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An Archaeobotanical Approach to Well-Being: Enslaved Plant Use at Estate Cane Garden, 19th Century St. Croix

Meredith Reifschneider[a] and Dana N. Bardolph[b]

[a]San Francisco State University, San Francisco, CA; [b]Northern Illinois University, DeKalb, IL

ABSTRACT

Recent paleoethnobotanical approaches in historical archaeology have successfully explored the intersection of plantation foodways, social relations, and the environment in contexts of enslavement, including in the colonial period Caribbean. This article presents an analysis of macrobotanical remains from Estate Cane Garden, a 19th century A.D. plantation hospital in St. Croix, U.S. Virgin Islands. In this study, we demonstrate how enslaved people actively negotiated the adverse conditions of slavery by using plant resources to secure their own well-being, by examining the types of plants found at the hospital, interpreting potential plant use, and by situating the hospital assemblage within a broader Caribbean comparative analysis. Ultimately, we argue for the need for a greater number of paleoethnobotanical studies of historic (16th–19th century) Caribbean sites to develop more robust intersite comparisons in order to reach a more nuanced understanding of the roles of plants in plantation lifeways.

KEYWORDS

paleoethnobotany; Caribbean; enslavement; healthcare

Archaeological research focused on the dark history of slavery in the Americas has valuable potential for exploring the intersection of food, social relationships, health, and environment in plantation contexts. Recent years have witnessed the growth of paleoethnobotany to address these themes in North American historical archaeology, and to a lesser extent, Caribbean historical archaeology. Historic period (16th–19th century) paleoethnobotanical studies of well-excavated and well-documented plantation sites in North America (e.g., Bowes 2011; McKnight 2011; Mrozowski, Franklin, and Hunt 2008; Raymer 1996; Rock and Newsom 1987; Trigg and Landon 2010; Trigg and Leasure 2011) have explored the ways in which enslaved people used plants to negotiate uneven social relations and mitigate the physically deleterious effects of the plantation labor system. In all of these studies, the value of using archaeobotanical data to supplement historical narratives and oral traditions is clear. In the Caribbean, however, macrobotanical studies of historical sites, including plantation contexts, are significantly fewer in number (Bain et al. 2017; Britt 2010; Faucher, Bain, and Grimes 2017; Oas and Hauser 2018).

In this article, we demonstrate how enslaved people actively negotiated the adverse conditions of slavery by using plant resources to secure their own well-being. Situating our discussion in a review of recent research, we present our analysis of macrobotanical remains from a former plantation hospital at Estate Cane Garden, St. Croix, U.S. Virgin Islands (Figure 1). The plantation hospital provides a known medical context from which to examine how enslaved nurses used plant resources to provide care to their patients. The goals of our study are to: 1) examine the types of plants used within the hospital setting; 2) consider the roles certain plants may have played in contributing to patient health and well-being; and, 3) compare plant use at Estate Cane Garden to other contexts in the Caribbean. While plantation regulations required that enslaved nurses and patients be confined to the plantation hospital, the results of the macrobotanical analysis hint at autonomous decisions by enslaved people. Enslaved nurses used a range of wild, gardened, and provisioned plants in order to provide foods and medicines to their patients at Cane Garden. Our comparative analysis indicates that Cane Garden is distinct from other historical Caribbean sites, namely with respect to cereal use, including maize (*Zea mays*). Finally, while the plant data from Cane Garden are from a decidedly unique context, this study speaks to the utility and need for future paleoethnobotanical studies in the Caribbean from historical sites to more fully understand the intersection of colonial enterprises and the domestic and spiritual lives of enslaved communities.

Paleoethnobotany in Enslaved Contexts

Archaeobotanical research is prevalent in historical North American contexts and to a minor degree in the Caribbean, with a primary concentration on well-known plantation sites (Bain et al. 2017; Bowes 2011; Britt 2010; Faucher, Bain, and Grimes 2017; McKnight 2011; Mrozowski, Franklin, and Hunt 2008; Raymer 1996; Rock and Newsom 1987; Trigg and Landon 2010). Research on plantation lifeways has increasingly incorporated paleoethnobotanical research to better understand the role of plants in enslaved peoples' foodways and health-related practices. Archaeologists in North America have predominately used macrobotanical data in their studies, rather than pollen, phytoliths, or starches (although see Trigg and Leasure 2011). Macrobotanical research in North American and Caribbean plantation contexts has generally addressed three distinct but interrelated themes: 1) the extent to which enslaved people relied on rationed/provisioned, gardened, and wild plants; 2) the strategies enslaved people undertook to supplement plantation rations with gardened and procured taxa; and, 3) how plants met various health-related needs for enslaved people.

CONTACT Meredith Reifschneider mreifschneider@sfsu.edu Department of Anthropology, San Francisco State University, San Francisco, CA 94132.

Figure 1. Map of the Caribbean region with inset showing Puerto Rico and the U.S. Virgin Islands (data source: Natural Earth).

To address the differing degrees to which enslaved people relied on provisioned, gardened, and wild plants, archaeobotanists frequently rely on measures of species ubiquity (Godwin 1956; Hubbard 1975, 1976, 1980; Marston 2014; Popper 1988; Willcox 1974), density (Marston 2014; Miller 1988; Scarry 1986), and taxonomic richness (Kintigh 1984, 1989; Lepofsky and Lertzman 2005; Marston 2014), among other ratios, to evaluate plant assemblages. Macrobotanical data have been used to demonstrate how enslaved communities supplemented undesirable and/or insufficient rations with gardened and wild plants (Young 1997). In the Caribbean, gardening ensured enslaved people a degree of autonomy from plantation managers' supervision, provided them with a level of control over their foodways, and secured social and economic networks of exchange (Fox 2020; Mintz 1996, 2010; Pulsipher 1994; Westmacott 1992). Enslaved household members frequently cultivated common fields and gardens in locations that were not suited to large-scale plantation agriculture, such as steep slopes, ravines, and mountainous areas (Pulsipher 1994, 203). As a result, gardening provided a setting for enslaved Africans and their descendants to develop complex systems of environmental management while establishing meaningful ties to local landscapes (Carney 2003, 2004; Carney and Voeks 2003).

In North America, research at Poplar Forest Plantation demonstrates how enslaved people used garden areas for small scale, personal production of economic plants (Heath and Bennett 2000), a practice that speaks not only to enslaved peoples' preference for certain traditional resources but also their ability to maintain some control over "the buffer area between the slave cabin and the surrounding plantation" (Bowes 2011, 91). Macrobotanical remains recovered from excavated subfloor pits at Poplar Forest include provisioned, produced, and procured taxa; in addition to producing vegetables and fruits for personal use and market sale, enslaved occupants also grew staple crops such as maize, millet (*Panicum miliaceum*), sorghum (*Sorghum* sp.), and wheat (*Triticum* sp.) (Bowes 2011, 98). Bowes further argues that when growing garden crops, enslaved people may have encouraged commensal weedy taxa, such as purslane (*Portulaca* sp.), mint (*Mentha* sp.), and knotweeds (*Polygonum* spp.), in their gardens to use as foods and medicines (Bowes 2011, 99). Household gardening may have reduced the pressure on slave owners to provide adequate rations, but likely also provided a food surplus that ensured enslaved people a greater degree of economic autonomy and food security.

Enslaved people also supplemented provisioned and gardened foods by gathering plants from the local landscape. Trigg and Leasure (2011) note that while foraging activities may have resulted from inadequate plantation rationing and provisioning, it also represented a way for enslaved people to take advantage of nutritious and easily procurable plant resources, to gain familiarity with the landscape, and to build social relationships across different social and ethnic groups. Mrozowski, Franklin, and Hunt (2008) demonstrate how foraging and hunting encouraged social relationships and knowledge transfers between enslaved African, Indigenous, and European communities in Virginia; by procuring local taxa (both plant and animal), enslaved people garnered a degree of autonomy in food selection and preparation and the ability to move about the local landscape (see also Heath 1999).

Paleoethnobotanical research in the Caribbean

Great strides have been made in recent years towards detailing the paleoethnobotany of the Caribbean, though much of the archaeobotanical research from the region focuses on the pre-Columbian period (i.e., pre-15th century A.D.; for summaries, see Newsom 2008; Newsom and Pearsall 2003; Newsom and Wing 2004). While macrobotanical data have been employed in analyses from prehistoric contexts, microbotanical approaches, including starch grain residue and phytolith analysis, dominate the pre-Columbian Caribbean literature (e.g., Berman and Pearsall 2000, 2008; Mickleburgh and Pagán-Jiménez 2012; Pagán-Jiménez 2009; Pagán-Jiménez et al. 2015; Pagán-Jiménez and Oliver 2008; Rodríguez Suárez and Pagán-Jiménez 2008). Pre-Columbian research typically focuses on three interrelated topics: 1) understanding prehistoric land use; 2) reconstructing local ecologies; and, 3) examining the adoption and spread of agriculture throughout the Caribbean basin (Newsom 1995; Newsom 2008; Newsom and Deagan 1994; Newsom and Pearsall 2003; Newsom and Wing 2004). In the U.S. Virgin Islands specifically, archaeobotanical research at prehistoric sites by Lee Newsom (1995, 2001) and Deborah Pearsall (1983, 1995) have aided vegetation reconstructions and understandings of plant-centered subsistence patterns on the islands prior to European colonization (see also Piperno 1995; Wiseman 1983).

Although fewer in number, macrobotanical studies of historical sites in the Caribbean have addressed a range of social, political, and ecological concerns. Oas and Hauser's (2018) study of household food practices at Morne Patate in Dominica is framed by a broader concern for understanding the political ecology of the island prior to and immediately following the sugar revolution on the island. Before plantations intensified production of sugar in Dominica in 1770 A.D., enslaved people at Morne Patate exploited a range of introduced African and local native plant taxa. In the period following 1770 A.D., a more diverse set of crops was recovered, with increased densities suggesting an intensification of production, processing, and consumption of cereals and other foods that accompanied the transition to sugar production at Morne Patate (Oas and Hauser 2018, 10). The adoption of dry-climate-adapted grains, including maize, sorghum, and millet, speaks to the proficiency of Morne Patate's enslaved occupants in experimenting with a range of dry-forest microenvironments (Oas and Hauser 2018, 10).

