

Chapter 21

Salt Archipelago: History and Archaeology of Salt Cultivation and Harvesting in the Caribbean

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Abstract This chapter offers the first overview of the history and archaeology of salt extraction and production in the Caribbean. First, the history of salt exploitation from early colonial times to the present is offered, providing a broad coverage of *salinas* throughout the entire Caribbean region regardless of linguistic barriers and colonial frontiers. This is followed by summaries of the various archaeological investigations that have focused on pre-colonial, colonial-, and republican-period salt cultivation and harvesting in the Caribbean. The chapter closes with a series of pointers for future archaeologies of salt in the Caribbean.

Keywords Salina · Saltpan · Salt pond · History · Archaeology · Overview

21.1 Introduction

The Caribbean is a vast and vibrant archipelago dotted with a wealth of islands embraced by the American continent. Here, I define the Caribbean in its broadest and most inclusive sense, including not only the Greater and Lesser Antilles but also the mainland coasts of South and Central America from Venezuela to Mexico's Yucatan Peninsula. The Caribbean is in fact a "meta-archipelago", a sinuous tropical constellation of thousands of islands surrounded by extensive continental coasts (Fig. 21.1) (Benítez Rojo, 1998, p. 11). This view of the Caribbean seeks to overcome more parochial understandings of the region still fractured along colonial and linguistic fault lines that often fail to view it from more expansive and inclusive perspectives.

In the Caribbean, where saltwater pools and rains are few, salt crystals swiftly grow in the heat of the tropical sun. Certain sub-regions of the Caribbean are therefore more suitable for salt cultivation and harvesting, making the southeastern

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Fig. 21.1 Map of the Caribbean region indicating the sub-regions mentioned in the chapter

Caribbean, several of the Lesser Antilles, and the Bahamian Archipelago prime locations for this activity (Fig. 21.1). In this chapter, I offer the first overview of the history of salt harvesting and cultivation in the region. Brief attempts at such an overview have tended to offer perspectives from specific linguistic and therefore regionalist points of view that fail to grasp the broader transimperial and transnational historical picture. It is hoped that this inevitably abridged overview offers a starting point for future, more detailed attempts.

The Caribbean has also seen numerous archaeological studies of salt cultivation and harvesting that offer new insights—not only into the processes of producing salt in the precolonial and colonial past and its local, regional, and global itineraries, but also into the material lives of the seafarers who extracted and traded this valuable commodity. I close by discussing ongoing research and the great potential for archaeologies of salt in this richly diverse region.

21.2 Salt Cultivation and Harvesting: A Few Key Terms

Before proceeding, we must define a few key terms that will be mentioned throughout this chapter. I utilize the term *salina* to refer to any coastal lagoon that has been used to harvest solar salt that crystallizes from the brine with the aid of solar

radiation. Salt can crystallize in natural unmodified lagoons, without human intervention, or in anthropogenically modified lagoons that are used to cultivate sodium chloride through constant human management of the saltworks. Salinas at which the specific process of obtaining halite (sodium chloride as a mineral) is known can be categorized into two types. The first is a saltpan, that is, a periodically dried-out salina where salt is cultivated using concentrating ponds and final crystallizing pans where the water evaporates and halite forms on the surface. The second is a salt pond, which is a perennially flooded salina where halite precipitates in the brine and sinks, being harvested from subaqueous deposits. I also employ the peculiarly agricultural terminology of “harvesting” and “cultivating” salt, since this is the historically documented way in which saltworkers described their processes of producing and obtaining sodium chloride in Caribbean salinas (Antczak, 2018, p. 67). Let us now survey the history of salt harvesting and cultivation in the Caribbean.

21.3 A History of Salt Harvesting and Cultivation in the Caribbean

21.3.1 Contact Period

Ethnohistorical evidence for the use of salt by Indigenous peoples of the Caribbean region during the earliest days of Spanish contact is sparse. While the abundance of salinas with naturally crystallizing salt throughout the Caribbean meta-archipelago and on the continental coasts must have been recognized by the natives, it is uncertain whether, before the arrival of Europeans, the Indigenous peoples used salt for preserving fish and meat or solely for nutritional and culinary needs.

As early as 1511, Fray Pedro Mártir de Anglería (1989, p. 73) noted regarding the salina of Araya in present-day eastern Venezuela that “the Indians have great esteem for those salinas, because they not only use the salt for domestic purposes, but also, using it as bricks, they sell it to strangers in exchange for foreign goods.” This is the earliest such reference, and given that the Spanish presence was just beginning to take hold on the Coast of Pearls, it is very possible that Indigenous use of the salina, as noted by Mártir de Anglería, had deep precolonial roots; however, the description “domestic purposes” is far too vague to determine if the Indigenous peoples, later termed *Guaiquerías* by the Spanish (Antczak et al., 2024), used the salt to preserve fish or only for culinary/nutritional purposes.

Chronicler Francisco López de Gómara (2021 [1552], p. 179), who never traveled to the Americas, wrote four decades later that the natives of eastern Venezuela “salt or dry [fish] in the sun... some they grill for preservation, others they cook, knead, and season to sell during the year.” The Indigenous inhabitants clearly had alternative means of preserving fish that did not require salt and, as shall be seen in the next section, the salt and salted fish trade between the colonists in the Greater

Antilles and the Indigenous peoples in Araya was active as early as the 1510s, and salting for preservation may well have been introduced by the Europeans.

The Indigenous people who inhabited the north-central region of today's Venezuela also probably utilized the salt pans of the coast in precolonial times, since the Jirarara are noted in the 1550s as having traveled overland to reach the coastal salina of Borburata to exploit its salt, which they then traded with others further inland (Bjord Castillo, 2001, pp. 65, 103, 113–115). Around the same time, Florentine traveler Galeotto Cey (1994, p. 59) noted that the Indigenous inhabitants of the Lake Maracaibo region to the west traded salt and fish with neighboring tribes for corn, roots, and gold. Clearly, sea salt was a commodity that was extracted from the coastal regions of Tierra Firme and traded further inland.

21.3.2 Sixteenth- and Seventeenth-Century: Spanish Araya and Dutch and English Encroachment

Salt enabled early modern European colonialism. It was specifically salt-preserved provisions that enabled European seafarers and explorers to venture ever farther out to sea and eventually cross the Atlantic and reach the Americas in 1492. When they arrived, one of their principal needs was finding a suitable source of salt. The Greater Antillean islands of Hispaniola, Cuba, and Puerto Rico, the first territories invaded and settled by the Spanish, had various salinas where salt crystallized naturally. As early as 1511, the large salina of El Corozo, located in Puerto Rico's southwestern Cabo Rojo peninsula, was assigned for exploitation to a protégé of the Viceroy of the Indies, Diego Columbus, Christopher Columbus' eldest son, but due to corruption, the enterprise failed (Ramírez Padilla, 2012, pp. 9–11). This salina, along with the Salina de Baní and others on Hispaniola, as well as numerous salinas on Cuba, was mostly utilized by locals. Meanwhile, the Spanish and Genoese in Santo Domingo, San Juan, and Havana soon established commercial relations with Tierra Firme and, until the end of the eighteenth century, primarily shipped salt from there for cattle ranching, curing hides, and salting meat and fish (Fig. 21.2) (Cey, 1994, p. 35; de Civrieux, 2021, I, pp. 236, 261; Hidalgo Torres, 2014; Latorre, 1919, pp. 49–50; Nestares Pleguezuelo, 1996, pp. 60–64, 90).

