

**ARCHAEOLOGY OF PIRACY BETWEEN CARIBBEAN SEA AND THE
NORTH AMERICAN COAST OF 17TH AND 18TH CENTURIES:
SHIPWRECKS, MATERIAL CULTURE AND TERRESTRIAL
PERSPECTIVES**

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The archaeology of piracy in the 17th and 18th centuries remains a poorly developed discipline in the world. American universities in connection with local authorities were the first to fund and support such research programs on the east coast of the United States and the Caribbean. The study of the shipwreck of the pirate Edward Teach (Blackbeard), the Queen Anne's Revenge 1718, is a very good example of this success. However, a work of crossing archaeological data deserves to be carried out for all the sites brought to light, in particular in the Caribbean area, on the North American coast, without forgetting the Indian Ocean. The synthetic work of Charles R. Ewen and Russell K. Skowronek published in 2006 and 2016 by the University of Florida is an important first step. They treat shipwrecks as well as land occupations, and go back for a long time on the perceived ideas related to the true image of Pirates. However, there is a lack of material culture studies from these sites probably related to the lack of scientific publications of these objects. French archaeology is now interested in these issues and is beginning to organize archaeological missions to study artifacts and conduct underwater archaeology surveys and excavations, dominant in this discipline. This article makes a state of the archaeology of piracy in the geographical area mentioned and tries to develop a synthesis of the study of artifacts in connection with the presentation of future research to be conducted in Santo Domingo, in the West Indies as well as in the Indian Ocean.

L'archéologie de la piraterie des XVIIe-XVIIIe siècles reste une discipline peu développée dans le monde. Les universités américaines en lien avec les autorités locales ont été les premières à fédérer des programmes de recherche sur la côte est des Etats-Unis et dans les Caraïbes. L'étude de l'épave du pirate Edward Teach (Barbe Noire), le Queen Anne's Revenge 1718, est un très bel exemple de cette réussite. Cependant, un travail de croisement des données archéologiques mérite d'être effectué pour tous les sites mis au jour, en particulier dans l'espace caribéen, sur la côte nord-américaine, sans oublier l'océan Indien. Les travaux de synthèse de Charles R. Ewen et Russell K. Skowronek publiés en 2006 et 2016 par l'Université de Floride représentent une première étape importante. Ils traitent autant des épaves que des occupations terrestres, et reviennent longuement sur les idées reçues liées à la figure du Pirate. Cependant, on constate l'absence d'études de la culture matérielle provenant de ces sites probablement en lien avec le manque de publications scientifiques de ces objets. L'archéologie française s'intéresse désormais à ces problématiques et commence à monter des missions archéologiques d'étude du mobilier et de terrain afin de prendre le relais de l'archéologie subaquatique, dominante dans cette discipline. Cet article fait un état de l'archéologie de la piraterie dans le secteur géographique évoqué et tente d'élaborer une synthèse de l'étude du mobilier en lien avec la présentation des futures recherches qui vont être menées à Saint-Domingue, dans les Petites Antilles et dans l'océan Indien.

La arqueología de la piratería en los siglos XVII y XVIII sigue siendo una disciplina poco desarrollada en el mundo. Las universidades estadounidenses relacionadas con las autoridades locales fueron las primeras en federar programas de investigación en la costa este de los Estados Unidos y el Caribe. El estudio del naufragio del pirata Edward Teach (Blackbeard), el Queen Anne's Revenge 1718, es un muy buen ejemplo de este éxito. Sin embargo, un trabajo de cruce de datos arqueológicos merece ser llevado a cabo para todos los sitios sacados a la luz, en particular en el espacio del Caribe, en la costa de América del Norte, sin olvidar el Océano Índico. El trabajo sintético de Charles R. Ewen y Russell K. Skowronek publicado en 2006 y 2016 por la Universidad de Florida es un primer paso importante. Tratan tanto los pecios como las ocupaciones de la tierra, y regresan durante mucho tiempo a las ideas recibidas relacionadas con la figura del pirata. Sin embargo, hay una falta de estudios de cultura material de estos sitios probablemente relacionados con la falta de publicaciones científicas de estos objetos. La arqueología francesa ahora está interesada en estos temas y está comenzando a montar misiones arqueológicas para estudiar muebles y terrenos para apoderarse de la arqueología submarina, que es dominante en esta disciplina. Este artículo hace un balance de la arqueología de la piratería en el área geográfica mencionada y trata de desarrollar una síntesis del estudio de los muebles en relación con la presentación de investigaciones futuras que se realizarán en Santo Domingo, en la Pequeña Indias occidentales y en el océano indico.

Introduction

For several decades, archives and historical documents have highlighted piracy and its actors during this golden age between the 1650s and 1730s, often described as the culmination of this phenomenon along the shores of America, in the Caribbean or in the Indian Ocean. These pirates, generally of European origin, make known their malicious act in the warm waters of the West and East Indies. When most of these buccaneers remain virtually unknown, some become true emblematic and historical characters who have marked their era. Their catch, journeys, feats of arms, alliances, deaths are recounted by contemporary storytellers and writers like Daniel Defoe but also by sailors or surgeons who have rubbed shoulders like Alexandre-Olivier Oexmelin. However, the aspects of their daily life on board or on land, the detailed knowledge of their ship, their cargo and treasure, places of landing and port cities sometimes remain little mentioned in the literature, for lack of fiction, certainly, but too often far from reality. The archaeology of piracy can be a way to better understand the lifestyle of these outlaw seafarers. Not very developed in France and in Europe, this recent discipline in archaeology has led for nearly 50 years of research and archaeological excavations between the east coast of the United States, the Caribbean and the Indian Ocean. These

scientific programs bring key information to the best knowledge of these sailors, former military or merchants, having been attracted by a more independent life.

In pursuit of the University of Florida publications with the two books led by Russell Skowronek and Charles Ewen at the University Press of Florida: *X Marks the Spot - The Archaeology of Piracy* in 2006 and *Pieces of Eight - More Archaeology of Piracy* in 2016, a French-international team is developing a research program entitled *Archéologie de la Piraterie des XVII^e-XVIII^e siècles (Archaeology of Piracy in the 17th-18th centuries)*, initiated in January 2018 (**Figure 1**). This research program, which brings together French, American, Chilean, Malagasy and Mauritian archaeologists and historians, develops archaeological investigations in terrestrial and underwater contexts. In March 2019, a mission of inventory and study of artifacts from the pirate shipwreck of *Speaker*, discovered in 1979 and wrecked in 1702 on the east coast of Mauritius, took place at the Museum National History of Mahébourg (Mauritius) with the collaboration of the Mauritius Museums Council and the Mauritius Marine Conservation Society (Soulat *et al.*, 2019, forthcoming). In order to communicate on the research carried out by the various actors of the archaeology of piracy, an international scientific work in French is being published by Editions

Mergoil (Soulat director 2019, forthcoming) while a valuation review on the same theme, intended for a wider audience, was published in July 2019 (*Les Dossiers d'Archéologie*, No. 394, 2019).

Finally, a project of archaeological surveys, terrestrial and underwater, is being prepared for Sainte-Marie Island in Ambodifototra Bay in Madagascar.



Figure 1. Logo of the *Archaeology of Piracy of the 17th-18th centuries* research program (Conception J. Soulat).

1. History of the archaeology of piracy

Since the 1980s, archaeologists interested in this archaeology of piracy have been focusing on very specific issues. On the one hand, the identification of a pirate site and its definition. Of course shipwrecks come immediately to mind, but how do you recognize a pirate ship from a merchant or war ship? Several factors come into play and a multidisciplinary methodology combining the analysis of archival documentation, naval architecture and material culture today makes it easier to identify (Page, Ewen 2016: 265-269). But apart from the shipwrecks, are there several categories of pirate sites? Yes, but it has not always been easy to recognize them. Thus, among the recognized land settlements, we can evoke ephemeral coastal occupations (makeshift camps, huts, etc.), ports, smuggling zones or even places of pillage (Skowronek 2016: 8-10).

The legendary sites of Port Royal in Jamaica, Tortuga Island in Haiti and Sainte-Marie Island in Madagascar have attracted and still attract researchers. Secondary sites such as bastions and colonial fortifications may also have been confronted with piracy including regular raids. Apart from the study of sites, the analysis of material culture could be at the heart of the discipline. However, to date, this is not the case since almost no published article focuses on this issue and especially to recognize or deny the existence of a material culture specific to the practice of filibuster. Two partially studied sites are an exception. The first is Port Royal which has been the subject of many academic memoirs on material culture from the five buildings excavated during the 60s and 90s. According to Donny Hamilton, who was responsible for the 1980-1992 excavation, Port Royal is

first and foremost a commercial center that can later be described as a pirate port (Hamilton 2006a: 15). Indeed, with the exception of the remains of captured pirate ships like the *Great Ranger* of the pirate Bartholomew Roberts, nothing was found in the ruins of Port-Royal that could be attributed to privateers or acts of piracy (Skowronek 2016: 10). The second is the shipwreck of the *Queen Anne's Revenge*, ship of the pirate Edward Teach (Blackbeard), which, through the publication of a first book in 2018 on the excavation since 1996, highlights a significant part of the presentation and the analysis of discovered artifacts (Wilde-Ramsing, Carnes-McNaughton 2018: 74-165). In an article published in 2016, authors Mark U. Wilde-Ramsing and Linda F. Carnes-McNaughton focused on French-made objects from the shipwreck (Wilde-Ramsing, Carnes-McNaughton 2016).

1.1. The birth of discipline

The rarity of the works published in the archaeology of piracy in the 17th-18th centuries can be explained by three factors: the difficulty of identifying pirate sites, the youth of this discipline, which was really born in the mid-1960s, but above all the question of ethics since the folklore around the pirate and its treasure for centuries attracts shipwreck hunters and other looters in search of the loot that could offer these particular sites. As a result, this phenomenon has long distanced academics and professional archaeologists and the case of explorer and treasure hunter Barry Clifford who originated two discoveries of pirate shipwrecks in 1984 (*Whydah Galley*) and in 2010 (*Fiery Dragon*) is a living proof of this. However, from the 1960s, new discoveries made by teams of American archaeologists will succeed in de-mononizing the archaeology of piracy. The underwater excavation of a neighborhood of the pirate city of Port Royal in Jamaica, currently located in Kingston Harbor, has clearly launched the

craze in this area. Partially submerged by an earthquake and tsunami that occurred in 1692, archaeology has revealed a large part of this trading post of the 17th century. A first excavation campaign was conducted between 1966 and 1968 by Robert F. Marx for the Jamaica National Trust Commission (Marx 1967). During this search, the remains of fish and meat markets, two taverns, a shoe repair shop, a carpentry workshop and perhaps a tin or goldsmith workshop and two shipwrecks dating from the disaster of 1692 and another that would have sank in 1722 were also located in the already excavated area located along the western outskirts of the city. Between 1969 and 1972, the excavation by Philippe Mayes around the church of St. Paul (Mayes, Mayes 1972) and the excavation of Anthony Priddy on New Street (Priddy 1975) have uncovered new vestiges. These excavations in the heart of the old city plan before 1692 have left the remains of an old shipyard and the remains of a tavern. Between 1981 and 1990, two other campaigns were led by Donny Hamilton of the Institute of Nautical Archaeology (INA) of Texas A & M University (Hamilton, Woodward 1984; Hamilton 2006a and 2006b).

These archaeological digs have identified five houses and two main thoroughfares, Lime Street and Queen Street, containing a large amount of objects from the colonial era that informs the daily lives of the population living in the Caribbean. In 1982, the discovery of an unpublished plan of Port Royal dated 1724 confirms that the wreckage found in 1967 is that of the *Great Ranger* of pirate Bartholomew Roberts (Hamilton 2006a: 21-26). At that time, a limited study of the wreckage was undertaken. It was not until 2012 that a new campaign confirmed that it was the *Great Ranger*. Led by three students from Texas A & M University, the search was partially conducted due to a reduced budget and 30 days of intervention (Gulseth 2016). To date, the shipwreck has not been exhaustively searched. The work

on Port Royal is therefore the oldest underwater excavation ever carried out on a land-based pirate settlement. They have developed a real craze for American universities around the discipline as shown by the many academic publications by Texas A & M University. Through the media coverage of the Port Royal excavations, archaeology has begun to take a serious interest in these particular contexts that have also attracted many treasure hunters in search of the famous pirate shipwrecks.