Documentary and macrobotanical data from 17th–18th century A.D. sites in Barbuda demonstrate the importance of the study of oft-neglected colonial contexts, including British colonial residences and administrative sites (Faucher, Bain, and Grimes 2017). While macroremains were scarce, limited to a single barley (*Hordeum vulgare*) grain from the Castle Island site, strontium isotope analysis ($^{87}Sr/^{86}Sr$) of the barley specimen suggested a British Isles origin of the grain. This finding is supported by documentary evidence indicating that British suppliers provided Barbudan colonial households with grain from the metropole (Faucher, Bain, and Grimes 2017, 548). While a greater sample size is necessary to corroborate this claim, these findings indicate the potential of paleoethnobotanical research in reconstructing colonial trade networks alongside domestic colonial foodways.

Plant use and wellbeing

Beyond political ecologies and environmental legacies, paleoethnobotanical studies also have the potential to address how provisioned, gardened/produced, and procured plants served to meet important nutritional, medicinal, and psychological needs for enslaved people (Franklin 2004; Mrozowski, Franklin, and Hunt 2008). Mrozowski, Franklin, and Hunt (2008, 700) employ a "well-being" approach to investigate how plants were used by enslaved people in the context of violence, racism, and economic and biological deprivation to meet culturally defined measures of emotional and physical health (see also Kowal, Gunthorpe, and Bailie 2007). The authors argue that the well-being interpretive framework has two implications: 1) it foregrounds the contributions of plants for addressing mental and spiritual, as well as physical, health and 2) it broadens the interpretive possibilities of macrobotanical remains by recognizing the overlapping and multifunctional roles of plants as sources of individual health and social wellness.

Indeed, the procurement and use of local taxa (both plant and animal) not only provided enslaved people with nutritional benefits but also afforded enslaved people a degree of control over their personal and communal lives. Comparative archaeological studies from the Caribbean demonstrate how enslaved populations developed diverse systems of resource procurement to meet household and community needs. Zooarchaeological studies in the French Caribbean indicate that enslaved households raised domesticated animals for household provisioning but also relied on a variety of marine and terrestrial wild animals, procured via a combination of fishing and hunting (Brunache 2011; Kelly and Wallman 2014; Wallman 2018). Throughout the Caribbean, enslaved people were obliged to complement standard rations by supplementing their diets with plants and animals that were available to grow, hunt, gather, and forage (Gibson 2009; Kelly and Wallman 2014, 3). Cultivating house gardens also served as a means to organize personal and communal life as part of greater well-being in the face of chronic food insecurity, forced bondage, and violence.

Despite recent developments in paleoethnobotanical research in Caribbean scholarship, additional studies are needed in order to: 1) advance our understanding of local ecologies and the environmental impacts of plantation agriculture, 2) further our ability to reconstruct the foodways and medicinal strategies of enslaved peoples, and, 3) lay the groundwork for future comparative studies. Despite recent inroads into macrobotanical studies of North American plantations, these studies are insufficient proxies for understanding enslaved people's experiences in the Caribbean, as the Caribbean environment is drastically different in terms of weather, climate, topography, and biota compared to North America. Enslaved Africans in the Caribbean would have already been familiar with tropical farming practices, and many of the plants in the Caribbean would have been similar to those they had historically been using (see Carney 2016). This factor would have greatly impacted both the kinds of plants that were grown and collected by enslaved people and the methods by which they were processed and eaten.

Furthermore, Caribbean islands in the 18th and 19th centuries A.D. often comprised multi-national, diverse communities with shifting political and economic arrangements and alliances. Caribbean islands (or even geographic regions)

changed hands frequently between France, England, Denmark, Holland, Spain, and Sweden, subjecting both planters and enslaved populations to drastically different colonial administrations, sometimes in quick succession (Hall 1992; Higman 2010; Trouillot 1992). For example, the Code Noir dictated specific rules for plantation owners and managers regarding foodstuff provisioning, but these rules and regulations changed through time depending on the fluctuating ownership of particular islands and subsequent colonial administrative changes (Carney 2016, 71). In the Danish West Indies (St. Thomas, St. John., and St. Croix), changing administrative regulations impacted plantation provisioning systems throughout the 18th–19th centuries A.D. After 1817, and following the British occupation of the Danish islands, Governor General Bentzon of St. Croix issued an official proclamation mandating a minimum ration of 6 qt of corn meal, or the equivalent in vegetables, per enslaved worker per week (Jensen 2012, 158). Slave laws passed by the colonial government aimed to secure minimum food rations for all enslaved laborers on the island but also represented a contested field of practice between the colonial government, plantation owners and managers, and, importantly, enslaved laborers who could take legal recourse against planters. Furthermore, international wars, blocked shipments, and fluctuations in prices greatly affected the types and quantities of foodstuffs that reached Caribbean islands, which directly impacted the types and quantities of foods available to enslaved people (Jensen 2012, 163).

Finally, the demographic structures of enslaved populations in the Caribbean differed significantly from North America. Enslaved populations throughout the Caribbean suffered from drastic demographic declines throughout the late 18th and early 19th centuries A.D. (Jensen 2012, 43). There was a marked excess of mortality versus fertility rates of enslaved populations in St. Croix between 1780 and 1804 (Green-Pedersen 1981, 238). This disparity proved a fundamental concern for the Danish Negro trade commission, who deemed it necessary to improve the social conditions of slavery prior to the Danish ban of the slave trade in 1792, effective in 1803. The total number of imported slaves to the Danish West Indies increased from 1792–1803 as a result of state-funded credit facilities for the purchase of enslaved workers. This period of demographic increase was followed by a consistent population decline; in St. Croix, the enslaved population decreased from 22,076 individuals in 1804 to 15,310 individuals in 1846 (Jensen 2012, 48). This negative demographic trend was caused by a multitude of factors, including manumissions, inter-island trade, the inability to import enslaved workers from Africa, and high mortality rates amongst enslaved plantation workers (Jensen 2012, 47). At no time between 1804 and 1848 did the birth rate of enslaved people surpass the death rate (Jensen 2012, 49); as a result, Danish colonial administrations increasingly became concerned with low birth rates and high mortality rates and actively attempted to pass legislation that required planters to meet the nutritional and healthcare needs of the enslaved. Hunger, malnutrition, and the need for medical care undoubtedly impacted the ways in which enslaved households accessed, prepared, and valued foods.

In this paper, we subscribe to Chen's (2008, xi) vision of well-being as "part of an integral relationship between eating, thinking, and caring about food and food as medicine," where foods are used to purify and heal, provide comfort, or contribute to longevity. In our interpretations, we do not explicitly attempt to delineate the different functional purposes that plants may have served for nurses in their healing rituals or for patients who consumed plant resources in the hospital. Rather, plant remains from the hospital are interpreted as representative of a holistic network of care. From a practical perspective, Mrozowski, Franklin, and Hunt (2008) note that it is difficult, if not impossible, for archaeologists to distinguish between medicinal versus dietary roles of plants from archaeological sites. Furthermore, ontological divisions between medicine and food often do not exist for many cultures of the African Diaspora; health can be maintained and restored through the use of specific herbs and regulated diets (Morgan 2014; Sutherland 2014, 19). Enslaved people took various preventative measures to secure their health, including managing their diet (Lee 2017, 145), thus blurring the biomedical distinctions between medicine and food.

In our case study, we attend to the structural constraints of preparation, feeding, and eating, while focusing on the social relations of "culinary care" (see Yates-Doerr and Carney 2016). We view health-seeking practices, whether on the part of caregivers (nurses) or recipients (patients), not as specific forms of ethnomedicine, nor structured sets of beliefs and practices, but rather as creative responses to social, economic, and environmental restraints and opportunities. Enslaved Africans throughout the Atlantic world actively invigorated ethnomedical practices that promoted survival, cultural continuity, and spiritual succor (Carney 2003, 181). Thus, we employ the lexical categories of foods and foodways to denote plants that were used by enslaved nurses at Estate Cane Garden to provide spiritual, biophysical, nutritional, and psychological support to their patients.

With those considerations in mind, we turn to our case study of plant use at Estate Cane Garden, a former plantation hospital in St. Croix, U.S. Virgin Islands. The goals of this study are to 1) analyze the abundance of different plant taxa (rationed, gardened, and wild) from the hospital; 2) address potential nutritional and medicinal contributions of plants to individuals at the hospital using archaeological, historical, and ethnographic data; and 3) compare macrobotanical data from Estate Cane Garden to other historical Caribbean sites. We begin by providing a brief description of the site, including a discussion of the hospital building within a broader historical context along with a summary of the excavation results. We then discuss the macrobotanical sampling strategy employed at Estate Cane Garden and the results of the analysis, framing our interpretation of plant use at the hospital with the use of historical and ethnographic accounts from St. Croix. Finally, we contextualize our findings within a comparative analysis of macrobotanical assemblages from Caribbean plantation sites, including Morne Patate in Dominica (Oas and Hauser 2018) and Gurabo in Puerto Rico (Newsom 1995), to construct a larger picture of plant use across different functional plantation settings. We conclude by asserting the importance of paleoethnobotanical research in the Caribbean and argue for its potential to contribute to our understanding of enslaved peoples' subsistence strategies, plantation provisioning systems, and the politics of healthcare and healing.

Case Study: Paleoethnobotanical Research at Estate Cane Garden

Estate Cane Garden (henceforth Cane Garden) is located in Queen's Quarter in St. Croix on the south shore of the island (Figure 2). The 89 acre estate is currently under the ownership of the Classical American Homes Preservation Trust and the Richard Hampton Jenrette Foundation. Cane Garden functioned as a sugar estate during the 18th–19th centuries, located on a low rise with access to the coast and low-lying fields. The upper residential portion of the site consists of an 18th century Great House, cook's house and residential quarters, and the remains of a stable building. The lower half of the site, located approximately a quarter of a mile west, consists of the sugar processing ruins and domestic structures for enslaved workers. Extant buildings associated with Cane Garden's role in sugar production include a windmill, an animal mill, a 19th century well, a possible lime kiln, a possible animal pen, a sick house or hospital building, a manager's house, sugar processing facilities, and an enslaved worker's housing area. The first mention of a plantation hospital building or "sick house" at Cane Garden comes from a property appraisal dated to 1798 (NARA RG 55, St. Croix Landsting, Panteprotokol 1797–1799). Written documents do not express how long the hospital building was in use, but a mean ceramic date of 1828 A.D. indicates that the building was used for a relatively long period of time. The mean ceramic date for this assemblage was calculated as a weighted average of the mid-production years for all ceramics within the assemblage, where weights indicate frequencies of certain wares or types (see for example South 1978).