The Spanish Tierra Firme provinces of today's Venezuela — from east to west, the Provinces of Margarita, Cumaná (or Nueva Andalucía), Caracas (or Venezuela), and Maracaibo — boasted the greatest abundance of salinas in the Caribbean (Fig. 21.3). This is because the Peri-Caribbean Arid Belt extends across vast portions of the Venezuelan and Colombian coastlines, from the Araya Peninsula in the east to the Paraguaná Peninsula and the Peninsula of La Guajira in the west, as well as across numerous Leeward Antilles, including the large islands of Margarita, La Tortuga, Bonaire, and Curaçao (Ochsenius, 1979). By far the most important of these at the time was the great Salina of Araya in the Province of Cumaná, where Greater Antillean ship crews and local Indigenous Guaiquerí people supplied



Fig. 21.2 Map of the Northern Caribbean indicating the locations of salinas. The salinas mentioned in this chapter are labeled



Fig. 21.3 Map of the Eastern and Southern Caribbean indicating the locations of salinas. The salinas mentioned in this chapter are labeled.

sodium chloride and salted fish to the Spanish Caribbean from the early days of Hispanic colonization (Cunill Grau, 2007, p. 393; de las Casas, 2022 [1561], p. 959; Marrero, 1976, p. 271; Otte, 1977, pp. 128, 289; Quezada de González, 2011, pp. 27–28, 36–37).

The reasons for favoring Araya salt were not only commercial but also practical, as the peninsula's salt was deemed 30% better than salt from Iberia (Goslinga, 1971, p. 119). This superior quality was due to the fact that, unlike other salinas in the Caribbean region that produced sea salt obtained through the natural, controlled or uncontrolled, evaporation of seawater, producing sodium chloride along with various associated salts, the Araya salina was not connected to the sea. Its salt formed when seasonal rains flushed halite from salt clays in the surrounding hills into the lagoon; there, aided by the tropical sun and constant wind, vast quantities of "very pure sodium chloride" accumulated below the brackish water in thick layers, as described by German naturalist Alexander von Humboldt (1852, pp. 185–186) at the end of the eighteenth century. For this reason, as early as 1511, Mártir de Anglería (in Felice Cardot, 1962, pp. 16) extolled the salina of Araya, saying it had "the whitest and best salt" and that it could "load as many ships as sail the sea." In 1603, Diego Suárez de Amaya (in Dávila, 2015, p. 50), Governor of Cumaná, also remarked that the salina is "so abundant, and the salt grows there so readily that if one month after 300 ships had harvested salt, the same number returned to harvest salt in the same spot, they would find the salt so abundant as if it had never been touched." A final practical reason that made Araya salt so attractive was the fact that no saltpan infrastructure had to be built as in other salinas, since the salt crusts formed naturally and only had to be broken up and lifted from below the waters of the shallow lagoon.

The vast and productive salina of Araya drew the attention of the Dutch from West Friesland who, barred by Spain from obtaining salt from Portuguese saltpans in 1598, began to furtively load their voluminous and lightly armed fluit ships at Araya in 1599 (Goslinga, 1971, p. 118). The Dutch were desperate for salt to preserve herring — their key commodity in the highly lucrative Dutch Mother Trade in the Baltic. By 1605, a total of 565 fluit ships had sailed to Araya from the Low Countries to gather salt as well as engage in lucrative contraband with the Spanish colonies (Hulsman, 2009, p. 54; Israel, 1990, p. 63). Alarmed by the brazen incursions, the Spanish Council of the Indies deemed the threat of the Dutch *zoutvaerders* (salt-carriers) too great and considered flooding or poisoning the saltpans to prevent further exploitation; in 1605, the ad hoc Armada de Barlovento was formed and crossed the Atlantic, attacking the Dutch at Araya as well as a number of English and French ships that were also there (Varela Marcos, 1980). The violent suppression proved largely effective, and the *zoutvaerders* would not return to Araya until 1621, following the end of the Twelve Years' Truce and the formation of the Dutch West India Company (WIC). Emboldened, this time the *zoutvaerders* landed at Araya with hundreds of infantrymen and set up two provisional forts (Felice Cardot 1982, pp. 113–114). The Spanish, however, responded swiftly, and in 1622, the initial stages of an imposing fortress were constructed at the entrance to the salina — the Royal Fortress of Santiago de Arroyo, designed by renowned military

engineers Juan Bautista Antonelli and Cristóbal Roda. This fortress successfully repelled a large Dutch fleet that same year and the next, ultimately forcing the Dutch to seek salt elsewhere (Dávila, 2015, pp. 60–64). They were ousted by the Spanish from the saltpan on the Island of St. Martin in 1633, La Tortuga in 1638, and the mainland saltpan of Unare in 1640, the latter two of which the Spanish flooded (Goslinga, 1971, pp. 131–137). After capturing Curaçao in 1634, the *zoutvaerders* also made inroads on Bonaire, which had a salina at its southern end. Eventually, in 1648, following the signing of the Peace of Westphalia, Dutch control of half of St. Martin and Bonaire, along with their respective salinas, was recognized by the Spanish.

The Bonaire salina, however, was not Araya and had to be worked to turn it into a functioning saltpan. At some point before 1643, saltworks were built on the salina and were thereafter manned by enslaved Africans supervised by local indigenous Caquetíos (Gehring, 2011, pp. 4, 7–8, 18, 23–24; Schiltkamp & de Smidt, 1978, pp. 10, 24, 25, 43). St. Maarten's saltpan was being utilized by the WIC during the following decades, and on Curaçao by 1665, the English remarked that 50 ships could load salt a year. After 1668, further saltpans were built in a number of Curaçao's southern bays (Description of the Island of Curaçao, 1880 [1665], p. 279; Langemeyer, 1934, p. 172). Following 1648, the WIC supplied their herring fisheries with salt from these new Caribbean possessions, fruitlessly attempting for nearly two decades through diplomatic means to regain access to Araya. However, after the peace treaty of 1661, they were once again permitted to obtain the Portuguese salt they had relied on throughout the sixteenth century (Goslinga, 1971, pp. 138–139; Ojer, 1962, pp. 26–31). Meanwhile, the English, who had already settled the east coast of North America in the early seventeenth century and started exploiting the exuberant fisheries of the Grand Banks, were also in need of cheap Caribbean salt to preserve their valuable catches. Enter La Tortuga Island.

21.3.3 *Saltertuda: The Most Important Salt Island in the Caribbean*

La Tortuga Island, not to be confused with the pirate lair of Tortuga to the north of Haiti, is the largest island of the Venezuelan Federal Dependencies and the largest still-uninhabited island in the Caribbean, lying some 100 km from the mainland (Fig. 21.3). At the southeastern end of the island, at Punta Salinas Bay, there is a saltpan nearly one kilometer in length. Following their violent confrontation with the Dutch in 1638, the Spanish left a large portion of the saltpan flooded, forming today's Los Mogotes Lagoon (Antczak, 2018, pp. 61–62). Surprisingly, however, the abandoned saltpan continued to be productive, and it quickly drew the attention of Anglo-American merchants from the British colonies of New England, as well as Bermuda and various British Caribbean islands. Like the Dutch, these merchants set their eyes on La Tortuga because its salt was abundant and free, and it was furthermore conveniently located on the return voyage to North America from the principal

British sugar island of Barbados. The first known Anglo-American salt foray to La Tortuga occurred in 1638 when the Salem ship *Desire* returned to the Massachusetts Bay Colony loaded with sodium chloride (Newton, 1914, p. 260).

