Archaeological Desk-based Assessment and Diving Survey, Proposed Guyeau Marina Location, St. Eustatius, Caribbean Netherlands

SECAR

Excavating the Caribbean's “Historical Gem”

The St. Eustatius Center for Archaeological Research

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1. Introduction

In November 2017, the St. Eustatius Center for Archaeological Research was contacted by Robert Proper and asked to carry out an archaeological investigation at the location of a proposed marina on the eastern coast of St. Eustatius.

As the construction of the marina will involve activities that disturb the sea floor and can have a negative effect on archaeological remains that might be present in the area, the Wet Maritiem Beheer BES requires an archaeological assessment to take place prior to granting a building permit. In the Wet Maritiem Beheer BES, maritime archaeological heritage is defined as “all submerged objects that are at least 50 years old and which are of general importance due to their aesthetics, their scientific value, or their cultural historical value, including areas which are of general importance due to the presence of said objects.”

The first step in the archaeological process is a desk-based assessment in which an archaeological expectancy for the development area is determined based on known environmental and cultural historical data. On the basis of this data, combined with a diving survey during which all archaeological remains visible on the sea floor are mapped, the locations, nature, and extent of archaeological heritage in the development area will be determined.

1.1 Development plan
The marina is part of a larger plan to develop the Guyeau Estate property into a hotel, luxurious villas, and various amenities. The marina can be used for ships up to 60 feet in length and several larger vessels. At the northernmost tip of the marina, a helipad is envisioned as well. As extensive dredging has to be performed prior to the construction of the marina, and large rocks will have to be placed on the sea floor to create a breakwater, archaeological remains in the area will be negatively affected.

1.2 Research area
The research area is located on the southeastern shore of St. Eustatius, approximately 600 meters north of Corre Corre Bay. Due to possible impact on maritime archaeological remains bordering the research area by dredging or other activities, it was decided to include a 100 meter perimeter around the development area into the research area. The research area comprised a total area of 142,519 m².
Figure 1. Proposed Guyeau development. Source: Robert Proper.

Figure 2. St. Eustatius as seen from the southeast. The research area is marked by the red arrow.
2. Environmental and cultural historical setting

2.1 Geology and geomorphology
St. Eustatius is located in the active, inner arc of the Leeward Islands and measures 8 x 4 kilometers at its widest points. It lies on a continuous submarine bank that also contains the islands of St. Kitts and Nevis (Roobol & Smith 2004:99). The island’s topography is dominated by two volcanic areas. The Quill, a morphologically young, dormant stratovolcano, comprises the southern part of the island. The Quill began forming between 40,000 and 50,000 years ago. Its last eruption dates to around 1600 BP (Roobol & Smith 2004:104). The Quill is almost entirely composed of varied pyroclastic deposits.

The research area is situated adjacent to the Quill volcano. Multiple volcanic episodes have created several layers of deposits which are eroding along the eastern shore, where most beaches are dominated by cobbles and boulders. The eastern shore of the island is exposed to heavy surf. The shallow benthic communities of the whole southern side of the island are located at the base of the Quill volcano and this is reflected in the benthic habitat in terms of lava fingers which are a dominant feature in this area. These lava fingers along the eastern coast are populated by a gorgonian reef up to approximately 25 m depth. From 25 m onwards, the lava fingers are overgrown principally by algae (Debrot et al. 2014:8).

St. Eustatius usually experiences a light constant northeastern trade wind averaging twenty knots. This causes the sea on the eastern side of the island to be relatively rough, with waves normally ranging between one and two meters. These crash into the shore and promote the erosion of the cliffs. Very little information is available on currents around St. Eustatius. They are likely dominated by the Caribbean current, transporting South Atlantic water through the Caribbean. Freshwater from the Amazon and Orinoco rivers is also partly directed into the Caribbean Sea. On the eastern side of the island, the flow of water is largely directed northward (Debrot et al. 2014:9).