The plantation hospital building at Cane Garden fits the description of other private and crown-owned plantation hospitals, such as Estate North Star (Jensen 2012, 62). The two-story building was constructed of limestone brick and cut coral and subdivided on the ground floor by an east/west wall (Figure 3). The southern room appears to have been further divided into smaller rooms, possibly for storage purposes, although debris piles and wall fall made it difficult to discern the floor plan of the room. There is a large doorway on the ground floor leading to the north room; it is possible that the larger, northern room was used to hold animals or functioned as a storage space, while patients were interned on the top floor. A series of beam supports along the eastern front of the building, along with a large posthole in the bedrock along the same side, suggest that the building initially had a porch or portico running along the front. Although there was no definitive cooking area, there may have been an attached kitchen on the west side of the building: a large, columnar chimney-like stone structure is evident on the west side of the building, and burned sediment and ceramics have been recovered from the immediate area. Plantation sick houses commonly had attached kitchens, wherein enslaved nurses could prepare food for their patients (Jensen 2012, 63; Sheridan 1985). Unfortunately, the entire west side of the structure is covered by a modern rubble pile, making it impossible to evaluate the architectural layout of this side of the building or conduct excavations.

The goal of the Estate Cane Garden Archaeological Project was to understand how enslaved people were affected by Danish colonial healthcare policies passed during the early 19th century by investigating how healthcare was practiced within the confines of a privately-owned institution (Reifschneider 2018). Jensen (2012) details how plantation hospitals were a part of a larger healthcare system in the Danish West Indies,

Figure 2. Map showing the approximate location of Estate Cane Garden, St. Croix (data source: Natural Earth).

implemented to abate the high morbidity and mortality rates of enslaved people on the islands. After the ban on the slave trade in 1803 by the Danish government, reproductive and mortality rates of enslaved people became a central concern for the Danish colonial administration. Although plantation hospitals were not strictly mandated by the colonial administration, by the early 19th century A.D., almost every plantation had one.

Plantation hospitals were meant to house sick and injured enslaved workers and were semi-regularly overseen by a physician of European descent. Plantation managers frequently contracted a physician to manage the care of enslaved workers, although this care was often reserved for cases of extreme emergency or in cases of complicated childbirths. Physicians could visit enslaved patients in their houses or at the plantation sick house. Patients were admitted to plantation hospitals by the plantation manager when sick or injured individuals presented with ostensibly serious injuries or healthcare concerns and stayed in the hospital only long enough to recover from illness or injury before returning to work. In the Danish West Indies, plantation hospitals also functioned as correctional facilities (Jensen 2012, 63), thus blurring the boundaries between discipline and medical care.

Daily care at hospitals was administered by an enslaved woman (sick nurse) appointed by the plantation manager. Physicians submitted annual reports to the Board of Health detailing the general health conditions of the island populations, in addition to discussing specific cases of medical importance (DNA WIMA 683, 10.2.2 1782–1853). The annual reports provide general information on the kinds of care physicians provided their patients, in addition to disease etiologies of the time (DNA BH 1252, 15 1803–1858, 21), but do not provide specific details concerning daily healthcare practices on private estates or within the confines of plantation hospitals. Estate Cane Garden was attended by Dr. Christopher Johnson from 1829–1848 (DNA BH 1252, 15 1823–1832, 1833–1840, 1841–1852). Like other physicians on the island, his annual medical reports detail the kinds of medical care he provided to his patients but do not specifically discuss treating patients at the Cane Garden sick house. His reports indicate that he made extensive use of physically invasive procedures and cures, such as prescribing calomel and lead pills, and using venesection to heal patients with "fever" (DNA BH 1252, 15 1823–1832, 1833–1840, 1841–1852). Pharmacy ordering records from St. Croix indicate that physicians frequently purchased plant-derived medications, including nightshade, squill, hellebore, and digitalis, and these substances would have been supplied in a powdered form. Historically, medical knowledge transfers between Indigenous, African, and European healers were frequent in the Caribbean, although not devoid of power relationships (Schiebinger 2017). There is no direct historical evidence that Dr. Johnson adopted local healing measures, including the use of local native plant taxa for curative purposes. Given the lack of documentary specificity regarding healthcare at the plantation hospital, we use macrobotanical evidence to explore the kinds of care enslaved nurses provided patients within the hospital at Cane Garden.

Figure 3. Photograph of Cane Garden hospital, looking south (photo by author).

Archaeological research at Cane Garden

Research at Cane Garden included archaeological testing and excavations conducted between 2012 and 2014, directed by Reifschneider. Excavations focused on the plantation hospital building (Figure 4) and targeted both interior and exterior spaces of the building. While interior excavations recovered few artifacts, a large sheet midden associated with the building was uncovered in the immediate exterior of the structure. Many diagnostic artifacts were recovered, including refined earthenwares (n = 758), unrefined earthenwares (n = 94), glassware (n = 249), buttons (n = 42), kaolin clay smoking pipes (n = 162), and coins (n = 5). Mammal faunal remains (NISP = 130) included domesticated and non-domesticated taxa. Marine taxa included mollusks (NISP = 680), fish (NISP = 466), and urchins (NISP = 26) and crabs (NISP = 101). Hunting materials included a re-used gun flint (n = 1), fishing weights (n = 8), and lead musket balls (n = 3).

Botanical sampling strategy

The hospital midden was excavated in 22 1 × 1 m units. Units were excavated in arbitrary levels that did not exceed 5 cm. The midden deposit was relatively shallow, not exceeding 20 cm in depth; the stratigraphy was not clear enough to distinguish between different dumping episodes. Approximately 10 L of fill from every level of each unit were saved for flotation. Flotation sample processing was carried out on St. Croix; all samples collected from Cane Garden were manually floated following the bucket flotation method (Pearsall 2015). Flotation samples were not collected from the shovel test units from the enslaved workers' village, as the deposits in this area of the site were exceedingly shallow (< 20 cm in depth) and much of the site had been plowed over the previous 15 years, rendering it unlikely to secure samples from good contexts in this area of the site.

Archaeobotanical laboratory procedures

A total of 41 light and heavy fraction samples recovered from Cane Garden were shipped to the University of California, Santa Barbara Integrative Subsistence Laboratory (UCSB ISL) for analysis by Bardolph in 2017. The samples represent a total of total of 111.15 L of soil with a total plant weight of 24.33 g (23.04 g of which are represented by wood charcoal). While material from light and heavy fractions was sorted and identified separately, results were combined for analysis. Botanical materials were identified with reference to the paleoethnobotanical comparative collection at the UCSB

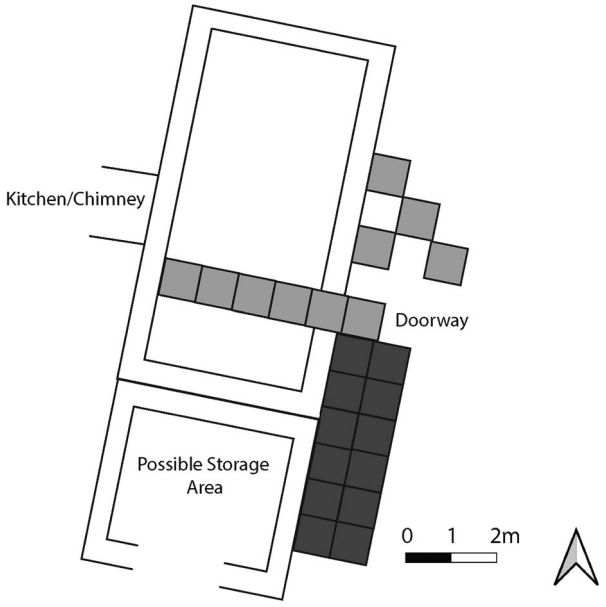

Figure 4. Plan of the hospital with excavation units shown in gray (darker gray units indicate the location of the midden).

ISL, a seed identification manual (Martin and Barkley 1961), and the USDA pictorial website (http://www.ars-grin.gov/npgs/images/sbml/), in consultation with the taxa list provided in

Newsom and Pearsall (2003), the latter of which permitted the identification of a range of native taxa, in addition to an introduced cultigen, maize, discussed below. Taxonomic identification (at the species, genus, or family level) was not always possible, as some plant specimens lacked diagnostic features altogether or were too highly fragmented. As a result, these specimens were classified as unidentified or unidentified seed. In other cases, probable identifications were made; if a specimen closely resembled a taxon but a clear taxonomic distinction was not possible (e.g., the specimen was highly fragmented), then the specimen was assigned a probable identification and recorded as cf. (e.g., maize kernel cf.). Once the plant specimens were sorted and identified, counts, weights (in grams), and provenience information were recorded. Wood was weighed, but not counted, and no wood identification was conducted. Generally, most of the seeds identified in the samples were too small to weigh, and thus only counts were recorded. Other than counts and weights, no other measurements were taken on any specimens. Following standard procedures, any heavy fraction samples weighing over 500 g were subsampled. These samples were weighed and then systematically split in half using a riffle splitter; counts and weights from the selected subsample were extrapolated using the total sample weight.

Basic results

Excluding wood, the macrobotanical assemblage from the hospital midden includes seeds from 16 identifiable taxa. Charred wood was likely used as fuel for cooking activities at the hospital and deposited in the midden after being cleaned up from the cooking area near the back of the building. The seeds in the Cane Garden assemblage represent a range of plant resources (Table 1); several documents allow us to infer potential uses at the hospital during the 19th century, including historical and contemporary compendia of

Table 1. Inventory of plant taxa identified at the Estate Cane Garden Site.

Common name	Taxonomic name	Count (n)
Cereals		
Maize kernel	*Zea mays*	4
Maize kernel cf.	*Zea mays cf.*	1
Fruits		
Sapote	*Pouteria* sp.	26
Sapote cf.	*Pouteria* sp. cf.	3
Sapote family	Sapotaceae	4
Miscellaneous/wild		
Amaranth	*Amaranthus* sp.	14
Chenopod	*Chenopodium* sp.	4
Grass family	Poaceae	10
Knotweed/smartweed	*Polygonum* sp.	7
Legume family	Fabaceae	6
Nightshade cf.	*Solanum* sp. cf.	1
Nightshade family	Solanaceae	2
Palm family	Arecaceae	4
Prickly pear	*Opuntia* sp. cf.	1
Purslane	*Portulaca* sp.	6
Spurge cf.	*Euphorbia* sp.	2
Sunflower family	Asteraceae	1
Trianthema	*Trianthema* sp.	2
UID		26
UID Seed		12

medicinal and edible plants from St. Croix. In particular, we draw on Soelberg, Davis, and Jager's (2016) study, which employed ethnographic data consisting of structured interviews of professional horticulturalists, bush doctors, and herbalists in St. Croix in 2014, along with 18th–19th century manuscripts. Analyzing documents written by Christian G.A. Oldendorp (1987 [1770]), West (1793), the apothecary Benzon (1822), Von Eggers (1876, 1879), and a manuscript on tree species of the Virgin Islands by Carl Berg and Eggers (1888), Soelberg, Davis, and Jager (2016) provide the names and uses of popular medicinal plants on the island. We also rely on various ethnographic botanical studies collected on St. Croix during the 20th century to further contextualize our findings (Carney 2003; Kuby 1979; Thomas 1997).