The documentary record for the following decades is limited, yet the available sources clearly indicate that by the 1680s, the island had become a prime salt destination. In 1682, pirate naturalist William Dampier visited the saltpan and observed that it was already “much frequented... by Merchant Ships, that come thither to lade Salt” (Dampier, 1699, p. 56). The legality of these Anglo-American ventures to the Spanish island was, nevertheless, an important point of contention, as no international treaty explicitly allowed the foreign salt harvesting activities. The Anglo-Americans based their right to La Tortuga salt on a literal reading of Article VIII of the 1670 Treaty of Madrid, where the uninhabited and physically unpossessed island did not fall within the inhabited Spanish havens to which the British were prohibited from sailing and trading (Hertslet, 1878, p. 45).

The late seventeenth- and early eighteenth-century golden age of piracy and increased Spanish patrolling of the Venezuelan Caribbean resulted in several unprotected Anglo-American ships being assaulted at La Tortuga. These incidents first led to the hiring of private armed escort ships by Anglo-American merchants and then to the formation of the official “Saltertuda Fleet” in 1700, which would be convoyed every winter and spring by a British man-of-war stationed in New England (Antczak, 2022, pp. 66–74; Bellomont, 1910 [1700], p. 196). The Saltertuda Fleet became an Atlantic-world institution and is recorded to have sailed at least 25 times during the eighteenth century. The growing importance of La Tortuga’s salt for New England and the contested issue of the legality of British salt raking on the Spanish island reached the British Crown, and eventually, in 1715 — an entire article — Article III of the Treaty of Commerce signed at Madrid, explicitly granted British subjects free and uninterrupted access to La Tortuga salt (Hertslet, 1878, p. 82). The following year, undoubtedly boosted by the favorable treaty, a large Saltertuda Fleet of 60 ships arrived at the island to rake salt.

My analysis of the fragmentary eighteenth-century Naval Office Shipping Lists (NOSL) for Massachusetts (including ports such as Boston, Salem, and Marblehead), New Hampshire (Piscataqua), New York, and Barbados, as well as dozens of Anglo-American newspapers, reveals that from 1700 to 1775, at least 958 ships entered the Eastern Seaboard carrying salt from La Tortuga (Antczak, 2023). La Tortuga’s renown in New England was so significant that the trademark “Saltertuda salt” was regularly advertised in colonial newspapers during the eighteenth century (Fig. 21.4). I have also recorded 133 English exonyms from Anglo-American documentary sources, including Tartuga, Saltotudoes, Saltertuda, Saltaturga, Salt-Tartoodas, Torguga, Tartoudies, and Tuda. Most of these creative exonyms derive from “Salt Tortuga,” the combined English and Spanish toponym for the island. To my knowledge, this is the greatest number of exonyms given to any island in the Caribbean, reflecting how many times it must have rolled off the tongues of Anglo-American mariners in the age of sail. Surprisingly, the uninhabited Spanish island was so ingrained in the Anglo-American collective imagination that Captain Giles Seaward

The figure displays eight distinct newspaper advertisements for salt, arranged in a grid-like fashion. Each ad is enclosed in a decorative border. The top-left ad is for 'Choice Saltatudas Salt' by John Tweedy, mentioning a sloop named Lydia. The top-right ad is for John Channing, located at the Locust Stump. The middle-left ad is for 'Best Saltertuda and Anguilla Salt' by Job Bennet. The middle-right ad is for 'GOOD Saltertuda SALT' exchanged for flax-seed by Benjamin Henshaw. The bottom-left ad is for 'Choice Saltertuda Salt, just landed' by William Torrey. The bottom-middle ad is for 'To be sold by Henderson Inches' at his warehouse near Faneuil-Hall. The bottom-right ad is for 'To be Sold by Amos Hosford' in Middletown. The bottom-most ad is for 'To be Sold by Benjamin Dolbear' in quantities of bunches of onions, barrels of pork, and stone lime. The trademark name 'Saltertuda salt' is consistently highlighted in yellow across all advertisements.

Fig. 21.4 Various advertisements for La Tortuga salt in eighteenth-century New England newspapers, with the trademark name “Saltertuda salt” highlighted.

of Piscataqua, who sailed to La Tortuga seven times, christened his brigantine “Tortuga,” and Captain Josiah Burnham of New London named his sloop “Saltatuda.”

Although British colonists also sourced salt from the Iberian Peninsula and other important Caribbean salt ponds, such as the Great Salt Pond on Dutch Sint Maarten, the Road Salt Pond on British Anguilla, and the Great Salt Pond on British St. Christopher, as well as the unclaimed saltpans on Grand Turk and Salt Cay in the Turks Islands, La Tortuga was unique because it was uninhabited. Consequently, the saltpan had no tenure rights, and rakers were not required to pay taxes or hire local enslaved saltworkers (Huntley, 1948, pp. 51, 59–60) (Fig. 21.2). The sea salt harvested from the abovementioned salt ponds involved, at a minimum, the labor of local salt workers, wooden barges, and some degree of man-made infrastructure such as dikes, channels, and jetties. Saltpans, such as those on the Turks Islands and Bonaire, required significant infrastructural investments. In addition to dikes and channels, these included pumps that fed brine into concentrating ponds and crystallizing pans, which had to be constructed and maintained year-round to ensure sodium chloride free from impurities and of high quality. Unlike the salt from many of these semi-industrial saltpans or the high-quality Araya salt, which formed when

rainwater washed halite into the lagoon, Saltertuda salt was of low quality as it crystallized naturally, entirely dependent on the whims of the climate and only aided by the harsh tropical sun and the warm, steady trade winds (Antczak, 2018). The resulting salt precipitated with numerous other unwanted minerals from the bittern that was usually purged in saltpan operations and was therefore coarse, large-grained, reddish, and “fiery” as well as contaminated with shells and other “trash” (Felt, 1849, p. 212; Innis, 1954, p. 161; McFarland, 1911, pp. 95–96, 66; Sloane, 1707, p. lxxxviii). For these reasons, unlike the salt from Portugal, Spain, or Sint Maarten, Saltertuda salt was deemed unsuitable for curing the top-quality saltfish that was principally exported to Iberia (Colonial Society of Massachusetts, 1927, p. 241).

Surprisingly, even though its salt was of low grade, during the eighteenth century La Tortuga became the most important salt island in the Caribbean (Brownrigg, 1748, p. 24). The reason for this was that Saltertuda salt was of strategic economic importance to the British and French sugar economy by way of refuse New England saltfish. In 1714, a year before the British were granted the right to exploit salt on the island, the Council of Trade and Plantations had argued in a letter to Queen Anne that,

The salt carried from thence [La Tortuga] to New England, is used chiefly for curing fish, which is either cadelscale fish or mackrel, [the second of which] are of such consequence, that the sugar islands cannot subsist without it; their negroes being chiefly supported by this fish. So that if they [the sugar planters] were not supply'd therewith from New England... they would not be able to carry on their sugar works. This has been confirmed to us by several considerable planters concerned in those parts (Council of Trade and Plantations, 1926 [1714], p. 289).

So, unlike the premium-grade cod exported principally to Iberia, which was cured with finer salts, the coarse and fiery Saltertuda salt was used to preserve “West India”-grade saltfish—badly dressed or cured, undersized, spotted, damaged, and spoiled “refuse” fish to be sold to the English and French sugar plantations of the Lesser Antilles (Francis, 2022, p. 93; Hunter, 1996, p. 86). On these islands, where sugar crops had overrun the arable land, this refuse saltfish was the primary source of protein fed to enslaved laborers toiling on the plantations.

In this way, anodyne Spanish La Tortuga became an essential cog in the mercantile capitalist system of the British (and, in a smaller measure, French) Empire — Spanish salt fueled the economies of the Hispanic Empire’s principal competitors. In fact, the yearly voyages of New England Saltertuda Fleets during the eighteenth century, carrying refuse saltfish and provisions to the West Indies, their subsequent month-long stopover to harvest salt at La Tortuga, and their return to their homeports loaded with the free sodium chloride, created an unmistakable triangular trade pattern within the larger and more notorious Triangular Trade in the Atlantic world (Fig. 21.5).

