, a few possibilities may have contributed to site formation processes. It is possible that heavy artefacts, such as cannon and anchors either rolled or remained exactly where the ship sank, while waves and surge moved lighter artefacts, such as bricks and timbers, toward the shoreline of the bay. Wood and other buoyant artefacts could have floated away during and after the wrecking process. Either the wreck-site lacks any ship structure or it is embedded beneath the cannon and covered in coral growth. The site may also have been altered by known catastrophic geological events in the area, such as the 1991 earthquake and tsunami, for example, as it is a fairly exposed part of the bay.

There are oral records of historic and modern salvage attempts on both of these sites. Miskitu Indians may have helped break up or recover wood and cargo per local folklore. Other stories of locals suggest cannon and anchors were moved from this site and taken to Puerto Vargas or Limon and that at least one sword, rifles, bricks, cannon balls, and a ball and chain were recovered by locals and tourists. Yellow bricks are displayed in several public locations around town.

The remaining artefacts on the site may provide some information about the wrecking event. Cannon 03, 04, 06, and 07 are staggered in a rough line opposite to the Cannon 08, 09, 10, 11, 12, 13, 14, and 15 configuration. This could represent cannon mounted on port and starboard decks sliding overboard as the ship listed to the south. If the ship righted or listed to the north, the rest of the guns (08, 09, 10, 11, 12, 13, 14, and 15) may have been deposited on the other side of the vessel. The cannon are not facing the same direction, and rolling motions of a ship pushed by surge and waves could have contributed to this more random distribution.

The position of the anchors, 40m south of the cannon, also poses questions. The crowns of both anchors should point toward land. A possible