Patterns in Plant Use

When looking at the assemblage as a whole, several observations regarding plant use can be made. First, evidence of common field crops, such as maize, millet, and wheat, are conspicuously lacking from the hospital assemblage. Indeed, maize is the only cereal in the Cane Garden assemblage, represented by a mere four kernel fragments (and one possible kernel fragment) in the assemblage. Given the historical importance of cereal grains such as maize, barley, rice, and oats as rations for enslaved workers in both North America and the Caribbean (Carney and Rosomoff 2009; Kiple 1984), it is notable that these staple crops are absent from the hospital midden assemblage. Ethnohistorical accounts and archaeological kernel morphologies indicate that at least two different varieties of maize were grown in the Caribbean at the time of European colonization (Newsom 2008; Newsom and Deagan 1994), and tropical grains such as maize and sorghum continued to be used as rations for enslaved people during the plantation era (Carney and Rosomoff 2009).

Gardened taxa

Candidates for gardened taxa include sapote (*Pouteria* sp.) and a possible prickly pear (*Opuntia* sp. cf.), along with

other Sapotaceae that could only be identified to the family level. Sapote trees produce sweet, edible fruits that are pumpkin-like in flavor; while native to the Yucatán Peninsula, sapotes have spread throughout Mexico, Central America, and the Caribbean (Acevedo-Rodríguez 1996; Honychurch 1986). At least three genera from the Sapote family have been identified in Caribbean archaeological deposits, including sapodilla, or bullet wood (*Manilkara* sp.), mastic bully (*Mastichodendron foeditissimum*), and yellow sapote (*Pouteria campeche*) (see Newsom 2008). According to Soelberg, Davis, and Jager (2016, 82), on St. Croix, Sapotaceae seeds (including *Manilkara zapota*) were used for medicinal purposes to treat stricture (narrowing of the body passages), and the leaves were boiled into a tea to treat diarrhea and dysentery. Although moderately poisonous, the seeds also can also be used as a diuretic (Kuby 1979). There are no extant historical documents that indicate the sapotes from Cane Garden would have been grown in gardens, although historical sources indicate that provision plots contained a range of tree fruit crops (Jensen 2012, 180). The presence of Sapotaceae seeds at the pre-Columbian site of Aklis on the west end of St. Croix may be suggestive of home-gardens at that site as well (Newsom 1995, 16).

Prickly pears (*Opuntia* sp.) are native to North America and the Caribbean (Dahlgren and Standley 1944; Honychurch 1986). Edible parts of the prickly pear include the pads (leaves of the plant) and the fruit (Crellin, Philpott, and Bass 1990, 356; Honychurch 1986). In North America and the Caribbean, the fruits of the prickly pear are nutritious and are commonly eaten raw or can be pressed into juice (Crellin, Philpott, and Bass 1990; Soelberg, Davis, and Jager 2016). In the 19th century, the fruit juice of the prickly pear was used as a diuretic, and the pads were used to treat ulcers and gout and to heal wounds (Oldendorp 1987 [1770]). During the 19th century in St. Croix, prickly pear pads also had recorded medicinal uses as cooling poultices (Von Eggers 1876; cited in Soelberg, Davis, and Jager 2016), and they were used for washing hair and eyes and for easing muscle tension (Soelberg, Davis, and Jager 2016, 83). Contemporary medicinal uses of prickly pear pads in St. Croix include preparing them as a poultice for dry or callous skin and for curing warts. Prickly pear cactus was also used at the garrison hospital in Frederiksted, St. Croix as fencing around the hospital (Jensen 2003). In addition, pads were used to feed cattle, goats, and chickens on the premises, while the fruits were fed to patients at the hospital (Jensen 2003, 5). It is possible that prickly pear served a similar function at Cane Garden.

Weedy/miscellaneous taxa

The assemblage from Cane Garden was dominated by miscellaneous wild plants (see Table 1). Many of these plants have known economic uses, although the presence of some of these taxa may represent incidental inclusions. Wild grain seeds and greens include wild amaranth (*Amaranthus* spp.), chenopod (*Chenopodium* spp.), knotweed/smartweed (*Polygonum* spp.), a possible nightshade (*Solanum* sp. cf.), purslane (*Portulaca* sp.), a possible spurge (*Euphorbia* sp. cf.), and trianthema (*Trianthema* sp.), along with members of the grass (Poaceae), legume (Fabaceae), nightshade (Solanaceae), palm (Aracaceae), and sunflower (Asteraceae) families. Three of the wild plant genera from the hospital midden (*Solanum*, *Euphorbia*, and *Portulaca*) have documented historical and contemporary medicinal uses in St. Croix. Although only positively identified to the family level in the Cane Garden macrobotanical samples, *Solanum* includes a range of economically important plants, such as nightshades and domesticates like tomato (*Solanum lycopersicum*) and potato (*Solanum tuberosum*). African eggplant, or guinea squash (*Solanum aethiopicum*), is documented in the Caribbean as early as 1640 A.D. by European naturalists and was an important foodstuff for enslaved people (Carney 2016, 61). On St. Croix, endemic *Solanum* species include wild eggplant (*Solanum torvum*) and black nightshade (*Solanum americanum*) (Soelberg, Davis, and Jager 2016, 87). Black nightshade is native to the Caribbean and has a range of medicinal uses; for example, in St. Croix, nightshade was prescribed during the 19th century A.D. for treating oral candidiasis (thrush) in children, and during the 20th century, teas made from nightshade leaves were used to treat intestinal parasites and worms (Soelberg, Davis, and Jager 2016, 85).

While the *Euphorbia* genus contains over 2,100 species (Kuby 1979), a variety of spurges have medicinal properties. Many forbs exude a milky, white sap that, although toxic, can be used for healing wounds; species from St. Croix including castor bean (*Ricinus communis*), physic nut (*Jatropha multifida*), and Barbados nut, or purging nut (*Jatropha curcas*), and all have known medicinal uses, discussed in detail by Soelberg, Davis, and Jager (2016). The castor bean plant orginated in Africa (Carney 2003), and since the 19th century, castor oil has been used as a laxative and also to cleanse cuts and wounds. Use of physic nut leaves as an antitode to blisters and skin irritation caused by the machineel tree (*Hippomane mancinella*) was recorded in the 19th century, and seed oil from the purging nut was used in the Danish West Indies as a drastic, sometimes lethal, purgative. In the 20th century, leaves from purging nut trees were boiled into a concoction to treat stomach ulcers, prevent bed wetting, and rid the stomach of worms. Today, the leaves are boiled into a tea to cure constipation and intestinal parasites; the seeds and leaves also are boiled into an ointment to treat skin cancer (Soelberg, Davis, and Jager 2016, 82).

Purslane is a wild, weedy plant that grows well in disturbed soils (Zimdahl et al. 1988). Purslane leaves can be added to soups or salads (Moerman 1998, 434) and also used as a diuretic (Crellin, Philpott, and Bass 1990). In 19th century St. Croix, common purslane (*Portulaca oleracea*) leaves were crushed into a poultice to remove splinters from the skin, and during the 20th century, the leaves were made into a cooling bath to cure "prickly heat" and skin rashes (Soelberg, Davis, and Jager 2016, 84). Contemporary uses include making tea from the leaves to abate high blood pressure and using a poultice from the leaves as a treatment for wounds and skin problems (Crellin, Philpott, and Bass 1990); furthermore, one seed from the plant may also be placed "in the eye over night for cleaning the eyeball" (Soelberg, Davis, and Jager 2016, 84).

Other weedy taxa from the hospital, including amaranth, chenopods, trianthema, and knotweeds/smartweeds, have documented dietary importance for historical and contemporary communities in St. Croix. Wild amaranth, commonly known as pigweed, includes species native to both Old and New World settings (Carney 2003). Amaranths found at the hospital may have been collected wild, encouraged, or tended, as they thrive in both garden and field settings (Bohrer 1991; Gremillion 1993). The significance of vegetable

amaranths in African dishes suggests that enslaved people in North America and the Caribbean substituted New World species for African ones (Carney and Rosomoff 2009, 179). Adaptable, vigorous, and drought resistant, amaranths can grow in infertile soils, and the leaves of New World amaranths, known as Caribbean spinach or callaloo in the Caribbean, are cooked into stews (Carney and Rosomoff 2009, 177). Indeed, *calelu* (callaloo), a stew featuring amaranth leaves, was a dish of enslaved people in the Danish West Indies during the 18th century (Carney and Rosomoff 2009, 177). The plant also produces nutritious cereal-like grains that can be prepared and eaten in a similar manner to other grains; its high protein content (16%) places its protein value above other domesticated cereals such as rye, rice, oats, barley, wheat, and maize (Misrahi-Barak 2014, 174). Chenopod, or goosefoot, is a prevalent edible plant that grows well in disturbed environments, as well; like amaranth, leaves from the goosefoot plant can be cooked into stews or eaten raw in salads, and seeds can be prepared in ways similar to seeds from domesticated grains (Turner et al. 2011).

Trianthema is a wild herb that grows well in disturbed habitats and may have been grown and collected from gardens for use as a seasoning. Trianthema roots can also be used as an abortifacient or cathartic (Mathieu and Meissa 2007). Knotweeds, or smartweeds, also grow near human habitats and in disturbed soils; in the 19th century, smartweeds were used in North American contexts as diuretics, astringents, ferbifuges, and to treat "diseases of the kidney" (Crellin, Philpott, and Bass 1990, 400). As many members of the *Polygonum* genus have contemporary medicinal uses, including healing earaches, hemorrhoids, and inflammation (Grieve 1971), it is likely that enslaved people in the Caribbean recognized similar medicinal values. Other wild plants from Cane Garden include members of the grass (Poaceae), legume (Fabaceae), palm (Aracaceae), and sunflower (Asteraceae) families. Grass seeds may represent incidental inclusions in the assemblage, or hospital residents may have used various island grasses for matting or thatching, or as fuel. Palms and sunflowers may have been managed or cultivated at Cane Garden for economic uses, or they may also represent incidental inclusions. While more specific classification of seeds of the Fabaceae family was not possible, many tropical legumes, including *Mucuna pruriens, Erythrina corallodendron, Piscidia piscipula,* and *Senna occidentalis*, have documented medicinal uses in St. Croix during the Danish colonial period (Soelberg, Davis, and Jager 2016).