As late as 1779, John Jay, the ambassador of the fledgling United States to Spain, was instructed to “use [his] utmost endeavors for obtaining permission for the Citizens and Inhabitants of these States to lade and take on board their vessels Salt at the Island of Salt Tortuga” (Library of Congress, 1909, p. 1179). It was only after 1781, when a Basque corsair ousted what were likely New England salt rakers from the saltpan, that the island ceased to be visited by Anglo-American ships, marking

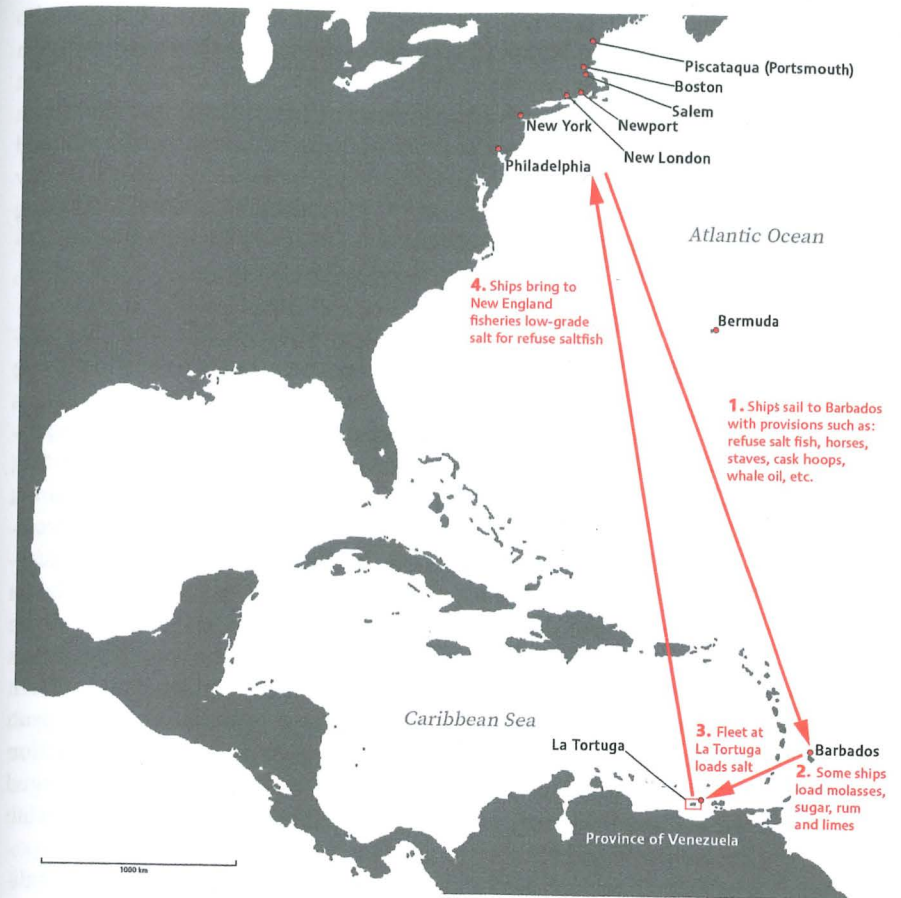


Fig. 21.5 Map of the Caribbean and North American regions highlighting the smaller triangular trade created by the Saltertuda Fleets

the end of La Tortuga’s era in the limelight and returning the saltpan to its original obscurity (de Amezaga Aresti, 1966, p. 94).

21.3.4 Late Eighteenth Century to Present

While La Tortuga’s saltpan was visited primarily by Anglo-Americans from the northern colonies, Bermudians and other British Antilleans also frequented the island. The Bermudians, who sold sea salt along the eastern seaboard of North America, also had the salt islands of Grand Turk and Salt Cay much closer to home, where they first raked and then cultivated salt on saltpans from the end of the seventeenth century. The islands were eventually claimed by Britain as late as 1766 (Gregory, 1978,

pp. 18, 55). Intra-imperial competition between Bermudians and Bahamians (who had plenty of salinas in their archipelago) for these islands was fierce and led to much tension in the second half of the eighteenth century (Jarvis, 2010, pp. 208–210). Not only was salt from there shipped to North America and, during the American Revolution, to the rebelling colonies, but ships from British, Spanish, French, and Dutch islands also sailed to the Turks Islands to trade goods, and in many cases, buy salt (Kennedy, 2007, pp. 226–229). At the end of the eighteenth century, salt raking and cultivation in the Caribbean by US Americans saw a decline as industrial saltworks were set up in New York and elsewhere on the East Coast (Bishop et al., 1864, pp. 289–295; Dell’Oro, 2022, pp. 146–147; Werle, 1940, pp. 85–89).

Throughout the Caribbean, there were also many less productive or geopolitically less strategic salinas on various islands and the continental coast, which were cultivated or raked primarily by locals (Figs. 21.2 and 21.3). Some salinas, such as that on Great Inagua in the Bahamas, were enormous and had the potential to produce vast quantities of salt. However, unlike strategic locations like La Tortuga, Sint Maarten, or Araya, where minimal infrastructural investments were made, Great Inagua was not situated in key navigational corridors. Consequently, large investments were required by colonial authorities to make these salinas productive, resulting in their relatively underutilized status. Some islands, such as Guadeloupe, had a few salinas, but these only produced naturally crystallized salt, and as was the case with salinas that were not tended to or modified for cultivation, the resulting salt was low-grade and “corrosive” (Du Tertre, 1654, pp. 132–133). In the early-modern Caribbean, geopolitics were so volatile due to constant wars between European empires, and seizures of colonial territories were so common, that the construction of saltworks on many of these insular salt pans was unviable. The situation changed markedly in the nineteenth century, when no longer imperial politics, but private capital, drove economic interests.

During the nineteenth century, semi-industrial saltworks were built on various salinas in the Caribbean and rented out to local or foreign businessmen. Such was the case of the salt pan on the island of Cayo Sal, in the Venezuelan Los Roques Archipelago, where a US-American businessman had been granted the right to cultivate salt in the late 1830s and 40s and employed more than a hundred Bonairean freedmen to build the saltworks that principally exported salt to the US; salt exploitation was later granted to a Bonairean entrepreneur (Antczak, 2019, pp. 111–123). 150 kilometers to the west, salt production on Dutch Bonaire had increased in the eighteenth century, and additional enslaved Africans were brought from Curaçao as convicts to labor on the salt pans as punishment (Goslinga, 1979, p. 113; Langemeyer, 1934, p. 176; Schiltkamp & de Smidt, 1978, pp. 164, 209). Two salt pans were built on Bonaire in the early nineteenth century, and the use of enslaved laborers to cultivate and harvest the mineral continued under brutal and dehumanizing conditions; salt from here was primarily exported to the US, but also went to Cuba, Puerto Rico, Suriname, and neighboring Curaçao (Stelten & Antczak, 2023). On Sint Maarten, the previously communal salt-harvesting arrangements among the Dutch and French colonists, who employed enslaved individuals in the salt pans, changed after 1831. Following this period, concessions were regularly granted to prominent local entrepreneurs, and the

Great Salt Pond, which had previously seen limited infrastructural investment, was significantly modified thereafter (Langemeyer, 1923, p. 258; 1934, pp. 117).

