

Archeological Investigations at
**Salt River Bay National Historical Park
and Ecological Preserve**

St. Croix, U.S. Virgin Islands

Meredith D. Hardy

With contributions by

Rachel Wentz, Ph.D., Brian Worthington, and Thadra Stanton

SEAC Accession Number 1953

2007

Management Summary

In June–July 2005, a systematic archeological pedestrian survey and limited Phase-I subsurface testing was conducted at Salt River Bay National Historical Park and Ecological Preserve (SARI) by the Southeast Archeological Center’s (SEAC) Regionwide Archeological Survey Program (RASP). The purpose of this survey was to provide a Phase I-level inventory of archeological resources at SARI, and evaluate potential impacts at several proposed locations for the placement of a marine research and education center in the vicinity of Salt River Bay on St. Croix, U.S. Virgin Islands. The primary goals of the inventory were: (1) to evaluate the presence and extent of unidentified cultural resources possibly located within the four areas proposed for the center’s location, and (2) to locate and identify terrestrial cultural resources that had been previously reported but their locations were uncertain.

As a result of these efforts, spatial, temporal, and structural data were collected and improved for the previously identified prehistoric *Lignum Vitae* site on Estate Judith’s Fancy (Virgin Islands Site Number 12VAm1-5, the Judith’s Fancy site). Additionally, the remnants of a prehistoric site first identified by Gudmond Hatt in 1923 were encountered, as was a relic mangrove swamp and

possible shell-bearing sheet midden that is also prehistoric in age. Excavations conducted at the Judith’s Fancy site provided two charcoal samples from a burned post, a shell sample, and a human tooth that were submitted to Beta Analytic for radiocarbon dating. All four dated samples fell within a time range of A.D. 540–890, firmly placing the age of the site within the Mogens Bay-Salt River I phase (ca. A.D. 600–900), with a late Saladoid presence also evidenced.

Based on the results of the archeological investigations conducted in 2005, the following recommendations were made. First, either the hotel peninsula or the disturbed area corresponding with Vescelius’s Site 5 is recommended as acceptable for use as the location of the marine research and education center activities. Second, a Phase II cultural resource survey should be conducted for either selected location prior to construction. Third, it is recommended that the old road that parallels the eastern shoreline of Salt River Bay, beginning on the southern end of Triton Peninsula, be used as the primary access to the hotel peninsula. And fourth, a Phase II archeological survey of a corridor surrounding and following the old road should be conducted if it is to be used to access the proposed center.



Contents

MANAGEMENT SUMMARY	2
FIGURES.....	4
TABLES.....	5
ACKNOWLEDGEMENTS.....	6
CHAPTERS	
1. INTRODUCTION.....	7
2. ENVIRONMENTAL AND CULTURAL SETTINGS	8
<i>Environmental Setting</i>	8
<i>Cultural Setting</i>	9
3. FIELDWORK.....	22
<i>Introduction</i>	22
<i>Previous Archeological Investigations in the Survey Area</i>	23
<i>2005 RASP Investigations</i>	25
<i>Excavations at the Judith’s Fancy Site (12VAm1-5, SARI 2.001)</i>	29
<i>Summary</i>	35
4. ARTIFACT ANALYSIS AND DISCUSSION.....	36
<i>Laboratory Methods and Procedures</i>	36
<i>Clay Artifacts</i>	36
<i>Glass Artifacts</i>	40
<i>Metal Artifacts</i>	43
<i>Faunal Remains</i>	43
<i>Lithic Artifacts</i>	46
<i>Human Remains</i>	46
<i>Discussion</i>	48
5. SUMMARY AND RECOMMENDATIONS.....	49
APPENDICES	
1. FAUNAL ANALYSIS FROM THE JUDITH’S FANCY SITE (12VAM1-5) BY BRIAN E. WORTHINGTON	52
2. LITHIC ANALYSIS BY THADRA PALMER STANTON	54
3. ANALYSIS OF HUMAN SKELETAL REMAINS FROM JUDITH’S FANCY PREHISTORIC SITE BY RACHEL K. WENTZ, PH.D.	55
<i>Summary</i>	56
4. CATALOG OF ARTIFACTS (SEE ENCLOSED CD)	
REFERENCES	57

Figures

- 1. General map of the U.S. Virgin Islands and location of Salt River Bay9
- 2. Changes in eastern shoreline of Salt River Bay10
- 3. 1647 Spanish map of St. Croix, with close-up of Salt River Bay.18
- 4. 1671 LaPointe map of St. Croix, with close-up of Salt River Bay.....19
- 5. Close-up of Hemer’s Peninsula, featuring previously unrecorded structures, from the 1799 Oxholm map of St. Croix.21
- 6. Proposed location alternatives for the marine research and education center.....22
- 7. 2005 archeological survey area23
- 8. Possible historic site, Hemer’s Peninsula, Judith’s Fancy.....25
- 9. Shovel test locations at Judith’s Fancy.....26
- 10. Locations of shovel tests positive for cultural materials at SARI 2.00527
- 11. Remains of old road with an iron gate post.....28
- 12. Shovel test locations around the former Kumpitch House, NPS Visitor Contact Station, above Salt River Point/Columbus’ Landing site, SARI 1.001 (12VAm1-6) Survey Site 829
- 13. Close-up of Figueredo’s original excavation grid, SARI 2.00130
- 14. EU P18-A, SARI 2.00130
- 15. The 2005 excavation grid, SARI 2.00131
- 16. EU R12, extent of excavation, SARI 2.00132
- 17. EU R12, at the top of Feature 1, SARI 2.00132
- 18. EU R12, Feature 1 at the base of Level 3, SARI 2.00133
- 19. EU R12, wooden post, SARI 2.00133
- 20. EU R12, Feature 4, SARI 2.00134
- 21. Shoreline and eroding bank just north of the excavation area, SARI 2.00135
- 22. Baked clay37
- 23. Historic coarse earthenware fragment from a jug or pitcher.....37
- 24. Prehistoric vessel with attached handle.....39
- 25. Prehistoric sherds possibly made with caliche.....40
- 26. Brushed/incised and filmed sherds41
- 27. Decorated sherds41
- 28. Red film on rim sherds41
- 29. Griddle rims.....42
- 30. Griddle rims.....42
- 31. Underside of FS# 33.02, cat. # SARI 452 (Figure 30), showing matt or grass impressions.....42
- 32. Drilled shark vertebra bead45
- 33. Ground hammerstone47
- 34. Groundstone tools and flakes47
- 35. Map of Judith’s Fancy with previously identified sites, locations of positive shovel tests, and recommended areas for further excavation51

Tables

1. Artifact Totals by Type.....	37
2. Historic Ceramics.....	38
3. Prehistoric Ceramics by Temper	39
4. Prehistoric Ceramics by Vessel Portion	39
5. Glass Artifacts	43
6. Metal Artifacts	44
7. Faunal Remains.....	45
8. Lithic Artifacts	47
9. Results of Radiometric Testing.....	49
10. Dental Metrics for Teeth Recovered from EU P18-A.....	55
11. Vertebral Metrics for Bones Recovered from EU P18-A.....	56

Acknowledgements

I wish to take this opportunity to express my sincere gratitude to all those who contributed their knowledge and expertise, as well as time and effort, towards the completion of this project.

First, I would like to thank SEAC Director John E. Ehrenhard (retired), current SEAC Director Bennie Keel, Ph.D., and Associate Director George S. Smith, Ph.D., for their encouragement, support, and guidance throughout the preparation of this document.

I am indebted to the field survey team that consisted of Robert Hellmann and Guy Prentice, Ph.D., Program Manager of the Regionwide Archeological Survey Program (RASP) and SAIP Coordinator, who trudged relentlessly through the guinea grass during the hottest and driest days of the year. I would also like to thank Prentice for his guidance and support throughout all phases of this project, and for editing early drafts of this report.

Three additional members of the field crew volunteered their time, archeological experience, and expertise to this project: Dan McClernon, Greg McCabe, and Rachel Wentz, Ph.D. Without them this project could not have been completed in such a timely manner. They all worked above and beyond the call of duty. Thank you for all of your hard work. Wentz also conducted the analysis of human remains—thank you!

Thanks go to Donna Ruhl of the Florida Museum of Natural History for identifying the wood specimens that were collected from the excavations; to Irvy R. Quitmyer, Ph.D., also of the Florida Museum of Natural History, for help with the faunal identifications; to Professor Stephen Kish of the Department of Geology, Florida State University, for identifying the stone materials that were recovered; and to David N. Dickel, Ph.D., Supervisor, Conservation and Research Laboratory, Florida Bureau of Archeological Research, for identifying tooth and bone fragments.

Thank you to the staff and personnel of SARI and Christiansted National Historic Site, and especially to Superintendent Joel Tutein, for allowing me access to the archival records and collections housed at the Christiansted facility, and for making his staff available for assistance. A very special thank you goes to SARI Chief of Resources Zandy-Marie Hillis-Starr and Administrative Officer Elizabeth Centeno who facilitated communications, found housing, and helped our volunteers. A special thank you goes to Hillis-Starr, for all of her support throughout the project. I would also like to give a big thank you to the Youth Conservation Corps volunteers who were made available and were a great help in the field: William Castro, Howard Forbes, and Grio O'Bryan.

Several people on St. Croix and St. Thomas merit acknowledgment. I would like to extend a special thank you to David Brewer, Senior Territorial Archaeologist for the Virgin Islands State Historic Preservation Office, for his insights and assistance. The field investigations could not have been completed without the help of David Hayes and the members of the St. Croix Archaeological Society for lending screens and other equipment. And finally, thanks are in order to Rick Starr, for building our large excavation screens and saw horses, and to Alexandra Starr, for being such a hard worker (a scientist in the works!)

And, thanks to my fellow SEAC staff for their help and support throughout this project. Thadra Stanton and Brian Worthington conducted artifact analysis on the lithics and faunal remains, and did all the data entry, cataloging, and artifact labeling. Thank you to Audrey Trauner, Richard Vernon, and Bridget Beers for all of their support and help, and to Administrative Officer Janice Burke and Administrative Assistants Cheryl Brinson and Tiffanie Bourassa, who facilitated shipping and correspondence between St. Croix and Tallahassee.



Chapter 1

Introduction

A feasibility study has been funded by the Department of Interior to help the National Park Service (NPS) determine the feasibility and best placement for a marine research and education center within the boundary of Salt River Bay National Historical Park and Ecological Preserve (SARI), St. Croix, U.S. Virgin Islands. This center would be operated by a consortium known as the Joint Institute for Caribbean Marine Studies, consisting of four universities: University of the Virgin Islands; University of North Carolina, Wilmington; University of South Carolina; and Rutgers, the State University of New Jersey. Four specific areas or combinations of areas have been proposed for the center's location. Two of the four proposed areas are located on NPS-owned lands within Salt River Bay National Historical Park and Ecological

Preserve (SARI), while the other two are located on privately owned land within SARI's legislated boundary. The currently on-going feasibility study will evaluate the potential impacts and issues of locating the center at each of these four areas. To assist in implementing the feasibility study, SARI asked the NPS' Southeast Archeological Center (SEAC) to conduct a systematic inventory (survey) of the archeological resources located on lands both owned by the NPS and privately owned lands that lie within the legislated boundaries of SARI that are currently under consideration for the proposed marine research and education center. In undertaking the archeological inventory at SARI, highest priority was given to those areas identified as the most feasible locations for the center. This survey was conducted in June–July 2005.



Chapter 2

Environmental and Cultural Settings

ENVIRONMENTAL SETTING

Salt River Bay National Historical Park and Ecological Preserve is located on the northern shore of St. Croix, United States Virgin Islands (Figure 1). St. Croix is the topographic high of a single landmass. St. Croix and the other U.S. Virgin Islands form part of a chain of islands known as the West Indies that, beginning with Cuba, extend southeastward in a broad arc, ending with the Island of Margarita near the mouth of the Orinoco River, Venezuela. St. Croix was created near the southern edge of the Greater Antillean Ridge (U.S. Department of Agriculture 1998:18). The island was separated from Puerto Rico and the northern U.S. Virgin Islands of St. Johns and St. Thomas by the 4,500-meter deep Virgin Islands Basin (Gill et al. 1989:49).

St. Croix has a dry subtropical climate, and is subject to intermittent but extensive damage due to occasional hurricanes and tropical storms. It is estimated that winds of hurricane force hit the Virgin Islands once every 16 years (U.S. Department of Agriculture 1998:13). Since 1867, over 36 hurricanes and 14 tropical storms have impacted the natural and cultural resources (terrestrial and submerged) of St. Croix (U.S. Department of Agriculture 1998:13).

Approximately 18,000 years ago, during the maximum Pleistocene glaciation, sea levels were roughly 200 feet below their present level. With the rising of sea levels and changing climatic conditions that followed the last several ice-ages, the number of faunal and floral species located on these isolated islands dwindled but became increasingly specialized, replicating a pattern that has also been observed on remote Pacific islands (Petersen 1997:120; Raffaele 1989:7). By the time of the arrival of the first known human explorers to the region nearly 6,000 years ago, warmer climates

and easterly trade winds had sculpted the Greater and Lesser Antilles into their basic present forms: islands having unique biotic communities that fostered the development of broad based foraging and maritime economies, inter-island trade networks, and frequent cultural exchanges among the human groups that came to settle these Caribbean islands (Rouse 1992:4).

Biotic communities found at SARI include coral barrier reefs and a submarine canyon, both sand and rocky beaches and shorelines, mangrove forests, and the Salt River watershed, the only remaining estuarine system on the island of St. Croix (NPS 1990a:64). Much of the shoreline that bounds Salt River Bay has been dramatically altered over the past 100 years. The shoreline at Columbus' Landing has been augmented through the intentional creation and expansion of sandy beaches. The subtropical deciduous hardwood forests that formerly covered these islands were cut down during colonial times (U.S. Department of Agriculture 1998:16–18; Woodbury and Little 1976:6) and are only now beginning to recover (Woodbury and Little 1976:6). Today, subtropical dry forest covers much of the landmass of the Virgin Islands, Puerto Rico, and Mona Island. When Estate Judith's Fancy was in the process of being developed in the mid 1960s, a marina and a salt water pond were dredged, and fill material was used to expand a peninsula and to build up the area immediately surrounding the marina. An artificial crescent beach was also created, flanked by rock jetties, and as previously mentioned a salt water pond was created by dredging beyond the crescent beach. The original shorelines and salt ponds are shown on a 1958 USGS quad map, and when compared to the 1983 maps, the effect of intentional shoreline displacement and dredging for marinas is evident (Figure 2). The upland and inland areas of Estate Judith's Fancy have been, comparatively