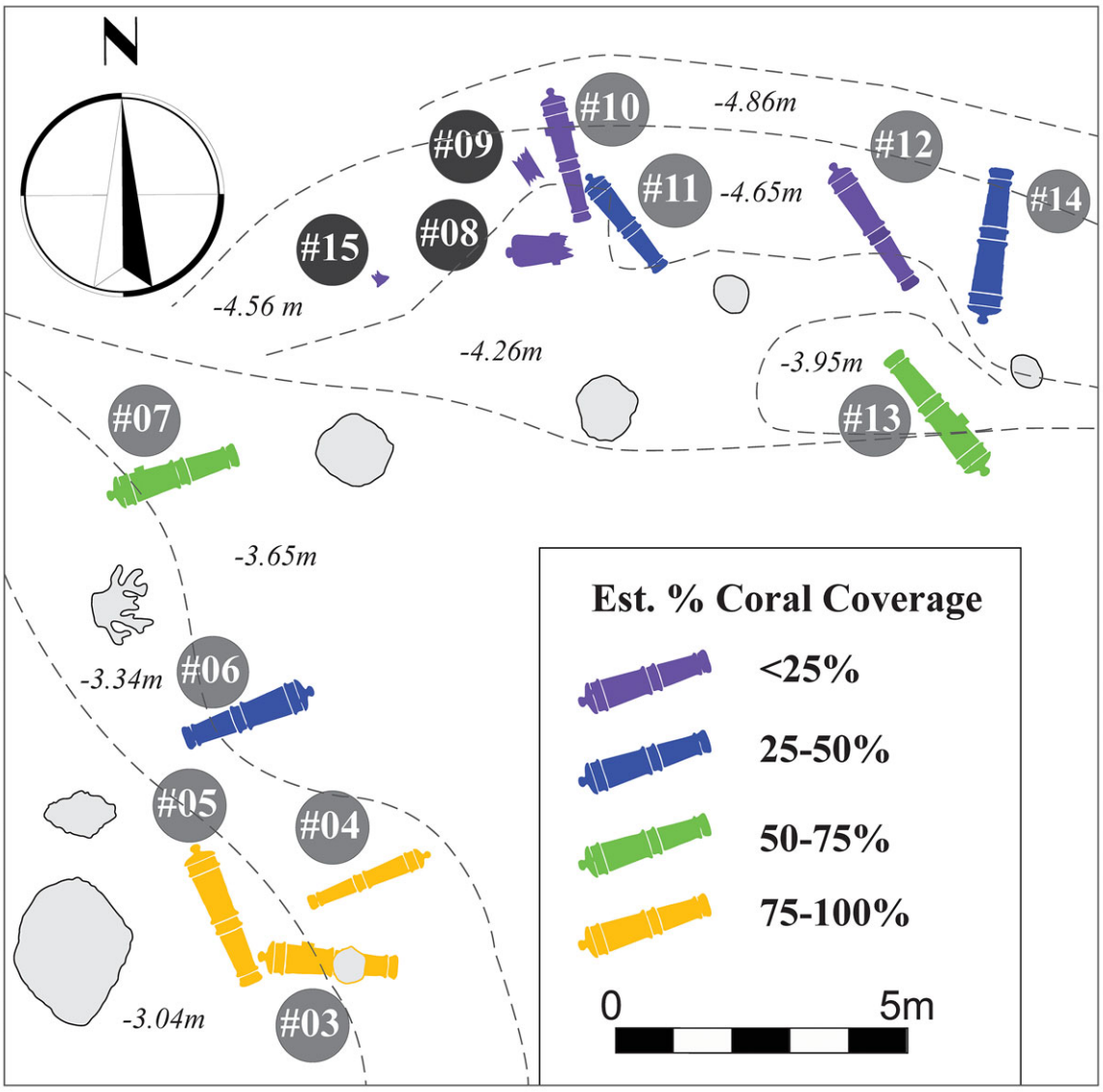

Figure 7. Cannon Site bathymetry and coral coverage (ECU Image by Nathan Richards).

hypothesis is that the anchors were utilized to kedge the ship in close to shore allowing the crew to wade to the beach, explaining the direction of the anchors and cannon. Whatever the case, Anchor 2 was put under enough stress to break at the crown (Harris *et al.*, 2015: 108–112, fig. 75).

Historically recorded wrecks

Two candidates for the identities of the wrecks, based on the accounts of items collected from the sites—including manillas, cowries, and manacles—local lore, and the presence of bricks and cannon currently visible on the sites, are two slave ships belonging to the Danish West Indies Company, *Christianus Quintus* and *Fredericus Quartus,* wrecked in 1710 during a voyage fraught with drama (Jutesen, 2005; Transatlantic Slave Database Voyages, 2009). The ships made multiple transatlantic slave-trade voyages during the first decade of the 1700s. After the 1710 wrecking, which scholars and local lore have sited at Punta Cahuita, approximately 600 slaves were released by the sailors from the ships into the surrounding Caribbean community. The voyage of the ships, the nature of the cargoes and the wrecking events are detailed in Danish records comprising letters, logs, resolutions and minutes compiled by Ole Justesen (2005). Court evidence and slave testimonies during the years after the wrecking survive in the Secion Colonial Cartago, Achivo National de Costa Rica. Three scholars who describe the voyage of these two slave ships in the most detail are Georg Nørregård (1948), John Alexander