Haiti had various saltworks on its dry northern peninsula that were already in use by the early 1800s, such as those in the Bay of Gonaïves, but the young republic preferred to continue importing salt from Santo Domingo (later the Dominican Republic) and the Turks Islands throughout the nineteenth century (Chauvet & Propheté, 1894, p. 207; Macaulay, 1835, pp. 129–130). On islands such as Jamaica, while salt ponds were raked by the British from the mid-sixteenth century and saltworks were built at the beginning of the nineteenth century to supply the local economy, at century’s end, salt prices were so low that these were abandoned and, like in Haiti, salt was imported from other Caribbean locales (Sperry, 2021, pp. 76–78). Meanwhile, in Venezuela during the 1870s, under the government of caudillo Antonio Guzmán Blanco, the salt pans of all states except Zulia came under centralized governmental control, and taxes on salt imports were increased in an effort to make Venezuela self-sufficient in salt supply (Vila, 1954, pp. 54–55).

In the late nineteenth and twentieth centuries, Caribbean salinas no longer drew the interest of European nations as had occurred in previous centuries: salt prices had fallen so drastically that this mineral was no longer considered “white gold,” and many salt ponds and salt pans throughout the Caribbean were abandoned. Today, large-scale industrial production by corporations such as Morton Salt on Great Inagua, Cargill on Bonaire, Indusalca in Manaure, Colombia, or Produsal at the Laguna Los Olivitos in Venezuela, and governmental saltworks at Sagua la Grande in Cuba satisfies not only domestic salt needs, but in the case of some corporations, also the international market. Meanwhile, other salinas such as those in Montecristi on the Dominican Republic and Pampatar on Margarita Island, Venezuela, or the salt basins of Grande Saline in Haiti, continue to be exploited by small producers, much the same way that saltworks in the Caribbean had historically been managed.

21.4 Archaeologies of Salt in the Caribbean

21.4.1 Precolonial Period

Archaeological investigations of the indigenous Caribbean past before European exploration and invasion have occasionally focused on sites located close to salinas. Sites on Anguilla, for example, are often found in large bays where salt ponds are also present, perhaps indicating that these were exploited by the indigenous inhabitants and the salt was traded beyond the island (Crock & Petersen, 2004). Several other precolonial indigenous sites in the Caribbean have also been found in the vicinity of salinas on Cayo Sal in the Los Roques Archipelago (Venezuela), Anegada, Guadeloupe, and Aruba (e.g., Antczak & Antczak, 2006; Davis & Oldfield, 2003; de Waal, 1999; Hofman et al., 1999; Veerstedt, 1991) (Fig. 21.3). Presently,

however, there is no direct archaeological evidence for salt harvesting at any of these sites.

Shaun Sullivan (1981) was the first to suggest that salt was being exported from certain precolonial sites in the Bahamian Archipelago, particularly site MC-6, located beside Armstrong Pond on Middle Caicos in the British Overseas Territory of the Turks and Caicos, which has been identified as a Classic Taino outpost (Keegan, 1992, p. 109) (Fig. 21.2). The first archaeological investigation explicitly addressing the question of indigenous salt exploitation was undertaken by Joost Morsink (2012, 2019) at MC-6, where he performed excavations in the indigenous village located by the pond, whose initial permanent occupation he dated to the early fourteenth century. Morsink argues that the site was occupied once the pond started to naturally crystallize salt, attracting permanent settlement since the salt could be used to preserve the abundant fish available in the surrounding water, which was in large measure used to trade with other island populations including the Taíno of inland Hispaniola (Morsink, 2019, p. 10; Morsink, 2021). Direct evidence for the salting of fish at the site, however, is not yet available and the large-scale precolonial trade of salted fish in the region remains a conjecture.

The most extensive archaeological studies of precolonial salt cultivation and harvesting have been undertaken on the Caribbean coasts of Belize and the Yucatán (Mexico). These studies have brought to light the complexities of precolonial Maya salt cultivation and harvesting in anthropogenically modified coastal saltpans, the salt's complex itineraries as it was traded throughout the region, as well as the dramatic changes in salt exploitation and commerce that occurred following the arrival of the Spanish (Andrews, 1983; Kepecs, 2005, 2014, 2015, 2018). Another notable study has investigated the mass-production of salt by boiling brine in clay pots at specialized Maya workshops on the coast of Belize (McKillop, 2002, 2018a, 2018b; McKillop and Sills this volume). These studies demonstrate that archaeological investigations of salt exploitation offer rich avenues for understanding everyday social life, mobility, and commerce in the circum-Caribbean precolonial past.

21.4.2 Colonial and Republican Period

21.4.2.1 Punta Salinas, La Tortuga

21.4.2.2 The Dutch Saltworks and Fort (1624–1638)

Historical archaeological investigations of salinas in the Caribbean have, to date, primarily been undertaken in the Southeastern Caribbean. The archaeological site of Punta Salinas (TR/S), located by the large saltpan at the southeastern end of La Tortuga, was discovered in February 1993 during an initial survey of the area by archaeologists Andrzej and Maria Magdalena Antczak. Later that year, a four-week expedition involving large-scale trench excavations was conducted at the site. These

investigations revealed eighteenth-century Anglo-American campsites by the saltpan. Three weeklong expeditions were held more recently, once in 2009 and twice in 2010. In 2010, excavations of an earthwork feature and adjacent sandy ridge site revealed the wooden Dutch fort erected by the saltpan in 1638 and brought to light evidence of the violent confrontation with the Spanish that ensued there that same year.

The material evidence recovered from these features includes various Dutch lead-glazed red earthenware cooking vessels and tablewares, Dutch and Mexican tin-glazed earthenware dishes, glass bottle fragments, lead shot, cannon balls, and other metal items, as well as 191 Dutch clay pipe fragments (Fig. 21.6). The zooarchaeological collection primarily consists of rabbit bones, with very few remains of local marine resources, suggesting that the Dutch musketeers garrisoned at the fort were likely reluctant to consume local fish and mollusks. Instead, they relied on the more familiar rabbit meat from the island's coastal dunes, along with provisions of

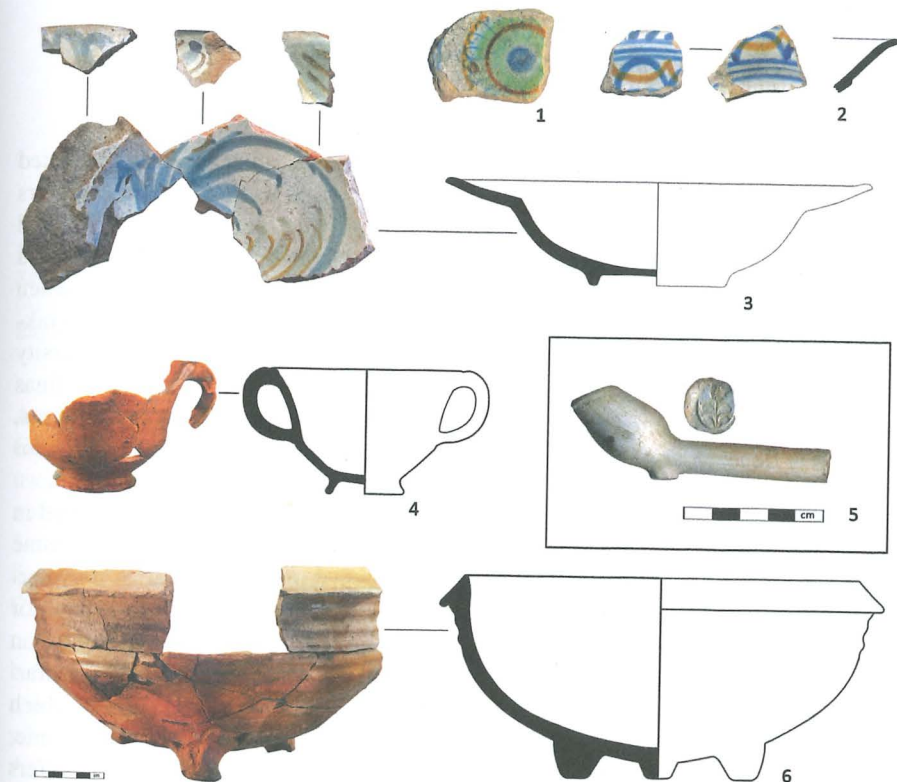


Fig. 21.6 Seventeenth-century artifacts recovered from the Dutch earthwork feature at Punta Salinas, La Tortuga Island. (1–2) Dutch tin-glazed earthenware dish fragments; (3) brimmed dish, probably of Mexican majolica and attributed to the San Juan Polychrome style; (4) Dutch lead-glazed red earthenware two-handed porringer; (5) pipe from Gouda, Low Countries, with a tulip mark; (6) Dutch lead-glazed red earthenware tripod saucepan