2.2 Historical context
After a long Amerindian occupation, St. Eustatius was first permanently settled by Europeans in 1636 when the Dutch established themselves on the island’s leeward side. St. Eustatius quickly developed into a trade hub. It was not until the latter half of the eighteenth century, however, that St. Eustatius was transformed into a bustling emporium and became one of the most important trading centers in the Atlantic World. As a result, thousands of ships visited the island annually to participate in free trade (Stelten 2010). Ship arrivals on Statia increased dramatically during the mid-eighteenth century, from 1,163 in 1744 to 2,016 in 1762, and reaching its apogee of 3,551 ships in 1779 (Enthoven 2012:261; Gilmore 2013:44). It is often said that St. Eustatius’ role as the emporium of the Caribbean quickly faded after the British capture of the island in 1781, but shipping records show that trade recovered and in 1787 a total of 2,755 vessels dropped anchor in the island’s roadstead (Stelten in press). In the last decade of
the eighteenth century, however, trade activity dwindled due to trade restrictions imposed by the French occupiers. Throughout the island’s history, the main anchorage area, or roadstead, has always been located on the leeward side in front of Oranjestad (Stelten in press). Nevertheless, shipping occurred in many places around the island. Moreover, the documentary record contains many references to ships wrecked in the waters surrounding the island during hurricanes or other unfortunate events. Newspapers are an important source of information on this topic. The September 7, 1733 edition of the Pennsylvania Gazette mentions that in the summer of that year, a storm caused eighteen ships to founder or wreck against the shore, leaving the “whole sea to leeward of Statia and Saba cover’d with wrecks.” Four decades later, the same newspaper published an extract of a letter from a gentleman at St. Eustatius to his friend in New York, dated September 5, 1772:

“I am sorry by this Opportunity to have Occasion to mention to you the unfortunate Situation we are in at this Island: On the 28th of last Month, we had a violent Gale of Wind, that drove all our Shipping out of the Road, except a Spanish Sloop, from Campeachy, and a Schooner ready to sail, with a large Quantity of Fire-arms, for Margarita. A Sloop, belonging to Richard Quince Esq. of North-Carolina, which had just arrived, loaded with Lumber, and a small Vessel from Anguilla, were drove on Shore, the Vessels lost, but their Cargoes and People saved.”

Governor Jan de Windt, writing to his superiors of the West India Company about the hurricane of 1772, remarks that three days before the hurricane, several ships had already wrecked due to rough seas preceding the storm. All ships on the road then fled out to sea, but De Windt does not mention what happened to them (NA 1.05.01.02 – 629, folio 337). An article in a contemporary newspaper stated that four ships foundered while at anchor, a number of other vessels were driven ashore, and some fled to open sea (Caledonian Mercury, November 18th, 1772).

Ship logs also provide detailed accounts of the wrecking of ships around the island. The log of the Princes Royal Frederique Sophie Wilhelmine mentions the wrecking of a North American ship that was being chased by an English privateer in 1779. At the southeastern point of the island, it capsized and its cargo of tobacco, flour, bread, and tea was lost. Several small boats were sent to save the crew. A barrel of rum was salvaged two days later, but the vessel was destroyed. It most likely hit the shallow rocks close the shore at the southern side of the island and was battered by the waves. On November 29, 1789, the log of the Zeemercuur reports that a bark crashed into shore due to a lot of wind and swell, hinting at a passing storm as the culprit (NL-MdbZA_20_1405, folio 93).

Most devastating to ships were hurricanes, some of which have been described by survivors. An account of the deadliest recorded hurricane in the Caribbean, the Great Hurricane of 1780, describes the situation on St. Eustatius:
“On the 10th [October 1780] instant, at eleven in the morning, the sky on a sudden blackened all around; it looked as dismal as night, attended with the most violent rains, thunder, lightning, and wind ever before known. In the afternoon the gale increased. Seven ships were drove on shore near North Point, and dashed to pieces on the rocks; they were bound for Europe, and every soul, officers and men, perished. Nineteen other ships cut their cables, and stood to sea; only one of which is returned, in a most dismal situation. We fear others have not weathered the storm.” (Fowler 1781:71)

Twelve years later during another hurricane, five ships wrecked around the island:

“Captain Saltus, of the sloop Mary, who arrived here last week from St. Kitts and St. Eustatia, brings accounts of a very severe gale of wind, which came on the first of the present month, at four o’clock p.m. the wind looked from east, to N.N.E., beginning to blow a hurricane. [....] At St. Eustatia, a Dutch ship, with 500 hogsheads of sugar, was driven on shore, and lost, the people saved; also went on shore, an American sloop and two English vessels. On the 2nd of August, a brig in putting to sea went on shore on the west side of St. Eustatia, her crew all perished.” (The New-York magazine 1792:574)