Contemporary excavations of Port Royal by the INA, two discoveries of pirate shipwrecks attested by the archives and confirmed by archaeology were made during the 80s. Found and partially searched between September and December 1980 by the French team under the direction of Jacques Dumas and Patrick Lizé, the first shipwreck is the one of the *Speaker* who sank off the coast of Mauritius in 1702 (Lizé 1984, 2006). This one will be the subject of a partial search between 1990-1991 by the team of Erick Surcouf and Thierry Proust before a storm destroyed the site (Surcouf, Proust 1991). The second is that of the ship *Whydah Galley*, sunk off Cape Cod, Massachusetts, in 1717, whose remains were found on July 24, 1984 by the American team of the controversial Barry Clifford. It was formally identified by the discovery of the bell in the fall of 1985 which included the inscription THE † WHYDAH † GALLY † 1716 (Clifford, Perry 1999) (**Figure 2**). The management of the site by Barry Clifford has created many controversies and most historians and archaeologists who worked on the *Whydah* no longer collaborate with him because of ethical problems related to unscrupulous practices, between estimation of artifacts, misinterpretations and excessive media coverage (Elia 1992). Even if these two shipwrecks were discovered more than

thirty years ago, the first one has never been searched exhaustively and has been the subject of only two scientific articles (Lizé 1984, 2006) while the second was excavated entirely with very important financial means but without the application of a real archaeological protocol during the search. The absence of scientific articles or even an archaeological and synthetic monograph is quite revealing. Apart from a few scientific articles, notably that of Christopher E. Hamilton in 2006, *Whydah* is known only through popular works such as the shipwreck discovery and expedition (Clifford, Perry 1999) or the 2007 National Geographic exhibition catalog (Clifford, Kinkor 2007). Nevertheless, although incomplete, these two examples allowed the rise of the archaeology of piracy through the launch of American university projects on the search for pirate shipwrecks. After the *Whydah* excavations that ended in 1989, it took almost ten years for another famous pirate shipwreck to be unearthed. On December 17, 1996, the North Carolina Office of State Archaeology's Underwater Archaeology Branch discovered the wreckage of an unidentified ship codenamed 31CR314. Its location and the type of vessel concentrate suspicion on the French ship *La Concorde* renamed the *Queen Anne's Revenge* by the pirate Edward Teach, better known as Blackbeard, who was shipwrecked off Beaufort in 1718 in North Carolina. North (**Figure 3**). After several excavation campaigns carried out between 1997 and 2006, which excavated only 60% of the site, and the analysis of the artifacts found between 1997 and 2016, the wreckage was officially identified in 2012 by American authorities. The work around *Queen Anne's Revenge* and the creation in 2006 of a research center, the QAR Project, dedicated to the study of the shipwreck and its artifacts, led new archaeologists to become interested in this discipline.

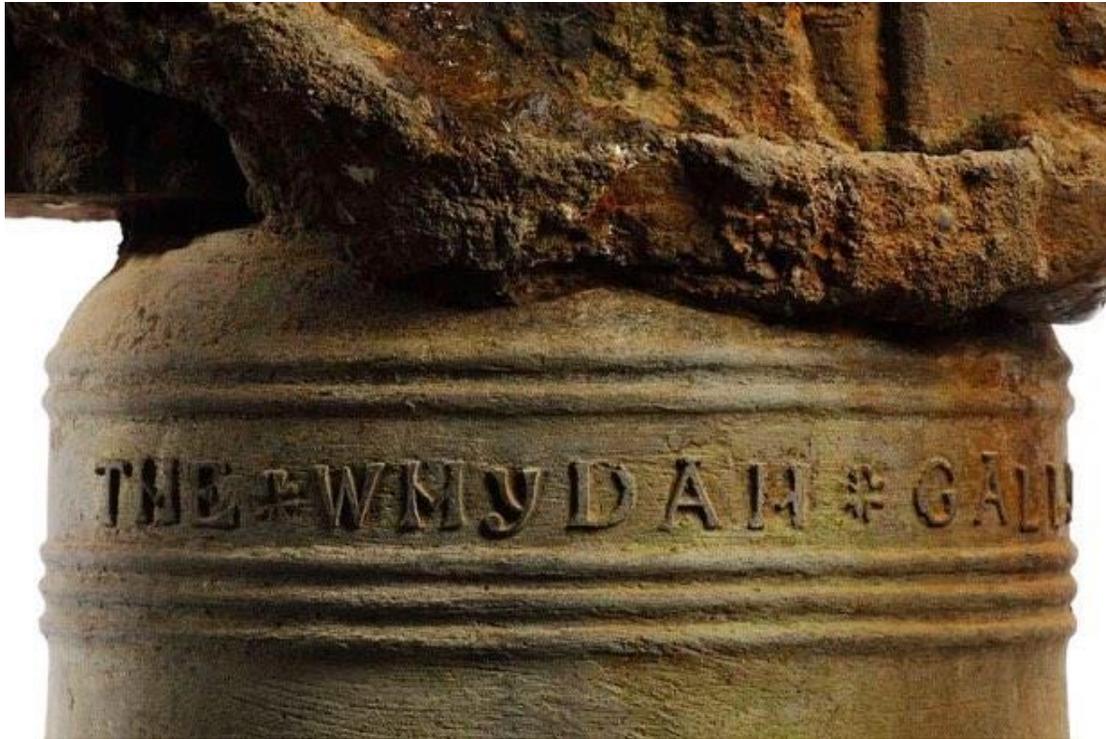


Figure 2. Bell from *Whydah Galley* (Whydah Pirate Museum / National Geographic Society).



Figure 3. Reassembled from one of *Queen Anne's Revenge* cannons (courtesy of DNCR).

1.2. *American monopoly: for better and for worse*

With the *Great Ranger* shipwrecks in Kingston Harbor/Port Royal, *Whydah Galley* off Cape Cod and *Queen Anne's Revenge* at Beaufort Inlet, as well as the establishment of Port Royal, American archaeology is seen as holding a certain monopoly on discipline while the historical treatment of this phenomenon affects many nationalities especially British, French, Spanish or Dutch. Yet tainted by the controversies surrounding Barry Clifford's explorations, the archaeology of piracy is essentially American because of the willingness of universities on the east coast of the United States to develop underwater archaeology departments, the most common natural environment for the study of pirate contexts. The best showcase for American underwater archaeology, coming out of the frame of the piracy, remains the colossal work carried out on the shipwreck of *La Belle*, a ship from Rochefort (southwestern France) part of the expedition of Robert Cavelier de La Salle lost during a storm in early January or February 1686 in Matagorda Bay, of Texas (Bruseth, Turner 2005; Bruseth *et al.*, 2017). Discovered through a research program that aimed to inventory the shipwrecks of the 16th and 18th centuries along the Texas coast, this wreckage was searched between 1995 and 1997 by professional archaeologists under the direction of James E. Bruseth of the Texas Historical Commission. Thanks to the construction of a monumental cofferdam which allowed to excavate the shipwreck under near-dry conditions. Driven by this particular case, the American development of this archaeology of underwater piracy is at the same time linked to the proximity between the universities of the east coast of the United States and the location of the sites in Caribbean space, but it is mainly carried by the underwater archaeology departments of these universities such as the Institute of Nautical Archaeology of Texas A & M University, East Carolina

University, etc. For example, the *Queen Anne's Revenge* study was initiated in 1996 by East Carolina University in association with the North Carolina Office of State Archaeology's Underwater Archaeology Branch and the North Carolina Department of Natural and Cultural Resources. In 1999, after working on the shipwreck of *Whydah*, Barry Clifford's team became interested in the pirate marker on Sainte-Marie Island, near Madagascar, precisely in the Pirate Bay, near the Isle, island near the village of Ambodifototra (**Figure 4**). The goal was to find the wrecks of the pirate William Kidd's *Adventure Galley*, and the pirate William Condon's *Fiery Dragon* aka Christopher Condent, ships wrecked in the area in the early 18th century. Disturbed by an unstable political climate, it was not until 2010 that the first prospecting campaign was put in place. Barry Clifford, accompanied by John de Bry and Marco Roling, discovers the *Fiery Dragon*, sunk in 1721, with more than 2,000 objects to be studied and analyzed (De Bry, Roling 2011). Nevertheless, the investigations seem to attest the presence of two shipwrecks one on top of another, the *Fiery Dragon* and a possible Asian prize. In 2015, a new campaign was organized to continue the excavation of the shipwreck and conduct geophysical surveys in the bay, including on the île aux Forbans (Pirate Island). It was in a 2015 campaign that an ingot, supposedly silver and marked with various symbols and numbers, was discovered and which allegedly belong to the shipwreck of the *Adventure Galley*.

An incomplete report explaining the methodology but not the results of this new campaign is online (Collective report 2017). Following the 2010 and 2015 US campaigns, a UNESCO team (STAB) led by Michel L'Hour visited the site in June 2015 to review the identification of the *Fiery Dragon* and to authenticate the *Fiery Dragon's* silver ingot (L'Hour 2015). For the latter, an analysis on the spot made it possible to show that it was a lead ingot,

and not silver, probable ballast, without a direct link with a shipwreck, even less the *Adventure Galley*. Regarding the *Fiery Dragon*, the analysis of the wood samples collected by the UNESCO team revealed that it was teak rather than oak or pine, which could indicate an Asian construction. The UNESCO mission report therefore concluded that the ship had not been manufactured in a European shipyard and was therefore unlikely to be the *Fiery Dragon*, a ship of Dutch origin. However, this statement remains open to discussion. In June 2007, Indiana Bee archaeologists under the direction of Charles Beeker, in partnership with the Children's Museum of Indianapolis and the Dominican organization Oficina Nacional de Patrimonio Cultural Subacuatico, discovered the *Quedah Merchant* pirate ship off the coast of the Dominican Republic (Beeker, Hanselmann 2009; Hanselmann, Beeker 2016). Lying under 3 m of bottom near the Catalina Island, this

ship sank in 1699 belonged to the pirate William Kidd. More recently, an American team from the River Systems Institute and the Center for Archaeological Studies of Texas State University under the direction of Frederick H. Hanselmann is working on one of the lost boats around 1671 in Panamá, which would have been one of Henry's five pirate ships. Morgan used to lead the Panamá sack (Hanselmann *et al.* 2016). Research conducted in laboratory environment revealed that the ship was in fact the *Nuestra Señora de Encarnación* sunk in 1681. It was part of the Tierra Firme fleet sailing from Cartagena (Colombia) to Portobello (Panamá). In the final analysis it is not the wreck of a pirate ship. Finally, a team of East Carolina University archaeologists led by Bradley Rodgers has been conducting research since 2017 on the shipwreck of an alleged Dutch pirate vessel or privateer ship that was wrecked in Bermuda in 1619 (Press article).



Source gallica.bnf.fr / Bibliothèque nationale de France

Figure 4. Map of the Port of Sainte-Marie Island of Madagascar (Reynaud), 1733, GE SH 18 PF 217 DIV 8 P 2/1 (Bibliothèque nationale de France).

This American monopoly obviously translates into the media coverage of these archaeological sites through National Geographic and Discovery Channel documentaries, but also through academic publications such as the University Press of Florida or the University of North Carolina Press. Two collector-led collective books were both led by Russell Skowronek and Charles Ewen at the University Press of Florida: *X Marks the Spot - The Archaeology of Piracy* in 2006 and *Pieces of Eight - More Archaeology of Piracy* in 2016. The publication of 2006 is to be considered as the first collective work of synthesis which gathers contributions on the archaeology of the piracy. Thanks to Skowronek and Ewen, the archaeology of piracy makes it possible to visualize the different types of existing sites, from land settlements (ephemeral coastal occupations, ports, smuggling areas or places of pillage) to shipwrecks. The book is divided into three parts according to the proposed articles: the Pirates Lairs, the pirate ships and their prizes, and the parallel between the fiction and the reality. Regarding the 2016 book, these three parts were not kept. Emphasis was placed on investigating pirate shipwrecks, on pirate folklore and archaeology, and on methodology for identifying pirate sites. In 2007, National Geographic showcases the discoveries from the *Whydah* shipwreck dig. Under the direction of Barry Clifford, excavator, a museum was inaugurated on Cape Cod and an exhibition catalog titled *Real Pirates: The Untold Story of the Whydah from Slave Ship to Pirate Ship, 1717* was published. However, the scientific contribution of the book is of limited scope since no information on the conduct of the search or on these results are present. The catalog is satisfied to show the photographs of about fifty objects out of 200,000 discovered without giving any details. Finally, published in 2018 by Mark U. Wilde-Ramsing and Linda F. Carnes-McNaughton at the University of North Carolina Press, a scientific work is

dedicated to the excavations of the shipwreck of *Queen Anne's Revenge*. The emphasis is deliberately placed on discovery and excavation methods while a large part of the book is devoted to the study of artifacts with comparative analysis. The book appears both as a scientific production while remaining accessible to a wide audience. In August 2019 a book by archaeologist Frederick H. Hanselmann on research conducted on the *Quedah Merchant*, last ship of the pirate William Kidd sunk in 1699 off the coast of the Dominican Republic, has been published (Hanselmann 2019).

2. Discoveries of pirate shipwrecks between Caribbean Sea and the North American Coast

Among the pirate sites proven by archaeology, shipwrecks appear to be the most convincing. Even if the sample remains rather weak with less than half a dozen shipwrecks identified for the golden age of piracy, between 1650 and 1730, it is these time capsules that will be the most telling. Their identification is of course linked to a comprehensive review of archival documentation and stories of seafarers according to the geographical area targeted. These shipwrecks are scattered in a fairly wide area stretching from Cape Cod in Massachusetts on the east coast of the United States to Mauritius in the Indian Ocean, passing of course by the Caribbean. Nevertheless, other potential sectors could soon see the day with the discovery of new wrecks in South America, precisely in the Strait of Magellan, or along the French Atlantic coasts.

Four pirate shipwrecks are concentrated between the east coast of the United States and the Caribbean (**Figure 5**). These ships were wrecked in a rather short chronological space, under thirty years, between the years 1699 and 1722. They are all associated with a pirate famous for his misdeeds: Scottish pirate captain William Kidd who abandoned in

1699 the *Quedah Merchant* near the port of Santo Domingo in Hispaniola (Dominican Republic), pirate captain Samuel Bellamy also known as Black Sam and his ship, the *Whydah Galley*, which sank off Cape Cod in 1717, the famous Edward Teach nicknamed Blackbeard and his *Queen*

Anne's Revenge scuttled in Beaufort Bay, North Carolina in 1718 or Bartholomew Roberts and his ship the *Great Ranger* sank in Port Royal Bay in Jamaica in 1722, following a hurricane that place shortly after arriving in the harbor.