Comparative Botanical Analysis

The final goal of this study is to present a comparative analysis of botanical assemblages from contemporaneous plantation sites in the Caribbean to contextualize the macrobotanical findings from Cane Garden specifically and to work towards developing a comparative interpretative framework of historic period plant use in the Caribbean more generally. Placing the Cane Garden plant data in a comparative framework is challenging, as few archaeobotanical datasets have been published from historic Caribbean sites. For this paper, we include data from the site of Morne Patate, a sugar- and coffee-producing plantation in Soufriere, Dominica (Oas and Hauser 2018), along with data from four geographically related historic period sites from Gurabo, Puerto Rico available in a report provided by Newsom (1998). Morne Patate is an estate located on Dominica and established ca. 1745 A.D. The estate increasingly participated in sugar production, especially between the 1770s and 1800s, although the property never fully converted to sugar cane and mostly participated in coffee bean growing. Excavations by Oas and Hauser (2018) focused on the estate and the enslaved village areas and identified three occupation phases: pre-1770 A.D., 1770–1830 A.D., and post-1830 A.D. deposits. For the purposes of this paper, we only include samples from post-1770 A.D. contexts (i.e., after British annexation and the beginnings of sugar production on the estate). Post-1770 A.D. deposits yielded a range of macrobotanical remains, including cereals (maize, sorghum, millet, and barley), other crops (okra [*Abelmoschus esculentus*], coffee [*Coffea* sp.], eggplant [*Solanum melongena*]), and fennel [*Foeniculum vulgare*]), and a range of local fruits (cocoplum [*Chrysobalanus icaco*], guava [*Psidium guajava*], hackberry [*Celtis* sp.], passion fruit [*Passiflora* sp.], and wild lime [*Zanthoxylum* sp.]) (Oas and Hauser 2018, table 3). Recovered plant densities increase over time, suggesting an intensification of local production, processing, and consumption of cereals and other foods that accompanied the transition to sugar production at Morne Patate.

The second dataset used in our comparative analysis includes four rural historic period sites in the Gurabo municipality of Puerto Rico (Newsom 1998). Sites B-1, V-1, V-2, and V-3 were rural farm sites that may have been associated with sugar production and sugar cane processing (Newsom 1998, 8); artifacts recovered from intact deposits at all four sites indicate that they were inhabited throughout the first half of the 19th century. At site B-1 (Barrio Celada), samples for archaeobotanical analysis were collected from interior floor deposits inside the structures (n = 3) and from targeted locations outside of the structures (n = 5). Sites V-1 through V-3 (Barrio Hato Nuevo) are associated with a single farmstead; six total samples from individual features were analyzed from those three sites.

Plant remains from the four sites include carbonized wood, maize remains, cane fragments, bark fragments, and a number of other unidentified seeds and other plant parts (Newsom 1998, table 2). The soil contents of three ceramic vessels from site B-1 were analyzed and found to contain maize, including kernels and cob fragments (cupules, glumes, and rachis tissue). For the purposes of this study, we exclude the maize fragments recovered from the ceramic vessels. Ten fragments of possible maize were recovered from the interior of the structure at site B-1. Only carbonized wood remains and parenchymal tissue were recovered from contexts at sites V-1 and V-2. Three samples, likely from postholes, were taken from site V-3; plant remains identified from these samples include bark/wood, a single Chenopodiaceae seed, and unidentified parenchymal tissue.

Despite the difference in sampling protocols and recovery between Cane Garden, Morne Patate, and Gurabo, broad patterns of production and provisioning strategies emerge. The presence of weedy plant taxa in the three Caribbean datasets suggests that inhabitants relied on foraging in addition to possibly gardening, although some specimens in all of these assemblages may represent incidental inclusions. The macrobotanical assemblage from Morne Patate has a larger percentage of wild/gardened tree fruit species than Cane Garden; it is likely that residents of Cane Garden did not have the opportunity to exploit the same type of dryland forests as

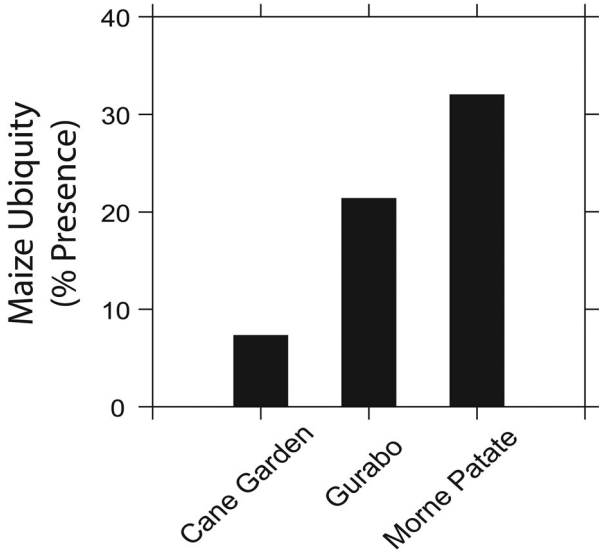

Figure 5. Maize ubiquity (% presence) at Estate Cane Garden (St. Croix), Gurabo (Puerto Rico), and Morne Patate (Dominica).

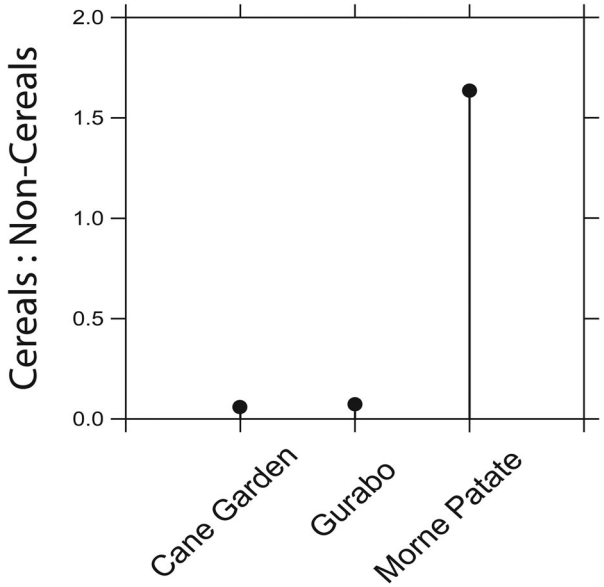

Figure 6. Dot chart of cereal to non-cereal ratios at Estate Cane Garden (St. Croix), Gurabo (Puerto Rico), and Morne Patate (Dominica).

inhabitants of Morne Patate. As noted above, many of the weeds recovered from Cane Garden have documented nutritional and medicinal uses; the function and use of the building at Cane Garden as a medical facility likely influenced the types of plants that were exploited within its boundaries.

Furthermore, there are notable differences in the abundance of cereals used by the enslaved occupants of Cane Garden, Morne Patate, and the Gurabo sites. The Morne Patate assemblage has the highest crop species richness and included maize, sorghum, millet, and barley. The Gurabo samples also contained maize, but in greater abundance than the low amount of maize recovered from Cane Garden. To visualize this difference, we initially began our analysis by comparing densities of maize remains across the three sites; however, a comparison of total plant density revealed a significant difference in the overall density of plant remains between Gurabo and the other study sites. This pattern may reflect several things (better preservation, differential patterns in disposal/deposition, higher settlement population, etc.). What is clear, however, is that density measures cannot speak to differences in plant use in this particular comparison. As a result, we turned to other measures and calculated the ubiquity of maize remains from the three sites, as well as ratios of cereals:non-cereal remains from each of the three sites. While both the Gurabo and Morne Patate samples reveal a higher ubiquity of maize compared to Cane Garden (Figure 5), it is clear that the enslaved residents of Morne Patate relied much more heavily on cereals relative to other plants, including fruits and other weedy/miscellaneous taxa, compared to those at the other sites (Figure 6).

Discussion

Plant use at Cane Garden speaks to broader economic and social practices of diet and well-being, including two interrelated issues: 1) exploitation of certain plants for care and healing and 2) strategic use of the landscape and diversified economic strategies by those at the hospital, including in comparison to other functional types of historical sites in the Caribbean. Interpreted within a well-being framework (Mrozowski, Franklin, and Hunt 2008), the macrobotanical assemblage indicates that enslaved nurses took advantage of both wild and gardened plants to provide healthcare for patients. Some plants recovered from the hospital, such as spurge, nightshade, and purslane may have had direct curative benefits. Species from these genera are common throughout the Caribbean and Africa; enslaved people may have drawn on traditional ecological knowledge to use Caribbean taxa in familiar ways to heal specific maladies.

Historical records indicate that malnutrition and malnourishment were a fundamental cause of high mortality rates and high incidences of disease in the Danish West Indies (Jensen 2012, 47). Poor nutrition (in terms of caloric intake, energy, nutrients, and amount of food available) was the primary factor in causing high mortality and morbidity rates and low birth rates amongst the enslaved population between 1803 and 1848. Poor sanitary conditions, crowded living quarters, and intensive labor regimes undoubtably precipitated the spread of endemic and epidemic disease, as well (Odewale 2019, 121). Inadequate food supplies and the physical effects of hunger, malnutrition, and disease would have had a direct impact on the ways in which nurses cared for their patients. Nurses likely incorporated plants into their patients' diets in order to offer them nutritional support and/or heal specific maladies in a way that contributed to a sense of well-being for enslaved inhabitants (Sheridan 1985, 336). Readily available wild plants such as amaranth, goosefoot, and purslane, which thrive in garden and field settings, may have been tended/procured by nurses as foodstuffs to help abate the effects of hunger and malnutrition. High in protein content, amaranth and goosefoot seeds may further have been used as a nutritious and available substitute for domestic grains such as maize and wheat.

The presence of certain taxa at the hospital also speaks to differences in provisioning strategies at Cane Garden compared to other types of historical sites. The paucity of maize and the lack of other staple grains, such as wheat, sorghum, millet, and barley, at Cane Garden is notable. Maize has been recovered from other historic period sites in the Caribbean, including Gurabo (Newsom 1998) and Morne Patate (Oas and Hauser 2018), and generally is considered a

plantation staple crop. When considering plantation provisioning practices on plantations in St. Croix from 1803–1848 from documentary records, maize is listed as a staple provision for all enslaved workers. While there was no formal legislation addressing mandatory rations to enslaved people before 1817, written sources from around 1800 mention the existence of a customary standard ration of 25 lbs of yams and 5 lbs of cornmeal per week per enslaved individual (Jensen 2012, 155). Following the British occupation of the Danish islands in 1817, the governor of the island issued an official proclamation mandating a minimum ration of 6 qt of cornmeal, or the equivalent in vegetables, per enslaved worker per week (Jensen 2012, 158).