Sometimes ships were intentionally sunk, or scuttled. In 1828, Thomas Harper described a situation in which a ship was brought onto the roadstead as a prize. Several boatloads of goods were taken off the ship, after which it disappeared. It was said that the ship was sunk (Wood 1830:25). Various other accounts do not specify the reasons for wrecking, but these are interesting nonetheless. In 1758, the Italian merchantman Duke Compagni had just weighed anchor when she was wrecked in an attempt to round the northern side of the island. The ship was carrying several chests of silver coins, most of which were salvaged. All crew survived the wrecking as well (Marx 1987:264). It is likely that the Duke Compagni was wrecked due to a navigational error rather than a storm. During a storm or hurricane, it was usually impossible to salvage the cargo, and many sailors would drown in the violent sea. This is particularly true for the northern side of the island, where high waves crash onto steep cliff during storms, causing ships to shatter to pieces and crews to perish. The fact that the wrecking of the Duke Compagni seems to have happened on a clear day points to a navigational error.

Despite its focus on international trade, the island’s countryside was littered with sugar plantations in colonial times. Here, illegally imported raw sugar was refined and provisions were grown for the island’s population. Cartographic evidence indicates that the terrestrial area bordering the research area has been occupied by plantations where sugar and provisions were cultivated since at least the early eighteenth century, but most likely already in the seventeenth century. Neither historical maps
nor other documentary evidence indicates that a settlement, harbor, or roadstead was ever present in or near the research area.

2.3 Archaeological context
The numerous wrecking events as described in the documentary record have left an extensive material reflection on the sea floor. In 1986, archaeologists from the College of William & Mary and East Carolina University conducted a magnetometer survey of approximately 2.5 km² in Oranje Bay and Gallows Bay. The magnetometer identified magnetic signatures generated by iron artifacts on the sea floor, and in this way the locations of two shipwreck sites were determined (Bequette 1986). Two other shipwrecks were located during visual surveys of the harbor area. Documentation and excavation of the wreck sites was conducted in 1987 and 1988 (Bequette 1992). All four shipwreck sites are similar in appearance in that they consist of piles of ballast stones that are completely overgrown with a variety of sponges and corals and inhabited by large numbers of fish and invertebrates. Most wood has been completely destroyed by shipworm (*Teredo navalis*), a species of saltwater clam that is notorious for burrowing through submerged wood. Test trenches around the wreck sites produced many artifacts that shed light on the age and nature of the vessels. Underneath the ballast piles, wooden hull remains were found as well. During these campaigns, no research was conducted on the east coast of St. Eustatius.
In 2014 and 2015, the author conducted an extensive underwater archaeological survey around the island in order to determine the location and extent of the historical roadstead in front of Oranjestad, and to find evidence of shipwrecks in other areas. It became clear that many artifacts are still present in the historical anchorage area. The author also documented a total of 43 anchors around the island, most of which were located on lava flows in the roadstead. Fishermen reported three anchors present on the island’s east coast: two at Corre Corre and one at the shallow rocks at English Quarter. After an extensive search, only one anchor was located during a U-pattern survey in the shallows at Corre Corre. This anchor was found directly in front of Corre Corre battery at a distance of 150 meters from shore at a depth of four meters. It is resting on a rocky bottom with no archaeological remains in the vicinity. The anchor’s length of 312 centimeters indicates it was used by a large vessel which may have run aground here. When ships ran aground, heavy objects such as cannon and anchors were often jettisoned to decrease draft and free the vessel.
Figure 5. The author documenting the anchor at Corre Corre Bay in 2014. This anchor is located 1,200 meters south of the research area. Photo by Mike Harterink.