salted beef and pork from their ships (Antczak et al., 2015, pp. 206–207). An analysis of the distribution of impacted and unimpacted lead shot aligns with the Spanish account of the attack found in contemporary written records. Wooden crosses, likely placed by modern fishermen, probably mark the site where the Dutch musketeers killed by the Spanish were buried (Antczak et al., 2015, pp. 207–208).

Investigations of the salina itself and a careful comparison with the documentary and visual evidence from the 1630s revealed that, before the final confrontation in 1638, the Dutch had resiliently weathered previous Spanish aggression that included the burning of their saltpan infrastructure and the partial flooding of their pans. The persistent Dutch *zoutvaerders* managed to use the Los Mogotes Lagoon that had begun to form when the Spanish cut channels from the sea in 1633 to flood the salt pans, taking advantage of it as a reservoir of hypersaline water to feed the evaporating pans they then constructed (Antczak, 2019, pp. 178–181). Despite Spanish sabotage, these expert alterations to the landscape of the salina, in fact, allowed the Anglo-American who arrived in following decades to harvest abundant salt with very little management of the process.

The Anglo-American Campsites (1638–1781)

The excavations of the later Anglo-American campsites at Punta Salinas generated an abundance and variety of material remains left behind by hundreds of seafarers on their salt harvesting voyages to the island, primarily dating to between 1700 and 1781, when the *Saltertuda Fleet* was operational. Serendipitously, the site has a *terminus ante quem* since the saltpan was definitively abandoned in 1781 when Basque corsair Vicente Antonio de Icuza expelled the last English-speaking salt rakers from the island. This extraordinary circumstance, along with the sheer diversity of archaeological remains, and the rare fact that—unlike shipwrecks—Punta Salinas contained things intentionally brought to land, used, and discarded by seafarers, make this Venezuelan site a remarkable historical archaeological case study for obtaining a better understanding of the material lives of early modern seafarers.

Nearly every year from 1700 to 1781, once the *Saltertuda Fleet* had anchored in Punta Salinas Bay, the saltpan and its surroundings came alive as the seafarers came down on land and set up their tarps, staying for up to a month at a time as they harvested salt. In their short stints on dry land, taverns were the favorite places for seafarers to spend leisure time and socialize in most Atlantic world ports, and an extended stay at La Tortuga necessitated such a place. At Punta Salinas, the seafarers improvised an unusual seasonal tavern of sea chests, barrels, and tarps to which they brought their personal possessions. The recovery of 790 individual ceramic, glass, and metal vessels belonging to a diverse range of forms and functions offers a unique window onto what was happening at this tavern by the saltpan (Antczak, 2015) (Fig. 21.7).

The drinking assemblage at Punta Salinas is impressive, with 142 ceramic punch bowls having been recovered. These punch bowls were probably used by sea captains and are peculiarly small, unlike most punch bowls found at other sites in the

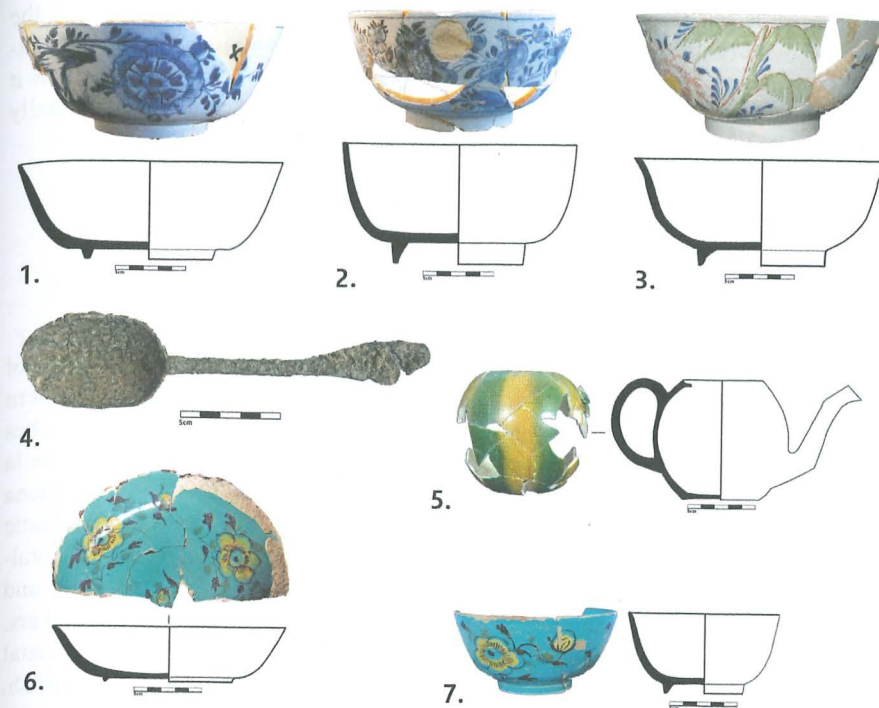


Fig. 21.7 Eighteenth-century artifacts recovered from the Anglo-American campsites on Punta Salinas, La Tortuga Island. (1–3) Five small English delft punch bowls or “sneakers,” c. 1720–1760; (4) pewter spoon; (5) Whieldon-type melon-ware teapot, Staffordshire, c. 1747–1780; (6–7) English delft saucer and tea bowl set, possibly Bristol, c. 1730–1750

Americas. Called “sneakers,” these portable punch bowls highlight the growing Georgian individualism of eighteenth-century middling seafarers, who probably used the bowls to underscore their purchasing power, keen senses of fashion, and access to the latest goods from Britain (Antczak, 2019, pp. 257–261) (Fig. 21.7, 1–3). The punch they drank at the site contained exotic ingredients such as spices from the East Indies, Seltzer water from Germany, and more local products of Caribbean plantations such as rum, sugar, and limes. These seafarers, however, did not only drink alcohol. Surprisingly, the remains of numerous fine teapots and tea bowls defies any facile stereotypes of middling merchant mariners as rough and rowdy men of the age of sail, since during the eighteenth century the tea ceremony was a drink associated with elite women and polite domesticity (Fig. 21.7, 5–7). Archaeological evidence from Punta Salinas challenges well-documented gendered norms of punch and tea drinking—at the saltpan of La Tortuga, Anglo-American seafarers far from home both imbibed exotic punch and sipped fine green tea, thus reformulating the practices of genteel New England society and adapting them to their peculiar maritime world (Antczak, 2024, p. 327).