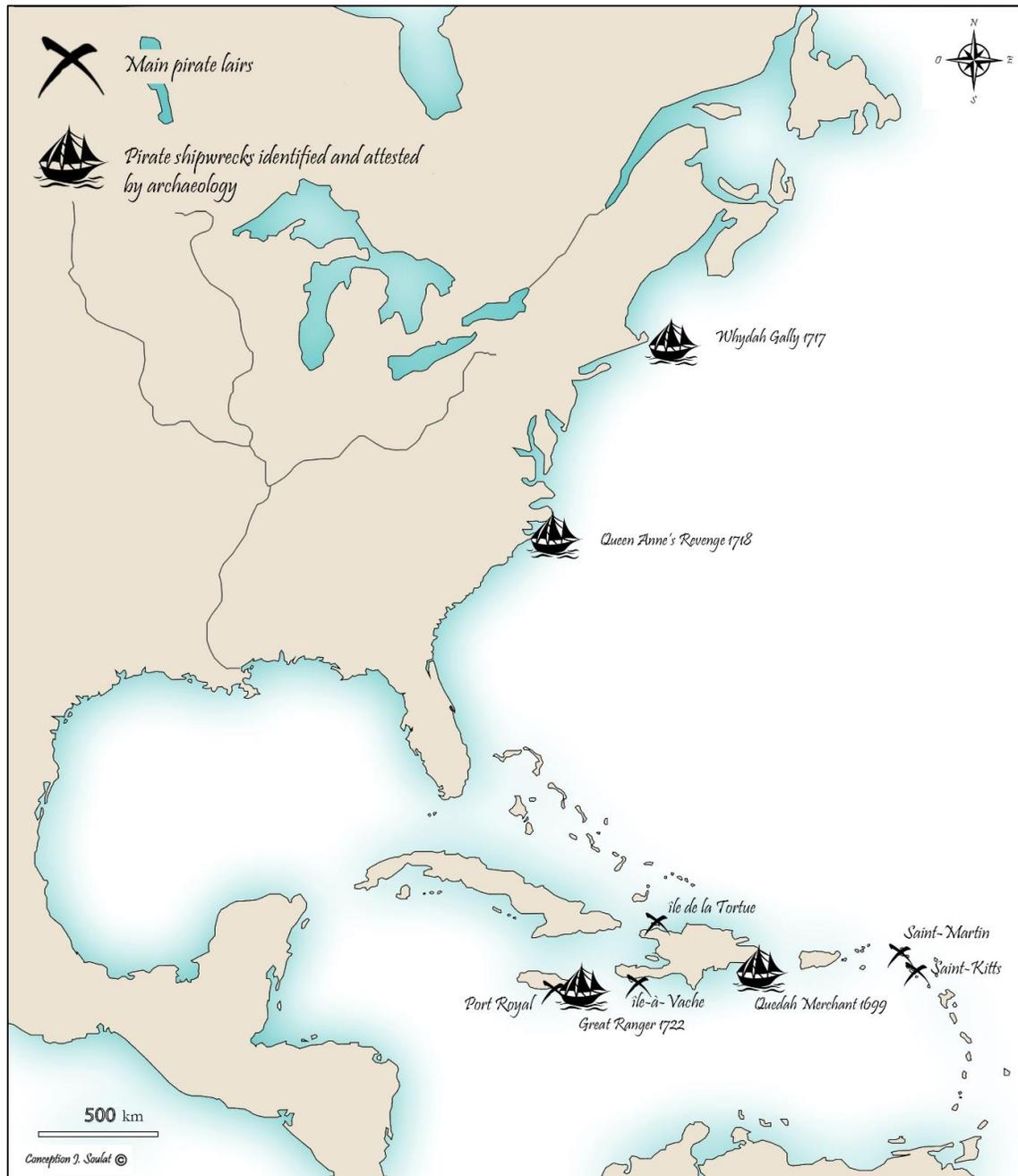


Figure 5. Location map of pirate shipwrecks identified and attested by archaeology (map by J. Soulat).

The analysis of these different contexts is an opportunity to understand the history of each shipwreck through the career of these pirates. The location and the comparative study of these archaeological sites using the site plans of the remains allows to visualize the conservation of the structure of the ship, the distinction of the artillery and the distribution of the artifacts within the shipwreck by functional categories while studying its quantitative representation. Searches are based on existing documentation and therefore depend on the accessibility of bibliographic references. For *Quedah Merchant* and the *Great Ranger*, access to search reports was not possible. The information is therefore based solely on published articles. For *Whydah Galley*, information relating to the discovery and excavation of the wreckage has been published several times and the excavation report has been consulted. Finally, for *Queen Anne's Revenge*, the synthesis builds on the many existing publications and reports available on the QAR Project website.

2.1. *Quedah Merchant* 1699 (Catalina Island, Dominican Republic)

To fully understand the story of *the Quedah Merchant* or *Cara Merchant*, it is necessary to reconsider the story of the famous Scottish pirate William Kidd who started in London in 1695. Kidd set up a company involving Lord Bellomont, an important colonial merchant who soon became the governor New York and Massachusetts. William III would also have been involved as stipulated by Kidd's letter of Mark bearing the King's seal. Kidd, backed by his investors, had to hunt and then capture pirates and enemy ships, with profits from loot spread among the crew members and, naturally, investors. He commanded the *Adventure Galley*, and set sail for the Indian Ocean as early as September 6, 1696. For over a year, Kidd and his crew strived to make a name for themselves.

On January 30, 1698, William Kidd aboard the *Adventure Galley* and his 34 cannons took near the port of Cochin in Kerala the *Quedah Merchant* under the command of Captain John Wright with a hundred men on board. It was a 500-ton French merchant ship built in Bombay (Mumbai) at the end of the 17th century. Commissioned by a consortium of Armenian merchants, nearly half of the cargo on board belonged to Muklis Khan, a nobleman of the Great Mogul's court. Once captured, William Kidd and his ships made their way to North America, passing through Sainte-Marie Island, near Madagascar. While in Sainte-Marie the *Adventure Galley* sank while the majority of his crew mutinied aided with four guns. Kidd and the remaining sailors reloaded the *Quedah Merchant* renamed *Adventure Prize* and set sail for the Caribbean. Upon arriving in Anguilla, Kidd learned that he was wanted for piracy. He sailed through the Greater Antilles, constantly seeking discrete places to anchor his ship and trade with local traders for supplies. Before leaving for New England, Kidd left one of his ships, the *Quedah Merchant*, near Catalina Island southeast of Santo Domingo under the custody of Henry Bolton. The latter stated that he had left the ship in a river opposite the island and two months later it burned and sank, in 1699. On his return to New England, Kidd was taken to London, tried and hanged for piracy and for murdering his quartermaster on May 23, 1701, despite the agreement he had made with British political power.

The discovery of the wreck of the *Quedah Merchant* occurred in June 2007 in a few meters from the Rocky Shoreline near Catalina Island by a team of Indiana University archaeologists led by Charles Beeker, in partnership with Children's Museum of Indianapolis and the Dominican organization Oficina Nacional de Patrimonio Cultural Subacuático (ONPCS) (Beeker, Hanselmann 2009). Its location was during the first prospecting campaign between May and June. The ship

lay under 3 meters of clear water. Kidd's writings provided crucial information on the location of the ship and its load containing a large number of firearms on board the ship, the cargo of several tons of scrap from Madagascar and a cargo of sugar and sugar-stone salt. The quantity of artillery is much greater than one would expect to find on a merchant ship. Moreover, according to the archives, there is no record of other shipwrecks in the area. Referencing data made it possible to formally identify the *Quedah Merchant*.

The first excavation campaign took place between May and June 2008. Charles Beeker and Frederick Hanselmann published two articles on this campaign, the first in 2009 and the second almost similar in 2016 (Beeker, Hanselmann 2009; Hanselmann, Beeker 2016). The wreckage delivered 26 guns measuring 1.8 to 2.1 m long, with the exception of three 2.44 m long, three anchors and a well-preserved wooden structure (**Figure 6**). The three largest cannons are undoubtedly from *Adventure Galley* based on records of artillery exchanges between the two ships (Hanselmann, Beeker 2016: 121-122). The majority of the cannons are stacked 2m high, reflecting their arrangement as cargo in the hold, and it appears that other cannons have been concealed beneath this main pile. Functional anchors would not have been stored under firearms because they needed to be accessible in the event of a storm. Kidd indicated that he had acquired 14 or 15 spare anchors, so additional anchors should be placed in this stack. The scrap may have been placed at the bottom of the hold because it would retain its value even if it became wet. The guns, on the other hand, would not work properly if they were corroded by seawater, which could explain their stacking on other iron objects. Nevertheless, their head-to-tail position by couple could also reveal their use as a fixed anchor point. The spatial analysis of the site clearly indicates that there was room for other assets and that the nature of

the missing cargo certainly contributed to explaining the gap between the two stacks of firearms. The distribution of site characteristics suggests the location of these bulk cargoes. The guns being more difficult to manually handle, they could be stacked directly under two cargo hatches. Sugar, much easier to load than cannons, may have been placed between and around the armament piles. The structural wood was analyzed and the results revealed that it was teak, native wood from Asia (Thailand, Myanmar, Laos or India). The discovery of teak hull remains is therefore crucial for the identification of the ship.

Based on the characteristics observed at the shipwreck site and contemporary accounts, a possible reconstruction of the demolition process has been proposed (Hanselmann, Beeker 2016: 120-121). When Henry Bolton took charge of the ship, it is quite possible that part of the cargo was removed before it was set on fire. Bolton may have recovered the guns on the deck, but he may not have wanted to make the effort to remove the guns stored in the hold. It can also be suggested that Bolton burned the ship for fear of being captured by the Spaniards, with the deployed guns still in place. As a result, these weapons may have fallen overboard during the fire.

The lack of evolution between the two issues evoked by Beeker and Hanselmann appears to reveal a project that has not progressed since 2008. The authors did not seem to have had the opportunity to rework the subject, nor to present research perspectives on the study of material culture. This lack could be explained by three factors. On the one hand, difficult access to the site due to the complex weather conditions due to the intensity of the waves. Thus, these poor conditions could explain the absence on the site of objects of daily life, lighter, and therefore more easily movable outside the area of excavation. The potential looting of the wreck because of its shallow depth could also explain the absence of objects.

On the other hand, the lack of cannons, new search campaigns could be linked to a lack of funding from the University and public authorities. A book by archaeologist

Frederick H. Hanselmann just came out and covers excavations and analysis conducted (Hanselmann 2019).

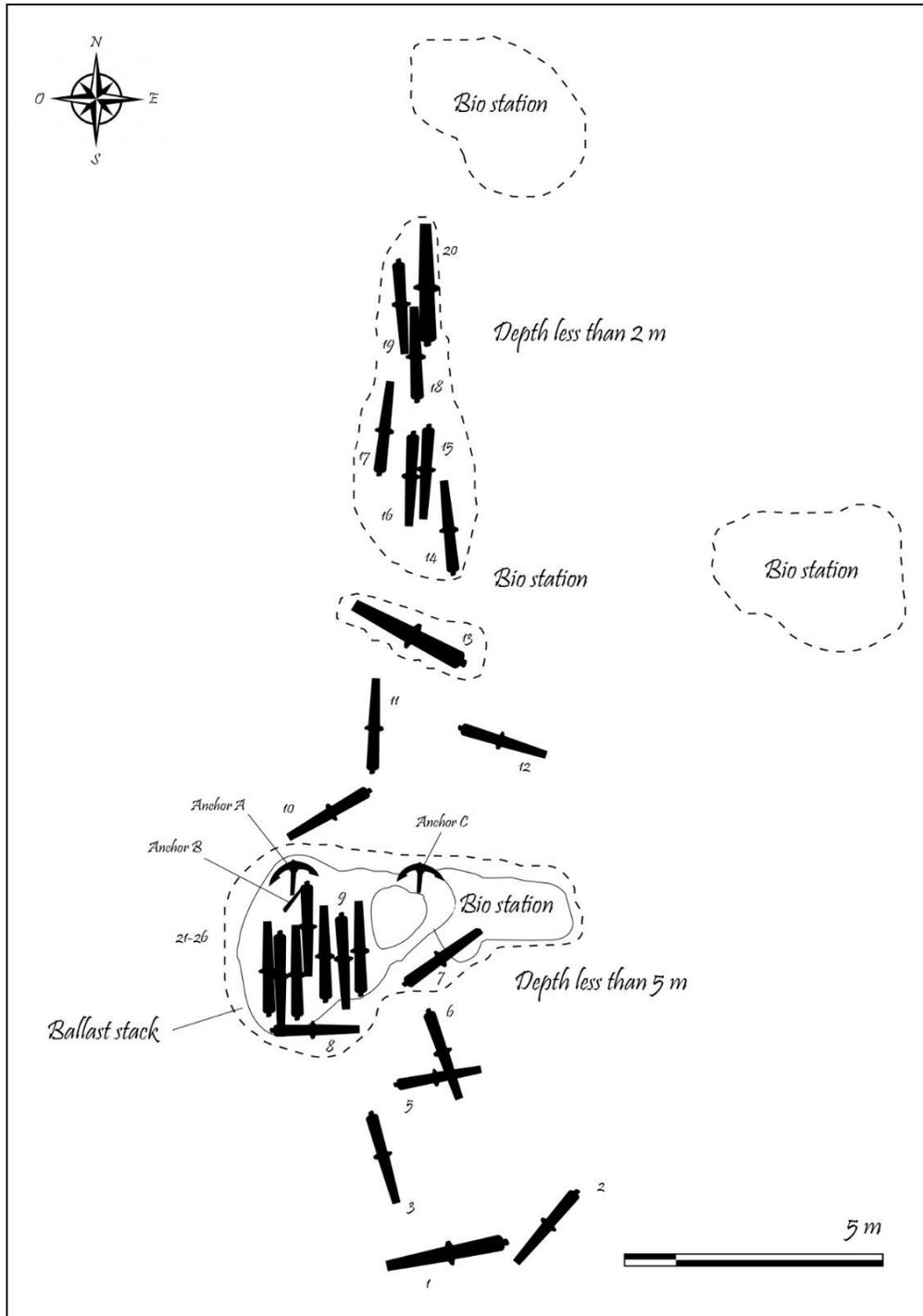


Figure 6. Map of the *Quedah Merchant* 1699 shipwreck by Indiana University (from Beeker, Hanselmann 2009 ; J. Soulat infographic).