In addition to maize, wheat, sorghum, millet, and barley were recovered from the Morne Patate sugar estate (Oas and Hauser 2018). Commonly documented in plantation records across the Caribbean, the latter taxa were missing from the Cane Garden and Gurabo macrobotanical assemblages. While these disparities may be a result of variation in environmental conditions and social settings, including functional site type (rural farmstead, estate and associated village, and hospital), they also speak to different social challenges faced by the communities forced to live and labor at these sites. While all three sites are associated with sugar production, over 90 percent of arable land on St. Croix was taken up by sugar production (Tyson 1996, 83); as a result, any sanctioned provisions to feed the enslaved population would have had to be imported. While not archaeobotanical in nature, research at Christiansted National Historic Site on St. Croix by Odewale (2016, 2019; Odewale, Foster, and Torres 2017) posits that royal enslaved laborers (i.e., enslaved laborers owned by the Danish Crown) did not have access to provision plots and gardens. Rather, enslaved Africans relied overwhelmingly on imported foodstuffs, Sunday market systems, and domesticated animals that were raised within the urban environment. The communities forced to live and labor in Puerto Rico and Dominica at Gurabo and Morne Patate, respectively, may have had more opportunity and/or space to grow food in garden plots than those on St. Croix.

Furthermore, the difference in grain abundance across these sites highlights the uniqueness of plant consumption as a resistance and survival strategy in a hospital setting. Plantation hospital records from St. Croix indicate that enslaved patients' diets included arrowroot (*Maranta arundinaceae*), tapioca (*Manihot esculenta*), and barley (Jensen 2003; 2012, 64), and special diets for convalescents in the garrison hospital in Frederiksted included grains such as rice (*Oryza* sp.), barley, and oats (*Avena* sp.) (Jensen 2003), although these grains are absent from the Cane Garden hospital macrobotanical assemblage.

The lack of maize (and other grains) at Cane Garden is likely due to cultural reasons, rather than taphonomic reasons, such as preservation and recovery issues, as maize kernels, cupules, and cobs are as likely, if not more likely, to preserve than other taxa recovered from the hospital. At Cane Garden, patients may have received maize in the form of cornmeal gruel or porridge, which would have been easier to eat and digest during convalescence. Maize kernels, cupules, and cob fragments were all recovered at Gurabo and Morne Patate, indicating that maize was produced and processed in close proximity to households. In contrast, the small amount of maize recovered from Cane Garden is represented by kernels only; the lack of cupules and cob fragments supports the assertion that maize was provisioned rather than cultivated or processed on-site. Traveler accounts in the Virgin Islands, such as Nissen's (1838) records of food purchases and prices, indicate that imported grains were bought by planters in the form of flour. If processed off-site, then maize and other grains ground into meal or flour would not have left macrobotanical signatures. Finally, the paucity of grain crops, including maize, may indicate negligence on the part of the plantation manager in providing the hospital nurses and patients with necessary foodstuffs. As Jensen notes, required or necessary quantities of foodstuffs were subject to interpretation by planters, despite the Danish colonial administration's attempts to enforce standard minimum rations (Jensen 2012, 153). In addition to economic concerns, planters may have withheld rationed crops as a form of punishment or as a way of increasing enslaved people's dependence on the plantation rationing systems (McKee 1999).

Possibly in response to insufficient rations or a desire to expand one's diet, individuals at Cane Garden consumed wild and weedy plants. The presence of wild plants at Cane Garden suggests that enslaved people strategically exploited a range of local environments; when present in fields, forests, and gardens, wild plants can provide an alternative source of essential nutrients and act as important contributors to diet in times when domestic crops are not ready for consumption (Nabhan 2016). The presence of weedy plants from Cane Garden may represent opportunistic collecting ventures in gardens, nearby cultivated fields, or in adjacent, uncultivated land.

Wild plants may have been collected from their natural habitats or may have been encouraged to grow alongside domesticates in formal garden or field settings. Many of the weedy taxa included in the Cane Garden assemblage grow well in disturbed habitats, suggestive of anthropogenic land use patterns or other physical changes to the landscape (see Bowes 2011, 99). Foraging for wild plants also had profound social and economic implications, as foraging often required individuals to contravene the geographic and economic boundaries of the plantation system. Enslaved people who scouted and foraged meaningful resource locales developed practices and knowledge systems that defied planter systems of control (DeLoughrey, Gosson, and Handley 2005). The presence of wild plant taxa from Cane Garden similarly denotes a level of spatial mobility. Plantation hospitals were largely driven by a formal code of containment, which was demonstrated by the physical location and layout of the buildings. To prevent the spread of communicable diseases and to discourage enslaved people from "feigning illness" (Sheridan 1985, 270), hospitals were places of confinement with barred windows, locked doors, and fenced enclosures.

Not only were hospitals designed to curtail the physical mobility of patients (and enslaved nurses), but they were also designed to act as boundary spaces to prevent the flow of ideas and practices. Hospitals were staffed by an enslaved nurse, who was overseen by an authorized, supervisory European physician, who was himself managed by the Danish colonial administration (Jensen 2012, 57). A breakdown or disregard for this idealized, hierarchical system of control is evident from the plant remains from Cane Garden. Enslaved nurses may have gathered the wild plants themselves, or the plants may have entered the hospital via other avenues.

The practice by non-patients and non-nurses of bringing foods into the hospital may speak to a social and spatial fluidity between the walls of the hospital and the rest of the site. This fluidity is also supported by faunal data; the faunal assemblage contains a large percentage (by NISP) of local fish and mollusks (Reifschneider 2018), indicating that enslaved nurses also used a wide range of local marine taxa in their cooking and healthcare practices. While hospitals were meant to represent the physical manifestations of bondage and confinement, to enslaved nurses (and possibly patients), they may have simultaneously represented opportunities for the appropriation of local plant and animal resources that promoted well-being.

Conclusion

In summary, nurses at the Cane Garden hospital used a range of domesticated, gardened, and wild plant taxa to provide for their patients. While it is likely that maize or other staple grains were allocated to patients at the hospital, as administrative and physician documents suggest (Jensen 2012, 64), they were not recovered in abundance via macrobotanical sampling. Macrobotanical remains suggest that patient diets consisted of gardened and wild plant taxa; nearly all of the recovered plants have documented historical and ethnographic medicinal and nutritional importance. The gardened and gathered plant foods at Cane Garden may have been supplemented by grains (including maize) administered to patients in the form of gruels or porridge; alternatively, the paucity of grains recovered in the macrobotanical assemblage may indicate withholding or negligence on the part of the plantation manager.

The presence of both gardened and wild taxa in the assemblage suggests that nurses (and possibly patients or other enslaved people at the site) were exploiting productive, locally available environments. Many of the wild plants grow well in disturbed soils, and likely were collected from nearby fields or intentionally tended in garden settings. Nurses may have used wild and gardened plants because of their availability in the local environment and also because they recognized certain nutritional and medicinal qualities in them. The presence of wild and gardened plants at the hospital, along with local marine fauna, has broader social implications indicative of the permeable boundaries between the building and the outside. While hospitals were supposed to have acted as centers of containment (and punishment), the presence of wild plants and animals suggests that either nurses were foraging for plants and animals for their patients or, more likely, that nurses and patients acquired these resources from other members of the enslaved social group. This notion implies a degree of social learning about the plantation landscape and its resources but also entails the subversion of systems of control at both the scale of the plantation and the hospital.

Finally, we support Oas and Hauser's (2018) call for historical archaeologists working in the Caribbean to take botanical and palynological studies of Caribbean historic period sites seriously. As successful macrobotanical studies of Caribbean contexts have demonstrated, plant-centered studies can and do contribute to our understanding of political ecology, foodways, the environmental legacies of colonial empires, and the role of plants for well-being. Although the macrobotanical remains from Cane Garden derive from a unique medical context, they nonetheless demonstrate the importance of macrobotanical studies for elucidating social systems of control and freedom within the context of Caribbean plantation slavery. While this study provides a window into one locale, more archaeobotanical research is needed to provide a more comprehensive picture of European colonialism and the impacts of the transatlantic slave trade, and to create the foundation for comparative studies between plantation, urban, and other specialized contexts.

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Notes on Contributors

Meredith Reifschneider (Ph.D. 2017, Stanford University) is an Assistant Professor of Anthropology at San Francisco State University. Her research interests include colonial medicine, U.S. military institutions, and Caribbean and California archaeology.

Dana Bardolph (Ph.D. 2017, University of California, Santa Barbara), is an Assistant Professor of Anthropology at Northern Illinois University. Her research interests include foodways, culture contact and colonialism, paleoethnobotany, New World archaeology, and discipline sociopolitics.

References

Acevedo-Rodríguez, P. 1996. *Flora of St. John, US Virgin Islands*. New York: New York Botanical Garden.

Bain, A., A.-M. Faucher, L. Kennedy, A. LeBlanc, M. Burn, R. Boger, and S. Perdikaris. 2017. "Landscape Transformation During Ceramic Age and Colonial Occupations of Barbuda, West Indies." *Environmental Archaeology* 23: 36–46.

Benzon, P. E. 1822. *Om den Vestindiske Salop*. Copenhagen: Andreafs Seidelin.

Berg, C., and H. F. A. Eggers. 1888. *Samling af Træsorter fra de Dansk Vestindiske Øer*. In the Botanical Museum of University of Copenhagen (unpublished).

Berman, M. J., and D. M. Pearsall. 2000. "Plants, People, and Culture in the Prehistoric Central Bahamas: A View from the Three Dog Site, an Early Lucayan Settlement on San Salvador Island, Bahamas." *Latin American Antiquity* 11: 219–239.

Berman, M. J., and D. M. Pearsall. 2008. "Archaeology at the Crossroads: Starch Grain and Phytolith Analyses in Lucayan Prehistory." *Latin American Antiquity* 19: 181–203.

Bohrer, V. L. 1991. "Recently Recognized Cultivated and Encouraged Plants Among the Hohokam." *Kiva* 56: 227–235.

Bowes, J. 2011. "Provisioned, Produced, Procured: Slave Subsistence Strategies and Social Relations at Thomas Jefferson's Poplar Forest." *Journal of Ethnobiology* 31: 89–109.

Britt, S. F. 2010. "Fueling the Fire: Examining Caribbean Colonial Relations Between Humans and the Environment." *Historical Archaeology* 44: 54–68.