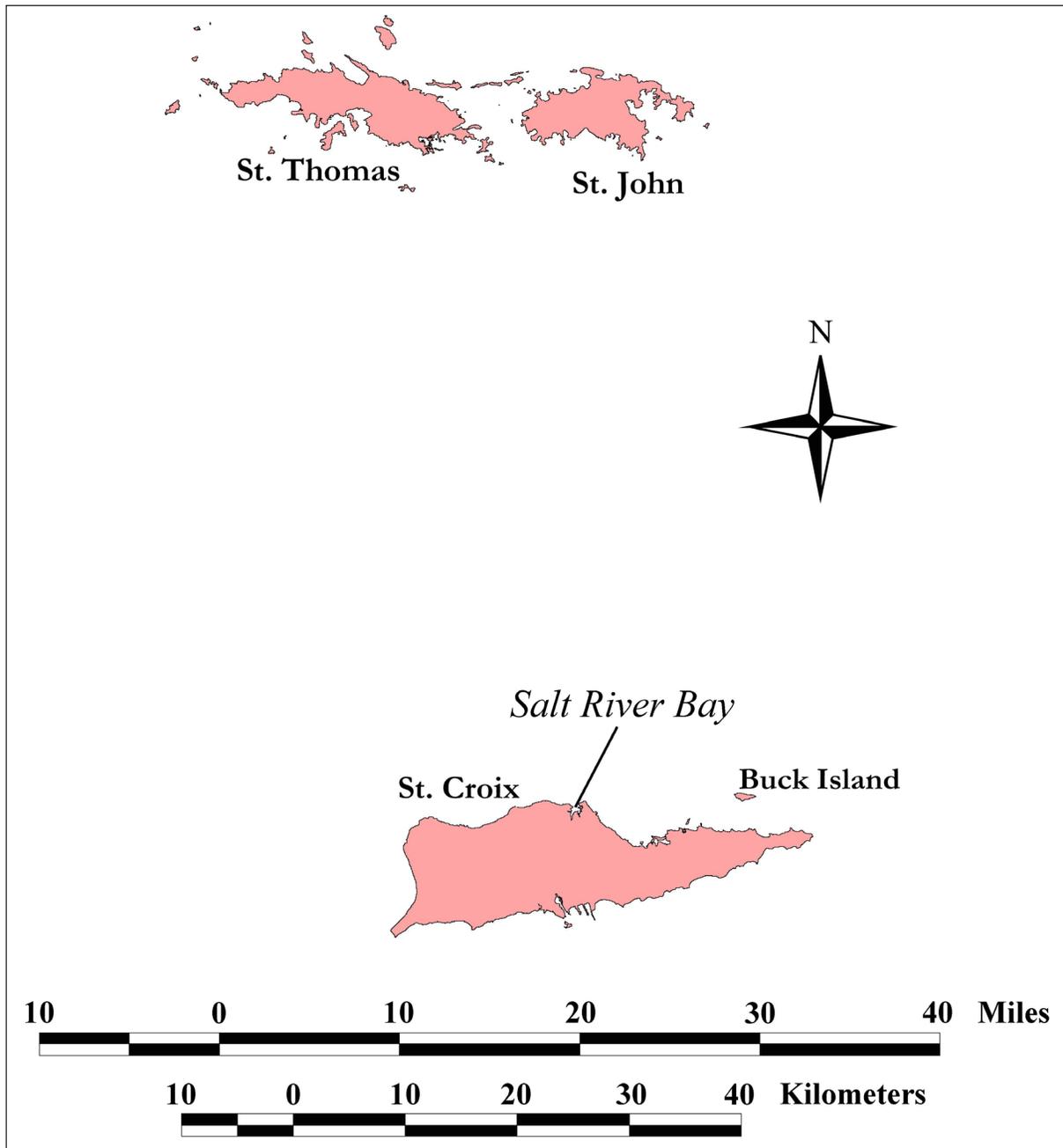


Figure 1. General map of the U.S. Virgin Islands and location of Salt River Bay.

speaking, little disturbed; bulldozers were used to remove trees, and today the area is composed of dense scrub vegetation. Push piles are evident, but exposed profiles from archeological excavations conducted in the mid 1980s reveal that much of the original subsurface remains intact.

CULTURAL SETTING

Because of its location, reliable food resources and soils good for agriculture, and, in times past, fresh water, Salt River Bay, located on the northern shore of St. Croix, U.S. Virgin Islands, has

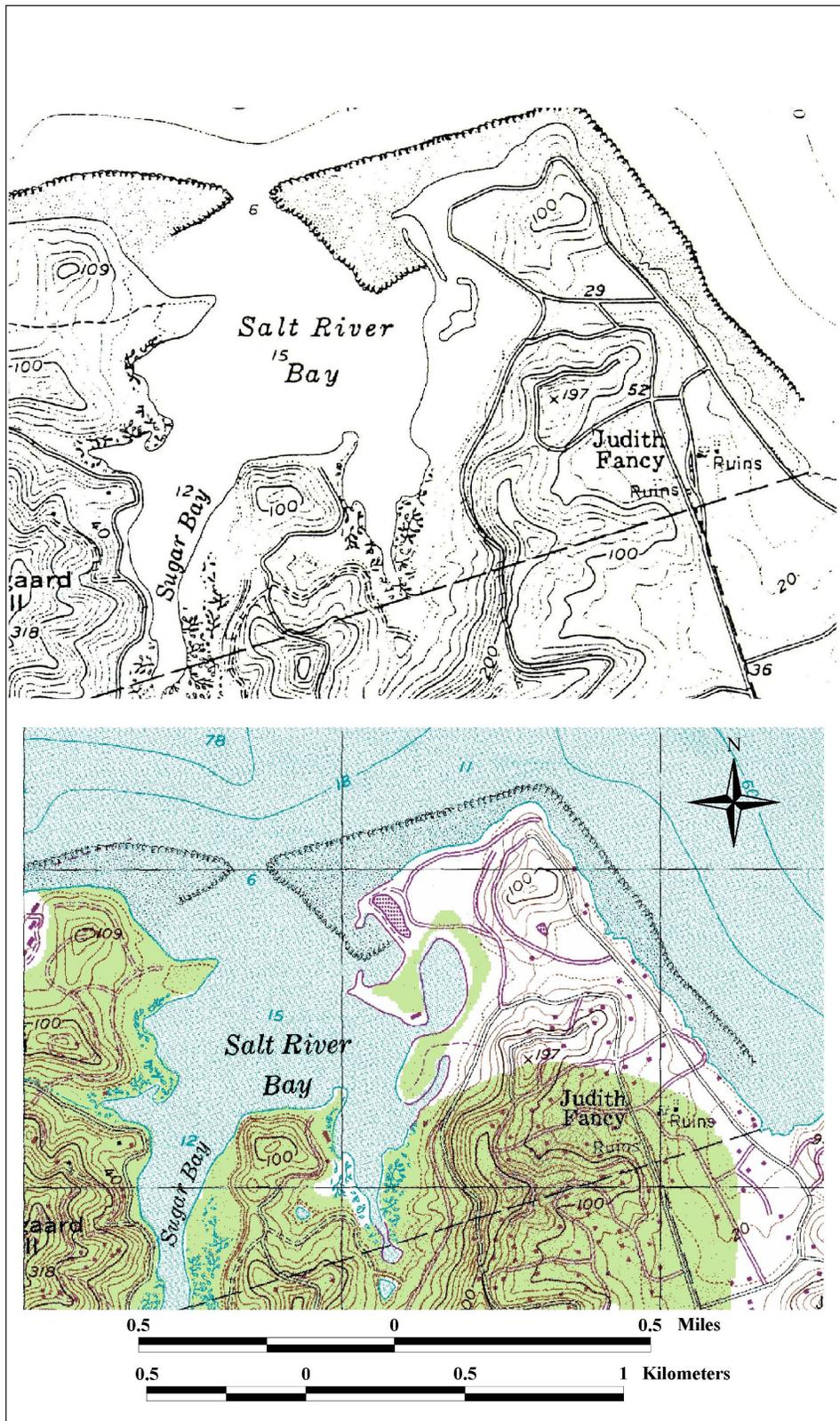


Figure 2. Changes in eastern shoreline of Salt River Bay. Top: 1958. Bottom: 1983.

been used as a point of interaction, exchange, and settlement for nearly 2,000 years. Salt River Bay National Historical Park and Ecological Preserve (SARI) currently possesses and manages a wealth of cultural resources that spans from the island's earliest prehistoric times to the early historic colonial period to the plantation era.

Cultural chronologies that have been developed specifically for St. Croix include one interpretation that recognizes three Ceramic Age (i.e., pottery-making) cultures: Igneri (A.D. 50–650), Taíno (A.D. 650–1450), and Kalina, or Carib (A.D. 1450–1600) (IASD 1989:8). Perhaps the most agreed upon chronology for interpreting St. Croix's cultural history emphasizes the island's cultural relationships to Puerto Rico and the rest of the Greater Antilles. This three stage cultural sequence begins with the Prosperity (ca. 200/100 B.C.–A.D. 400) and Coral Bay–Longford (ca. A.D. 400–600) phases of the Saladoid period, followed by the Magens Bay–Salt River I (ca. A.D. 600–900) and Magens Bay–Salt River II (ca. A.D. 900–1200) phases of the Elenan Ostionoid period, and the Magens Bay–Salt River III (ca. A.D. 1200–1500) phase of the Chican Ostionoid period. The synopses that follow for each of these three cultural periods will illuminate the primal role that Salt River Bay had in the prehistory of St. Croix and the Virgin Islands.

ST. CROIX PREHISTORY

The Saladoid Period

Current evidence indicates that the Columbus Landing site, located on Salt River Point, was first occupied during the Saladoid era, circa 200/100 B.C.–A.D. 600 and represents a major population center on St. Croix during this period. The Saladoid settlement pattern expressed at Salt River is consistent with other village patterns observed both across the Caribbean and in lowland South America where the basic settlement pattern is ultimately derived. They are often located in ecotones, or areas where two or more ecological zones converge, typically in close proximity to mangroves, estuaries, continual or intermittently running fresh water, lagoons, coral reefs, and

fertile soils, and along watersheds and near river mouths (Morse 1989). Saladoid period settlements and later villages tended to have houses clustered around cleared plazas that also apparently served as a planned cemetery (Rodríguez 1997:84). In general terms, the Saladoid pattern consists of several large round houses, each ranging in size from 10 meters to approximately 32 meters in diameter, and built of poles and thatch. Saladoid sites measure roughly 10 to 20 hectares in size, and are generally widely dispersed.

Saladoid peoples brought with them a well-established “Tropical Forest” agricultural subsistence economy, based on the domestication of a wide variety of tropical forest plants, most notably the starchy root crop manioc (Lathrap 1970; Steward 1948). Evidence for manioc cultivation is provided by the presence of ceramic griddles on many prehistoric archeological sites; griddles recovered in the lowland Amazon and Orinoco basin of South America have been dated between 2,000 and 500 B.C. The Saladoid also grew and consumed soursop, papaya, guaba, sapote, yellow sapote, guava, sapodilla, and avocado (deFrance et al. 1996; Newsom 1993; Newsom and Wing 2004). Other botanical remains recovered from Saladoid period sites in Puerto Rico and Hispaniola include goosefoot (*Chenopodium*), calabash (*Bignoniaceae*; *Crescentia* sp.), bullytree or jacana (*Pouteria* sp.), wild fig (*Ficus* spp.), and evening primrose (*Oenothera* sp.), among many others (Newsom 1993). Maize or corn (*Zea mays*) may also have been a component of the Saladoid diet, though the extent of its role is currently unknown.

Archeologists recognize two major ceramic styles within Saladoid culture: Huecan and Cedrosan, both of which have been found on St. Croix (Righter 1997). Huecan ceramics, however, are found more often on St. Croix, Vieques, and eastern Puerto Rico, while Cedrosan pottery is typically found on St. Thomas, northern Puerto Rico, and the Mona Passage (Rouse 1992:102). Reasons for how and why these two distinct ceramic styles came to be so disproportionately distributed at Saladoid period sites are currently open to several interpretations (Haviser 1997). One explanation is that two migrations occurred simultaneously,

involving distinct peoples with separate ceramic traditions. A second, more readily accepted explanation is that these ceramic styles represent variation within a single culture, reflecting either different lineage groups or specialized uses.

A third, more controversial alternative is that one ceramic style, Huecan, represents a separate, cultural migration that preceded the recognized entry of Cedrosan Saladoid culture. The Huecan or Huecoid culture, referred to as AGRO I by Luis Chanlatte Baik (2003), is believed to have arrived on Vieques and other islands of the northern Lesser Antilles by circa 170 B.C.; Chanlatte Baik calls the Cedrosan Saladoid culture AGRO II. Chanlatte Baik claims that this Huecoid culture had a distinctive material culture that included unglazed and unpainted pottery (no red-on-white painted wares), fine zoned-incised cross-hatching decoration (ZIC wares), red or white staining used only to fill areas of fine incisions or engravings, and a lapidary industry that manufactured finely-crafted ornaments made from semi-precious stones. Ornaments were also made of shell, mother of pearl, wood, and bone. It is believed that these ornaments sometimes depicted animals not found on the islands but only in the Amazonian and Orinocan basins, such as Andean condors. The fact that some of these semi-precious stones appear to have originated from lowland South America begs for the argument that a long-distance island-to-mainland exchange network existed at this time. However, a reanalysis of the *La Hueca*/Sorcé materials by José Oliver has called for a reassessment of this *La Hueca* discussion (Oliver 1999).

Whichever explanation may be the case (or any combination thereof), Huecan pottery typically consists of ZIC wares, while Cedrosan pottery has fine white-on-red painting (WOR wares) (Righter 1997:73). In general, Saladoid pottery is thin-walled and hard-fired, and include inverted bell-shaped bowls, with open and flaring rims more common than restrictive or straight rims, and carinated vessel walls (Allaire 1997a:22; Righter 1992). Other vessel traits include boat-shaped bowls, double bowls, globular vessels, pierced lugs or tabular handles, and D-shaped handles (Hayward and Cinquino 2002). Later Saladoid pot-

tery incorporated polychrome paints, like purple, black, yellow, and orange, as well as zoomorphic and anthropomorphic figures (*adornos*) (Petersen 1997:23). In the Virgin Islands, the earlier Cedrosan ceramic period is called Prosperity (ca. 200/100 B.C.–A.D. 400), while the later period is called Coral Bay–Longford (ca. A.D. 400–600) (Keel et al. 1996:37; Rouse 1992:87, Figure 14).

A variety of tools were made and used by Saladoid peoples, including groundstone adzes, celts, axes, pestles, grinding stones, and hammerstones, bone tools, and shell gouges (Hayward and Cinquino 2002). Some petaloid celts show evidence of having been highly polished and were possibly used for ceremonial purposes, while others were used for grinding or pecking objects. Other artifacts associated with Saladoid culture include carved shell masks, pendants made of shell and turtle bone, stone net sinkers, spindle whorls, coral hammerstones, and small chert stone tools (Righter 1992:27).

There is evidence for extensive circum-Caribbean and inter-island trade networks among the early Saladoid cultures in the form of non-local shells and semi-precious stones that were used in a lapidary industry (Allaire 1997a; Boomert 1987; Cody 1991; Crock and Bartone 1998; Watters 1997; Watters and Scaglione 1994). These objects include beads and amulets carved from amethyst, aventurine, turquoise, carnelian, jadeite, and quartz (Righter 1997:74; Rodríguez 1997:86). These types of items have been recovered occasionally in burials.

Archeologically, it is known that Saladoid mortuary customs included burial in either middens surrounding the communal plaza space, or in the central plaza itself as a kind of cemetery (Curet and Oliver 1998; Righter 2002; Sandford et al. 2002:220). Interred individuals are often recovered in flexed, tightly flexed, or in seated positions (Sandford et al. 2002), though Siegel (1992) reports numerous extended burials at the Maisabel site (Puerto Rico). Goods were typically placed nondifferentially in middens surrounding the communal space and not with individuals, possibly indicative of egalitarian reverence in death (Siegel 1997:110). On the other hand, excavations

at the Tutu site on St. Thomas revealed that both subadults and adults of the early Saladoid period, buried in the plaza area, were often interred with pottery (Sandford et al. 2002:221). Grave goods recovered from midden contexts often included polished stones, carved shell and bone amulets, beads, pendants, effigy ceramic vessels, and plain or carved three-pointers. Other Saladoid burial practices, as observed at Punta Candeleró, Puerto Rico, and Salt River, St. Croix, include pottery being turned upside down over an individual's head or legs and bodies headed east and being covered in vegetal fibers (Rodríguez 1997:83). Children under the age of five were buried in large ceramic vessels, often with some kind of grave good, like a shell trumpet or green serpentine pendant (Rodríguez 1997:84). Keegan notes (2000:144) that those goods found with a few burials are likely personal possessions, and could be indicative of personal achieved status.