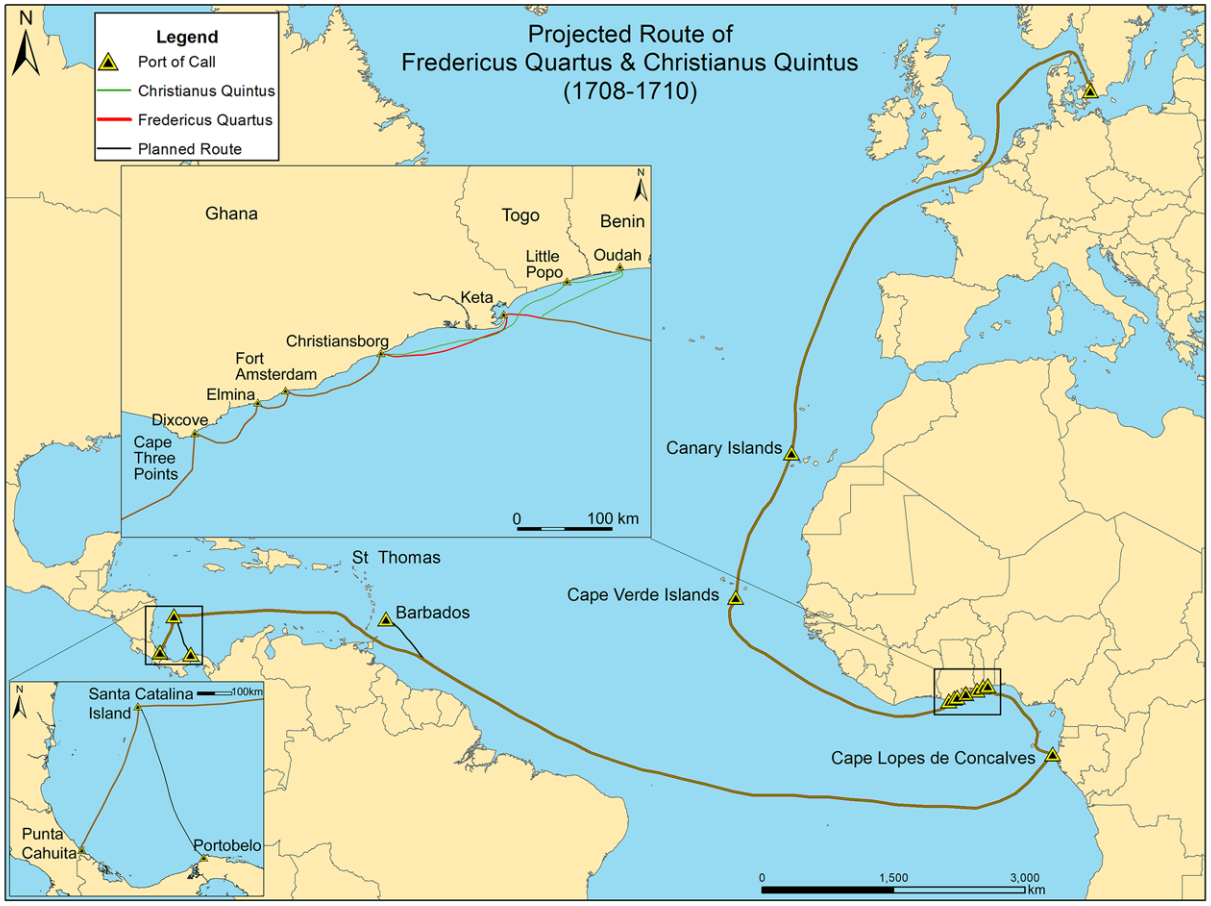

Figure 8. Projected voyage route of the slave ships *Christianius Quintus* and *Fredericus Quartus* (ECU image by Jeremy Borrelli).

Holm (1978), and most recently, Kent Russell Lohse (2002, 2005a, 2005b, 2014), and the following is based on their accounts.

Historical background of the voyage

In December 1708, *Christianus Quintus* and *Fredericus Quartus* sailed from Copenhagen each carrying 24 cannon and a crew of 60 men. Both vessels were heavily loaded with typical cargoes intended for the African slave trade such as cloth, metal goods, and weapons, as well as materials, such as bricks and boards for building and repairing Danish forts. The initial cargo of *Fredericus Quartus* included 30 chests of sheets, eight chests of guns, two casks of knives, 522 bars of Norwegian iron, 648 bars of Swedish iron, and 19 cases of gifts, including large quantities of currency, such as cowrie shells stowed in barrels and copper bangles (manillas), to sell or trade. Some of these items would have had secondary uses, for example, bed sheets were worn as clothing items, while iron bars could be refashioned into tools and weapons by blacksmiths (Alpern 1995: 11, 18). The ships also carried about 28,000 pounds of bread and 22 hogsheads of salted pork for crew consumption (Holm, 1978: 183; Alpern, 1995: 11, 36; Lohse, 2014: 17).