Brunache, P. L. 2011. *Enslaved Women, Foodways, and Identity Formation: The Archaeology of Habitation La Mahaudière, Guadeloupe, Circa late-18th Century to Mid-19th Century*. Unpublished Ph.D. Dissertation, The University of Texas at Austin.

Carney, J. A. 2003. "African Traditional Plant Knowledge in the Circum-Caribbean Region." *Journal of Ethnobiology* 23: 167–186.

Carney, J. A. 2004. "'With Grains in Her Hair': Rice in Colonial Brazil." *Slavery & Abolition* 25: 1–27.

Carney, J. A. 2016. "Fields of Survival, Foods of Memory." In *Geographies of Race and Food, Fields, Bodies, Markets*, edited by R. Slocum, and A. Saldanha, 61–78. Burlington: Ashgate Publishing.

Carney, J. A., and R. Rosomoff. 2009. *In the Shadow of Slavery: Africa's Botanical Legacy in the Atlantic World*. Berkeley: University of California Press.

Carney, J. A., and R. A. Voeks. 2003. "Landscape Legacies of the African Diaspora in Brazil." *Progress in Human Geography* 27 (2): 139–152.

Chen, N. N. 2008. *Food, Medicine, and the Quest for Good Health: Nutrition, Medicine, and Culture*. New York: Columbia University Press.

Crellin, J. K., J. Philpott, and A. T. Bass. 1990. *Herbal Medicine Past and Present: A Reference Guide to Medicinal Plants (Vol. 2)*. Durham: Duke University Press.

Dahlgren, B. E., and P. C. Standley. 1944. *Edible and Poisonous Plants of the Caribbean Region*. Washington, D. C.: Bureau of Medicine and Surgery, U.S. Navy Department.

Danish National Archives. DNA (Rigsarkivet). West Indian Medical Administration, Archives of the Landphysicus – WIMA/AL. Archive no. 683. 683:10.2.2 Letters received and drafts for letters sent 1753-1854, 1782–1853.

Danish National Archives – DNA (Rigsarkivet). Board of Health – BH (Sundhedsstyrelsen). Archive no. 1252. 1252:15 Medical reports 1803-1958, 1821, 1821 (Medicinalindberetninger).

DeLoughrey, E. M., R. K. Gosson, and G. B. Handley. 2005. *Caribbean Literature and the Environment: Between Nature and Culture*. Charlottesville: University of Virginia Press.

Eggers, H. F. A. 1876. "St. Croix's Flora." *Vidensk. Medd. Kjøbenhavn* 38: 33–158.

Eggers, H. F. A. 1879. "The Flora of St. Croix and the Virgin Islands." *Bulletin of U.S. National Museum* 13: 133.

Faucher, A.-M., A. Bain, and V. Grimes. 2017. "First Archaeological Evidence for Old World Crops in the Caribbean: The Presence of Barley on the Island of Barbuda." *Historical Archaeology* 51: 542–556.

Fox, G. 2020. "Enslaved Life at Betty's Hope." In *An Archaeology and History of a Caribbean Sugar Plantation on Antigua*, edited by G. Fox, 158–176. Gainesville: University Press of Florida.

Franklin, M. 2004. *An Archaeological Study of the Rich Neck Slave Quarter and Enslaved Domestic Life*. Williamsburg: Colonial Williamsburg Foundation.

Gibson, H. R. 2009. "Domestic Economy and Daily Practice in Guadeloupe: Historical Archaeology at La Mahaudière Plantation." *International Journal of Historical Archaeology* 13 (1): 27–44.

Godwin, H. 1956. *The History of the British Flora*. Cambridge: Cambridge University Press.

Green-Pedersen, S. E. 1981. "Slave Demography in the Danish West Indies and the Abolition of the Danish Slave Trade." In *The Abolition of the Atlantic Slave Trade*, edited by D. Eltis, and J. Walvin, 231–257. Madison: University of Wisconsin Press.

Gremillion, K. 1993. "Crop and Weed in Prehistoric Eastern North America: the Chenopodium Example." *American Antiquity* 58: 496–509.

Grieve, M. 1971. *A Modern Herbal*. New York: Dover Publications Inc.

Hall, N. A. T. 1992. *Slave Society in the Danish West Indies: St. Thomas, St. John, and St. Croix*. Jamaica: The University of West Indies Press.

Heath, B. J. 1999. *Hidden Lives: The Archaeology of Slave Life at Thomas Jefferson's Poplar Forest*. Charlottesville: University Press of Virginia.

Heath, B. J., and A. Bennett. 2000. ""The Little Spots Allow'd Them": The Archaeological Study of African-American Yards."." *Historical Archaeology* 34: 38–55.

Higman, B. 2010. *A Concise History of the Caribbean*. Cambridge: Cambridge University Press.

Honychurch, P. N. 1986. *Caribbean Wild Plants and Their Uses: An Illustrated Guide to Some Medicinal and Wild Ornamental Plants of the West Indies*. New York: Macmillan Publishers.

Hubbard, R. N. L. B. 1975. "Assessing the Botanical Component of Human Paleoeconomies." *Bulletin of the Institute of Archaeology* 12: 197–205.

Hubbard, R. N. L. B. 1976. "Crops and Climate in Prehistoric Europe." *World Archaeology* 8: 159–68.

Hubbard, R. N. L. B. 1980. "Development of Agriculture in Europe and the Near East: Evidence from Quantitative Studies." *Economic Botany* 34: 51–67.

Jensen, N. 2003. "Sundhed, Citroner og Slaver. Et Detailstudie af Hospitalet i Frederiksted på St. Croix i Dansk Vestindien, 1780." *1066-Tidsskrift for Historie* 33: 3–11.

Jensen, N. 2012. *For the Health of the Enslaved: Slaves, Medicine and Power in the Danish West Indies, 1803-1848*. Copenhagen: Museum Tusculanum Press.

Kelly, K. G., and D. Wallman. 2014. "Foodways of Enslaved Laborers on French West Indian Plantations (18th-19th century)." *Afriques. Débats, méthodes et terrains d'histoire* (5). Mis en Ligne le 22 Décembre 2014.

Kintigh, K. 1984. "Measuring Archaeological Diversity by Comparison with Simulated Assemblages." *American Antiquity* 49: 44–54.

Kintigh, K. 1989. "Sample Size, Significance, and Measures of Diversity." In *Quantifying Diversity in Archaeology*, edited by R. Leonard, and G. Jones, 25–36. Cambridge: Cambridge University Press.

Kiple, K. 1984. *The Caribbean Slave: A Biological History*. Cambridge: Cambridge University Press.

Kowal, E., W. Gunthorpe, and R. Bailie. 2007. "Measuring Emotional and Social Well Being in Aboriginal and Torres Strait Islander Populations: An Analysis of Negative Life Events Scale." *International Journal of Equity in Health* 6: 18.

Kuby, R. L. 1979. *Folk Medicine on St. Croix; An Ethnobotanical Study*. Unpublished PhD Dissertation, The University of Kansas, Lawrence.

Lee, L. A. 2017. "Health Consumerism Among Enslaved Virginians." In *Material Worlds: Archaeology, Consumption, and the Road to Modernity*, edited by B. J. Heath, E. E. Been, and L. Lee, 141–161. New York: Routledge.

Lepofsky, D., and K. Lertzman. 2005. "More on Sampling for Richness and Diversity in Archaeobiological Assemblages." *Journal of Ethnobiology* 25: 175–189.

Marston, J. 2014. "Ratios and Simple Statistics in Paleoethnobotanical Analysis: Data Exploration and Hypothesis Testing." In *Method and Theory in Paleoethnobotany*, edited by J. Marston, J. D'Alpoim Guedes, and C. Warriner, 163–180. Boulder: University Press of Colorado.

Martin, A., and W. D. Barkley. 1961. *Seed Identification Manual*. Berkeley: University of California Press.

Mathieu, G., and D. Meissa. 2007. "Traditional Leafy Vegetables in Senegal: Diversity and Medicinal Uses." *African Journal of Traditional, Complementary and Alternative Medicines* 4: 469–475.

McKee, L. 1999. "Food Supply and the Plantation Social Order." In *I, Too, Am America*, edited by T. Singleton, 218–239. University of Virginia: The University Press of Virginia.

McKnight, J. W. 2011. *A Study of Archaeobotanical Remains from the King's Reach Site (18CV83) Cellar (Feature 200)*. Maryland: The Maryland Archaeological Conservation Laboratory Jefferson Patterson Park and Museum.

Mickleburgh, H. L., and J. R. Pagán-Jiménez. 2012. "New Insights into the Consumption of Maize and Other Food Plants in the Pre-Columbian Caribbean from Starch Grains Trapped in Human Dental Calculus." *Journal of Archaeological Science* 39: 2468–2478.

Miller, N. 1988. "Ratios in Paleoethnobotanical Analysis." In *Current Paleoethnobotany: Analytical Methods and Cultural Interpretations of Archaeological Plant Remains*, edited by C. Hastorf, and V. Popper, 72–85. Chicago: University of Chicago Press.

Mintz, S. W. 1996. *Tasting Food, Tasting Freedom: Excursions into Eating, Culture, and the Past*. Boston: Beacon Press.

Mintz, S. W. 2010. "Houses and Yards Among Caribbean Peasantries." In *Perspectives on the Caribbean*, edited by P. Scher, 9–24. Malden: Wiley-Blackwell.

Misrahi-Barak, J. 2014. "The Amaranth Paradigm: Amerindian Indigenous Glocality in the Caribbean." In *Caribbean Globalizations, 1492 to the Present Day*, edited by E. Sansavoir, and R. Scholar, 173–188. Liverpool: Liverpool University Press.

Moerman, D. 1998. *Native American Ethnobotany*. Portland: Timber Press.

Morgan, K. 2014. "Rastafari, Cultural Healing in the Caribbean." In *Caribbean Healing Traditions: Implications for Health and Mental Health*, edited by P. Sutherland, R. Moodley, and B. Chavannes, 164–175. New York: Routledge.

Mrozowski, S., M. Franklin, and L. Hunt. 2008. "Archaeobotanical Analysis and Interpretations of Enslaved Virginian Plant Use at Rich Neck Plantation (44wb52)." *American Antiquity* 73: 699–728.

Nabhan, G. P. 2016. *Gathering the Desert*. Tucson: University of Arizona Press.

National Archives- NARA (Washington). RG 55, St. Croix Landsting, Panteprotokol 1797-99, Litra M, f. 150a-150b.

Newsom, L. 1995. *Archaeobotanical Analysis of Aklis Site, St. Croix. U.S. Virgin Islands*. Ms. on file, New York: Panamerican Consultants, and Atlanta: Southeast Regional Office of the National Park Service.