As regards the saltpan itself, unlike the Dutch *zoutvaerders* before them, the Anglo-Americans did not modify the landscape of the salina and build any saltworks at the site. Since they weren't focused on producing high-quality salt, as it was intended for preserving refuse fish in New England, simply raking the naturally crystallized sodium chloride from the saltpan each year was sufficient.

21.4.2.3 Cayo Sal, Los Roques Archipelago

Uespen de la Salina (1700–1800)

One hundred fifty kilometers northwest of La Tortuga lies the large archipelago of Los Roques and the long, narrow island of Cayo Sal, which forms its southern boundary (Fig. 21.3). At the western end of Cayo Sal, a series of salinas stretches 2.2 km east to west. At the western end of the salina, at the site of Uespen de la Salina, large trench excavations were undertaken by Andrzej and Maria Magdalena Antczak in the 1980s. More recently, in 2007, 2009, and 2010, further systematic excavations were conducted at the site. The site includes the foundations of a coral-stone structure, and on the adjacent saltpan, there are a series of coral dikes and walkways, suggesting that this was a temporary or seasonal campsite for saltrakers.

These investigations brought to light 270 individual ceramic, glass, and metal vessels, and analysis of the ceramic collection reveals a diverse array of British, Spanish, French, Dutch, Mexican, and regional and probably local Venezuelan lead-glazed and coarse earthenwares (Antczak, 2019, pp. 281–307) (Fig. 21.8). Fragments of various iron tools, such as hoes and pitchforks used for breaking up the salt crusts on the saltpan, were also recovered. The medley of ceramics from Uespen de la Salina aligns with documentary evidence indicating that enslaved Curaçaoans were brought to the island for short periods to rake salt. Bermudians also visited the archipelago to extract its natural resources, and turtle fishermen from the English, French, and northern Dutch Antilles camped at the site for seasons. These fishermen, who likely raked salt from the saltpan to preserve their catches, also engaged in illicit trade with inhabitants of the nearby Spanish coast of Tierra Firme. They traded alcohol and clothes for supplies, as well as contraband cacao and mules, which were then transshipped to Curaçao—two of the most lucrative commodities produced in the Provinces of Venezuela and Cumaná (Antczak, 2024, p. 337). This seemingly unremarkable, uninhabited island and its saltpan were, in fact, an important transshipment point and a place of contact for a bevy of transimperial seafarers roving the Venezuelan Caribbean to extract and trade valuable commodities.

Los Escombros (1830–1880)

Nestled between the two internal lagoons, one kilometer to the east of Uespen de la Salina, lies the site of Los Escombros. The site was discovered and excavated by Andrzej and Maria Magdalena Antczak in the 1980s, with further excavations

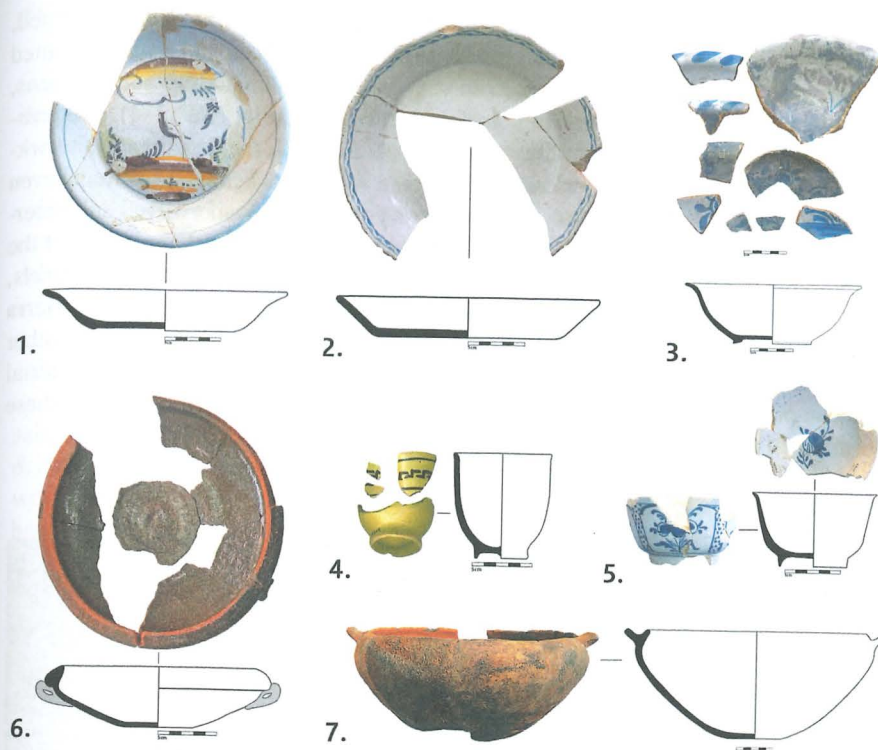


Fig. 21.8 Eighteenth-century ceramics recovered at the site of Uespen de la Salina on Cayo Sal in the Los Roques Archipelago. (1) Spanish majolica plate from Tirana, Seville; (2) French faïence blanche, Normandy blue-on-white type; (3) Dutch delftware dashed-rim bowls; (4) Esquitlan-ware pocillo, probably Puebla, Mexico; (5) English delft tea bowls, c. 1720–1740; (6) “El Morro”-type (morroware) lead-glazed coarse earthenware cazuela; (7) possibly Venezuelan coarse earthenware cooking pot or caldero

carried out in 2005, 2010, 2012, and 2013. It is the only semi-industrial saltworks that has been systematically investigated in the Caribbean to date. The saltworks involved modifications to the salina, including walkways, dikes, and sluices that segmented large portions into primary and secondary concentrating ponds and crystallizing pans (Fig. 21.9, 1). Documentary evidence indicates that the saltpan was originally constructed under the tenure of Jeremiah Morrell, a US-American businessman who was given the concession to exploit the salina by the Venezuelan government from 1834 to sometime into the 1840s. Morrell hired more than a hundred Bonairean freedmen to construct the saltworks and the structures at the site, which included the overseer's house and a patio for packing the salt. After Morrell left the island, a Bonairean entrepreneur briefly continued exploiting the pans until 1880 (Antczak, 2019, pp. 115–120).

Excavations of various trash middens at the site revealed 422 ceramic, glass, and metal vessels. The ceramic collection is mainly composed of refined white

earthenware from Britain and contains an abundance of expensive slipped, painted, and transfer-printed cups and matching saucers, bowls, painted and transfer-printed plates and soup plates, and specialized serving vessels, including soup tureens, pitchers, and sugar pots, as well as colorful chamber pots (Fig. 21.9, 2–4). The presence of many of these wares in the midden associated with the Bonairean saltworkers suggests that the US-American businessman was extravagant and perhaps even eccentric, spending more money than necessary to equip his short-lived salt enterprise and saltworkers with fancy imported wares. Evidence from the middens of the saltworkers also includes various probable Venezuelan coarse earthenware vessels, some of which are griddles for cooking arepas, the corn cakes typical of Tierra Firme (Fig. 21.9, 5). Once again, like the archaeological investigations of the other Venezuelan saltpan sites above, Los Escombros reveals the surprising material aspects of the everyday lives of the seafarers who temporarily inhabited these deserted islands (Antczak, 2019, pp. 311–334).