Upon reaching the north-western slaving coast of Africa, the ships visited several ports along the Gold Coast and Bight of Benin to unload cargoes and conduct financial transactions for slaves and ivory (Fig. 8) (Lohse, 2005: 21, 32, 43; Transatlantic Slave Database Voyages, 2009). Tragedy struck the crew of *Christianus Quintus* at Little Popo. During loading operations, a canoe capsized in the surf, killing the captain and three other crew members. The first mate died shortly afterwards of a tropical illness. This left the command of the ship to second mate, Anders Pedersen Waeroe (Holm, 1978: 183). *Fredericus Quartus,* captained by Dirk Fijfe, also encountered challenges. As more slaves boarded in Keta, the ship's stores were depleted. The slaves became malnourished and restless and, on the night of 13–14 September 1709, broke free of their shackles and attacked their captors on the main deck. The rebellion was quickly quelled, and the leaders of the mutiny were publicly executed on board the ship. *Fredericus Quartus*, loaded with about 450 slaves and 8000lbs of elephant tusks finally re-joined *Christianus Quintus* and departed the Slave Coast in October 1709 with the intention of landing cargoes at St Thomas, one of the Virgin Islands in the Caribbean (Holm, 1978: 183–184; Justesen, 2005: 223).

The strong trade winds along the West African coastline pushed the two slave ships toward the Bight of Biafra and Cameroon. During this time, *Christianus Quintus* and *Fredericus Quartus* passed by the Portuguese islands of São Tomé and Príncipe, but were unable to stop due to poor weather conditions. Instead, the ships called at Cape Lopes de Consalvis. The crew could not acquire many supplies, and soon heard that France and Denmark were at war. Cape Lopes belonged to France so the captains decided to head directly toward the West Indies, despite dwindling rations. Both vessels lost slaves and crew to disease and malnutrition. Fearing further rebellions, the captains of the two slave ships sailed close together throughout the voyage. Both ships missed Barbados by three degrees to the south. The crew were confused about location and concerned about the small quantity of remaining food. Upon arrival in the Caribbean, they landed on St Catalina Island, 300 miles away from St Thomas, the original destination for the cargo. After realizing their navigational errors and accepting that they could not return to St Thomas given their lack of supplies, the captains decided to proceed to Portobelo, Panama, in an attempt to sell their remaining slaves and to acquire supplies (Holm, 1978: 184–185; Justesen, 2005: 231; Lohse, 2005: 147).

When the two ships approached Portobelo, the crew encountered a heavy storm forcing an unanticipated landing 500 miles away on a shoreline that they believed to be Punto Caretto in Nicaragua (Norregaard, 1948: 81). Holm (1978: 185) and Lohse (2005b: 132) argue that the name of the point or peninsula was misinterpreted and rather corresponds with the location of Punta Cahuita, Costa Rica. A Jamaican fisherman piloted the captains to Cahuita Bay where the ships anchored. The anxious crew confronted Captain Pfieff and demanded slaves be released so the rest of the food could be divided among them. When the captain denied their request, as well as their subsequent demand for a month's pay, the discontents threatened mutiny. In an attempt to appease the sailors, Pfieff decided to release the slaves ashore, but at this point the crew were no longer satisfied with the captain's concessions. They broke open chests and divided the ships' gold among themselves, thereafter setting *Fredericus Quartus* alight using a pile of refuse, tar, and pitch. The boatswain of *Christianus Quintus* deposited the crew ashore and cut the anchor cable, allowing the vessel to break up in the surf. The crew hired a group of Jamaicans to transport them to Panama. Left with no other option, the captains returned to Denmark (Holm, 1978: 186; Lohse, 2005b: 136).

The Danish company soon received news that slaves escaped into the forests and later observers reported assimilation into Miskito Indian communities. Costa Rican colonists captured some of the slaves and took them to the colonial capital, Cartago, for questioning about their African origins, the voyages, and their escape from the ships. In the following months, the Royal Asiento of Panama conducted further investigations of the incidents questioning both the captains and the crew. Some 105 slaves were captured and resold to Costa Ricans at auctions. Eight years later, accusations of slave smuggling among Costa Rica settlers, added to jurisdictional disputes among colonial officials, instigated further interrogations of African-born slaves and added to the story of the two shipwrecks (Lohse, 2002: 76–77, 2005b: 136–146; 2014: 7).