Newsom, L. 1998. *Paleoethnobotanical Analysis of Historic Plant Materials from the Proyecto de Dragado del Lago Carraizo, Gurabo, Puerto Rico*. Ms. on file, Carbondale: Center for Archaeological Investigations, Southern Illinois University.

Newsom, L. 2001. *Archaeobotanical Analysis of Plant Remains from the Trunk Bay Site, St. John, U.S. Virgin Islands*. Ms. on file, St. John: U.S. National Park Service.

Newsom, L. 2008. "Present Status and New Horizons (Understanding the Evolution of an Indigenous Ethnobotany)." In *Crossing the Borders: New Methods and Techniques in the Study of Archaeological Materials from the Caribbean*, edited by C. Hofman, M. Hoodland, and A. van Gijn, 173–194. Tuscaloosa: The University of Alabama Press.

Newsom, L., and K. Deagan. 1994. "*Zea mays* in the West Indies: The Archaeological and Early Historic Record." In *Corn and Culture in the Prehistoric New World*, edited by S. Johannessen, and C. Hastorf, 203–217. Boulder: Westview Press.

Newsom, L. A., and D. M. Pearsall. 2003. "Trends in Caribbean Island Archaeobotany." In *People and Plants in Ancient Eastern North America*, edited by P. Minnis, 347–412. Washington D. C.: Smithsonian Institution Press.

Newsom, L. A., and E. Wing. 2004. *On Land and Sea: Native American Uses of Biological Resources in the West Indies*. Tuscaloosa: University of Alabama Press.

Nissen, J. P. 1838. *Reminiscences of a 46 Years' Residence in the Island of St. Thomas, in the West Indies*. Nazareth: Senseman & Co.

Oas, S. E., and M. Hauser. 2018. "The Political Ecology of Plantations from the Ground Up." *Environmental Archaeology* 23 (1): 4–12.

Odewale, A. 2016. "Living Among Presidents and Kings: Enslaved Africans Coping with Risk in Service to the Elite." Unpublished Ph.D. dissertation, Department of Anthropology, University of Tulsa, OK.

Odewale, A. 2019. "An Archaeology of Struggle: Material Remnants of a Double Consciousness in the American South and Danish Caribbean Communities." *Transforming Anthropology* 27 (2): 114–132.

Odewale, A., H. T. Foster, and J. M. Torres. 2017. "In Service to a Danish King: Comparing the Material Culture of Royal Enslaved Afro-Caribbeans and Danish Soldiers at the Christiansted National Historic Site." *Journal of African Diaspora Archaeology and Heritage* 6 (1): 19–54.

Oldendorp, C. G. A. 1987. *History of the Mission of the Evangelical Brethren on the Caribbean Islands of St. Thomas, St. Croix, and St. John*, edited by A. R. Highfield, and V. Barac. Ann Arbor, MI: Karoma Publishers Inc. First published in 1770.

Pagán-Jiménez, J. R. 2009. "Nuevas Perspectivas Sobre las Culturas Botánicas Precolombinas de Puerto Rico: Implicaciones del Estudio de Almidones en Herramientas Líticas, Cerámicas y de Concha." *Cuba Arqueológica* 2: 7–23.

Pagán-Jiménez, J. R., and J. R. Oliver. 2008. "Starch Residues on Lithic Artifacts from Two Contrasting Contexts in Northwestern Puerto Rico: Lose Muertos Cave and Vega de Nelo Vargas Farmstead." In *Crossing the Borders: New Methods and Techniques in the Study of Archaeological Materials from the Caribbean*, edited by C. L. Hoffman, M. L. P. Hooglandand A, and L. van Gijn, 137–158. Tuscaloosa: University of Alabama Press.

Pagán-Jiménez, J. R., R. Rodríguez-Ramos, B. A. Reid, M. van den Bel, and C. L. Hofman. 2015. "Early Dispersals of Maize and Other Food Plants into the Southern Caribbean and Northeastern South America." *Quaternary Science Reviews* 123: 231–246.

Pearsall, D. 1983. "Plant Utilization at the Krum Bay Site, St. Thomas, United States Virgin Islands," appended in E. Lundberg, *Preceramic Procurement Patterns at Krum Bay, Virgin Islands*, Unpublished Ph.D. Dissertation, University of Illinois, Urbana-Champaign: 290-361.

Pearsall, D. 1995. "Final Report: Analysis of Charred Botanical Remains from the Tutu Site, St. Thomas, U.S. Virgin Islands", Ms. on file, St. Thomas: State Historic Preservation Office.

Pearsall, D. 2015. *Paleoethnobotany: A Handbook of Procedures*. 3rd ed. San Diego: Academic Press.

Piperno, D. 1995. "Phytolith and Pollen Analysis at the Tutu Site, St. Thomas, U.S. Virgin Islands", Ms. on file, St. Thomas: State Historic Preservation Office.

Popper, V. 1988. "Selecting Quantitative Measures in Paleoethnobotany." In *Current Paleoethnobotany: Analytical Methods and Cultural Interpretations of Archaeological Plant Remains*, edited by C. Hastorf, and V. Popper, 53–71. Chicago: University of Chicago Press.

Pulsipher, L. 1994. "The Landscapes and Ideational Roles of Caribbean Slave Gardens." In *The Archaeology of Garden and Field*, edited by N. Miller, and K. Gleason, 202–222. Philadelphia: University of Pennsylvania Press.

Raymer, L. E. 1996. *Macroplant Remains from the Jefferson's Poplar Forest Slave Quarter: A Study in African American Subsistence Practices*. Stone Mountain, Georgia: New South Associates Technical Report #402.

Reifschneider, M. 2018. "Enslavement and Institutionalized Care: The Politics of Health in Nineteenth-century St. Croix, Danish West Indies." *World Archaeology* 50: 494–511.

Rock, C., and L. Newsom. 1987. "Botanical Analysis of the Privy Pits, Kings Bay Plantation." In *Historical Archaeology of Plantations at Kings Bay, Camden County, Georgia*, edited by W. H. Adams, 441–442.

Rodríguez Suárez, R., and J. R. Pagán-Jiménez. 2008. "The Burén in Precolonial Cuban Archaeology: New Information Regarding the Use of Plants and Ceramic Griddles During the Late Ceramic Age of Eastern Cuba Gathered Through Starch Analysis." In *Crossing the Borders: New Methods and Techniques in the Study of Archaeological Materials from the Caribbean*, edited by C. L. Hoffman, M. L. P. Hoogland, and A. L. van Gijn, 159–172. Tuscaloosa: University of Alabama Press.

Scarry, C. M. 1986. *Change in Plant Procurement and Production During the Emergence of the Moundville Chiefdom*. Unpublished Ph.D. dissertation, University of Michigan, Ann Arbor.

Schiebinger, L. 2017. *Secret Cures of Slaves: People, Plants, and Medicine in the Eighteenth-Century Atlantic World*. Stanford: Stanford University Press.

Sheridan, R. 1985. *Doctors and· Slaves: A Medical and Demographic History of Slavery in the British West Indies, 1680-1834*. Cambridge: Cambridge University Press.

Soelberg, J., O. Davis, and A. Jager. 2016. "Historical Versus Contemporary Medicinal Plant Uses in the US Virgin Islands." *Journal of Ethnopharmacology* 4: 74–89.

South, S. 1978. "Pattern Recognition in Historical Archaeology." *American Antiquity* 43: 223–230.

Sutherland, P. 2014. "The History, Philosophy, and Transformation of Caribbean Healing Traditions." In *Caribbean Healing Traditions: Implications for Health and Mental Health*, edited by P. Sutherland, R. Moodley, and B. Chevannes, 153–163. New York: Routledge.

Thomas, T. 1997. *Traditional Medicinal Plants of St. Croix, St. Thomas and St. John: A Selection*. St. Croix: University of the Virgin Islands.

Trigg, H. B., and D. B. Landon. 2010. "Labor and Agricultural Production at Sylvester Manor Plantation, Shelter Island, New York." *Historical Archaeology* 44: 36–53.

Trigg, H. B., and A. Leasure. 2011. "Cider, Wheat, Maize, and Firewood: Paleoethnobotany at Sylvester Manor." *Northeast Historical Archaeology* 36: 113–126.

Trouillot, M.-R. 1992. "The Caribbean Region: An Open Frontier in Anthropological Theory." *Annual Review of Anthropology* 21: 19–42.

Turner, N. J., ŁJ Łuczaj, P. Migliorini, A. Pieroni, A. L. Dreon, L. E. Sacchetti, and M. G. Paoletti. 2011. "Edible and Tended Wild Plants, Traditional Ecological Knowledge and Agroecology." *Critical Reviews in Plant Sciences* 30: 198–225.

Tyson, G. 1996. "On the Periphery of the Peripheries, The Cotton Plantations of St. Croix, Danish West Indies, 1735–1815." In *Bondmen and Freedmen in the Danish West Indies: Scholarly Perspectives*, edited by G. Tyson, 83–105. St. Croix, US Virgin Islands: Virgin Islands Humanities Council.

Wallman, D. 2018. "Histories and Trajectories of Socio-Ecological Landscapes in the Lesser Antilles: Implications of Colonial Period Zooarchaeological Research." *Environmental Archaeology* 23 (1): 13–22.

West, H. 1793. *Beskrivelse over Ste Croix med en Kort Udsigt over St. Thomas, St. Jean, Tortola, Spanishtown og Crabeneiland*. Copenhagen.

Westmacott, R. 1992. *African-American Gardens and Yards in the Rural South*. Knoxville: University of Tennessee Press.

Willcox, G. H. 1974. "A History of Deforestation as Indicated by Charcoal Analysis of Four Sites in Eastern Anatolia." *Anatolian Studies* 24: 117–133.

Wiseman, F. 1983. "Pollen and Phytolith Analysis at Krum Bay, St. Thomas," appended in E. Lundberg, *Preceramic Procurement Patterns at Krum Bay, Virgin Islands*, Unpublished Ph.D. Dissertation, University of Illinois, Urbana-Champaign: 362–373.

Yates-Doerr, E., and M. A. Carney. 2016. "Demedicalizing Health: The Kitchen as a Site of Care." *Medical Anthropology* 35 (4): 305–321.

Young, A. L. 1997. "Risk Management Strategies Among African-American Slaves at Locust Grove Plantation." *International Journal of Historical Archaeology* 1: 5–37.

Zimdahl, R. L., K. Moody, R. T. Lubigan, and E. M. Castin. 1988. "Patterns of Weed Emergence in Tropical Soil." *Weed Science* 36: 603–608.