2.2. *Whydah Galley 1717 (Cape Cod, Massachusetts, USA)*

As for *Quedah Merchant* and William Kidd, *Whydah Galley* is also linked to a famous pirate, Samuel Bellamy. Originally from Canterbury (Kent), Samuel Bellamy was a British seaman who traveled early in his Atlantic career to New England to Eastham near Cape Cod. He enlisted in piracy with Benjamin Hornigold and Olivier Le Vasseur aka La Buse. Black Bellamy took control of the squadron when Hornigold refused to attack his British compatriots. With La Buse they captured several ships in 1716. In January 1717, the two pirates separated. In February 1717, after three days of pursuit in the Bahamas, *Whydah Galley*, a slave ship, was taken by Bellamy. It consisted of a 300-ton fast three-master, carrying oars easy to maneuver and armed with 18 guns. The name *Whydah* came from the African slave trading house Ouidah or Whydah, in present-day Benin, well known to the British. After leaving London in 1715, Captain Lawrence Price sailed to the coasts of West Africa where he embarked 367 slaves. Before being captured by Bellamy, *Whydah Galley* was returning from Jamaica after selling his cargo of slaves and sailing to London. At that time, this ship was loaded with ivory, gold powder, sugar and indigo. Captain Price having surrendered himself he was rewarded with £ 20 for his needs and benefited from Bellamy's ship *La Sultane*, which had been taken near Saba Island a few months before. Bellamy added at least ten more cannons to *Whydah*. The booty amounted to 20,000 pounds Sterling and each of the 180 crewmen received 50 pounds. After several prizes, Bellamy made his way to Rhode Island. On April 26, 1717, following a strong storm, the *Whydah* was stranded on a sandbank close to shore off the coast of Cape Cod. After a week, aid arrived on the scene to intervene but the ship had already been engulfed. Only two men were able to reach the shore by swimming, including Thomas Davis, a

Welsh carpenter forcibly recruited in December 1716. Bellamy and 144 crewmen perished in this sinking and 62 bodies were recovered.

The shipwreck was discovered 455 meters from Marconi Beach in Wellfleet, Massachusetts on 24 July 1984 by controversial explorer Barry Clifford and his team. Located between 6 and 9 meters deep, the remains of the ship which stretched about thirty meters long quickly delivered a first cannon. The wooden structure of *Whydah* did not survive the destruction. Part of it was thought to be recoverable because the vessel was stuck in the sandbank. Thus, at first, this absence did not allow archaeology to confirm the historical data. The orientation of the shipwreck is explained by the direction of the wind and the action of the waves when the ship was forced to run aground near the shore. The shipwreck was searched between 1984 and 1989. In 1985, the discovery of the ship's bell with the inscription THE † WHYDAH † GALLY † 1716 formally identified the wreck.

Modifications were made to the vessel when it was taken by Bellamy. Thus, to improve the combat, at least ten additional guns were added as we note on the wreck since there is not 18 cannons but more than 28 which corresponds to the archives consulted. According to their state of conservation, 12 guns could be measured and 15 others could be studied in a preliminary way because their concretion was too dense. The distribution of guns on the site could correspond to a ship lined with the rear of the three smallest 3-pound guns and the bow with two guns, four heavier guns of maximum 6 pounds located in the middle of the ship, and 17 more common 4-pounder cannons placed the full length of the ship (Hamilton C. E. 2006: 150). The locations of the guns on the site are in accordance with the historical documentation for the ship's armament. Archaeological excavations have so far revealed rigging elements, such as self-raising lines and other ropes, warp

plates, garbage bags, lead pieces, blocks and anchors.

During the 1988 campaign, which lasted 113 days, including 86 days dedicated to the search, 20,851 objects were discovered, including guns, anchors, coins, musket balls and various objects (Halmilton C. E. 2006: 134). Due to the harsh climatic conditions and the current, the heavier objects stayed in place while the glass and ceramic were moved. Even though musket rounds and coins appear less dense, their block concentration has been sufficient to be spared. By drawing the distribution of silver objects in relation to the remains of pewter and copper clothing (including buttons, cufflinks and buckles), we note that their concentration is located near the stern of the ship while that of objects pewter and brass is more in the center of the shipwreck. It is possible that the silver clothing accessories were included in the valuations and stored separately. High-value silver objects could be stored in the cabin where the captain, quartermaster and other officers of the ship could reside.

The article by Christopher E. Hamilton, published in 2006 in *X Marks the Spot; the Archaeology of Piracy*, evokes 100,840 objects that are divided into 25 categories (Hamilton C. E. 2006: 144-145, table 8.1.). Of this type of artifacts, three types of objects account for a large share of the total: 86,271 rounds / grape bullets (85.5%), 7,000 pieces of gold dust (7%) and 5,658 coins (5.5%). These three categories therefore account for 98,929 of the artifacts (98%), leaving 1,911 other objects (2%) divided into 22 different categories. Within the discovered objects, there are 35 fishing weights and 23 tools related to the maintenance of the ship in particular to the activity of the carpenter. Among them, there are caulking chisels, punches, hammers or tools related to the forge to repair the metal parts. Also belonging to the tools, 90 wooden or bone handles have been inventoried. 28 instruments of navigation and surgeon

were discovered including compasses, sectors, mortars, etc. As for armaments, there are 86,271 musket balls, 28 cannons and 78 components, 156 cannonballs, 341 individual hand-held firearms and associated elements, 24 knives and accessories. Many personal items were found during the search: 238 clothing accessories (buttons, buckles, staples, etc.), 22 elements of adornment (rings, etc.) and 29 objects related to entertainment (game pieces, pipe, etc.). For the artifacts on board, several categories appear: 23 pieces of tableware, 179 utensils related to the kitchen, 42 furnishing supplies (candlesticks, drawer handle, etc.). 42 remains of fauna were located (food or unwanted animals). Remains of merchandise have been identified through the discovery of 12 seals, 9 elements related to containers, and 265 manufactured remains of lead, in particular ingots. Finally, 217 elements related to the structure of the ship were excavated (pulley, anchors, bells, hinges, fittings, etc.).

2.3. *Queen Anne's Revenge 1718 (Beaufort, North Carolina, USA)*

Unearthed by two successive hurricanes in 1996 in Beaufort Bay off North Carolina (USA), the wreck of *Queen Anne's Revenge* was the ship of the famous English pirate Edward Teach better known as Blackbeard. For nearly 18 years, the search of the ship was the subject of a research program set up in 1997 by the QAR Project with private funding and led by the Underwater Archaeology Branch of the North Carolina Department of Cultural Resources (Wilde-Ramsing, Carnes-McNaughton 2018: 55-59). The purpose of the project was to thoroughly excavate the wreck and analyze the archaeological remains to better understand the history of the ship and the daily life of its crew related to the fate of Teach.

Born in 1680 in Bristol (England), Edward Teach enlisted in an English privateer ship between 1702 and 1713

during the War of Spanish Succession. This activity was not as lucrative as he would have hoped, he chose to resign and engage a few years later, around 1716, as a pirate with Captain Benjamin Hornigold, quickly becoming one of the lieutenants. After several raids, the two pirates took in November 1717 a French privateer frigate, *La Concorde*, commanded by Captain Pierre Dosset, in the Grenadines, off Bequia, south of Martinique. Built in Nantes in 1710 for the ship owner René Montaudoin, the frigate was of 280 tons burden and was armed with 26 guns. She made a first expedition between July 21, 1710 and November 2, 1711 during the War of Spanish Succession. She was turned into a slave ship, when the treaty of Utrecht allowed the resumption of the maritime trade, and carried out three expeditions, in 1713, 1715, then in 1717 (Mettas: 16,37, 56). *La Concorde* was armed for the trade and did not have to carry all its capacity of armament. She had only 16 guns at that time instead of 26 when she was captured in November 1717 by Teach. At the time of her capture by Teach the fact that *La Concorde* was a private frigate during the War of Spanish Succession was important. He had fought within the British ranks during this conflict and had probably had to face French frigates of this type. He must have known its qualities and it is perhaps, not by chance, had made *La Concorde* his flagship. Similarly, it may be argued that the name *Queen Anne's Revenge* evokes this conflict (Queen Anne's War for the British), to which Blackbeard had participated a few years earlier. The capture of an old French privateer ship that participated in this war was probably a revenge for him (Revenge), a name frequently used by pirates.

Once taken and renamed *Queen Anne's Revenge*, Teach added 14 guns to the existing 16, bringing the number of guns to 30. A few months later, Teach separated from Hornigold to conduct his attacks alone. Many prey were hunted and

defeated, the Grand Allen, HMS *Scarborough* or the *Adventure*. On the way to one of his expeditions to Spanish America, he found on his way a 10-gun pirate sloop commanded by Major Stede Bonnet. As a result of this meeting, the two pirates decided to sail together, creating an alliance that was, however, quite short-lived. It ended a few weeks later, but the old friends remained in the same waters. In the spring of 1718, prizes were chained and led to pirates in Charleston Bay, South Carolina. The whole area was ransacked. Teach blocked all Charleston's port and commercial activity for a week. Blackbeard raised his blockade against a rich currency of exchange. At that time, an alliance of four ships under Teach's command anchored in the waters of the harbor. The alliance traveled up the coast of North Carolina by *cabotage* to Beaufort Bay. However, in order to avoid sharing his loot from an estimated 1,000 to 1,500 pounds sterling, Teach made the decision to weigh down his cargo so that the *Queen Anne's Revenge* bogged down in one of the many sandbanks in the bay. He asked two of these acolytes to help him, Stede Bonnet and Israel Hands, whose sloop of the latter also ran aground on another sandbar. Blackbeard recovered one of the sloops with 40 men, leaving *Queen Anne's Revenge*. He then got rid of 17 men on a deserted island. The latter would probably have died of hunger and thirst if Stede Bonnet had not come to their aid two days later.

In November 1718, Virginia Governor Alexander Spotswood made the decision to stop the actions of the pirates, including Teach. He pursued two British ships, the *Lyme* and *Pearl*, whose captain was Lieutenant Robert Maynard. On November 17, 1718, Maynard sailed to Ocracoke Bay, where he saw the Blackbeard and his ship. On November 22, 1718, the sloops came closer to the fringing range of Teach's ship. He took the front and sent a first flank that fatally hit the *Lyme*, killing her commander and several

crew members. Teach then fired at the *Pearl*, killing 20 of Maynard's men. The *Pearl* approached the sloop. Blackbeard and Maynard found themselves face to face, each armed with a saber and a pistol. Teach was hit first but a violent saber fight ensued and turned to his advantage. At the moment of a fatal blow to his adversary, Blackbeard was surprised by a stab in the neck given by a sailor. Continuing the fight in spite of the pain and the multiple wounds, Teach received another stab from a second sailor, then Maynard wounded him mortally with a pistol shot. The pirate collapsed. There were about 25 wounds on him, 5 of them shot. Lieutenant Maynard cut off his head and exhibited it on top of the main mast to serve as a warning to all pirates in the Caribbean and elsewhere.