The Ostionoid Period

By circa A.D. 350, late Saladoid cultures were being influenced by another wave of cultural changes that were spreading throughout the Caribbean. A number of archeologists recognize several possible sources for these influences: trade and interaction, innovation by Saladoid groups, or the physical migrations of peoples coming from Barrancoid cultural groups that, once again, originated from the mainland of South America along the lower Orinoco River (Allaire 1997a:25; Rouse 1992:92). By A.D. 600, these cultural traits were present in the region of both the Mona Passage and the Virgin Passage, including the islands of Vieques, Puerto Rico, and the Virgin Islands (Allaire 1997a:25). This event has prompted archeologists to recognize a new cultural period: Ostionoid. Today, the Ostionoid cultural complex has been divided into three phases: Magens Bay–Salt River I (ca. A.D. 600–900), Magens Bay–Salt River II (ca. A.D. 900–1200), and Magens Bay–Salt River III (ca. A.D. 1200–1500). This division reflects the later infusion of Chican cultural influences into the Virgin Islands at the end of the Ostionoid period.

By the end of the Ostionoid period (A.D. 1200–1492), the people of the Virgin Islands had

come under the sway of Chican Ostionoid cultural subseries that had developed out of the earlier Elenan Ostionoid cultural subseries of the Dominican Republic (ca. A.D. 800–1000). This culture then spread to Haiti, eastern Cuba, Puerto Rico, and the Virgin Islands (Rouse and Allaire 1978:473). It was the Chican Ostionoid culture that developed into the Classic Taíno cultures encountered by Columbus and subsequent explorers of the 15th and 16th centuries (Rouse 1992:135).

The early Ostionoid period has been described by Rouse (1992:133) as a virtual “cultural Dark Age” for these Taíno ancestors, marked by an absence of effigy vessels, figurines, masks, and intricate decorations on pottery. On the other hand, Curet (1992b, 1996) contends that an argument for cultural impoverishment does not hold when evidence for increasing political, economic and religious complexity has been archeologically recovered. By approximately A.D. 900, just prior to the revival of trade networks, these artistic elements had returned, bigger and more massive than ever. Elenan and Chican ceramics are typically poorly proportioned, with flat bases, thin rims, and raised loop or strap handles; they are often polished, and painted completely in red or red smudged with applied or modeled zoomorphic images (Righter 1992:27; Rouse 1992:124). Chican ceramics are often incised with curvilinear designs and have incurving shoulders (Rouse 1992:125). Chican pottery is typified by carinated bowls and decorated with incised and punctated designs and elaborate lugs. Religious icons known as *zemis* were also incorporated into Chicoid ceramics and other art forms, like vomiting spatulas and statuettes.

During the Ostionoid period, villages were hierarchically ordered and highly variable in regard to size. Some villages remained small and may have served as agricultural hamlets or activity camps while others grew to be regional centers of power (Rouse 1992; Siegel 1996). These centers, in turn, were hierarchical, with some including only one plaza and others containing multiple plazas. The ball court at the Salt River site on St. Croix is the only one known to exist in the Virgin Islands (Alegría 1983:122; Morse 1989, 1995, 1997, 2004)

Instead of occurring in the middens surrounding entire hamlets and villages, human burials tended to be grouped into family units and directly related to individual structures or houses, in addition to continued interment in the plaza cemeteries (Curet 1992a, 1992b, 1996:120; Righter 2002; Sandford et al. 2002). Ball courts were sometimes established over the Saladoid plaza cemeteries, possibly indicative of continued communal or ritualistic significance attributed to the site (Alegria 1983; Curet and Oliver 1998:225). Grave goods interred with some individuals are believed to be indicative of social status (Rouse 1992:116).

On St. Croix, many people of the Magens Bay-Salt River I culture continued to live at the same sites as their Saladoid predecessors. These people employed deep-sea fishing techniques and collected shellfish. Many of the long-distance trade networks that had existed during the Saladoid period were, by A.D. 400, no longer in use. However, by approximately A.D. 1200 (Magens Bay-Salt River II), these trading practices had been revived (Rouse 1992:126). Corn continued to be consumed (Rouse 1992:109).

By the Coral Bay-Longford and Magens Bay-Salt River I phases of the Saladoid/Ostionoid transitional period (ca. A.D. 400-600, ca. A.D. 600-900), Hemer's Peninsula, located across Salt River Bay from the Columbus Landing site, was also being used by prehistoric peoples, though its role as perhaps a satellite community for growing populations at Salt River Point, a special-use area for craft production, or as a burial ground is unclear. What is clear, however, is the immutable fact that in the last few centuries prior to the arrival of Columbus, the Taíno chiefdoms that ruled St. Croix and other adjacent islands were both competitive and far-reaching in terms of extending their political and economic influences beyond their own local territorial boundaries.

The Taíno Chiefdoms

Much is known about the Classic Taíno culture from fifteenth and sixteenth century observations, though it should be remembered that these historical accounts are biased recordings made by Catholic clergy and Spanish explorers and officials.

These historic records do not document all aspects of Taíno life, nor do they fully comprehend and describe the social complexities of kinship and exchange relationships. Moreover, observations of Taíno life did not encompass the entirety of the Caribbean, or even the Greater Antilles.

In general, the Taíno were a hierarchical chiefdom society, with local chiefs (*caciques*) ruling smaller villages, who in turn were governed by regional chiefs and a paramount chief. Within the social hierarchy, *nitainos* (aristocratic nobility) were ranked under the *caciques* and were followed by *naborias* (commoners), who composed the lower social classes. *Caciques* could be men or women, dependent upon specific circumstances. For example, if the sister of the ruling *cacique* did not bear any sons then a daughter could rule; if there were no children, then the sister could rule (Helms 1980; Keegan and Maclachlan 1989:618). There existed multiple hierarchical levels of social status that would have been dependent upon heredity. The Classic Taíno practiced matrilineal descent and it has been proposed that they were viri-avunculocal, when the husband and wife live with the husband's mother's brother, though there is little evidence to support this theory (Keegan and Maclachlan 1989:618-621). The *caciques* practiced polygamy, in order to build and maintain political alliances (Rouse 1992:16).

The Taíno lived in well-organized villages (*yucayeques*) where they resided in two types of structures—*caney* and *bohío*—that were made of wood, the *caney* being larger than the *bohío* (Highfield 1997:166; Olazagasti 1997:137). Villages are believed to have consisted of 20 to 50 structures, with populations estimated, on average, between 1,000 and 2,000 people. Houses were built of wood and covered with thatch, had a central hearth and an opening in the roof above to vent smoke. Personal belongings and objects were stored in baskets, gourds, or hammocks and hung from the roof. *Caney* were generally rectangular in shape and served several purposes—as the residences of *caciques* and certain *nitainos*, as council houses, temples, and the place where visitors were received. *Bohíos* were the commoner's houses and were round and sometimes bell-shaped. Patterns

were intricately woven into the building's structure with colored bark and foliage (Deagan and Cruxent 2002:33–34). The *bohios* could hold 10 to 15 men and their families. Residential patterns were based on the social hierarchy; the cacique lived in the largest house (*caney*) located at one end of a plaza or ball court (*batey*). Residential houses surrounded the ball court, and larger towns often possessed several smaller courts. Some researchers (Siegel 1997:108) have suggested that the patterns of the village layout were indicative of Taíno (and even earlier Saladoid) cosmology, in which a concentric model of the universe consisted of three planes: the celestial vault, the physical earth (middle), and the subterranean waters. Each village was, in essence, the center of its own universe; there were circular villages with a sacred plaza, or round houses with a sacred interior space, or both. Within the villages and houses, the connector (*axis mundi*) between the planes was a central post, and the connector used by the *behique* was the *duho*. Each village and house was, therefore, representative of the Taíno cosmos.

Agriculture was a central part of daily life, providing the Taíno with foodstuffs, material culture, and the basis for their religious practices (Highfield 1997:165). The Taíno practiced swidden agriculture, and planted tuber crops in *conucos*, as did their Ostionoid predecessors. They used sticks called *coa* to dig holes in the *conucos* in order to plant seeds. The crops were used to make several types of foods, like *casabi* (cassava bread), that was cooked on flat ceramic griddles called *burén* (Olazagasti 1997:131). Their crops included *yucubia* or manioc (*Manihot walkerae*), that produced *yuca* (manioc root, for cassava), *aje* (sweet potato; *Ipomoea batatas*), and other tubers like *lerén* (llerenes; *Calathea allouia*), *yautía* (*Montrichardia aborescens*), and *maní* (peanuts; *Arachis hypogaeae*), along with *mahíz* (corn; *Zea mays*), squash (Cucurbitaceae), beans (*Phaseolus* sp.), and *aji* (pepper) (Highfield 1997:162–163). Fruits that were cultivated and eaten by the Taíno included *yayagua*, or pineapples (*Ananas comosus*), *hobo* and *hikako*, the coco or West Indian plum (*Chrysobalanus icaco*), papaya (*Papaya carica*), and *guannaba* or soursop (*Annona muricata*). Other

plants that were cultivated for non-dietary purposes included large hardwood trees like the silk cotton tree (cf. *Ceiba* sp.) for making *canoas* (canoes) (called *piraguas* by the Caribs), the *hibuero* tree (*Crescentia cujete*), for its calabash fruit used for storage containers, and *tabaco* used in the *cohoba* ritual. A variety of other hardwood trees were also used, including wild mahogany (*Swietenia mahoganii*) and lignum vitae (*Guaiacum* sp.). They also collected palm nuts, guava berries, and *guáyiga* roots (Rouse 1992:13). Wild cotton (cf. *Gossypium* sp., better known as Sea Island cotton) was used to make sleeping hammocks, clothing, storage nets, and fishing nets (Olazagasti 1997:135–137).

The Taíno exploited marine resources by using nets, hooks, and large arrows, in addition to collecting shellfish (Rouse 1992:13). The nets were woven from cotton or hemp, and stones were used for weights (*potalas*). Hooks were made from fish bones. They also used the ground bark of dogwood (*Piscidia carthaginensis*; *Piscidia piscipula*) to stupefy fish that had been trapped in weirs (Nellis 1994:73; Woodbury and Little 1976).

The Taíno were skilled boatmen and navigators, building and maintaining large canoes for inter-island travel (Keegan and Maclachlan 1989:614). Women reportedly made and traded particular goods equated with elevated status, including *duhos* and items made of cotton (Keegan and Maclachlan 1989:618). Women also maintained the *conucos*, while men fished and helped with the planting and harvesting of crops.

Fifteenth and sixteenth century observers documented the use of ball and dance courts and of the ball game itself, in addition to other activities of the Taíno. The ball game was more than just a recreational activity. Not only was it a sport on which wagers were placed, but the game also served as an aid in decision making processes and for determining “who should have the honor of sacrificing a captive” (Alegría 1983:4, 11). The *bateys* themselves consisted of a plaza enclosed with either earthen walls or upright stones.

In sum, both the Columbus Landing site and the Judith's Fancy prehistoric site on Hemer's Peninsula were probably components of a larger Salt River watershed community that may have

included the nearby archeological sites known as Glynn and Windsor. Both sides of the bay continued to be occupied through the Ostionoid period and were presumably outlying communities within a larger Taíno cultural sphere, centered in Puerto Rico and Hispaniola. The presence of the ballcourt surrounded by both uncarved and carved stones alludes to the growing importance and cultural significance of the Salt River Point village within the developing Taíno sphere of influence.

CONTACT AND CONFLICT: THE COLLISION OF TWO WORLDS

It has long been held that by the time of Columbus' arrival to Salt River in 1493, the Taíno villages on St. Croix had been overrun by Island Carib invaders from the south. This belief was largely based on cultural and physical differences between the various peoples that were encountered by Columbus and his men as recounted in the chronicles of their first and second voyages. Some researchers argue, beginning with Gudmond Hatt, that many of the Island Caribs that were encountered by Columbus and his men were actually Arawaks who had been influenced culturally by mainland Caribs (Honychurch 1997:294). Contemporaneous with the development of the Taíno chiefdoms of the late Ostionoid period, Island Caribs or *Kalinago* (Cooper 1997:186) were invading the islands of the Lesser Antilles, conquering people they (the Island Caribs) called *Igneri* (Cooper 1997:186; Rouse 1992:25, 127, 131).

The Island Caribs belonged to a cultural group commonly found among the Guianas, and spoke an Arawakan language (and not a Cariban language) different from the Arawakan language spoken by the Taíno (Cooper 1997:187). The men of both Arawakan-speaking groups spoke a Carib-based pidgin, though, that was used as a trade language throughout South America and the Antilles (Allaire 1997b:181; Honychurch 1997:293).

According to historical observations by sixteenth century clergy and missionaries, the Island Caribs were an agricultural people who planted manioc and sweet potato in rain forest garden plots located near villages. Women and men lived

in separate structures, women in several round huts and men in a large rectangular house. Fishing was not widely practiced. These people were not organized in chiefdom societies like the Taíno, but were more egalitarian in social structure (Allaire 1997b:182). They made and used a vast array of weapons, including the longbow, with arrows tipped with wood or stingray spines and poisoned with manchineel juice, war clubs (*boutou*), blowguns, and utilized special warfare tactics, like using smoke from hot chili peppers to blind their adversaries (Allaire 1997b:183). Island Caribs did not worship *zemis*, nor apparently any other deities. Their pottery was essentially undecorated, similar to the Caribs of mainland South America (Rouse 1992:22).

Island Carib style artifacts resembling those of the Lesser Antilles have not been archeologically recovered from St. Croix. In fact, to date there has been no demonstrable archeological evidence recovered for an Island Carib presence in the Virgin Islands. On islands where Island Caribs are known to have lived, there are few to no archeological traits that distinguishing Island Carib villages from those of their neighbors.

THE HISTORY OF ST. CROIX: FROM COLUMBUS TO THE PRESENT

The first contact between Europeans and the indigenous peoples of the Virgin Islands occurred on November 14, 1493, during Columbus' second voyage to the West Indies (Rouse 1992; Taylor 1970). Columbus and his fleet of 17 vessels arrived at St. Croix, then called *Ayay* by the Taíno and *Cibuquiera* by the Island Caribs, to find fresh water, people who could serve as guides for the next portion of the journey, and to generally investigate the island (NPS 1990a:11; Taylor 1970). When a longboat was sent ashore at Salt River Bay with 25 armed men, a small village with only a few huts was observed. The team encountered only women and small boys, and was told that Island Caribs had taken control of the island (NPS 1990a:11; Rouse 1992:146). The women appeared to have been captured Taíno brides. While taking the captured women and children back to the fleet,

the Spanish noticed a canoe that contained four men, two women, and a boy (Cohen 1969:138; NPS 1990a:11). This small crew was apparently dumbfounded, and the Spaniards began to row toward them. A skirmish quickly ensued, with the Island Caribs firing arrows and wounding two (Cohen 1969:139). The outnumbered Island Caribs were also taken as captives, save one that was killed. According to some researchers (Al-laire 1997b; Cooper 1997; Morse 1997; Rouse 1992:146), the “Caribs” that were encountered on St. Croix had only recently (perhaps A.D. 1450) conquered the Taíno island residents, but a debate remains regarding who these people actually were (Cooper 1997:186). It is estimated that at the time of Columbus’ arrival there were approximately 20 villages on St. Croix, each consisting of about 60 people (Cooper 1997:186).

In 1509, despite a peace treaty executed between Ponce de Leon and the Island Caribs, St. Croix was subjected to slave raids and about 140 people were captured (NPS 1990a:13). In nearby Puerto Rico, the Island Caribs aligned with the remaining Taíno in battles against the Spanish; by 1520, however, the Taíno had been annihilated. In 1550, King Charles V reportedly drove the indigenous peoples away from the island, “the king having ordered them treated as enemies and exterminated” (Knox 1852). But, in 1587 John White, while traveling from England to Virginia to be the new Governor of the colony on Roanoke Island, made a stop at Salt River Bay (Lewisohn 1970:17; Morse 1993:1). He and his men reportedly observed a few people and a small cluster of houses on the island. However, by the early seventeenth century the island was deserted.