2.3 Archaeological expectancy

The research area and the area bordering it have never served as a common anchoring ground, nor has a settlement ever been located here. On the terrestrial side, the research area is bordered by a steep cliff approximately 30 meters high, on which a sugar plantation was located that was in operation from at least the early eighteenth century to the early nineteenth century. The surf area is littered with large boulders. As this is the windward side of the island, rough seas are common and large waves continually crash into shore here. These circumstances make it unlikely that much, if any, deliberate maritime activity has ever taken place in the research area. Nevertheless, the documentary record indicates that dozens, if not hundreds, of ships have wrecked around St. Eustatius during colonial times. Given the frequency of tropical storms and hurricanes on and around St. Eustatius, and the catastrophic effect these events had on ships, it is not unlikely that vessels wrecked in the research area as well. Moreover, a historic anchor was found 1,200 meters south of the research area in front of Corre Corre Bay which is likely indicative of a ship that wrecked or ran aground.

Taking the above into consideration, the research area can be classified as having a low archaeological expectancy for remains relating to a roadstead, docks, piers, or other coastal structures,
and a medium archaeological expectancy for shipwreck remains. If present, these remains most likely manifest themselves in the form of ballast piles surrounded by non-perishable artifacts such as cannons, anchors, barrel hoops, ballast bricks, ceramics, and glass. Due to strong wave action, remains close to shore and/or in shallow water are expected to be in a bad state of preservation, while remains further offshore and/or in deeper water are expected to be in a better state of preservation. Based on the previous discovery of a historic anchor at Corre Corre, large ferrous objects such as cannons and anchors are expected to be well preserved throughout the research area. Organic materials such as wood are expected to be absent due to the effects of the shipworm (*Teredo navalis*), except underneath ballast piles where wooden hull remains might be present. It is expected that the integrity of shipwreck sites is greatest in the deeper area furthest offshore, where wave action is limited.
3. Archaeological SCUBA diving and snorkeling survey

3.1 Introduction
Based on the desk-based assessment, the research area has a medium archaeological expectancy for the presence of shipwrecks and associated remains. Therefore, a SCUBA diving and snorkeling survey was conducted by a team of two SECAR archaeologists in order to visually inspect the entire research area and a 100 meter perimeter to determine the nature, age, and extent of archaeological remains present here.

Transects were dived at regular intervals in a southeast to northwest direction (Figure 6). Due to strong surge and limited visibility, one transect was executed at a slightly different angle. Divers swam two meters above the sea floor and within visual distance of each other to maximize the area to be surveyed. Videos were recorded with an Olympus EM-1mkII camera with 8mm fisheye lens in 4K resolution (3840x2160 at 30 fps). The survey took place between December 15 and 21, 2017. The vessel Yellow Boat (NE33) from Scubaqua Dive Center was used to carry out the research. Divers started the transects at predetermined GPS locations. At the end of a transect, a surface marker buoy was inflated by the divers and the captain of the vessel marked the GPS location of this buoy. The very shallow areas close to shore were surveyed from the surface by snorkeling.

Figure 6. SCUBA diving and snorkeling transects.
3.2 Results
The development area and a 100 meter perimeter were surveyed completely in nine SCUBA diving transects and two snorkel transects. With the exception of several sandy patches, the sea floor was found to be rocky throughout the research area. Large boulders up to four meters in diameter, remaining from the erosion of the cliffs, were found across the research area. Depths ranged from two meters close to shore to thirteen meters at the northernmost extremity. Several modern artifacts were encountered during the SCUBA diving survey, including an anchor made of rebar, two disintegrated fish traps, a metal scaffolding post, and a two meter long piece of metal sheet. These objects point to the modern-day use of the research area as a fishing ground by local fishermen and possibly a place to dispose of trash. No archaeological remains were encountered in the research area.

3.3 Recommendations
Based on the desk-based assessment, the research area had a medium archaeological expectancy for shipwreck remains. During the SCUBA diving and snorkeling survey no archaeological remains were encountered in the research area. Given the fact that an estimated 90% of the research area’s sea floor has a rocky composition, if shipwreck remains had been present, these would have been detected during the survey. As no archaeological remains were found, further archaeological research is not recommended prior to the construction of the proposed marina.
Figure 7. Most common sea floor composition in the deeper part of the research area: many soft corals on a rocky sea floor and large boulders.

Figure 8. Sea floor composition around the location of the proposed helipad: a higher elevation reef with sponges, soft, and hard corals.
Figure 9. Modern anchor frequently used by local fishermen, found near the end of transect 6.

Figure 10. Approximately two meter long metal plate, found shortly after the start of transect 5.
Figure 11. Remains of a fish trap found at the end of transect 5.
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