Caught in a sandbank in Beaufort Bay, off North Carolina and a few miles from the coast, *Queen Anne's Revenge* was located amidst a dozen other shipwrecks dating back from the 18th century to the twentieth century. Indeed, the bay has always been known as a cemetery of shipwrecks because of the stagnant sandbanks whose locations vary according to the tides and the swell, a fact that did not facilitate the research carried out since 1978 by David Moore, archaeologist and historian at the North Carolina Maritime Museum. Thanks to several hurricanes, the shipwreck was discovered in 1996 following the intervention of Intersal divers at the 31-CR-314 site, which was located at a depth of 20 meters. Unfortunately, after November 1996, it took a few more years to thoroughly

investigate the site because of the many active hurricanes. It was only between 1998 and 1999 that two successive campaigns were conducted with the help of the Underwater Archaeology Branch of the North Carolina Underwater Archaeology Center. However, the first items collected, although reminiscent of a ship from the early 18th century, there was no indication that it was Blackbeard's ship. Between 2006 and 2008, the entire area of the site was finally visible, which made it possible to measure and consider the total length of the ship (**Figure 7**). In 2009, the quantities of clues excavated and the resulting analyses, particularly within the 36.6 meter-long archaeological site, helped to specify the type of ship. The discovery of the bell marked with the inscription IHS MARIA ANO 1705 appeared characteristic of a French frigate while the diverse origin of the cannons *in situ* directed the identification towards a pirate shipwreck. Finally, these elements associated with the location of the remains in the area may well identify *La Concorde*, the French frigate that became a slaver renamed *Queen Anne's Revenge*. Following the ship's anchor, it was not until September 4, 2011, that the North Carolina authorities formally declared that this wreck was indeed that of the pirate Blackbeard. To date, 60% of the shipwreck area has been excavated and nearly 250,000 objects and debris have been recovered. Since June 11, 2011, the artifacts discovered are exhibited at the North Carolina's Maritime Museum in Beaufort.

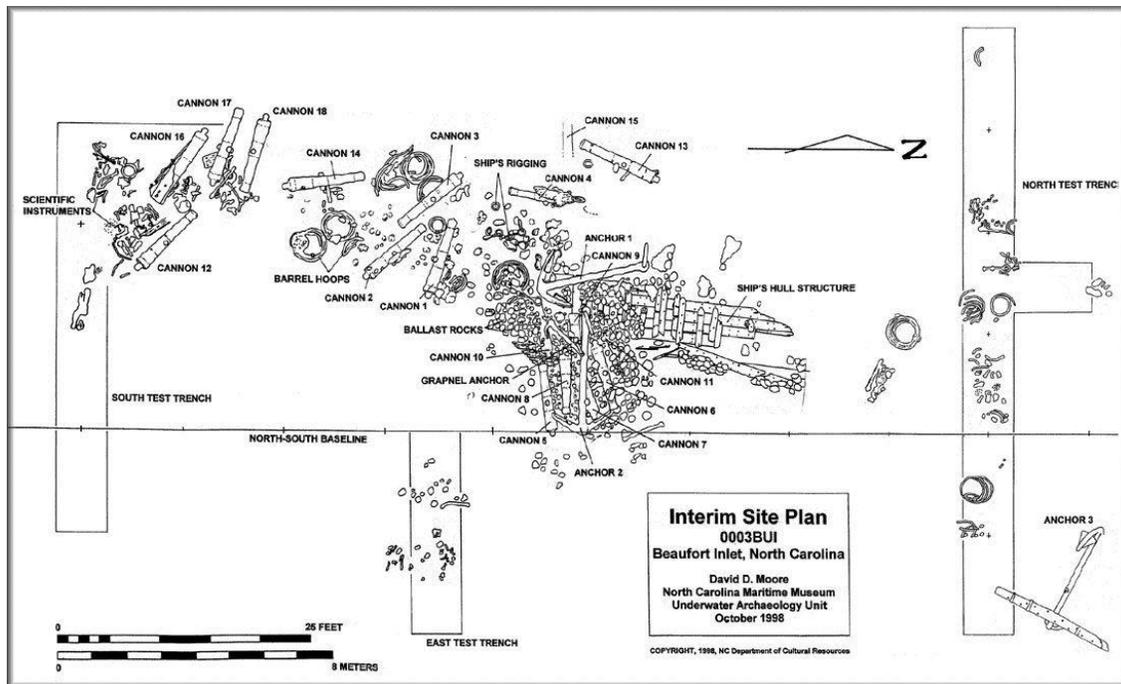


Figure 7. Plan of the shipwreck of the *Queen Anne's Revenge* in October 1998 (courtesy of DNCR).

2.4. *Great Ranger* 1722 (Port Royal, Jamaica)

The *Great Ranger* was one of the three main ships in the fleet of nine ships belonging to the famous pirate Bartholomew Roberts nicknamed Black Bart. Born in Pembrokeshire, Wales, Roberts captured and looted more than 400 ships in less than three years, from June 1719 to February 1722, carving out a place in history as the most successful pirate captain. He inherited the *Royal Rover* from pirate captain Howell Davis who died in 1719. The *Royal Fortune*, the *Little Ranger* and the *Great Ranger* were the three ships under his command during his last fight with Captain Chalenor Ogle of the Royal Navy and his ship the *HMS Swallow*. In 1720, a French light frigate the *Comte de Toulouse*, a 16-gun Saint-Malo ship, was modified by Roberts by adding eight guns and renaming it *Great Ranger*. A second ship, a French sloop, formerly the *St. Agnes* of Nantes, was renamed *Little Ranger*. In August 1720, Roberts' ships

sailed along the African coast. The pirates reached an agreement with Michael Gee, captain of the *Onslow*, frigate of the British Royal African Company of 410-ton, 26 guns and 50 men. Captain Gee received the former French ship *Royal Fortune*. Upgrades took place, including the addition of 14 guns. Roberts then went to the West Indies and took fifteen ships, English, French and Dutch. On January 11, 1722, the *Royal Fortune* and the two *Rangers* sailed as far as Senegal to Whydah. Roberts learned of two 50-gun frigates under the command of Chalenor Ogle. The proximity of the two ships of the Royal Navy did not prevent the *Royal Fortune* and the *Great Ranger* from sailing slowly along the coast, multiplying their prizes. *Onslow* replaced the *Ranger*. The winds pushed the pirate squadron to Cape Lopez. It was there that the Navy frigates joined them on February 22, 1722. *Swallow* first captured *Onslow* and then, in a final action, attacked *Royal Fortune*. Roberts was killed during the fight.

After having hanged about fifty pirates at the fortress of Cap Corse (Cape or Cabo Corso), Captain Ogle crossed the Atlantic with his three pirate prizes, stopping in Barbados and Port Royal to sell goods on August 14th, 1722. From August 16 to August 27, Lieutenant Isaac Sunn was instructed to remove the goods from the pirate ships for sale ashore. Before it could finish, a hurricane struck the island on August 28, 1722. About a month after the disaster, a letter from the Governor of Jamaica, Sir Nicholas Lawes, addressed to the Colony Office, reported 50-ship loss of the 73 recorded. They had sailed through the storm, two others had been stranded on the shore and ten of the lost ships were recovered. Among the victims of this hurricane were the *Royal Fortune* and the *Little Ranger*. They were blown across the harbor and broken into pieces on the rock of Salt Pond Hill. The *Great Ranger*, however, was one of the few ships to survive the storm even though it was badly damaged. Sailors of the Royal Navy recovered what they could in the port to repair the *Swallow*. Ogle's crew tried to repair the *Great Ranger* until mid-October then sold it to a Port Royal buyer.

A map drawn in 1724 by a lieutenant of the Royal Navy presents the Bay of Chocolata Hole off Port Royal. This map was made to help captains maneuver in the harbor following the new developments made. Until 1735, Port Royal did not have a suitable wharf for careening and refitting large ships. One of the wrecks shown on this map marked with the letter "P" is that of the *Great Ranger*. The discovery of this map in 1982 by Donny Hamilton, archaeologist and responsible for the underwater excavations of Port Royal is what triggered the current research on the *Ranger*. How did she end up in the bay two years later? Was she still being repaired?

It was the excavations of Robert Marx in Port Royal between 1966 and 1968 that made it possible to highlight this wreck. Marx's excavations took place

along what had been the city's harbor on Fishers Row. In March 1967, Marx discovered wooden fragments thinking they belonged to a building. Later, he discovered that they came from the wreckage of a ship that he believed had sunk during the hurricane of 1722, so he called it "the wreck of 1722". The remains of this ship were those of the *Ranger*. A plan drawn up by Marx shows how the two sections of the ship are separated by ballast and wood. Marx thought the pieces of wood were part of the ship's cargo. With the wreckage above the sunken city, it was difficult to differentiate the artifacts from the *Great Ranger* from that of the city of Port Royal. Marx estimated that most of the shipwreck was 15 meters long, of which only skittles, frames, and lower futtocks remained. Most of the ship's hull contained ballast rock that was concreted with 150-pound mortar rounds that were also used as ballast for the ship. While searching in a little academic way, Marx had recovered a number of objects including four whale teeth, cannonballs, musket balls, a small tin teapot, a pewter mug, a large Dutch stoneware pitcher, buttons, buckles, cooking utensils, flasks, pulleys and blocks (hoists). A piece of French shield dating from 1721 is also part of the lot and makes it possible to date appropriately the wreck sunk during the hurricane of 1722. When Marx concluded his search on the *Ranger*, he filled the zone with sediments and ballast so to avoid damaging the wooden structure.

In the summer of 2012, a team of students from the Texas A & M University received a permit from the Jamaica National Heritage Trust to conduct an archaeological dig on the *Great Ranger* and to search for the *Royale Fortune* and *Little Ranger* (Gulseth 2016: 105). A mission of only 30 days and a modest budget limited the results. The cabin measured exactly one French foot, identifying it as a French-made ship. The search method recommended the installation of six squares from A to F.

Only 10 meters of the pirate ship were left reasonably intact. A mound of rocks and eight mortar rounds are all that remains of the ballast. 37 large, widely spaced timbers emerge from the mound of rock and sand. A number of these floor frames were assembled with large framing pins. These iron ties have a diameter of 3 to 3.5 cm and go through two and sometimes three frames at a time. This type of rigging system in a highly framed frigate would have given the ship a sturdy hull and would be reminiscent of the construction of the *Queen Anne's Revenge* pirate ship from Blackbeard, also of French manufacture.

In order to collect as much data as possible while having minimal impact on the site itself, the team used an underwater dredge to remove sand that covered parts of the wreck. Only 20 objects were collected. Among them, eight objects were pieces of the ship itself, including a fragment of guidewires, part of a rigging block, iron fasteners, a skid plate and a lead scupper. Some of the other artefacts found during the search were more likely to be intrusive. An onion-shaped bottle for wine or spirit was found on the surface of the wreck. Another was later located in the same position. It is hard to believe that these complete bottles had just been deposited on the surface of the wreck since 1720. It seems more likely that a storm carried them from the sunken city and that they ended up on the site of shipwreck.

2.5. Synthesis

The four shipwrecks discussed above are dated between the years 1699 and 1722 during the golden age of piracy. Two come from the American East Coast while the other two come from the Caribbean Sea. All four are related to the activities of a pirate known enough to be part of the pirates short list cited by Daniel Defoe alias Captain Charles Johnson in his *General History of the most famous pyrates* published in 1724. Apart from these chronological, geographical and

historical common points, it is necessary to advance other elements which make it possible to better apprehend the phenomenon of the piracy at this period.

At first, it is intriguing to see that three out of four ships are French (*Quedah Merchant*, *Queen Anne's Revenge* and *Great Ranger*) with the exception of *Whydah Galley* who is English. When we look at the nationality of the three pirates, Kidd, Teach and Roberts, all British, we know that depending on the circumstances, some preferred to attack foreign ships even if it was never a rule in itself since Roberts or Bellamy regularly attacked English ships, besides subject of discord between this last one and Benjamin Hornigold. We also note that the types of prizes are varied since the *Quedah Merchant* of Bombay was a merchant ship of 500 tons, just like *Whydah*, merchant and slaver of 300 tons while *La Concorde* of Nantes (*Queen Anne's Revenge*) and the *Comte de Toulouse* of Saint-Malo (*Great Ranger*) were privateer frigates.

In any case, once the capture was made, the pirate captain decided to make changes in the artillery, systematically adding new guns but always small calibers. Thus, Kidd transferred four guns between the *Adventure Galley* and the *Quedah Merchant*, Bellamy modified the *Whydah Galley* from 18 to 28 guns, Teach added 14 guns to the *Revenge* which carried only 26 guns, while Roberts modified the *Ranger* from 16 to 24 guns. As such, it would be relevant to know the origin of manufacture of these additional guns to try to track the prizes made by these pirates. For example, *Queen Anne's Revenge*, as well as the *Whydah*, are known to have a wide variety of guns with artillery being English, Swedish or Dutch. As with valuable wares, the cannons of these catches were always scrutinized in an attempt to maximize and strategically increase the ship's firepower.

Regarding the excavation of these shipwrecks, it is known that climatic conditions have made their study very complex both because the remains are

under severe strain and especially because regular hurricanes in the targeted areas do not facilitate underwater work. Thus, for different reasons, two shipwrecks out of four were excavated and studied exhaustively, *Whydah* and *Queen Anne's Revenge*, although with the latter only 60% of the entire site was investigated. They delivered a large number of objects and remains, between 200,000 and 400,000 items for each case. In the publications on the *Quedah Merchant*, the absence of "light" or personal objects is explained by the waves that moved the artifacts out of the zone, these reasons remaining to be verified. However, for the *Great Ranger*, the two 1967 and 2012 excavation campaigns revealed only a portion of the shipwreck, without guns, and with very few objects. This absence could easily be explained since a lieutenant of the Royal Navy had the objective of completely emptying the ship of its merchandise, operation interrupted by a hurricane in 1722, but the guns had probably already been removed from the ship.