The European Colonization of St. Croix and Salt River Bay

Knowledge of the seventeenth century occupations of the Salt River Bay watershed area is sketchy, at best. What little is known is based largely on historical maps and some brief accounts of the era. The first European settlement on St. Croix was established by the English in 1631. They were led by William Hawley, brother of Captain Henry Hawley who was governor of Barbados; it was

Henry who most likely devised the plan to settle the island. The English colonists set about planting tobacco, maize, sweet potatoes, watermelons, ginger, cotton, and sugar cane (Figueredo 1978:60; Highfield 1998). St. Croix was chosen for its agricultural fertility, as the soils of Barbados and St. Christopher’s (Kitts) were depleted of nutrients necessary for sugar and cotton production. Just four months later, though, these first settlements were sacked and uprooted by Enrique Enríquez de Sotomayor, governor of Puerto Rico. His infantry was attacked by a French ship just as they were about to land on St. Croix, but the French broke away at nightfall. The Spaniards brought the English settlers back to Puerto Rico as captives.

The French attempted to settle St. Croix in 1634, but they, too, were ousted by Don Enrique. This time he sent a frigate with 40 troops, and the resulting skirmish ended with 6 Frenchmen taken prisoner, 10 killed, and the burning of buildings. A group of English evacuating Tortuga attempted to settle in 1636, but they were attacked by Spanish troops led by Iñigo de la Mota Sarmiento in March of the same year (Figueredo 1978:61).

Around February 1641, the English arrived again, this time recruited from St. Christopher’s and ruled by proprietary patents held by Colonel William Caverly who had been given a grant by the Earle of Carlisle. Even though Caverly was named governor, he appointed Thomas Brainsby to act in his stead; however, the English settlers did not have an official commission from the government. The small English settlement may have been located on the western end of the island, near the location of Fort St. James (later Fort Frederik, in Frederiksted).

In May 1642, a group of Dutch settlers, representing the Chamber of Zealand of the Dutch West India Company and led by Louys Capoen, arrived and established a strong settlement at Salt River. An additional 120 French settlers accompanied the Dutch to the island. St. Croix was rated a patroon, meaning that there were at least 20 households with three people each, and a minimum of 60 men employed at Fort Flamand (known today as Fort Salé). Capoen was designated governor of the island. Their settlement was centered at Salt River Point

(Columbus Landing), with Fort Flamand having 11 mounted canons (Figueredo et al. 1989:22).

Following a revolt in 1645, the English settlers prevailed and remained sovereign on St. Croix until 1650. A Spanish map created in 1647 illustrated Salt River Bay with a fort, a “House of Preachers,” and the Governor’s house (Figure 3). Four or five habitations were illustrated along the bay’s eastern shoreline, in addition to a system of roads. Fort Flamand is depicted as a three-sided fortress in its correct position at the western mouth of the bay. Associated with the fort are several structures that are hypothesized to have been the residences of wealthy, politically influential inhabitants of the island (Joseph 1989:19). A Dominican (Jacobin) monastery is also depicted, as is a possible customs house (NPS 1990a).

As with the Dutch, the primary settlement and governmental seat during the French colonial period (1650 to 1696) was based at Salt River. Three hundred planters were initially sent to French St. Croix from St. Christopher, who quickly began to burn much of the forest in order to create fields ripe for agriculture. The settlers planted coffee, ginger, indigo, and tobacco. Despite the settlers’ efforts, a series of bad policy decisions led to the failure of the West India Company.

By 1653, Louis XIV, through de Poincy, deeded St. Croix to the Knights of Malta. France remained sovereign over the island, but the Knights managed the affairs of governance. In 1659, the newly appointed governor, M. du Bois, gave free trading rights to the settlers and convinced the planters to switch to sugarcane as their primary crop. Shortly thereafter, some 400 soldiers were sent from the colony on St. Christopher’s, and the population quickly grew to include 600 men with arms.

In 1665, the French West India Company was created. This new commercial company would govern the islands of St. Croix, St. Bartholomew, and the French halves of St. Christopher and St. Martin (Boyer 1983:6). By this time ninety estates had been established on the island. In 1674, the Company’s control over the island was dissolved by Louis XIV, and the French Crown directly ruled the islands. The French residents experienced a brief period of prosperity which attracted new residents. By the 1680s, there were nearly 1300 inhabitants, of which roughly 600 were slaves, living in 130 residences. Because of the costs of handling illegal trade, war, privateering, and piracy, the Crown decided that it was no longer feasible to maintain the colony. In 1696, all 1,200 residents



Figure 3. 1647 Spanish map of St. Croix, with close-up of Salt River Bay. Note that north is at the bottom of the map. Courtesy of the St. Croix Landmarks Society, Whim Plantation, St. Croix.



Figure 4. 1671 LaPointe map of St. Croix, with close-up of Salt River Bay. Note that north is at the bottom of the map. Courtesy of the St. Croix Landmarks Society, Whim Plantation, St. Croix.

were removed, leaving behind their horses, cattle, and sheep, and setting fire to their houses.

According to the limited information that is known about the community, few supply vessels ever arrived at the island. The colonists were forced to engage in illegal trading activities with nearby islands governed by various colonial powers: Denmark, England, Netherlands, and Spain (Island Resources Foundation 1988:4).

During the French colonial period, the Salt River settlement grew, for a short time at least, into an active trading center. Under Governor du Bois, the governmental headquarters was located along the eastern side of Salt River Bay, and Fort Flamand became known as Fort Salé. The fort was expanded and several structures were purportedly built nearby, including a Catholic (Jacobin) mission just to the south, and several estates; however, the exact number of these structures and their

placement is unknown. It is likely that the fort expansion occurred between 1660 and 1676, the most prosperous years of the French settlement; however, other accounts state that the hub of French activities was transferred to *Bassin* in the 1660s. Further research, both historical and archeological, needs to be conducted in order to better understand the French colonial period of the island as a whole and of Salt River Bay in particular.

Both the Blondel map of 1667 and the LaPointe map of 1671 illustrate estates scattered along the bay’s shoreline, with residences or outbuildings possibly located within SARI’s boundaries (Figure 4). However, these maps show differing locations for several of these habitations. Based on these resources, it appears that the Breuet estate was established on the bluff above the shoreline on Hemer’s Peninsula, though its exact location is unknown.

On June 15, 1733, King Christian VI of Denmark validated Danish occupation of the island by purchasing St. Croix from France for 750,000 French livres, under the stipulation that the Danish government could not sell the island without obtaining French approval (Taylor 1970:120; Williams 1984:94). Control of the colony was then given to the Danish West India Company. When Company officials arrived, they found 150 English colonists and 456 slaves already in residence, who had arrived around 1729, from Anguilla and settled near the center of the island (Boyer 1983:10; Island Resources Foundation 1988:4).

The settlement of St. Croix proceeded quickly. The island's forests, previously burned by French colonists, were once again destroyed in order to create cultivable lands. By 1743, 264 plantations had been established on St. Croix: half grew cotton, and half grew sugarcane (Boyer 1983:11). Many of St. Croix's first planters in the Danish regime were from other Caribbean islands—St. Eustatius, Virgin Gorda, and Tortola. Because so much of the cultivable land was devoted to either sugarcane or cotton, most other provisions, like breadstuffs, salt-meat, and even salt-fish had to be imported (Hovey 1994).

In 1747, the Danish West India Company granted the planters of St. Croix self-rule and separate administration (Boyer 1983:12). In 1753, the planters petitioned the King to purchase the Company's interests in the Caribbean holdings. This was done in 1754, and the Crown established St. Croix as the capital for the Virgin Islands (Boyer 1983:12; Rogoziński 2000:84; Tyson 1977). Individual municipal councils were established for St. John and St. Thomas, to handle their internal affairs. Trade was opened with all peoples from Denmark, Norway, and the West Indies colonies. In 1764, this open trade policy was expanded to include all other American colonies.

Throughout the eighteenth century, it can be said that the planters of northern European countries—England, Denmark, Netherlands, and America—treated their slaves the harshest of all slave-holding colonial powers (Boyer 1983:20; Goveia 1991). There existed no slave law as found in the Spanish, Portuguese, and French Catholic

colonies (*Siete Partidas*, *Code Noir*) (Goveia 1991:346). When the Danish Crown took control of the colony in 1754, more codes attempting to protect slaves from harsh treatment were created. While the Danish colonies were the scene of some of the harshest treatment of African slaves, they were also the first colonial power to halt participation in the slave trade (Boyer 1983:35). By the 1840s, Governor Peter von Scholten was setting in motion the means to end slavery in the Danish Virgin Islands. A slave revolt occurred on July 2, 1848, and the next day Governor von Scholten granted immediate emancipation, which was ratified on September 22, 1848.

The United States made several attempts to purchase the Virgin Islands, once in 1865 (Treaty of 1867), and again in 1903 (Treaty of 1902) (Boyer 1983:79). In 1917, the Danish government finally sold the islands to the United States for \$25 million (*Betænkning Afgiven af den I Henhold til Lov Nr. 294 af 30 September 1916:9*).

During the Danish period (1733–1917), the majority of Salt River shoreline and Hemer's Peninsula was left to agriculture and pasture, and little development occurred. The Salt River watershed was subdivided by authorities of the Danish West India Company in 1735 into two quarters, Nord Side B (North Side B) and Dronningens Quarter (Queen's Quarter). Those portions of Nord Side B that are today within the legislated boundaries of Salt River Bay National Historical Park and Ecological Preserve comprise matriculs 1 (Estate Judith's Fancy, owned by Jens Peter Hemmer), 2a (owned by Henry Ryan), 2b (Estate Salt River, owned by Charles Aitkens), 10a and 10b (old Catholic Church Yard), and Triton Peninsula (a part of Estate Montpellier). Parts of Dronningens Quarter that are today possibly within SARI's boundaries include matriculs 2 and 50 (owned by Colonel Charles Lymbart, Estate St. John), 4 and 9 (owned by Henry Ryan, Estate Morningstar), and 3 and 10 (owned by Peter Cornelius Low, Estate Montpellier). These lands comprised agricultural fields of estates and, for the most part, did not contain residences, though there is the possibility that unrecorded outbuildings may have stood in these areas.

The first owners of two sub-parcels of No. 1 Nord Side Quarter B, during the Danish colonial period are listed as Jens Hensen and the Widow Narum, in 1750 (Figueredo and Tyson 1986). By 1754, the two sub-parcels were combined and owned by Jens Peter Hemmer, who planted the estate in sugar. One hundred acres were added a few years later, and the entire estate became known as Hemmers Fryd (Hemmer’s Delight). Upon Hemmer’s death in 1782, the estate came under the control of John Benner, who named it Judith’s Fancy after his wife.

According to most historic maps of the Danish colonial period, no buildings stood on Hemmers Fryd (Hemer’s Peninsula). Two small structures are, however, depicted on Oxholm’s 1799 map of St. Croix (Figure 5). According to Figueredo and Tyson (1986), there are no tax records associated with these structures, nor are they illustrated before or after Oxholm’s map. Based on the Benner’s

estate tax records from 1792 to 1794, it is possible that these structures were residences for either a relative of Judith Benner, Peter Heyliger, who was living in these buildings with his slaves, or for James Thompson and his wife (Figueredo and Tyson 1986:232).

Hemmers Fryd remained in sugar cultivation until the 1920s, when it became a stock estate. In the 1950s, the land was sold and the estate was subdivided and prepared for residential development. The peninsula itself and the shoreline along the bay were slated for development as a tourist resort hotel and marina complex (Joseph 1989:27). A large salt pond was dredged for use as a marina, and a peninsula was built to the west. Part of the old shoreline was enclosed to create a new salt pond, and the northwest bay shore was extended. The hill on the northeastern portion of Hemer’s Point was bulldozed and graded, exposing bedrock in some places.

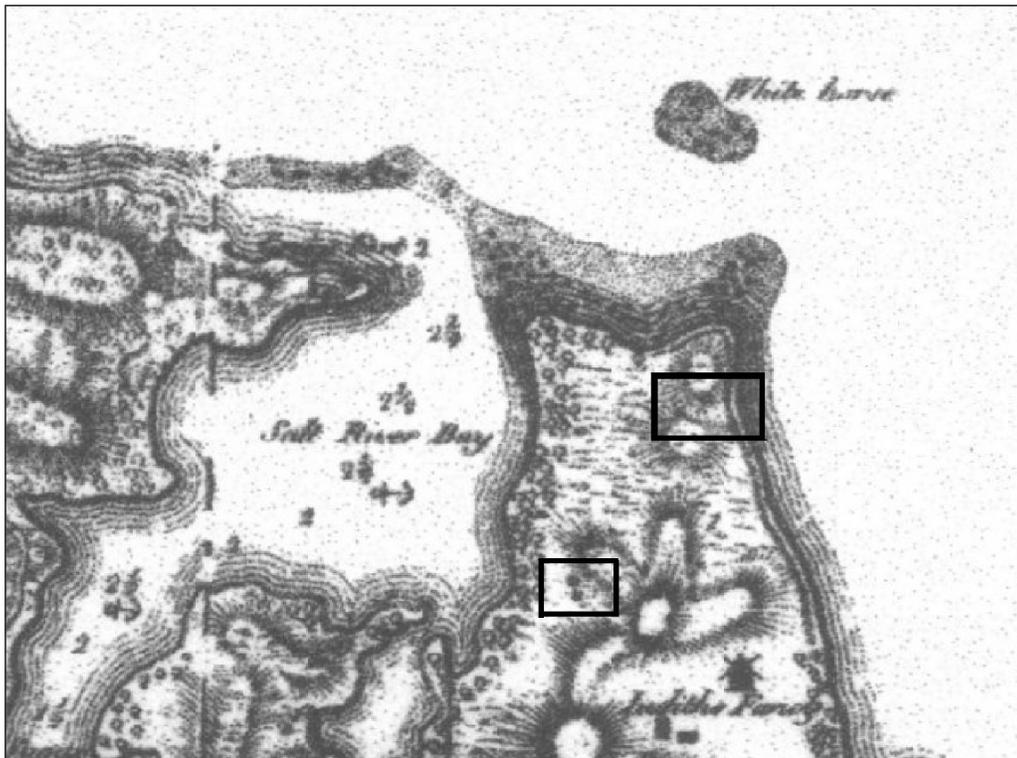


Figure 5. Close-up of Hemer’s Peninsula, featuring previously unrecorded structures, from the 1799 Oxholm map of St. Croix. Courtesy of the St. Croix Landmarks Society, Whim Plantation, St. Croix.

Chapter 3

Fieldwork

INTRODUCTION

The feasibility study that prompted the recent archeological survey demarcated three alternatives for the placement of the proposed marine research and education center. Alternative 1 (East Site) comprises the lands on the eastern shore of Salt River Bay, including the old hotel site known as Hemer’s Peninsula and once a part of Estate Judith’s Fancy (NPS owned). Alternative 2 (South Site) is the former NOAA Hydrolab facility on the northeastern tip of Triton peninsula (privately owned). Alternative 3 (West Site) would use both the SARI visitor contact station, located on Grieg Hill at Salt River Point, and the Salt River Bay Marina (Figure 6).

The 2005 archeological investigations were prioritized to address areas with the greatest potential for siting the proposed marine research and education center. The investigations focused on identifying and delineating archeological resources within three core areas of Option A’s Hemer’s Peninsula and along the eastern shore of Salt River Bay: (1) the site identified as Site 5 by Gudmond Hatt (1924); (2) the site identified as Site 5 by Gary Vescelius (1952); and (3) the site identified as “New Site” by Alfredo Figueredo in 1986. The latter site was further tested in 1989 in two separate investigations, one by J. Joseph of New South Associates, Inc., and the other by the Interagency Archeological Services Division (IASD). All of these sites are considered a part of 12VAm1-5, as it was believed by all of the previous investigators that they were on the same site when in fact they were in two different locations. Two additional areas where artifact concentrations were reported during the New South

survey but never substantially investigated (Figure 7, Areas 4 and 5) were also to be reexamined.

The archeological survey of the two privately-owned properties within SARI’s legislated boundaries—the former home of NOAA’s Hydrolab (Figure 7, Area 6) on Triton peninsula, and the Salt River Marina (Figure 7, Area 7)—was contingent on the permission of all landowners or their legal representatives. Unfortunately, they did not consent, and this portion of the survey was not conducted.