Local histories of contest and assimilation

A rich oral history concerning the wreck-sites is part of community memory. In 1710, this area was an economically contested by indigenous Indians, Africans, Spanish, Creole, English, and others. Historical evidence reveals that during the colonial period, especially the late 1600s and early 1700s, Miskitos (a group of mixed ethnicity African/Indigenous Central Americans) raided, captured and traded slaves. Raiding enemies was a common occurrence and Miskito men often took enemy women as wives. Captives were also traded with English privateers and pirates in Central America in this period, often being sold to Jamaican markets (Helms, 1983: 179–181). Addressing interactions between the locals and indigenous peoples, Cahuita informants also speculated that Africans arriving in the area in this early period did not escape or flee into the Talamanca Mountains. In fact, they did not disappear from the landscape at all. Rather, they were assimilated into the present-day Bri Bri population with a matrilineal clan system. If a Bri Bri woman had a black child it belonged to the clan and was considered indigenous, not black or African, despite the father's ethnicity or skin colour (Maria Suárez Toro, 2016, pers.comm.).

These scenarios might all apply to the history of the shipwrecks, crew, slaves, and recovery of artefacts from these wrecks.

Discussion

To date, the few surface artefacts archaeologically documented on and near the two sites are not sufficient to confirm the hypothesis that these are the two slave ships. Complications include the usual post depositional factors associated with shipwrecks located in close proximity to a foreshore community such as easy salvage, artefact reuse, and site contamination. A more in-depth understanding of these events is an integral part of interpreting the sites as the project progresses. The few surface ceramics and bottles and date to a later period. Grindstones, seen on the Brick Site, are common on slave shipwreck sites, but not exclusive to the proposed vessels, or even the slave trade. The cannon, recorded on both sites, could potentially yield diagnostic data from manufacturer's marks, dates, bore diameter, and locations of features such as trunnions and reinforcing rings. At present they

are too heavily encrusted with marine growth to record this information and even *in situ* operations, such as the removal of concretions in targeted areas, would destroy corals and expedite underwater corrosion processes. These are future management choices the Costa Rica Park Service could make with guidance from qualified archaeological conservators.

An examination of the historical and archaeological records for yellow bricks, found on both sites and the dominant feature of one, suggest that this vessel was from Northern Europe. There are various types of yellow-bodied bricks found in the archaeological literature that are similar to those found on the Brick Site. Gluckman originally identified them as 18th-century Dutch yellow brick (Gluckman, 1982: 465). The Danish used yellow brick for forts and warehouses in Africa and St Thomas. The bricks recorded, however, most closely resemble the smaller Danish *flensburger* type, ranging from about 210–230mm long. There is an abundance of archaeological evidence to further support the shipment of commercial ballast bricks, which is mainly demonstrated by the presence of large caches of such bricks on 16th and 17th century colonial and shipwreck sites (Forster and Higgs 1973: 29; Stenuit, 1974: 235; Becker, 1977: 112; Green, 1977: 169–172, 1986: 103, 1989: 190; Borrelli and Harris, 2016: 11).

The practice of stocking the hold with heavy, low-stowage-factor ballast bricks may have been a predetermined sacrifice, since human cargo would have been much lighter than the original outbound cargo. Bricks, while not part of the cargo traded for slaves at the Gold Coast, would have provided some profit upon arriving at the destination of St Thomas in the form of building material for the growing colony (Borrelli and Harris, 2016: 8–16). The Brick Site presents an opportunity to examine commercial ballast in regards to stowage patterns and as a means of identifying shipwreck sites.

Two shipwrecks during this period of yellow brick exportation thought to have wrecked at Punta Cahuita were the Danish slave ships *Fredericus Quartus* and *Christianus Quintus*. It is known from the historical record that both vessels were loaded with '24 cannons . . . cloth, metal goods, and weapons . . . as well as building materials, bricks, and boards to repair and enlarge Danish forts on the African coast' (Norregaard, 1948: 70). When the crews of each vessel mutinied, *Fredericus Quartus* was burned to the waterline and left to the elements. This type of non-violent deposition is consistent with the buoyant hull site pattern for the Brick Site. The lack of visible hull remains is indicative that the vessel was likely made of wood, some of which may still be intact underneath the pile of bricks. *Christianus Quintus* was moved or anchor kedged closer to shore to allow the crew to disembark and abandoned to break up in the surf. This is more consistent with the Cannon Site and the location of the anchors.