3. Study of material culture from piracy sites

The examination of the archaeological artifacts from these sites identified as pirate should allow to understand what was the daily life of these pirates in the 17th and 18th centuries was like, including adaptation to their new environment. Life aboard pirate ships is the one that archaeology provides the best information because of the six examples listed that yielded a large quantity of objects. But the organization and development of these buccaneers on land in ephemeral establishments or merchant port cities like Port Royal in Jamaica are less well known. Did the life on board or ashore of these ruffians differ from that of other embarked or disembarked seamen? Whether pirates or sailors, these seafarers crossed the oceans and were therefore in perpetual motion. Depending on the archaeological sites, shipwrecks or land

establishments, the harvested artifacts may vary significantly depending on the functional categories represented. Like individuals, the analysis must also take into account that those post-medieval artifacts were constantly moving from a European sphere that developed on the old continent to new geographical and maritime areas like the Americas, the Caribbean and the Indian Ocean. An adaptation of the artifacts can always be considered depending on the environment in which it develops. The archaeology of this material culture is therefore above all an archaeology of economics, commerce, and conflict with goods and people passing through. This is confirmed by Donny Hamilton's very accurate observation of Port Royal, a historically pirate city par excellence, where he explains that apart from the pirate wreck of Bartholomew Roberts' *Great Ranger*, there is no real relic and artifacts reminiscent of piracy (Hamilton D. 2006: 26). Thus, the port city remains primarily a trading hub of the Caribbean and in a second time a city where buccaneers gathered. In this context, it is clear that the study of objects "related to piracy" is part of an international phenomenon of contacts with the integration of objects of different nationalities combining European artifacts with oriental and Asian elements. We know that most pirates were from Europe, especially England, as far as the most famous are concerned. However, in connection with the geopolitical changes, some of them could have been born overseas on the American coast or in the Caribbean or in the Indian Ocean. Regarding dating, these artifacts are part of a chronological horizon of 80 years that extends between the years 1650 and 1730, so between the second half of the 17th and the first third of the 18th century.

3.1. *Is there a material pirate culture?*

One of the main problems that the study of artifacts discovered on pirate archaeological sites offers remains the

existence or not of objects specific to piracy and thus the highlighting of a real pirate material culture. Can we talk about pirate objects in the same way that we evoke the presence of pirate shipwrecks?

In reality, it is the context that makes it possible to determine whether the material culture of this period can be related to any activity of piracy. As mentioned above, the identification of an archaeological site or context as being peculiar to piracy depends on its relative connection to a famous pirate or to a group of individuals related to filibustering. The history of piracy is therefore conditioned by this phenomenon, just as archaeology is. Contemporary stories and cartographic or military archives work in this direction. As such, we must not forget that we do not know the identity and history of a small minority of pirates who were active in the seventeenth and eighteenth centuries, in this case a hundred captains. But the list can be lengthened because the archaeological discovery of a new wreck can eventually lead to identify the story of an unknown buccaneer poorly highlighted or known in existing inventories.

Moreover, the objects found on these pirate sites do not become pirates. This is a concept that does not really make sense. These typical artifacts of the modern period or post-medieval (European site) and colonial (American site, Caribbean or Indian Ocean) which evolved from now on in a pirate context do not morph so far. There is therefore no real pirate material culture but simply objects of everyday life used by pirates in particular contexts. The presence of a material pirate culture appears as a concept totally manufactured by nineteenth and twentieth century narratives and especially Hollywood film fictions. Translating this invention, the presence of the skull and crossed bones assigned to certain pirate flags, which reflects an historical reality, is found joyfully on many other artifacts such as the button of a jacket, the lock entrance of a chest, a coin or the stern of a ship, etc.

Even if this representation could have been more convincing and very practical to help the commercial operation around the franchise *Pirates of the Caribbean*, it remains nevertheless a mere fabrication far from the historical and archaeological reality. There are also representations of death with the figuration of skull on many media dated to the seventeenth and eighteenth centuries but it has no direct relationship with piracy. In this sense, one can evoke rings of faith, tokens in honor of the commemoration of St. Lambert of Maastricht, rosary beads or some crucifixes.

However, it is clear that some objects or assemblage of objects appear to be very representative and reflect a "pirate phenomenon". We can cite the silver or real pieces-of-eight as evoked by Alexandre-Olivier Oexmelin in his journal (Oexmelin 1678, edition 1930, 1995: 23) and popularized by Robert Louis Stevenson in his *Treasure Island*. We meet them especially on all the pirate shipwrecks. Concerning the assemblages, when they are heterogeneous, they can be symptomatic of different prizes as one can see it on certain wrecks where the pieces of artillery vary in medium (cast iron or bronze), of caliber or origin with various shields present on the guns. You can find this variety in the tableware or goods such as tin plates with London stamp, pitchers from La Rochelle or tableware Chinese porcelain.

In the search for pirate shipwrecks, it is the artifacts on board that can identify a particular ship and thanks to the discovery of the bell that bears her name as it is the case for the ship of Samuel Bellamy the *Whydah Galley*, sunk 1717 off Cape Cod, Massachusetts. Some archaeologists have hypothesized to attribute personal items to famous pirates. As such, one can evoke the alleged gun of Samuel Bellamy from *Whydah Galley* (Clifford, Kinkor 2007: 66-67) (**Figure 8**), or the buckle of Stede Bonnet found on the *Queen Anne's Revenge*, ship of Teach sunk

in 1718 off Beaufort (North Carolina) The proof for this type of interpretation is the example of the brass buckle with two initials "SB" on the underside of the buckle, are interpreted by some as the initials of the pirate Stede Bonnet (Wilde-Ramsing, Carnes-McNaughton 2018: 144) while for others, they could simply evoke a member of the crew of the pirate company from the same crew as that of Teach such as Samuel Booth or another sailor on

board, and two brass buckles relatively close to the one from *Queen Anne's Revenge* were discovered during the Port Royal underwater excavations revealed initials under the "SB" coping for one (**Figure 9**) and "RP" for the other (Thornton 1992: 134, fig. 32). In these two cases, it seems very risky to propose the name of a potential owner, and even more a pirate.



Figure 8. Samuel Bellamy Pistol from *Whydah Galley* 1717 (Whydah Pirate Museum).

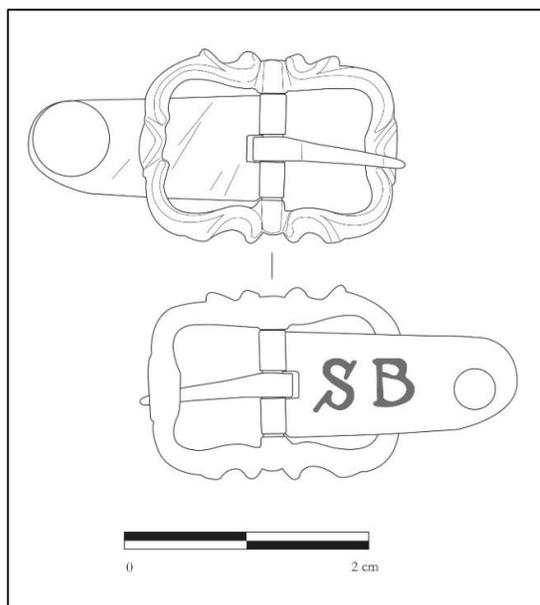


Figure 9. Buckle with SB initials from Port Royal, Jamaica (by J. Soulat after Thornton 1992, Helen Dewolf).

3.2. Daily life through functional categories

Objects discovered on an archaeological site are systematically classified by functional category. The modern or colonial period is no exception, as are the pirate sites. There are nine functional classes among the most represented, which can be associated with shipwrecks and land-based sites (**Figure 10**). In this context, it is necessary to highlight armaments (artillery, portable weapons, various ammunition), personal effects (clothing accessories, jewelry, cutlery, hygiene, tobacco, objects of piety, gaming piece, musical instruments), ship furniture (ballast, bell, caulking, candlestick, hardware, various carpentry

tools, shoemaking, ironwork), navigational instruments (compass, sector, carpenter's rod, sounding weight), various containers (pottery or metal, various utensils, food scraps, metal plates, pitchers, various glassware, cutlery), the apothecary (various containers and surgical and medical utensils) and the sphere of trade and goods (ceramic containers for transport, lead shipping seal, scales, weights, coins, ingots, beads, shackles, Chinese porcelain). These categories are found in shipwrecks but also on land sites. This classification makes it possible to clearly visualize the different aspects of everyday life around the pirates. Some categories will be detailed in the following pages.

Armament	Artillery, portable armament, ammunition.
Personal effects	Clothing accessories, jewelry, cutlery, hygiene, tobacco, piety, gaming pieces, musical instruments.
Ship furniture	Ballast, bell, caulking, candlestick, hardware, tools (carpentry, shoe repair, ironwork).
Navigation	Compass, sector, carpenter's rod, sounding weight
Containers	Dishes, utensils, plates, dishes, pitchers, glassware, cutlery, teapot, food scraps, etc.
Apothecary	Various containers, surgical and medical utensils
Trade and goods	Lead shipping seal, scales, weights, coins, ingots, pearls, shackles, Chinese export porcelain

Figure 10. Functional categories of artifacts from pirate sites.

3.2.1. Armament

Majoritarian on the pirate shipwrecks, contrary to terrestrial establishments, the armament is

distinguished in two big categories: the artillery and the portable armament. Among the artillery, there are of course the guns of different calibers and materials, the

cast iron balls (simple, rowed or chained) and the grape (pellets, nails and fragments of glass). The artillery aboard the pirate ships consisted of mismatched naval guns, cast iron or bronze, of more or less important caliber and especially of diverse origin, witness of the prizes made. The ships taken by the pirates were systematically rearmed by adding additional guns. Captain William Kidd, in 1698, transferred four guns between *Adventure Galley* and *Quedah Merchant*, Samuel Bellamy modified his *Whydah Galley* from 18 to 28 guns in 1717, Edward Teach added in 1717 14 guns to *Queen Anne's Revenge* which had only 16, while Bartholomew Roberts modified the *Ranger* from 16 to 24 guns in 1720. As for the valuable goods, the guns of these prizes were always scrutinized in order to try to increase as much as possible and strategically, the firepower of the ship. On the *Whydah Galley*, the distribution of guns on the site could correspond to a ship trimmed behind the three smaller 3-pound guns and two-gun on the bow, four heavier guns of up to 6 pounds in the middle of the ship, and 17 more common 4-pounder cannons placed along the full length of the ship (Hamilton CE 2006: 150). The *Queen Anne's Revenge* study found that of the 24 guns sampled (out of 30 in total), 17 were six pounds, one or two nine pounds, four with four pounds, two pounds, one pound, and two of a half-pound. All these guns were cast in England or Sweden. Whether on the *Whydah* or the *Revenge*, we note that the calibers do not exceed 6 pounds, which shows that these guns were mainly used for close range firing.

The portable armament includes, depending on the site, firearms with individual armament (pistols and muskets), the pivoting guns (scythes or peterero), the balls mad of lead but also the grenades, and the white weapons with the swords, daggers and other single or double edge weapons for hand to hand combat, such as boarding. In the firearms, the wrecks sometimes deliver pivoting cannons fixed

to the rail of the bridge is the case of *Whydah* and *Revenge*. This portable and swiveling artillery was very mobile and could be moved quite easily over the deck of a ship. This mobility resulted in the installation of these guns where they were most needed while the big guns were useless if they were on the wrong side of the ship. Outside the artillery, guns and muskets appear more common on these sites. However, the wrecks offer all too rarely the wooden parts of these weapons in contrast to ornamental side plates of bronze or iron with firing mechanism. As with cannons, these muskets could also have various origins, usually English or French. In addition to these weapons, ammunition made from shots and lead pellets is extremely common: 250,000 rounds on the *Revenge*, over 80,000 on the *Whydah*. For the *Revenge* and the *Whydah*, one must surely relativize these figures because they most probably include remains of shot and buckshot. Finally, grenades were also common on ships, especially pirate ships. They could look like a cast iron cannon ball containing the powder inside with a bamboo or wood wick system for ignition.

Portable weapons also include knives, swords, daggers and other single or double edge weapons. Most have not retained their blade but only their brass handle and guard. Whether on the *Whydah* or the *Revenge*, the discovered swords are regulatory weapons of the British and French colonial naval infantry probably belonging to officers of these military corps present aboard ships of the Royal Navy or French Royal Navy working in Caribbean waters (Clifford, Kinkor 2007: 44, 58-59; Wilde-Ramsing, Carnes-McNaughton 2018: 115). These ceremonial swords developed in the last third of the 17th century, lasting until the middle of the 18th century, began to be abandoned by the officers during the first third of the 18th century due to their weight and very massive aspect.

3.2.2. *Personal effects*

Personal effects collected belonging to the pirate captain who therefore owned one or more pieces of clothing. Thus, this broad functional category involves associating several types of objects specific to clothing accessories (buttons, buckles, shoes, etc.), to ornamental elements (rings, bracelets, earrings, medallions, etc.) or to various and personal utensils (knives, combs, ear-spoons, sewing kits, objects of piety). Within these various utensils, the sewing kit is distinguished by thimbles, needles and pins or needle boxes, while the objects of piety can be represented by rosaries, crucifixes or medals, often of saints. Finally, we can evoke the sphere of relaxation and entertainment with smoking pipes, playing pieces or musical instruments. This particular type of artifact are found and excavated as much on shipwrecks and as on terrestrial sites. Even if they are much rarer compared to weapons, the intra-site synthesis of these objects can help to understand the appearance of these pirates including through the fashionable and different social aspects that surround them. In the context of an interdisciplinary analysis, the comparison between the contributions from archaeology and historical evidence may well be relevant. Thus, some famous pirate clothes have been described. For Bartholomew Roberts, it is said that he was dressed in a vest and rich scarlet damask pants, wearing a red feather on his tricorne hat and that he wore a gold chain with a cross of diamonds around his neck, two pairs of pistols at the end of a silk scarf worn on the shoulders and a side sword. Because of his shiny cotton clothes, Jack Rackham was nicknamed Calico Jack by Daniel Defoe.