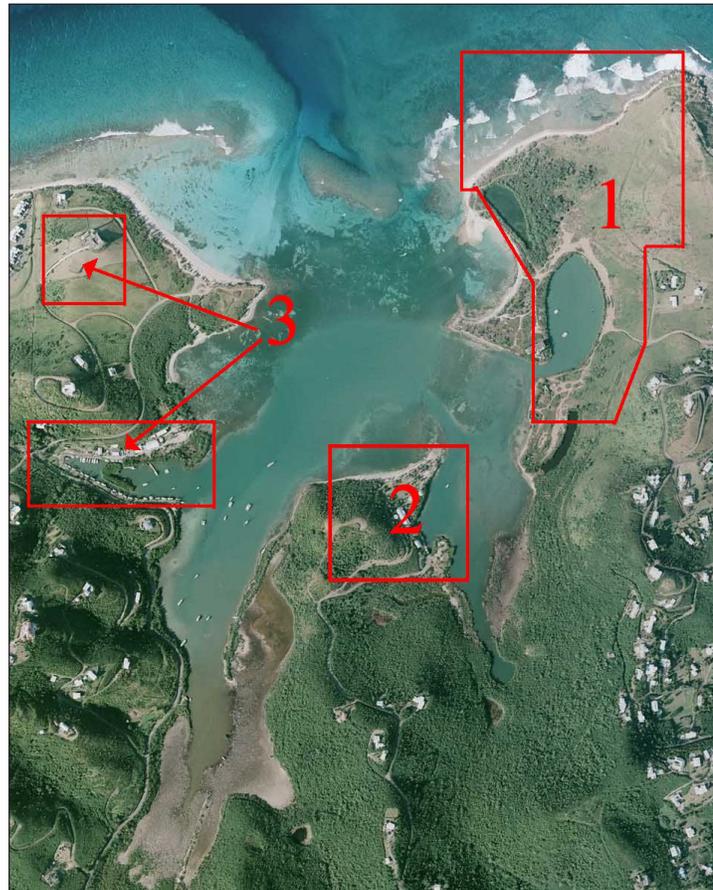


Figure 6. Proposed location alternatives for the marine research and education center.

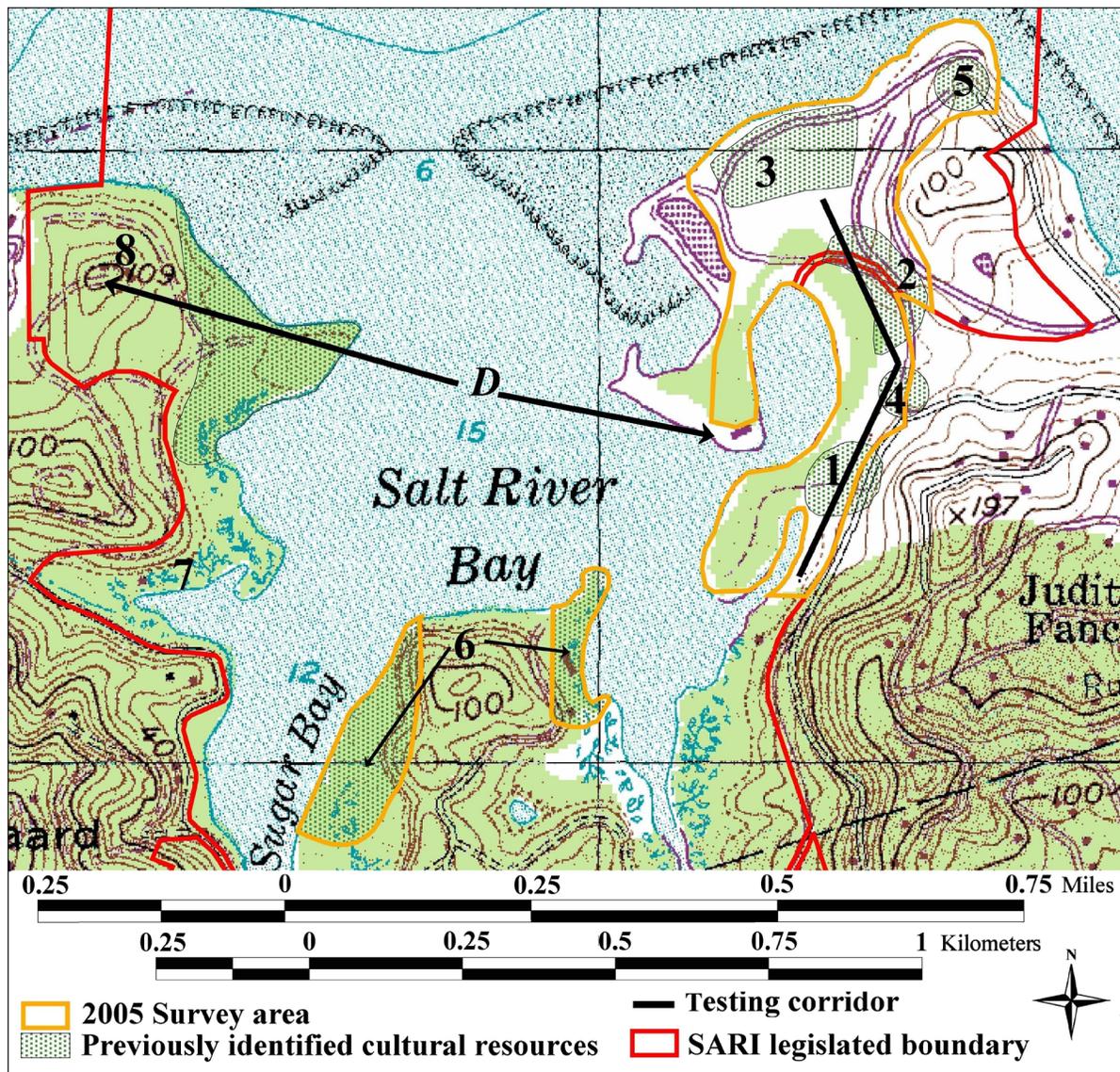


Figure 7. 2005 archeological survey area. Areas of concentrated study with previously identified cultural resources: (1) Hatt's Site 5; (2) Vescelius' Site 5; (3) Figueredo and New South prehistoric site; (4) and (5) artifacts encountered during New South survey, 1989; (6) artifacts encountered during IASD survey 1989; (8) NPS Visitor Contact Station, Grieg Hill (no cultural resources encountered during testing). Areas 6 and 7 were not surveyed.

All field methods used during survey and excavation of this project conformed to NPS standards for fieldwork performed under Section 110 of the National Historic Preservation Act (NHPA) (Prentice 2002). The Archeological Sites Management Information System (ASMIS) database was subsequently updated with all relevant site data.

PREVIOUS ARCHEOLOGICAL INVESTIGATIONS IN THE SURVEY AREA

Archeological investigations of the Salt River watershed began in the late nineteenth century. Interest continued after the United States purchased the Virgin Islands from Denmark in 1917.

Unfortunately, the majority of these investigations were conducted using substandard field methods and procedures, and all occurred prior to the establishment of Salt River Bay National Historical Park and Ecological Preserve. Finally, with a primary focus on prehistoric resources, none of these previous investigations were concerned with discerning historic period occupations.

Based largely on the work conducted at Salt River, Gudmond Hatt, of the National Museum of Denmark, established the first prehistoric chronology for St. Croix and the Virgin Islands which has, for the most part, remained intact. The chronology was divided into three diachronic components, a pre-ceramic tradition (Krum Bay), and two ceramic traditions, Coral Bay–Longford and Magens Bay–Salt River. Hatt’s Coral Bay–Longford tradition consisted of ceramic traits found throughout the Lesser and Greater Antilles, such as red-on-white and red-on-black painting, polychrome painting, ZIC wares, inverted “bell-shaped” vessels, and griddles, in addition to three pointer stones and beads and amulets carved of both local and non-local stone. The Magens Bay–Salt River tradition consisted of ceramic traits found most notably across the Greater Antilles in midden levels above the Coral Bay–Longford ceramics. Magens Bay–Salt River ceramics included boat-shaped vessels, double bowls, round bowls with inward sloping rims, limited vessel ornamentation, red film or red and black filming, limited vessel painting except for some red around rims and in restricted areas, and pottery heads or figures (adornos). Three pointers and stone collar fragments were also typically recovered from these upper levels. Spindle whorls tended to be restricted to upper levels, though some were recovered from lower levels. Hatt correlated the Coral Bay–Longford tradition with a pre-Taino culture, and he believed that the Magens Bay–Salt River tradition represented Taínan cultural influences from the west (Puerto Rico and Hispaniola). Hatt went on to speculate that the people encountered by Columbus on November 14, 1493, were not Caribs but “Arawaks (Taíno) who had adopted certain Carib traits” (Hatt 1924:42).

Previous archeological investigations of Hemer’s Peninsula and the eastern shore of Salt River

Bay have been largely non-scientific and ad hoc. Only two prior investigations, conducted in 1988 (NPS-IASD) and 1989 (New South Associates) just prior to the establishment of SARI, have used modern standard field procedures. These investigations have revealed the potential for intact and significant cultural resources to be present within the feasibility study area.

The prehistoric site located at Estate Judith’s Fancy, Hemer’s Peninsula, was first identified in 1923 by Gudmond Hatt. Though there is little known from this early survey, he did conduct limited excavations and plotted its location (SARI 2.005). In 1951, the site was revisited by Gary Vescecius during the St. Croix Archeological Survey, conducted jointly by the Yale Peabody Museum of Natural History and the St. Croix Museum (Vescecius 1952). Vescecius, thinking he had relocated Hatt’s Site 5, plotted the site in a slightly different location, and labeled it Number 5 in the Virgin Islands site files (SARI 2.003). He categorized Judith’s Fancy as a single component site associated with his Period IIIa (ca. A.D. 650–950), the beginning of the Ostionoid period.

Based on his 1986 survey and test excavations, Alfredo Figueredo hypothesized (Figueredo and Winter 1986:11) that because it was open and exposed to the sea and not well protected from northeasterly winds, the Judith’s Fancy site was probably not a farming village, but “the location of undisclosed special activities” (SARI 2.001) It was proposed that this “activity area,” possibly specialized ritual activities, would have been associated with the inhabitants of the Columbus Landing site across the bay.

Contrary to this hypothesis, Joe Joseph (1989) of New South Associates found evidence for extensive middens just north of Figueredo’s testing area (SARI 2.001). He concluded, however, that the distribution of ceramics recovered during shovel tests were not indicative of the typical concentric-ring pattern of Saladoid and early Ostionoid village sites found throughout the Caribbean. Instead, he believed the site consisted of several individual habitations, each with its own specific midden.

Finally, the 1988 survey conducted by the Interagency Archeological Services Division

(IASD) of the National Park Service (IASD 1989) resulted in the radiometric dating of human skeletal material recovered during Figueredo's 1986 investigations. The remains, an adult male between the ages of 25 and 45, produced a raw radiocarbon date of 1150 B.P. \pm 70. By using calibration tables to correct for fluctuations in atmospheric ^{14}C levels over time, the real time scale was calculated to have been between A.D. 665 and 1015, placing the age of the skeleton firmly within the Magens Bay–Salt River I or II periods (ca. A.D. 600–900, ca. A.D. 900–1200).

Based on the evidence gathered from sparse investigations spanning 80 years, it can be postulated that the Judith's Fancy prehistoric site was not merely an activity area. It is possible that the site was a kind of "satellite community" of the Salt River Point/Columbus Landing site across the bay. As the population of the Salt River Point community increased, the location of the village grew in importance, possibly because of its ease of location for voyagers, reliable food resources, and soils amenable for root crop agriculture. The artifact distribution patterns from the various Judith's Fancy investigations follow those from contemporaneous sites across the Caribbean, such as at Golden Rock (St. Eustatius), Maisabel (Puerto Rico), Sorce (Vieques, Puerto Rico), Tutu (St. Thomas), and Indian Creek (Antigua). All of these sites have semi-circular or U-shaped middens surrounding a central area devoid of cultural materials, commonly referred to as a plaza. Human remains are often encountered both in these surrounding middens and the plaza itself. Future archeological testing and radiometric dating is necessary, however, to establish the physical extent of the occupation, establish the site's overall chronology, and determine the site's exact placement in the prehistory of St. Croix.

To date, there is scant archeological evidence for the historic

occupations at Salt River, especially those structures purportedly located along the east shore. No systematic archeological investigations have been targeted specifically towards identifying the English Village site. A survey conducted by the National Park Service in 1989 uncovered three anomalous clusters of bricks and brick rubble; these clusters were roughly continuous along the bank. During the 1988 IASD survey of SARI waters, an eighteenth century English-style dark green glass spirits bottle was recovered, though the English style string rim on the vessel tentatively provided a date of roughly 1788–1800, too late to be associated with the English Village.

2005 RASP INVESTIGATIONS

PEDESTRIAN SURVEY

A pedestrian survey was conducted on the hilltop and slopes to the east of the archeological site 12VAm1-5. Downslope from the highest hill and near a dried pond were several clumps of non-native plants (agave and bromeliads) and Spanish bayonet, plants typically associated with historic or more recent residential sites (Figure 8). There



Figure 8. Possible historic site, Hemer's Peninsula, Judith's Fancy.

were two large groupings of coral and stone which appeared to line up as cornerstones for structures. Several pieces of pearlware and dark green bottle glass that date to the late eighteenth and early nineteenth centuries were also observed, as were modern materials such as bathroom tiles and glass. One prehistoric pottery sherd with red film was collected. When Oxholm's 1799 map of St. Croix was examined, a possible structure was noted near where these items were observed (see Figure 5).

SHOVEL TESTING

The team excavated a total of 56 shovel tests in 2 parallel transects that followed the shoreline in areas that were assumed, based on the vegetation, to be undisturbed lands (lands not created during the dredging activities of the 1960s) (Figure 9). As a result of this Phase I survey, a basic understanding of the soil stratigraphy of the eastern shore of Salt River Bay has been obtained.

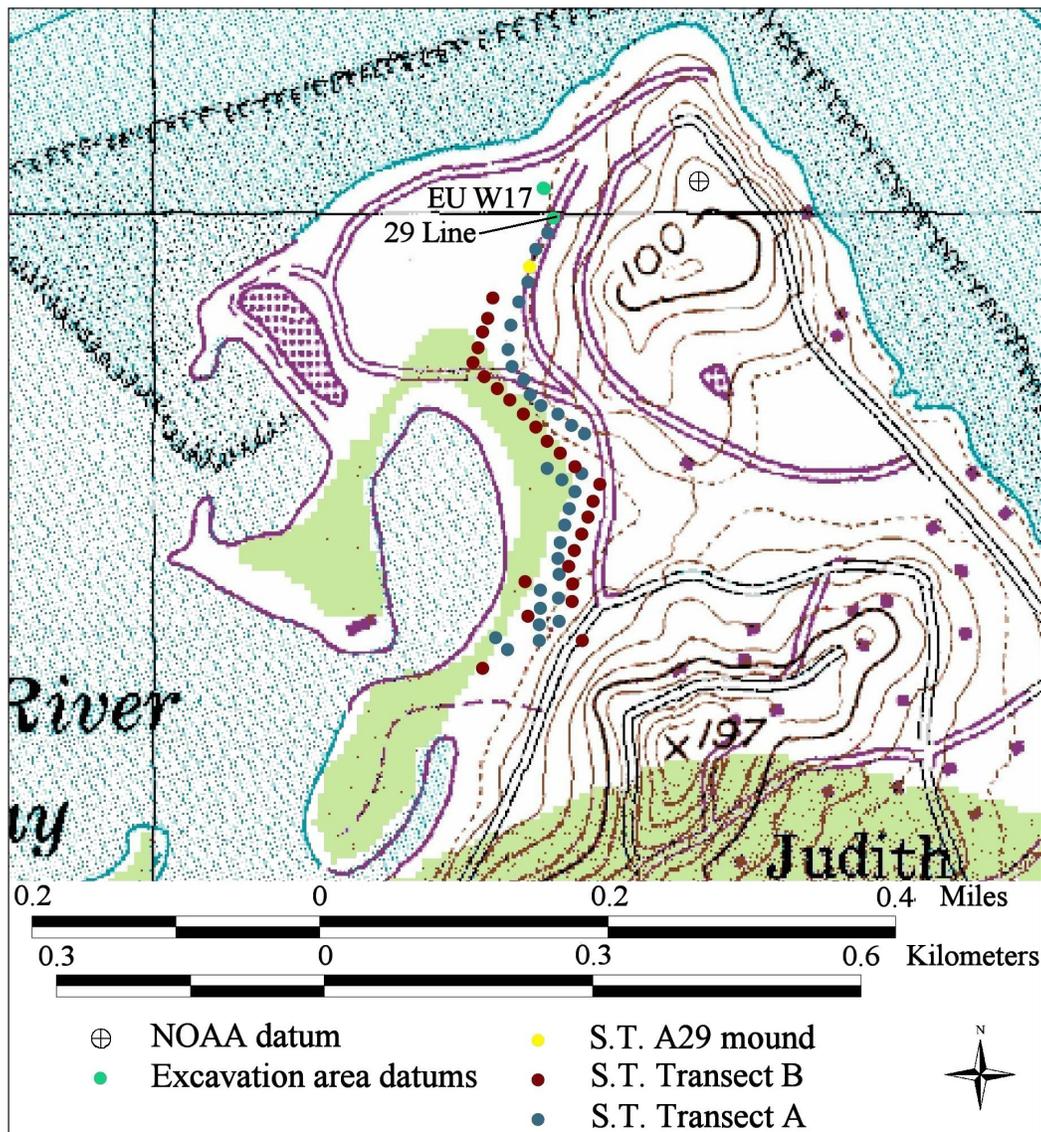


Figure 9. Shovel test locations at Judith's Fancy: south end, SARI 2.005 (Hatt investigation); middle, SARI 2.03 (Vescelius investigation); north end, SARI 2.001 (Figueredo, New South, NPS-SEAC investigations).