Slave-ship research and assemblages

Published slave shipwreck archaeological investigations or searches include *Meermin* (1766), *Henrietta Marie* (1700), *Fredensborg* (1768), *Adelaide* (1714), *Guerrero* (1827), and most recently, *São José-Paquete de Africa* (1794) (Svalesen, 1995, 2000; Moore and Malcolm, 2008; Webster, 2008a, 2008b; Handler, 2009; Swanson, 2010). Vessels, such as *Whydah* (1717), *La Concorde* (1717), and *James Matthews* (1841) were not working slavers at time of wrecking and have a more limited capacity to yield much about their an earlier roles as human cargo carriers (Barker and Henderson, 1979; Elia, 1992; Moore, 2001). Some 18th-century sites, with identities yet to be confirmed, have yielded substantive slave-trade artefact assemblages. Two examples are the Manilla shipwreck in Bermuda (Karklins, 1991; Smith and Maxwell, 2002) and the Elmina wreck in Ghana (Cook, 2012; Cook *et al.*, 2016). Both sites lack significant ship structure on the surface of the seabed. The Elmina hull structure was identified within sediment coring methodologies and the burned wood sample analyses provided a date range for the wreck. The Elmina wreck proved equally archaeologically problematic in gathering any diagnostic details from the encrusted cannon. Some clusters of manillas were embedded in or under the cannon concretions (Cook, 2012: 206, 241–243).

More material evidence is required to prove the hypothesis that the wrecks at Cahuita Point are those of the *Christianius Quintus* and *Fredericus Quartus.* If so proved, the sites will be two of the few ships in the archaeological record wrecked while on the outward voyage carrying slaves aboard. The Danish West India and Guinea Company was reorganized under a new charter in 1697 and ships were fitted out for the slave trade by their wealthy shareholders. From 1697, the company only owned 20 ships and at least eight were lost, including *Fredericus Quartus* and *Christianus Quintus*. It is probable that some trade cargo items, leftover from buying slaves in Africa, remained on board the vessels when they sunk. In addition, the ships are recorded as carrying complementary financial assets in the form of cargoes of ivory, gold, building materials such as bricks, and metal supplies crucial for Danish settlements in African and Caribbean outposts, such as St Thomas. These cargoes also offset the risk of loss of profit from slave mortality. Generally, cargoes that reached St Thomas, which served as the West Indies' entrepôt, were sold in small lots, both to government officials and other Atlantic World traders. According to correspondence from the Board of Police and Trade in Copenhagen, cargoes included local supplies for St Thomas and listed in one example: 'Bricks, klinkers, Norwegian planks, rope, pitch and tar, copper work such as sugar kettles, Silesian linen, grindstones, Lubeck beer and iron' (Westergaard, 1917: 147, 150, 152, 321, 180, 313). More lucrative cargoes included ivory to be resold to other Europeans and used for diverse products ranging from intricately

carved crucifixes, plaques, portrait medallions, and statues or decorative treatments for furniture, coffins, large chests, and mirror frames, for example. Researchers found grindstones, hippo and elephant ivory on 18th-century Danish slave-ship *Fredensborg* (Webster, 2008: 11–12), and ivory is listed among the cargo transported on the *Fredericus Quartus* and *Christianus Quintus*.

What other artefacts recovered on the two Costa Rica sites, or reported as removed from the site are common to other slave-ship assemblages? Diagnostic items described as part of the cargo of *Christianus Quintus* are also listed in Gluckman's report on the Point Cahuita sites, such as manillas and a barrel of cowries (1982: 465–467). European traders purchased slaves with cowries, bracelets, and iron bars, but also a complicated combination of textiles, firearms, household goods, tobacco and alcohol. Cowries (*Cypraea moneta*) from the Maldive Islands, were used in Benin, Yorubaland, and the Slave Coast. In the slaving kingdom of Dahomey cowrie shells served as the only form of currency, in addition to ornamentation uses (Alpern, 1995: 24). Thirty-two cowries were embedded in iron concretions recovered from the Elmina wreck in Ghana, an archaeological project that yielded a rich assemblage representative of the West African market (Cook, 2012: 204).