Among the clothing accessories, the strong representation of the buckles is worth noting. Of varied shape and generally made of brass or copper-based metal, they very often present associated fastener (clevis) whose back may be marked with initials. In addition to shoe

buckles, we find flat-profile shoulder loops that do not exceed 10 cm in length. Besides the shoe, the garment can be put forward. Witnesses still preserved, the buttons differ according to the dress and the function. They are circular in shape and curved or flat profile. The jacket buttons are usually made of copper alloy but can also be made of wood, very often of British manufacture. Cufflinks, sometimes interpreted as cloak fasteners, are also present. In direct relation with the fastening of the garment, one can evoke the presence of circular pins decorated in brass, silver or gold. Elements of adornment appear rarer but nevertheless identifiable including rings, bracelets, earrings or pendants collected in various contexts. On the *Whydah Galley*, a gold ring features a TEYE BA monogram on the upper part of the ring, and WFS on the back (Clifford, Perry 1999: 177; Clifford, Kinkor 2007: 94). TEYE is interpreted as a common surname in the North of England while BA could be translated as "Master of Arts" (Bachelor of Arts) but also as an evolution in the career of a sailor. Finally, the initials WFS probably represent the "West Fleet Station", a Royal Navy base in Kingston, Jamaica. Finally, various and personal utensils can be mentioned. Encompassing very different objects such as knives, bone and tortoiseshell combs, ear spoons, sewing kits (thimbles, needles and pins or needle boxes), tobacco pipes or objects of piety (rosaries, crucifixes or medals). All these elements are encountered whatever the type of context, especially terrestrial. As such, looting and archaeological excavations on Port Royal have brought together a number of artifacts specific to this category such as many tortoiseshell combs or cruciform pendants made of copper alloy of various origins.

Distractions and hobbies were obviously part of the daily life of pirates aboard ships and during their stay on land. The game, the music, the tobacco but also the drinks bring together a number of objects related to these activities.

Gambling or betting was prohibited on board because it could cause brawls within the crew. However, the presence of pawns or game chips have been repeatedly identified on the shipwrecks of pirates. On the ground, the witnesses of this entertainment were highlighted in the taverns of Port Royal with the discovery of many fragments of British clay pipes. In addition to pipes, pawns or relatively similar game counters have been found many times on pirate shipwrecks. Most often in pewter, these are square or circular pieces often marked with a cross incised in the center that can also be interpreted as an

X. These gaming pieces made by the sailors themselves reveal how the cards, checkers, backgammon and other dice games have contributed to long hours at sea. The shipwreck of *Whydah* has delivered 16 squares (10), rounds (5) or polygonal (1) that measure between 2 and 3 cm (Clifford, Perry 1999: 160) (**Figure 11**). Of the total, only three are not marked with a cross. On the *Queen Anne's Revenge*, there are six similar square pewter pieces weighing between 12 and 32 gr. who were identified including two with a cross (Wilde-Ramsing, Carnes-McNaughton 2018: 139).

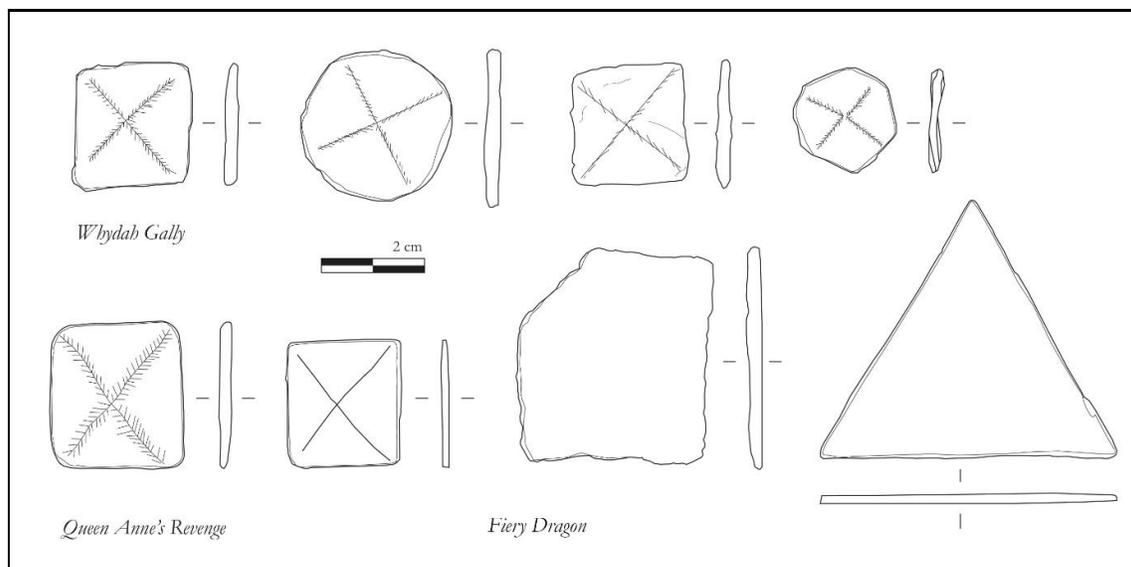


Figure 11. Pewter gaming pieces found on several pirate shipwrecks (by J. Soulat).

3.2.3. Containers and tableware

The domestic sphere and in particular the kitchen is well represented on the shipwrecks, as on the colonial settlements. This category brings together a wide variety of objects such as containers in various materials (ceramics, glass or metal), kitchen utensils and even food remains like carved animal bones.

Ceramic containers were varied and of different origins, as in the case of a Spanish or Italian terracotta jar with orange paste found on the *Queen Anne's Revenge* (Wilde-Ramsing, Carnes-McNaughton 2018: 132). Measuring 60 cm high, these

ovoid jars with banded and short-necked handles could be used for storing foodstuffs. For liquids, the so-called "Bellarmine" jugs or pitchers from the Cologne region, characteristic of a 17th century German production decorated with a bearded human face (**Figure 12**). These jugs were typically used to carry alcohol into a culinary setting as is the case on the *Revenge* (Wilde-Ramsing, Carnes-McNaughton 2018: 134). In Port Royal, several copies from the Raeren and Frenchen workshops were also discovered during the excavation of buildings 4 and 5 (Donachie 2001: 82-83). Located in these

same buildings, common British-style or African-Jamaican culinary ceramics (Donachie 2001: 113-114), a tripod stove

with a clear paste and glaze were highlighted (Donachie 2001: 116).

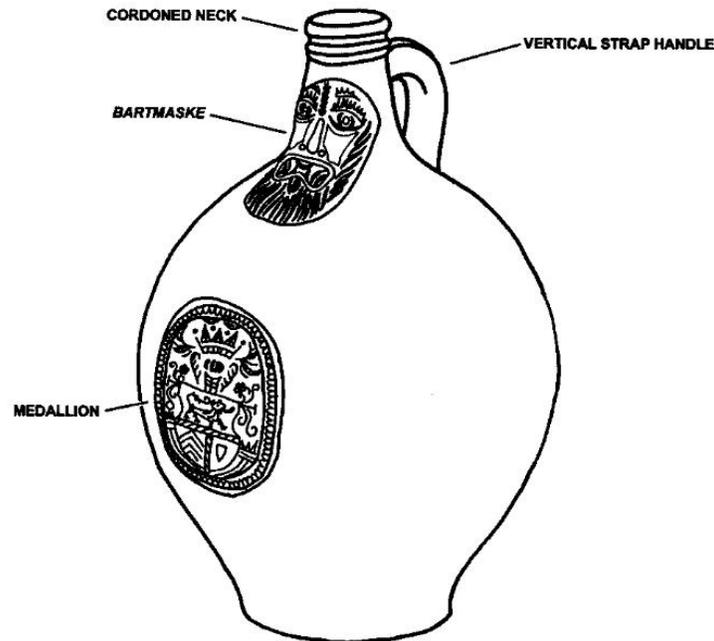


Figure 12. Schematic drawing of Rhine-type Bellarmine ceramics.

In addition to ceramics, metal culinary dishes have also been located. Stirrups in tripod brass containers with handle or more simply on pedestal with kidney-shaped handles. On the *Revenge*, two cast iron tripod pots have been identified, one from British production and the other from French manufacture (Wilde-Ramsing, Carnes-McNaughton 2018: 130-131). This type of pot became popular in the late Middle-Ages and found in contexts all the way up until the nineteenth century in French and British colonies. In the kitchen, apart from jugs and pitchers, the drinks may also be stored in glass containers such as black or olive-green wine bottles in the form of onions of the British tradition or those of elongated and cylindrical shape, French tradition. These English bottles are found on a regular basis such as the *Queen Anne's Revenge* (Wilde-Ramsing, Carnes-McNaughton 2018: 137)

or the *Great Ranger* (Gulseth 2016: 106-108). In Port Royal, the various excavations yielded more than 800 complete British-type wine bottles dated between 1660 and 1730 (Marx 1969: 4, 10, 13-14, Brown 2011: 69). They come from two taverns.

Always integrating into the domestic sphere, tableware comes from different contexts and appears very varied. Collected were metal dishes, usually in pewter (plates, dishes, pitchers, cups, teapot, coffee maker), to which can be added table cutlery in copper or pewter alloy (knives, forks and spoons), glassware (stemware, jugs and bottles) and ceramic dishes (dishes, bowls and jugs). Very common in Western Europe since the 14th century, pewter dishes, not very fragile and unbreakable, are quickly adopted on board vessels of all types. From the seventeenth century, it is produced mainly in England

and France, a phenomenon that is also spreading in colonies across the Atlantic where trained artisans from Europe came to develop their business and increase their trade. Plates and tin dishes are very common on board ships, like the pirate ships *Whydah* and *Revenge*. On the *Revenge*, 35 examples of British production were discovered, including one eared porringer, 13 plates and 21 platters between 17 and 45 cm in diameter (Wilde-Ramsing, Carnes-McNaughton 2018: 134-135). Five different trademarks have been identified, including Henry Sewdley of London from 1709 on three plates, George Hammond, registered in 1695, and John Stile, 1689. In Port Royal, nearly 300 pewter objects have been discovered dating back to before 1692 (Gotelipe-Miller 1990: 25). A wide variety of objects make up this assemblage including crockery, cutlery, table accessories and personal effects. The majority of these elements were produced in England but some pieces come from France and Holland. A total of 155 plates and dishes were inventoried, representing 57.6% of the collection. As on the

Revenge, trademarks were found on many plates such as the initials "SB". These initials surrounding a pineapple are found on 31 dishes and tin plates. The peculiarity of this brand is its link to Simon Benning, master pewterer from North London originally from the Worshipful Company of Pewterers, who came to develop his business in Barbados from 1656 and Port Royal in 1660. It seems that his trademark was inspired by the emblem of Port Royal represented on the coat of arms founded in 1661 in London and on which we find this pineapple (Gotelipe-Miller 1990: 64-65).

Regarding the drinks, we find stemmed glasses or decorated glass cups. They evoke a high social status in connection with gentlemen consuming in the taverns of Port Royal or in the cabins of ships. The stemmed glasses found in Port Royal are derived from British and Venetian-style productions (McClenaghan 1988: 86), while the Bohemian-style wheel-engraved cups are probably made in France (McClenaghan 1988: 243) (**Figure 13**).

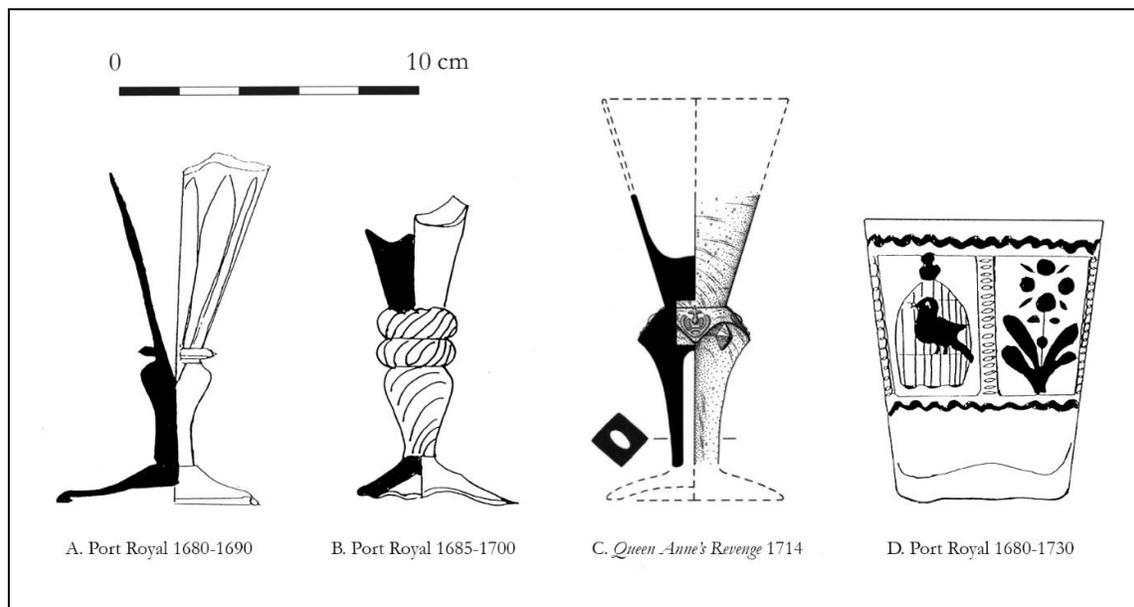


Figure 13. Drink glasses from Port Royal and *Queen Anne's Revenge* shipwreck (from McClenaghan 1988; Wilde-Ramsing, Carnes-McNaughton 2018).