Most of these shovel tests, dug until subsoil or C horizons were reached, produced no artifacts. As revealed in shovel tests A13 through A23, a large area of the eastern shore has been affected by land development, with much of the O/A and any B horizons removed. A thin, newly developed O (organic) horizon, ranging from 2 to 12 centimeters thick, sat directly on Cr or R (mixed C and bedrock or bedrock, respectively) horizons. On Transect B, two tests (B15, B16) had thick, mixed O/A horizons that could be interpreted as Ap deposits. Test B14 contained 4 zones, with well-defined O/A horizons.

At 20–38 centimeters below surface (cmbs), a possible Bt horizon was encountered, consisting of dark gray to grayish brown clayey loam mottled with shell, rock and yellowish brown clay. This zone overlaid a yellowish brown sandy loam with small quartzite nodules, which was possibly a C or very weathered Cr horizon.

A possible sheet shell midden was encountered in shovel tests numbers A2 (at roughly 27–42 cmbs), A3 (24–29 cmbs), A9 (15–24 cmbs), B6 (61–74 cmbs), B7 (0–57 cmbs), B8 (11–47 cmbs), and B9 (22–72 cmbs) (Figure 10). Lower zones



Figure 10. Locations of shovel tests (blue) positive for cultural materials at SARI 2.005 (Hatt investigation).



Figure 11. Remains of old road with an iron gate post.

of tests A9 and A11 (24–68, 48–66 cmbs, respectively) consisted of dark brown to black loamy clayey muck with small weathered shells, typically indicative of old or relic mangroves. Other disturbed areas with notable zones comprised of fill were encountered in the upper horizons (O/A and Ap) of tests A1–A5, A10, A11, B1, B2, and B4 (0–55 and 0–29 cmbs). In Shovel Test A15, a hole or ditch at roughly 6–50 cmbs appears to have been filled with rocky dark yellowish brown coarse sandy loam.

The only other cultural remains were encountered in tests A29 through 31, that were most likely associated with the prehistoric archeological site 12VA m1-5 located nearby (see Figure 10). In Test A29, a small earthen mound was encountered. It measured roughly 2 by 2 meters, and dropped off sharply on the edges; the mound was covered with a scatter of burned and fire-cracked rocks and shell (*Strombus* sp.). A shovel test was placed on the mound's southern slope. Its stratigraphy consisted of an O/A horizon with Munsell color value 10YR 4/3 (at 0–12 cmbs), an Ap horizon with Munsell values 10YR 5/4 and 10YR 4/4 (at 12–47 cmbs), and a B, possibly Bx or Bm horizon with Munsell value 10YR 4/4 mottled with 10YR 8/4 (at 47–48

cmbs). This B horizon corresponded with the B horizon encountered in test A28. Plans were made to return and excavate a small 50-by-50-centimeter test unit in the mound's center, but unfortunately this was not done due to time constraints. Ap horizons containing prehistoric ceramic sherds were encountered in tests A30–A31, at roughly 8–33 and 12–30 cmbs, respectively, and sat on a possible Bx or Bm horizon.

During the shovel testing portion of the survey, the team encountered an old road bed on the slopes above the eastern shoreline of Triton Bay; this road is depicted on the USGS quad map, but is very overgrown. Photographs of this old road were taken to document its current appearance (Figure 11). Above the road the slopes were fairly steep, and intact archeological deposits were neither encountered nor observed. As a side note, it is possible that this road is the one depicted on seventeenth century maps and associated with the “English Village” (see Figure 3). A future survey of this road and the surrounding area may reveal evidence of the seventeenth century structures depicted on the maps.

The team also excavated shovel tests on the ridges and slopes surrounding the former Kumpitch House, built in the 1970s, located above the Columbus Landing site on the western shore of Salt River Bay and now the location of the NPS visitor contact station (Figure 12). A total of five shovel tests were excavated in areas deemed likely to contain intact cultural deposits (1a, 1b, 2, 3, and 4). Brick fragments were encountered in tests 3 and 4, but their proximity to other large pieces of debris and rubble meant that their presence could be attributed to recent construction (and dumping) activities. No other prehistoric or historic artifacts were encountered.

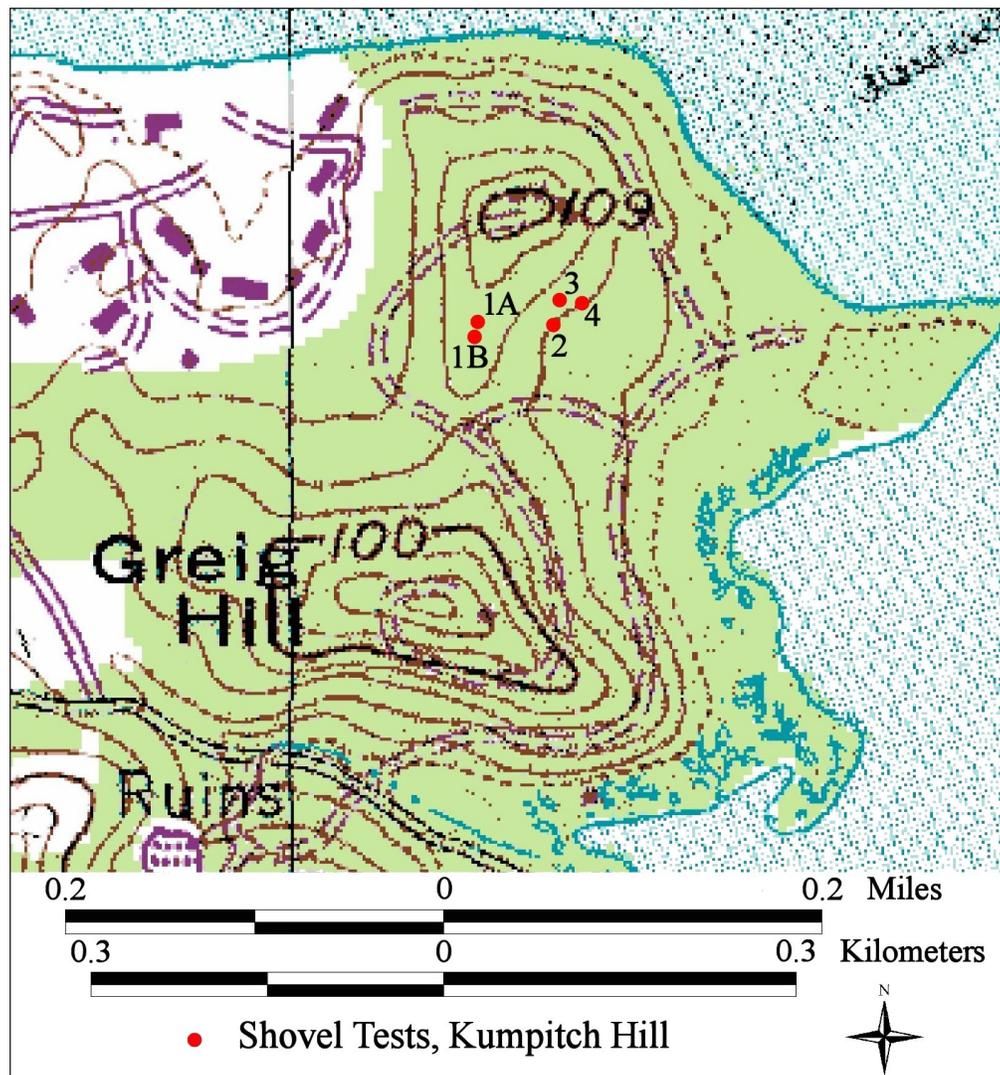


Figure 12. Shovel test locations around the former Kumpitch House, NPS Visitor Contact Station, above Salt River Point/Columbus' Landing site, SARI 1.001 (12VAm1-6), Survey Site 8 (see Figure 7).

EXCAVATIONS AT THE JUDITH'S FANCY SITE (12VAM1-5, SARI 2.001)

After the Phase I survey portion of the project was completed, the team spent the next 1½ weeks testing and evaluating the Judith's Fancy prehistoric site (12VAM1-5; a.k.a. the Lignum Vitae site). All of Figueredo's excavation units from his 1986 investigations were relocated, identified, cleaned of debris, and photographed. Three of these units—U15, V15, and P18—were selected

for profiling, and all of the slumped fill covering the walls and floors was removed. Two of these units were chosen for cleaning and profiling because they were known to have contained human burials (three were in U15, and one in P18), while the third, V15, was selected in order to illustrate stratigraphy from a non-burial unit. While many of Figueredo's 16 units, all measuring 2 by 2 meters, were relatively shallow in depth (averaging 30 to 50 centimeters below ground surface), several were quite deep (measuring between 75 centimeters and

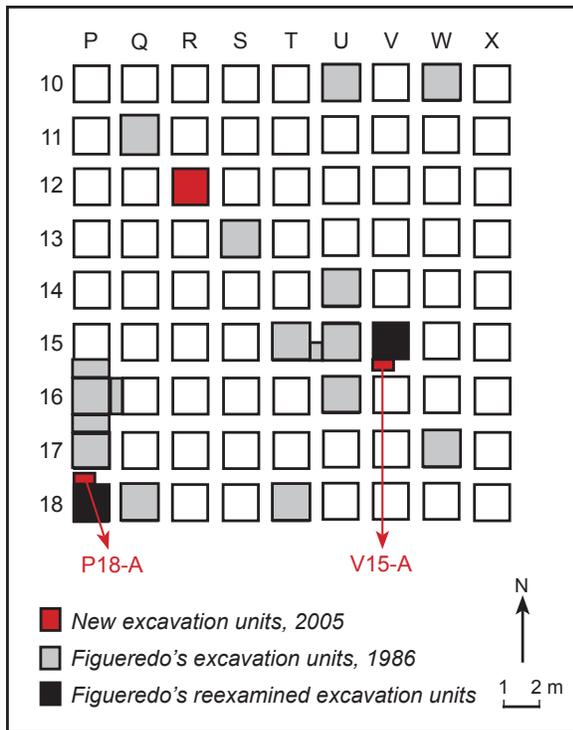


Figure 13. Close-up of Figueredo's original excavation grid, SARI 2.001.

1.5 meters). These deeper units were located on the periphery of the excavation area, corresponding to Figueredo's descriptions in the 1986 Phase II report (Figueredo and Winter 1986).

Two of the units that were cleaned and profiled, V15 and P18, were selected for expansion (Figure 13). Two small units, designated V15-A and P18-A, were excavated into the neighboring balks. V15-A, located in the southwest corner and southern wall of V15, measured roughly 50 by 70 centimeters; P18-A, located in the northwestern corner and northern wall of P18, measured 50 centimeters by 1 meter. These unit expansions were selected because of their proximity to exposed bone. In V15, bone was encountered while cleaning the unit's southwest corner and southern and western walls.

In P18, bone was observed protruding from the unit's north wall; bone was also encountered at the base of V15-A, but it was determined to be non-human. Unit P18-A produced human remains buried in midden (small pottery sherds, fish bones, and various other items); this feature was named Feature 3. The remains were surrounded and covered by large pieces of coral and shell (Figure 14).

The individual was incomplete; only some vertebrae, ribs, and two teeth were encountered (see Appendix 3 for a detailed analysis). While the remains were intact they were delicate and easily fragmented. From their location in the ground it can be surmised that the individual had been disarticulated and possibly bundled prior to being set in the midden. In other words, this individual was not buried as a whole corpse but at a later date, when little remained of the person except bones. Archeologists often refer to these kinds of interments as secondary burials.



Figure 14. EU P18-A, SARI 2.001.

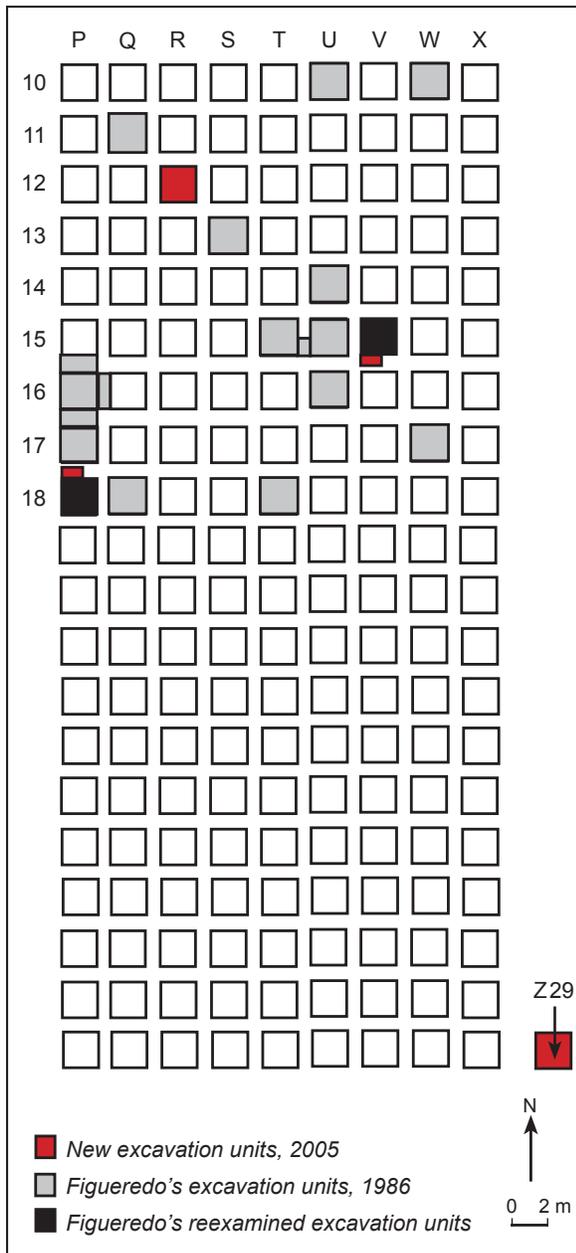


Figure 15. The 2005 excavation grid, SARI 2.001.

Two new excavation units, each measuring 2 by 2 meters, were established following Figueredo's original grid (Figure 15). These units were designated R12 and Z29. Unit R12 was placed within the limits of Figueredo's original grid, while Z29 was established by expanding the W line of the grid 35 meters to the south and 10 meters east (Figure 15, lower right corner). Both

units were excavated to a depth of 50 centimeters below datum (cmbd).