An assemblage of manillas was recovered from the aptly named Manilla shipwreck in Bermuda, believed to be a candidate for the French ship *Amazon* (1739) possibly smuggling slave-trade goods to the island (Smith and Maxwell, 2002: 81). Archaeologists from Syracuse University conducted a comprehensive study of 44 manillas from the Elmina wreck in Ghana (Cook, 2012: 175–176). The bracelets or rings called manillas were among the first European goods traded in the late 15th century and continued to be imported when the slave trade ended in the 19th century. Until the late 17th century, not all the manillas came from Europe. A small number were made in the Congo/Angola region from local copper ore. Although originally intended to encircle arms or legs, manillas tended to become smaller and serve less as ornaments and more frequently as currency, or as a source of metal for African smiths to recycle. Alpern (1995: 13) notes that the manillas of the mid 1500s were 8½ inches wide and 10oz in weight and by the end of the trade in Nigeria were 2½ inches across and 3oz in weight. By the 16th century, manillas were made from lead, pewter, iron, and tin, and various combinations of alloys, as well as the usual brass and copper. Community testimonies and artefact collections, old photographs, newspaper articles, and the park service reports all attest to the presence and recovery of manillas in the Cahuita Bay through time.

The kettle on the Brick Site could be an item associated with a slave-trade ship. Various pewterware artefacts such as tankards, plates, spoons and basins were recovered from slave-ship *Henrietta Marie* (Moore and Malcolm, 2008: 31–33), the Elmina wreck (Cook, 1997: 192), and a Dutch frigate *Utrecht* lost off Brazil (Barkin, 1987: 25, 71). Alternatively, if the kettle is determined to be aluminium with X-ray Fluorescence analysis, rather than pewter or tin, there are several possible reasons as to why it could be on the site. The site is very close to the historic town at Punta Cahuita where the shoreline was described as much closer to the wreck in years past. Another possible explanation is as marine debris from shipping activities in the area.

The Lighthouse Maritime Archaeology Program (LAMP), St Augustine, Florida, found a kettle on the site of the mid 18th-century Storm Wreck in 2012. This kettle was cast iron, and likely intended mostly for boiling and pouring water. Similarly to the kettle recovered from the Cahuita site, LAMP archaeologists are uncertain as to whether or not the kettle may have been part of the ship's regular cooking materials, or part of the cargo (LAMP, 2017).

Future research

The goal for the forthcoming fieldwork seasons are systematic surveys in the area between the two wreck-sites and around Punta Cahuita to locate associated cultural material. Excavation of the extensive brick pile would be necessary to confirm the evidence of ship structure and to find artefacts from the ship that can be more precisely dated in the strata below. More *in situ* diagnostic artefacts may further confirm or refute a slave-ship site identity, facilitating more substantive research related to the role of the two ships as human cargo carriers or directing research toward other candidates.

Other future goals related to the wider project are a survey of 19th-century Punta Cahuita town with underwater and terrestrial operations. A 3D reconstruction of the area using the bathymetry, from the Brick Site to shore, merged with 3D models or LiDAR of present-day 'above water' Punta Cahuita, and of the old township through time, would be included. The project team would extend work to the shoreline and include the old settlement sites with pilings representing the core of a commercial centre, and the digital humanities approach of visualizing what has happened around the Brick Site over time.

At present, the lack of a waterlogged artefact conservation facility in Costa Rica limits object recovery and therefore the goal will be to locate diagnostic artefacts to answer specific research questions. The artefacts will either be documented and remain on the site or temporarily recovered for photography, 3D recording, and X-rays. A challenge to this project is balancing a research agenda with maintaining the sites *in situ* as park monuments, educational resources, marine-life substrates, and tourism investments for local snorkelling group outfitters.

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