3.2.4. Trade and goods

Revealing the commercial activity of Port Royal or prizes taken by pirate ships, many objects interpreted as goods have been identified on the targeted archaeological sites. This category of artifacts brings together various objects that reflect a certain globalization with varied origins within a single assembly. There are seals and seals meant to close the textile bags containing various commodities and whose origin could be indicated, currencies, ingots and gold powder with different origins, glass beads very often originated from Europe, objects related to the sphere of slavery (shackles, remains of shackles and gold jewelry) or Chinese blue on white export porcelain. To help manage these various goods, measurement and weighing tools have been discovered within these contexts such as balances and monetary weights.

Out of the popular image of the pirate and his treasure, the discovery of coins aboard the wrecks of pirate ships remains rare in archaeological context because it obviously depends on the history of the sinking. Indeed, if the vessel was scuttled voluntarily by its captain or if the vessel sank slowly due to a sandbar, it is easy to think that the treasure on board was taken by the crew with the most precious items. This is precisely what happened for the *Queen Anne's Revenge* in 1718 (4 coins) or the *Speaker* in 1702 (34 coins) and the *Fiery Dragon* in 1721 (13 coins) in the Indian Ocean. It is therefore not surprising that the excavations of these shipwrecks revealed only a few coins. Nevertheless, the figures that will be advanced are to relativize because none of these three shipwrecks has been exhaustively searched. As an exception, *Whydah Galley* holds more than 15,000 coins mostly in silver. The ship sank with her crew, also trapping the entire cargo including her monetary treasure. There are thousands of *reales* of which 31 silver coins are equivalent to an 18th century pound *sterling* (Clifford, Kinkor 2007:

121-122). Among the most singular pieces, there is the presence of a silver *demi-écu* of Louis XIV struck in 1691 and a silver *real* of Philip IV struck in 1693 in Potosí, Alto Perú (present-day Bolivia) (Clifford, Perry 1999: 145). Apart from the consequent assemblage of *reales*, several other currencies of very varied origin have been identified as English *shillings*, *crowns* or *half-crowns* and *centimes* and other French coins from different workshops (Rennes, Saint-Menehould, Bordeaux, Paris, Limoges and La Rochelle), and a Scottish *bawbee*.

In addition to the currency, two other forms of payment could be identified: gold and silver bullion and gold nuggets, also called dust or gold grains. For the ingots, the *Whydah* shipwreck yielded at least seven pieces of gold bullion and three silver ingots (Clifford, Kinkor 2007: 16, 124). Melted and molded into transportable pieces in a pocket, the gold ingots display knife-made marks, likely made by pirates to test and make sure they were solid gold, not just gold hiding a lead core. The gold powder is also found on the *Whydah* as well as on the *Queen Anne's Revenge*. The presence of this gold dust aboard these ships is surely linked to their slaving activity before they were captured by pirates such as Bellamy and Teach. For the latter, we know that when he and his crew took *La Concorde*, they stole more than 20 pounds (9 kg) of gold dust (Wilde-Ramsing, Carnes-McNaughton 2018: 150). It is known that the French slaver went several times to the West African coast between 1713 and 1717. Therefore, it is quite possible that these grains of gold come from these localities. The *Whydah Galley* also cruised in the same waters between the end of 1715 and the beginning of the year 1716, among the gold dust many fragments of Akan gold jewelry were found. On the *Revenge*, the excavations were able to bring to light only 20 gr while on the *Whydah*, it is near 7,000 grains that were discovered (Hamilton CE 2006: 144).

As mentioned above, the discovery of this gold dust reflected on those two shipwrecks can also be related to remnants of African gold jewelry belonging to the Akan tribes who lived on the West African coast, between the current Ghana and Ivory Coast. African gold was prized by international pirates because of its purity and consistent quality. Remnants of gold jewelry have been found on *Queen Anne's Revenge* and *Whydah Galley*.

3.2.5. International artifacts

Whether in shipwrecks or on land sites, the artifacts discovered appears clearly international. The European sphere, especially the British and French material culture, is mixed with objects from Germany, Holland, Scandinavia, Asia, India and Egypt. England supplies a large number of items such as cannons, jacket buttons and various buckles, London tin ware with various identified craftsmen, glass wine bottles, wine glasses, kaolin clay tobacco pipe of the Bristol workshops, monetary weights and various currencies (*shillings* and *guineas*). The majority of these objects come from Port Royal and the wreck of *Whydah Galley*.

For France, we note the presence of infantry swords made in Saint-Etienne, rifles from the workshops of Tulle, green glaze ceramics of Saintonge, a syringe and a pewter clyster produced in Paris and Rouen for which the artisans are known, nesting weight set from Montpellier, a lead shipping seal of Narbonne and coins of the reigns of Louis XIII and Louis XIV. It should be noted that most French objects come from *Queen Anne's Revenge* as well as the *Whydah Galley*.

For the rest of Europe, the Venice workshops have produced many stemware and glass beads, often called in France "perles de Venise," that have been disseminated to the transatlantic colonies of America, the artisans of Nuremberg have marketed throughout Europe monetary weights, tokens and bucket, while bellarmine sandstone jugs from the

Rhine Valley are as common on shipwrecks as Chinese export porcelain. On the pirate shipwrecks, cannons are also produced in Sweden and Denmark as well as coins from Holland and Spain. Finally, the oriental sphere is also well represented with the Chinese blue on white export porcelain that ranges from the second half of the 17th century thanks to the export of the Jingdezhen ware (South of China) which is encountered in very large quantity in Port Royal or on shipwrecks of the Indian Ocean like the *Fiery Dragon*, but partially within the shipwrecks of the Caribbean space. Of course, artifacts from India and the Ottoman Empire (potteries, coins and statuettes) are also present in large numbers for the archaeological contexts of the Indian Ocean, on Sainte-Marie Island off the northeast coast of Madagascar, and on the island of Mauritius.

4. Terrestrial perspectives for the archaeology of piracy in the Caribbean Sea

Apart from the archaeology of pirate shipwrecks, the archaeological study of land occupations by Caribbean buccaneers remains rare but nevertheless appears to be very promising. Pirate lairs occupations result in ephemeral camps in perishable material, the installation of batteries and defense systems.

Historically, Tortuga Island is the emblematic landmark of the Filibuster but it is not the only site of Hispaniola occupied by the Brethren of the Coast. Petit-Goâve, Léogane and Port-de-Paix are also important sites of the French buccaneers in the 17th century. These free and hard-to-control men depended on a governor who obeyed the king, such as Governor Pierre-Paul Tarin de Cussy (Governor of Saint-Domingue [Haiti] 1684-1691). It is the latter that promotes the development of fortifications very useful to pirates. Thus, the study of the fortifications of the buccaneer era appears both as an original way of approaching this

history and as an invitation to develop a specific program of archaeological research (Pavlidis 2019, Pavlidis 2019, forthcoming). Several French historians

and archaeologists have worked on the topic of defense systems in Santo Domingo (Hrodej 2014, Vidal 2010).

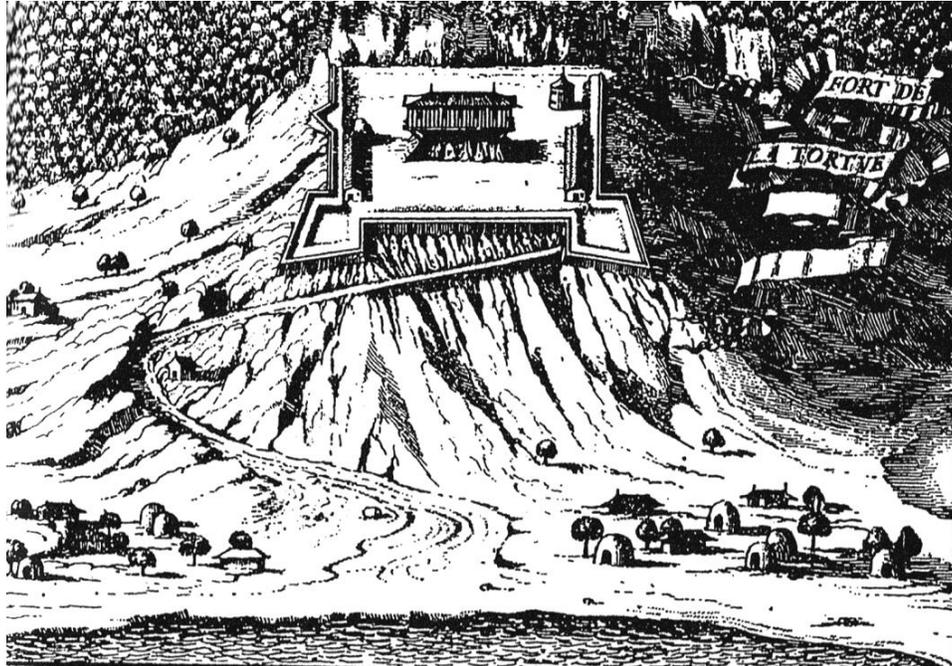


Figure 14. Fort de la Roche or Fort Le Vasseur (by Oexmelin 1678).



Figure 15. Basse Terre and Fort de Blondel on Turtle Island in 1667 (by Blondel engineer, BNF Div 5, portefeuille 1).

The two forts of Tortuga Island, the Fort Le Vasseur founded around 1640 (**Figure 14**) and the Fort de Blondel completed in 1674 (**Figure 15**), are of real interest for the history of the filibustering/buccaneering, and for that of the first French settlements in Santo Domingo during the second half of the 17th century. The rarity of this type of site and the various descriptions that suggest differences, or even evolutions of the buildings, such as the addition of a ditch on the attack front of Fort de Blondel, deserve that archaeologists be interested. In 1987, a French-Haitian mission composed of eight researchers went to the island (Coustet, Cauna 1987: 6-12; Camus 1987). Their mission was to identify the main sites, including the two forts. Fort Le Vasseur was found, the rock still in place and a summary clearing allowed the team to detect traces of development. They also easily found the fort designed by Blondel. There is still a piece of wall, ruptures of slopes and three guns! The research team also identified a high battery whose ruins are "relatively speaking to us". They argued for archaeological excavations and publish their conclusions in the numbers 174-175 of the Franco-Haitian magazine *Conjonction* in 1987 by drawing attention to the fragility and interest of those places. No excavations have been undertaken since 1987. The island, relatively isolated from the large neighboring island, is therefore relatively spared modern

facilities, which should encourage the resumption of work in the field. A future French mission will be organized soon in order to make a record and a statement of the condition of the remains at various elevations and to record measurements and geolocation (personal communication of L. Pavlidis).

Apart from the study of defense systems, the search for ephemeral pirate encampments on the shores of the Caribbean islands seems almost unheard of. In 2016, preventive archaeological survey by INRAP conducted under a villa construction in Grand-Case bay, on Saint-Martin Island (French West Indies) discovered the original remains of early colonial occupation on the seaside attributed on the second half of the 17th century or the beginning of the 18th century (Coulaud, Sellier-Ségarde 2019). Diversified artefacts, associated with a precarious temporary settlement reflect upon people origins and social statutes, probably buccaneers, as is the case for other Caribbean islands. For example, an ink drawing representing dwellings along the beach, close to an anchorage, indicated as Amerindian and buccaneer occupations (**Figure 16**). This illustration from the 1630s was used by Hessel Gerritsz in a Dutch West Indies Pilot/Rudder. The buccaneer installations are regularly mentioned along the beaches on unoccupied islands near the freshwater and anchorage points.

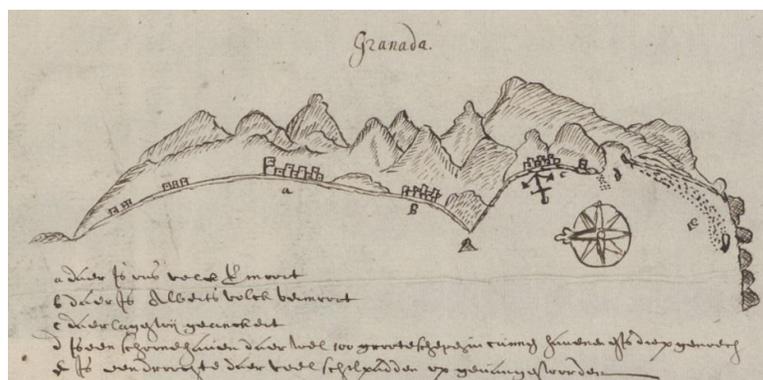


Figure 16. Ink drawing depicting two coves of the island of St. Vincent (Dutch National Archives, The Hague).

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