UNIT R12

In Unit R12, the O/A humic horizon spanned to nearly 20 cmbd, while an A horizon consisting of dark brown (10YR 3/3) silty loam was observed from 20 to 30 cmbd. Below 30 cmbd, the soils changed to 10YR 3/4 and 10YR 4/4, dark brown to dark yellowish brown clay loam mixed with fragmented rock, shell, coarse sand, and charcoal. Midden material, consisting of fish bone, ceramic sherds, and crushed shell and coral began to be encountered at roughly 18 to 20 cmbd, but did not pick up in density until about 40 cmbd. Because of time constraints, it was decided to continue excavating only the western half of the unit; the result being that the eastern half of the unit was excavated to only 40 cmbd, while the western half was excavated to 50 cmbd. It was in the lower western half of the unit (40–50 cmbd) that midden material began to pick up in density.

The soil matrix at Level 5 was comprised of several distinct zones, including sandy clay loams mixed with rubble, shell, and crushed stone (Figure 16). The largest area was comprised of 10YR 3/3 and 10YR 3/4 sandy clay loam mixed with rubble and flecked with charcoal. Other concentrations included 10YR 6/8 and 10YR 3/4 sandy clay loam mixed with shell and crushed stone located in the northwestern corner of the unit, and 10YR 5/6 sandy clay loam extending out roughly 50 centimeters from the middle of the western wall.

Two features were identified in Unit R12. Feature 1 was first assigned to a line of coral and shell that appeared at 11 cmbd and ran diagonally between the unit's eastern and southern walls (Figure 17). At 26 cmbd, a concentration of charcoal and burned clay was encountered between this coral/shell line and the southeastern corner of the unit. This concentration turned out to be an intact burned post, measuring roughly 12 centimeters in diameter. The post continued down to at least 40 cmbd, where it tapered down to nearly 6 centimeters in diameter and was supported by large pieces of coral (Figures 18 and 19). Because of



Figure 16. EU R12, extent of excavation, SARI 2.001.



Figure 17. EU R12, at the top of Feature 1, SARI 2.001.



Figure 18. EU R12, Feature 1 at the base of Level 3, SARI 2.001.



Figure 19. EU R12, wooden post, SARI 2.001.



Figure 20. EU R12, Feature 4, SARI 2.001.

time constraints, the eastern half of the unit was not excavated beyond 40 cmbd, so the actual base of the post was not reached.

Feature 4 was a concentration of coral, stone, and shell rubble that appeared at roughly 50 cmbd (Level 5) in the southern-middle portion of the unit (Figure 20). In the middle of this feature was a concentration of 10YR 3/4 sandy loam mixed with shell, bone, and charcoal. Because of time constraints, the team was unable to excavate further and ascertain what this feature could have been.

UNIT Z29

The O/A horizon in Unit Z29 consisted of dark brown (10YR 4/3, 10YR 4/4) sandy loams, and spanned to roughly 20 to 30 cmbd except in the northwestern corner of the unit (the lowest corner at 30 cmbd). The northern half, specifically the northwestern quadrant, of the unit lay at a lower elevation than the southern half, so excavation did not begin in this area until roughly 27 cmbd. A B horizon of yellowish brown (10YR 5/4) sandy

loam was encountered in the southern fifth of the unit which overlaid a B1 horizon; this B horizon was only 1 to 4 centimeters thick. Throughout the rest of the unit, the B1 zone was found directly underneath the A horizon.

Portions (bases, sides, and rims) of several pottery vessels that had broken in place were uncovered at roughly 36 to 40 cmbd. Given the unit's location in a swale at the base of the slope, much of the upper 35 centimeters appears to have consisted of erosional deposits washed down from the slopes above. Historic artifacts, namely two pieces of late eighteenth-century ceramics and a hand-wrought nail, were uncovered in the upper 15 centimeters of the northern portion of the unit (at 30–40 cmbd). A possible feature (Feature 2) was uncovered in the unit's northwestern corner at roughly 40 to 60 cmbd, identified by soil discoloration and differences in texture. The feature, though, could not be clearly defined within the limits of the excavated unit.

Finally, the team examined the exposed bank and shoreline north of the main site area (Figure



Figure 21. Shoreline and eroding bank just north of the excavation area, SARI 2.001.

21). Pottery, fish bones, and opercula were observed and collected. It appears that the Judith's Fancy site continued to the water's edge, and is actively being eroded. Geological samples were taken from both the shoreline and the rocky ledges above the site for future sourcing studies of lithic artifacts and materials used as ceramic tempering agents.

SUMMARY

In sum, much of the survey area has been negatively affected by activities associated with developmental landscaping and site preparation in the 1960s and the 1980s. The upper soil horizons

have been removed and only a thin (0 to 10/20 centimeters) humic horizon (topsoil) sits over subsoil (rocky clayey colluvium). Prehistoric cultural resources identified by archeologists in the 1920s and the 1950s have largely been destroyed, though one small locale of sheet midden in the middle of the survey area may still be intact. On the other hand, and despite former assessments to the contrary, it appears that much of the Judith's Fancy (Lignum Vitae, 12VAm1-5) archeological site remains intact. The development landscaping activities over this portion of SARI lands removed much, but not all, of the O horizon lying above and protecting intact archeological deposits, including human remains.



Chapter 4

Artifact Analysis and Discussion

LABORATORY METHODS AND PROCEDURES

Prior to being shipped back to SEAC, all artifacts, materials, and equipment were washed thoroughly at SARI to eliminate nematodes and other pests foreign to mainland United States soils as required by the Department of Agriculture. Two sets of soil samples from Excavation Units R12 and Z29 were water screened through 1/8-inch and 1/16-inch mesh, respectively. The only human remains reconstructed were those recovered initially intact in the field. Due to their friable nature, they broke apart when removed from the soil matrix.

Artifact classification and cataloging followed guidelines set forth in the Cataloging Manual for Archeological Objects Vols. I, II, and III (NPS 1990b) and the Museum Handbook, Museum Records, Park II (NPS 1984). The cultural materials were sorted into five basic categories: mineral, vegetal, animal, human remains, and unidentified. The information from the artifact analysis and computer data entry was encoded in the Automated National Catalog System (ANCS+), the NPS's computerized inventory system.

Prehistoric sherds were classified by tempering agent, decorative elements, vessel shape, possible function, and, where applicable, rim and base form. The sorting criteria were based largely on prehistoric ceramic analysis forms and instructions developed by Emily Lundberg and Ken Wild for Virgin Islands National Park (VIIS). The few examples of historic-period ceramics that were encountered were classified according to paste, glaze, and decorative techniques. Items made of glass were classified according to manufacturing method, function, and color, though glass color is not a reliable diagnostic attribute. Metal artifacts were classified according to material, method of manufacture, and function.

In addition to the above classification schemes, attributes of each artifact, when no specific field was available in the ANCS+ database templates, were described in detail under the section titled "Comments." Function, when it could be ascertained, was also listed under "Comments." Examples of these commented attributes include vessel thickness and decorative elements (painting, incising, etc.) for Native American ceramics.

A total of 5,737 artifacts and 10 bags of clay and wood, weighing 27.679 kilograms, were recovered during both the pedestrian survey and the shovel testing portions of the 2005 study (Table 1). Catalog numbers SARI 2 through SARI 1331 were assigned to these curated materials.

CLAY ARTIFACTS

A total of 66 clay artifacts and two bags of "sherdlets" were recovered during the 2005 field season. Of these, 7 specimens were brick fragments weighing 135.4 grams; 59 fragments, weighing roughly 207 grams, were identified as baked or burned clay, the majority of which were recovered in close proximity to a burned post uncovered in EU R12 (Figure 22). The bricks were yellow Danish bricks, which were often brought to the Caribbean as ship ballast. These yellow bricks, today one of the most distinguishing characteristics of eighteenth and nineteenth century Danish West Indian architecture in the Virgin Islands, were possibly made in a specific region in Denmark: North Schleswig. Schleswig bricks averaged 4 centimeters in thickness (Riksantikvarieämbetet 2003:6).

CERAMICS

The remaining clay artifacts consisted of ceramic vessel fragments, either prehistoric Native Ameri-

Table 1. Artifact Totals by Type

Artifact Type Totals	Ct.	Wt. (g)	Qty.	Wt. (g)
Bone	1037	250.2	—	—
Brick	7	135.4	—	—
Ceramic	2856	12000.2	2	46.8
Clay	59	207.3	1	45.5
Coral	80	1315.8	—	—
Glass	7	10.0	—	—
Metal	34	186.9	—	—
Osteological	190	196.3	—	—
Other Mineral Materials	1	26.4	—	—
Shell	1119	5905.8	—	—
Stone	311	7235.9	—	—
Wood	36	9.2	7	107.3
Subtotals	5737	27479.4	10	199.6
Grand Total	5737		10	27679 (Total Weight)

**Figure 22. Baked clay, FS# 24.57, cat. # SARI 206.****Figure 23. Historic coarse earthenware fragment from a jug or pitcher, FS# 45.02, cat. # SARI 840.**

can (n = 2851, 12,032.2 g) or historic (n = 5, 14.7 g) pottery sherds. Of the five total historic ceramics, three sherds were classified as refined earthenwares; one was creamware, one was pearlware, and one was whiteware. One sherd was identified as part of a coarse earthenware pitcher; the fifth sherd was a piece of salt glazed stoneware (Table 2). All of these wares are representative of a late eighteenth through early nineteenth century occupation (ca. 1760s–1830s), based on their dates of invention and manufacture. Coarse earthenwares and stonewares were typically relegated to everyday domestic and other utilitarian functions, such as oil and olive storage jars, water jars, pitchers, mixing bowls, and baking pots (Figure 23). Stone-

ware was vitreous, or did not need a glaze to be water proof, but sometimes salt was thrown onto the wares as they were firing, melting and forming a shiny clear glaze on the vessel's exterior.

The thinner, refined earthenwares were made to imitate highly desired but expensive Chinese porcelains. Creamwares were created sometime between 1740 and 1760, though some sources place their origin as early as the 1720s (Godden 1966:xv). Pearlwares were created circa 1779, as an “improvement” in creamwares, resulting in a truer white paste with a bluish tinge. Further improvements by 1820 led to the elimination of the bluish tinge, resulting in whitewares.

Table 2. Historic Ceramics

FS#	Cat. #	Comments	Ct.	Wt. (g)	Type Name	Date Range	Typology	Provenience
15.01	SARI 54	Blue Transfer Print Pearlware. Base, with foliate/garland design.	1	0.4	Cobalt Blue Transfer Printed Pearlware	1780–1830 AD	Earthenware, Refined, Pearlware	Shovel Test A31
18.01	SARI 67	Whiteware. Portion of a plate well.	1	0.8	Whiteware	1820–2005 AD	Earthenware, Refined, Whiteware	EU U15, south wall profile cleaning
43.61	SARI 829	Exterior-Brown Lead Glazed. Interior-Salt Glazed. Form-Indeterminate.	1	0.7	Salt Glazed Stoneware	1500–2005 AD	Stoneware, Coarse, Brown Paste	EU Z29, Level 3, Zone 3
45.01	SARI 839	Mocha Creamware	1	0.4	Mocha Creamware	1762–1830 AD	Earthenware, Refined, Creamware	EU Z29, Level 4, Zone 3
45.02	SARI 840	Sherd is most likely a pitcher or jar with handle attachment present. Clear lead glaze on interior, slipped exterior. Light pink paste, small grit tempering.	1	12.5	Slipware	1500–2005 AD	Earthenware, Coarse, Slipware	EU Z29, Level 4, Zone 3
HISTORIC CERAMIC TOTALS			5	14.8				

In short, the historic ceramics, which were all recovered from EU Z-29, represent an occupation and use of the area during the Danish colonial era (1732–1917), including the temporary English occupational periods (1801–1802 and 1807–1817). Though the historic maps do not illustrate any structures in this area, there is the possibility that two small structures not reported on the tax rolls were located to the south and one to the east (see Figure 5). Additional excavation is needed for a better interpretation of the historic occupation of Salt River Bay. On the other hand, these sherds could have washed down the hillside and been deposited via natural processes.

Native American Wares

A total of 2851 Native American prehistoric sherds were also recovered during the project (Table 3). After being sorted by vessel portion (rim, body, base), the sherds were next sorted by tempering agent. At the present time, only general observations will be offered regarding the composition of

the recovered prehistoric ceramic assemblage. A more in-depth examination that included a detailed analysis of sherd thickness, finishing and decorative techniques, and vessel form and possible function will be prepared at a future date as part of the author’s doctoral dissertation.

The majority of the prehistoric ceramics were body sherds (n=2302), followed by rim sherds (n=308). Six of these rim sherds were flanged rims, typically indicative of large platters or open, shallow bowls. All of the 159 base sherds were flat, not concave or convex. Other identifiable vessel portions included handles (n=16), spouts (2), and a single lug. All of the handles were D-shaped strap handles (Figure 24).

Rim forms include simple rounded (n=137), interior tapered (n=33), internal thickened border (n=16), inward beveled (n=11), and outward ticked (n=10). Additional styles include rolled-out (n=7), bilateral wedged (n=3), flat flanged (n=4) and double tick rounded (n=4).

Tempering agents included fine sands, sands, coarse sands, grit, some shell, and grog (Table 4).

Table 3. Prehistoric Ceramics by Temper

Temper Type	Ct.	Wt. (g)
Unidentified Temper	88	286.1
Coarse Sand	253	1225.5
Coarse Sand, Shell	12	47.6
Grit	2	22.4
Grit, Coarse Sand	408	1824
Grit, Coarse Sand, Feldspar	33	203.1
Grit, Coarse Sand, Quartz	31	409.1
Grit, Grog	3	40.5
Grit, Grog, Sand	3	29.5
Grit, Quartz	1	21.0
Grit, Sand	277	1210.3
Grit, Sand, Clay	1	11.2
Grit, Sand, Unidentified (Mica?)	5	20.1
Grit, Sand, Quartz	3	123.3
Grit, Sand, Shell	7	165.9
Grit, Sand, Shell	9	57.8
Grit, Shell	1	14.9
Grit, Sand	4	18.9
Grog, Coarse Sand, Shell	3	55.5
Grog, Sand	1	47.6
Grog, Sand, Unidentified (Mica?)	2	7.7
Grog, Sand, Shell	9	36.7
Unidentified (Mica?), Sand	1	21.9
Quartz, Coarse Sand	3	221.2
Quartz, Coarse Sand, Grit	2	40.7
Quartz, Grit, Coarse Sand	1	7.7
Quartz, Grit, Sand	1	2.6
Quartz, Unidentified (Mica?), Sand	2	32.4
Quartz, Sand	4	17.7
Sand	1615	5516.44
Sand, Grit	4	37.4
Sand, Unidentified (Mica?)	1	4.6
Sand, Mica, Shell	13	43.3
Sand, Quartz	2	17.8
Sand, Shell	33	140.0
Sand, Shell, Quartz	11	27.9
Shell, Sand	2	21.9
TOTAL	2851	12032.24

The majority of sherds (n=1681) were tempered primarily with sands, ranging from fine to regular, but nearly all of the sherds contained some level of sand tempering. Coarse sand and grit tempering was also prevalent as primary tempering agents (n=263, n=788, respectively). Twenty-two sherds

Table 4. Prehistoric Ceramics by Vessel Portion

Vessel Portion	Ct.	Wt. (g)
Unidentified Vessel Portion	64	81.7
Base	159	1217.5
Body	2302	8193.94
Handle	16	136.0
Rim	302	2366.5
Rim, Flange	6	19.6
Spout	2	17.0
TOTAL	2851	12032.24

**Figure 24. Prehistoric vessel with attached handle, FS# 61.12, cat. # SARI 1037.**

had grog, or crushed pieces of pottery, as a tempering agent, and many sherds included shell or some other form of calcium carbonate temper (e.g. foraminifera). Other tempering agents observed in many sherds included quartz, clay, hornblende or volcanic glass, and coral. Additionally, several sherds represented vessels that appear to have been constructed with caliche, a form of weathered calcium carbonate which forms in sediments or voids and crevices within bedrock, left behind when ground water evaporates. Caliche soils (Kingshill Marl) are found in the central and southwestern portions of St. Croix, which during the Cretaceous period was a submerged valley or channel where coral colonies once grew. The resultant coral limestone (as it was formerly called) is buff to white in color, and is found with cream or white marl (Figure 25). In order to further identify these tempering agents, thin sections are being prepared and will be examined under a polarizing microscope.