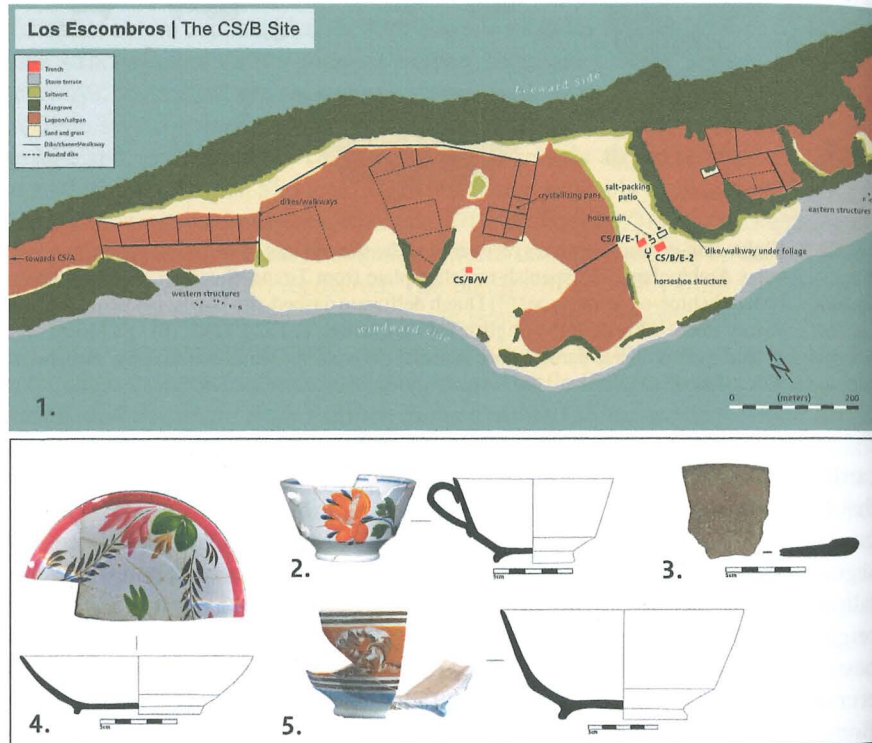


Fig. 21.9 (1) Map of the site of Los Escombros on Cayo Sal, Los Roques Archipelago, highlighting the features and structures associated with the saltworks and the trenches excavated. Nineteenth-century ceramics recovered at the site of Los Escombros: (2) Painted whiteware London-shaped teacup, 1830–1840; (3) probably Venezuelan coarse earthenware aripo or griddle; (4) painted whiteware saucer, 1830–1840; (5) industrial slip bowl with cabling decoration, 1830–1840

21.4.2.4 *Oranje Pan, Bonaire (1820s–1860s)*

One hundred fifty kilometers west of Cayo Sal is the Dutch island of Bonaire with its extensive salinas at its southern end (Fig. 21.3). A survey by Ruud Stelten and I was conducted here in 2016 at *Oranje Pan*, one of the two remaining historic saltworks on the island. Surface collection of materials was undertaken around “slave cabins” that were built beside the saltpan by the Dutch administration to house the enslaved laborers who toiled on the pans (Fig. 21.10). Analysis of the archaeological remains found during the survey suggests that the enslaved utilized a variety of imported refined ceramics and coarse earthenwares and also supplemented the meager rations described in the documentary record with local marine resources they collected (Stelten & Antczak, 2023, pp. 560–565).

Stelten also performed an underwater survey of the anchorage in front of the saltpan, identifying numerous anchors most probably belonging to salt ships (Stelten & Antczak, 2023, pp. 565–568). The saltpan itself was a carefully engineered saltworks involving channels and dikes, walkways, sluices, and pumps for moving the brine from the concentrators to the crystallizing pans. The infrastructure on the shore, apart from the cabins, also included a storehouse and quarters for the



Fig. 21.10 (Top) Nineteenth-century “slave cabins” of the Witte Pan on Bonaire; (Bottom) “slave cabins” of the Oranje Pan with the saltpan in the background

managers, as well as obelisks erected to mark the area of the anchorage for incoming ships. Future systematic excavations at the site will help reveal more detailed aspects of the everyday lives of the enslaved who labored on these Bonairean salt-pans in the inclement sun.

21.4.2.5 Salt Cay, Turks and Caicos (18th–19th Century)

More recently, in 2017, 2019, and 2023, Stelten and Morsink performed terrestrial and underwater surveys at Salt Cay in the Turks and Caicos (Fig. 21.2) (Morsink & Stelten, 2020; Stelten, 2019). They mapped the extensive saltworks and infrastructure that the Bermudians constructed on the island in the eighteenth century and documented various shipwrecks in the surrounding waters. A field school to be held at the site in 2024 promises to continue shedding light on life on this small salt island and broadening our archaeological understanding of other Caribbean salt-pans and the people who grew salt crystals on them.

21.5 Future Directions

There are many Caribbean salt-pans and salt ponds that have yet to see concerted historical and archaeological research efforts. While, as seen above, the Venezuelan Caribbean has seen the majority of archaeological research on salt-pans, no investigations have, for example, yet been undertaken at the historically crucial salina of Araya. Sites that could feasibly be explored include numerous late eighteenth- and nineteenth-century salinas on islands in the Bahamas, the nineteenth-century salina on Isla Beata, Dominican Republic, or the Road Salt Pond on Anguilla. At many salinas, the situation is critical, as many have been heavily affected by development, as is the case, for example, with the Great Salt Pond on Sint Maarten, which has largely been filled in, and where most archaeological evidence has probably been lost or at best heavily disturbed.

Investigations such as those currently underway on Salt Cay in the Turks and Caicos offer promising new avenues into the history and archaeology of salt in the broader Caribbean, and it is hoped that in coming years archaeologists will become interested in studying further salinas on the islands and coasts of the region. Future studies could focus in more detail on the lives and labor of the enslaved on salinas and perform detailed environmental archaeologies of the processes of salt cultivation at salinas where fully developed saltworks existed. Underwater archaeological investigations of the wrecks of salt ships could also provide rich information on the onboard lives of seafarers engaged in the salt trade and offer valuable case studies with which to compare extant terrestrial data from seafarer campsites.

As my research on the Venezuelan islands has demonstrated, historical archaeological investigations of Caribbean salinas offer a rich window not only onto the past practices of cultivation and harvesting of salt but also into the material lives of

the seafarers who raked the salt and used uninhabited islands where they camped at as waystations for smuggling commodities or extracting other natural resources. Studies of salt in the Caribbean thus have the potential to continue revealing more about unknown lives beyond the stereotypical sugar plantation that has dominated the focus of much historical archaeological research in the region.

As we have seen in this overview, the Caribbean was historically a prime region for harvesting solar salt. While most islands have lagoons or functional salinas that can produce salt naturally, during the first centuries after Spanish invasion it was the great salina of Araya that supplied the Spanish Caribbean colonies, access to which caused conflict with the Dutch from the Low Countries. The neighboring Spanish island of La Tortuga would then become crucial to the Anglo-American refuse-saltfish trade during the late seventeenth and eighteenth centuries, supplying the low-grade salt that powered Caribbean plantation slavery. All the while, salt-pans on other Dutch, English, and unclaimed islands, such as Grand Turk and Salt Cay, supplied local and regional needs well into the nineteenth century when numerous salt-works came under the management of businessmen. The Caribbean is still today a major producer of solar salt, no longer cultivated and harvested with the toil of the enslaved, but through large-scale, mechanized industrial saltworks operations. While the context of production has radically changed and salt is no longer used to preserve refuse fish, today saltfish remains deeply embedded in the culinary practices and identity of the Caribbean's inhabitants. Saltfish dishes are a point of national island pride but are also a haunting reminder of their shadowy historical roots as cheap slave provender preserved with the Caribbean salt of yesteryear. Given its abundance of salinas, and how important salt has been to the history, culture, and economy of this vast tropical region and the empires and countries dependent on it, unlike anywhere else in the world, the Caribbean is indeed a salt archipelago.

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