Figure 25. Prehistoric sherds possibly made with caliche. Left to right: FS# 36.26, cat. # SARI 527; FS# 81.09, cat. # SARI 1320; FS# 50.19, cat. # SARI 974; FS# 37.07, cat. # SARI 560.

Ceramic finishes include smoothing, light burnishing, slips, and films. The majority of all sherds demonstrated some degree of smoothing. Slips ranged in color from buff to light brown to orange. The primary decorative element was red film on the vessel rim (n=16), but other forms included plain red film over the vessel body, and a brownish-red to purple slip (Figures 26–28).

Griddle (burén) fragments were recovered from both excavation units: 91 were body sherds, and 25 were rims (Figures 29, 30). The griddle sherds measured, on average, 9 to 11+ millimeters thick, with a slipped and/or burnished interior (top) and unfinished or rough exterior (underside). A number of these sherds were griddle rims (n=25), representing a variety of styles, including triangular raised (Style B, n=6), non-raised rounded with inward bevel (Style J, n=6), perpendicular raised (Style E, n=4), non-raised rounded edge (Style H, n=3), unrounded/sharply edged upcurving raised (Style G, n=2), overhanging raised (Style C, n=1), and rounded raised (Style D, n=1). Of particular note was one sherd with a possible imprint of a basket weave on its underside (Figure 31) (FS# 33.02, cat. # SARI 452).

GLASS ARTIFACTS

Glass is a highly fired ceramic material chiefly composed of silica mixed with other materials that act as fluxes and stabilizers. Glass making technologies are the most reliable way to determine age in glass artifacts. Most glass was either free-blown or blown into molds until the advent of semi- and fully-automatic machines in the 1880s (Jones 1986; Jones and Sullivan 1989). Hand-finishing tools were used to smooth, form, and finish the necks and mouths of free-blown or blown-in-mold vessels. While glass color is easily quantifiable, it is not a reliable diagnostic tool and should not be used as the sole criteria for dating glass objects. When used in conjunction with glass-making technological attributes it can aid in providing chronological information.

A total of 7 glass fragments, weighing 10 grams, were recovered (Table 5). All but one of the glass shards were machine molded; FS# 23.26 (cat. # SARI 149) was mold blown and dark green in color. Other glass colors that were observed were amber (n=3, FS# 16.01, cat. # SARI 65), and colorless (n=3, FS#s 6.05, 40.33, and 45.57,



Figure 26. Brushed/inciped and filmed sherds. Left: FS# 37.41, cat. # SARI 594. Right: FS# 37.54, cat. # SARI 607.



Figure 27. Decorated sherds. Left to right: FS# 27.18, cat. # SARI 271 (rim points); FS# 61.10, cat. # SARI 1035 (red film on lug); FS# 51.01, cat. # SARI 996 (red film on rim).



Figure 28. Red film on rim sherds. Left to right: FS# 67.01, cat. # SARI 1141; FS# 61.01, cat. # SARI 1026; FS# 45.03, cat. # SARI 841; FS# 43.01, cat. # SARI 769.



Figure 29. Griddle rims. Left to right: FS# 41.13, cat. # SARI 747 (rim style B, triangular raised); FS# 41.14, cat. # SARI 748 (rim style A, concave raised); FS# 27.23, cat. # SARI 276 (rim style E, perpendicular raised).



Figure 30. Griddle rims. Left to right: FS# 27.22, cat. # SARI 275 (rim style E); FS# 27.21, cat. # SARI 274 (rim style D, rounded raised); FS# 33.02, cat. # SARI 452 (rim style E).



Figure 31. Underside of FS# 33.02, cat. # SARI 452 (Figure 30), showing matt or grass impressions.

Table 5. Glass Artifacts

FS#	Cat. #	Comment	Ct.	Wt. (g)	Field Site #	Date Range	Typology	Provenience
6.05	SARI 32	Machine Molded. Insufficient portion to determine form.	1	0.6	1953.03	1881–2005 AD	Indefinite Glass (insufficient portion)	Shovel Test B2
16.01	SARI 65	Machine molded amber glass. Post 1900.	3	4.7	1953.08	1904–2005 AD	Indefinite Glass (generic use)	Shovel Test B22
23.26	SARI 149	Dark green container glass. Insufficient portion to determine form..	1	1.1	1953.06		Indefinite Glass (generic use)	EU V15, east wall profile cleaning
40.33	SARI 733	Flat colorless glass, weathered.	1	0.9	1953.06		Flat Glass	EU Z29, Level 3, Zone 1
45.57	SARI 895	Machine molded, colorless. Insufficient portion to determine form.	1	2.7	1953.06	1904–2005 AD	Indefinite Glass (generic use)	EU Z29, Level 4, Zone 3
GLASS ARTIFACT TOTALS			7	10				

cat. #s SARI 32, 733, 895, respectively). Based on the manufacturing technology the majority of the shards represent twentieth century intrusions into the site. The mold blown dark green shard is likely from a late eighteenth to nineteenth century liquor bottle, but more evidence is needed to prove this date.

METAL ARTIFACTS

A total of 34 metal artifacts were recovered (Table 6). Of this total, 11 were nails, three were heads of spikes, and 16 specimens were unidentifiable iron fragments. Three of the nails were wire drawn and machined, while six were cut, one was cut and machine headed, and one was wrought. While wire nails typically date to the later quarter of the nineteenth through the twentieth centuries, the cut and wrought nails potentially date to the late eighteenth through the nineteenth centuries. Three pieces of a cast iron latch were recovered (FS# 26.08, cat. # SARI 253). Finally, one piece of lead was also recovered (FS# 43.64 cat. # SARI 829).

FAUNAL REMAINS

A total of 2237 faunal specimens, weighing approximately 7472 grams, were recovered and identified (Table 7). Of this total, 1038 were bone, 1116 were shell, and 83 were coral. Three pieces of bone were worked.

The total number of individual specimens (NISP) consisted of 948 vertebrate remains and 1070 invertebrate remains. The majority of vertebrate remains were from aquatic fauna; a total of 19 species were identified, representing pelagic waters and offshore and inshore banks. Of the aquatic species, parrotfishes (*Sparisoma* sp., *Scaris* sp.) were the most numerous (NISP=106, MNI=40), followed by tuna (*Thunnus* sp.; NISP=58, MNI=11) (MNI=minimum number of individuals). Other vertebrate fishes included porcupine fish (*Diiodon hystrix*), triggerfish (Ballistidae f.), snapper (*Lutjanus* sp.), grunts (*Haemulon* sp.), jacks (*Caranx* sp.), snook (*Centropomus* sp.), and grouper (*Epinephelus* sp.) Only one specimen was positively identified as shark, a single vertebra that had been

Table 6. Metal Artifacts

FS#	Cat. #	Material	Object Name	Comment	Typology	Ct.	Wt. (g)	Date Range	Provenience
11.01	SARI 44	IRON	NAIL	Wire drawn nail.	Wire, Machine Headed	2	10	1850–2005 AD	Shovel Test B10
18.16	SARI 82	IRON	NAIL	Machine Cut Nail	Cut	3	1.4	1790–2005 AD	EU U15, south wall profile cleaning
20.03	SARI 90	IRON	SPIKE	Heads of two spikes or large nails.	Hand Wrought	2	4.2	1790–2005 AD	EU R12, Level 1, Zone 1
20.04	SARI 91	IRON	SPIKE	Head of spike	Hand Wrought	1	1.8	1790–2005 AD	EU R12, Level 1, Zone 1
24.87	SARI 236	IRON	NAIL	Machine Cut Nail	Cut	1	2.1	1790–2005 AD	EU R12, Level 2, Zone 1
24.88	SARI 237	IRON	METAL FRAGMENT	Unidentifiable flat iron fragments.	Indefinite Use, multipurpose	4	14.5	—	EU R12, Level 2, Zone 1
26.08	SARI 253	IRON	LATCH	Iron latch (hook) fragment. Large portion.	Latch	3	83.2	—	EU V15, south wall profile cleaning
30.42	SARI 393	IRON	METAL FRAGMENT		Indefinite Use, multipurpose	2	6.6	—	EU R12, Level 3, Zone 2
40.34	SARI 734	IRON	NAIL	Machine Cut Nail, Hand Wrought Head.	Cut, Hand Headed	1	4.4	1790–2005 AD	EU Z29, Level 3, Zone 1
42.09	SARI 768	IRON	METAL FRAGMENT	Possible end of strap; end has rivet	Indefinite Use, insufficient portion	8	37.7	—	EU Z29, Level 3, Zone 2
43.62	SARI 830	IRON	METAL FRAGMENT	Unidentifiable iron fragment.	Indefinite Use, multipurpose	1	0.6	—	EU Z29, Level 3, Zone 3

Table 6 (continued). Metal Artifacts

FS#	Cat. #	Material	Object Name	Comment	Typology	Ct.	Wt. (g)	Date Range	Provenience
45.58	SARI 896	IRON	NAIL	Machine Cut Nail, Hand Headed.	Cut, Hand Headed	2	4	1790–2005 AD	EU Z29, Level 4, Zone 3
45.59	SARI 897	IRON	METAL FRAGMENT		Indefinite Use, insufficient portion	1	4	—	EU Z29, Level 4, Zone 3
63.15	SARI 1136	IRON	NAIL	Wire drawn nail.	Wire, Machine Headed	1	2.3	1850–2005 AD	EU Z29, Feature 2, Level 5, Zone 4, East-half
70.28	SARI 1215	IRON	METAL FRAGMENT	Unidentified drawn fragment, possibly part of wire or wire drawn nail.	Indefinite Use, insufficient portion	1	0.2	—	EU Z29, Feature 2, fine waterscreen
43.63	SARI 831	LEAD	METAL FRAGMENT	Unidentifiable lead fragment.	Indefinite Use, multipurpose	1	3.2	—	EU Z29, Level 3, Zone 3
METAL ARTIFACT TOTALS						34	180.2		

Table 7. Faunal Remains

Faunal Types	Ct.	Wt. (g)
Bone	1,035	247.4
Bone, Worked	3	2.7
Coral Fragment	83	1,315.8
Food, Shell	13	682.9
Shell	1,092	4,671.1
Shell, Worked	7	200.9
Tool, Shell	4	350.9
Fauna Total	2,237	7,471.8

drilled in the centrum was identified as that of a requiem shark (*Carcharrhinus perezii*; FS# 22.10, cat. # SARI 119) (Figure 32). The remains of a sea turtle (Cheloniidae) and a marine mammal (cf. *Cetacean*) were also identified.

Four species of terrestrial mammal were identified, including dog (cf. *Canis* sp., FS# 76.09, cat. # SARI 1275) and agouti (*Dasyprocta* sp.,



Figure 32. Drilled shark vertebra bead, FS# 22.10, cat. # SARI 119.

FS# 37.115, cat. # SARI 668); both of these species were introduced with the arrival of the first South American settlers to the island during the Saladoid period. The other two mammals were a rodent (Rodentia) and a tibia from a subadult pig (cf. *Sus scrofa*). The pig bone is most likely modern, as it was found on the surface of EU U15 during clean-up.

The majority of invertebrate remains were too fragmented for positive identification. In all, 23 genus/species were identified, the most numerous being turban snails (*Turbinidae*; n=163) which were represented by opercula. Other species included queen conch (*Strombus gigas*), West Indian top shell (*Cittarium pica*), West Indian chiton (*Chiton tuberculatus*), and knobby keyhole limpets (*Fissurella nodosa*). Of all the invertebrate remains, 55 appeared to have been worked, either by cutting or grinding. One columella (FS# 22.12, cat. # SARI 121) appears to have been an unhafted hammer, with pounding damage on the tip.

A more thorough and detailed analysis of the faunal remains is presented in Appendix 1.

LITHIC ARTIFACTS

A total of 311 lithic artifacts, weighing nearly 7236 grams, were recovered from the excavations at the Judith's Fancy site (Table 8). Of this total, only four flakes exhibited retouching or use wear; the other 114 flakes were unretouched. A total of 24 cores were recovered, 18 of which were irregular flake cores and six were tested cobbles. Other stone artifacts included a grindstone, hammerstones (n=3), a pebble tool, and two abraders (Figure 33).

By far, the most significant lithic artifacts were made from a greenstone, possibly argillite (Stephen Kish, personal communication, 2005). A total of 19 greenstone artifacts were recovered, including a smoothed discoidal fragment (FS# 30.29, cat. # SARI 380), an incomplete or broken celt (FS# 61.28, cat. # SARI 1053), a possible plummet with an unpolished cortex (FS# 27.55, cat. # SARI 308), and a possible tip of a groundstone awl (FS# 18.12, cat. # SARI 78). A partial greenstone adz (FS# 41.16, cat. # SARI 750) with possible hafting scars on one side was also recovered (Figure 34). Greenstone shatter and a flake were recovered alongside the adz, but these fragments do not appear to refit.

A sample of these stone materials was examined by Dr. Stephen Kish of the Department of Geology at Florida State University. Apparently, the majority of these lithic materials were avail-

able locally (Nagle and Hubbard 1989; Whetten 1966), but the origins of some specimens remain in question. There may be evidence for exotic or non-local lithic materials at Judith's Fancy.

A more detailed analysis of the lithic artifacts is presented in Appendix 2.

HUMAN REMAINS

Excavation Unit P18-A produced evidence of intact midden with a secondary human burial of at least one adult and one child. The adult had been intentionally disarticulated and placed in an excavated portion of a midden that was marked by large pieces of coral and stone at roughly 25 to 35 cmbd, and then covered with the matrix that had just been excavated. The skeletal fragments began to appear at roughly 35 cmbd, and at 40 cmbd, a large concentration of remains was exposed. All told, 7 rib fragments and a left scapula were encountered, as were one complete vertebra (T-9) and several vertebral fragments. No degenerative pathologies of the vertebrae were observed, and there was no osteophytic lipping present. Two teeth were also recovered; both were permanent canines demonstrating moderate attrition and calculus buildup on the labial surfaces. All of these remains, save the ribs and scapula fragments, were commingled and not in anatomical association. The ribs appeared to be those of an adult, and their close proximity to each other seemed to indicate that the thorax of this individual was intact when placed in the ground. In addition to this adult, a single fragment of a deciduous lower molar was recovered from the eastern wall of the same unit. A more detailed analysis of these remains is presented in Appendix 3.

It appears that this is an intentional burial practice, one that took time, effort and planning. The excavations in 1986 encountered an incomplete individual along the northern wall of Unit P18, who may have been the same person encountered in 2005. Unfortunately, the remains from the 1986 excavation are now missing. On the other hand, thanks to the actions of concerned citizens who were observing the 1986 excavations, several

Table 8. Lithic artifacts

Lithic Types	Ct.	Wt. (g)
Abrader	2	256.7
Adze	1	19.1
Biface	2	22.8
Celt	1	220.9
Core	24	2,344.0
Debitage	46	253.9
Flake	114	512.7
Fossil	2	4.1
Grindstone	1	69.4
Hammerstone	3	1,426.1
Plummet	1	50.2
Sample, Comparative	32	1,192.7
Shatter	65	193.7
Stone, Fire Cracked	1	8.2
Stone, Unmodified	3	303.3
Stone, Worked	7	294.3
Tool, Flake	4	20.1
Tool, Pebble	1	13.9
Uniface	1	29.8
LITHICS TOTAL	311	7,235.9

bones and a tooth were picked up and conserved by Liz Wilson, a long time resident of the Judith's Fancy subdivision, a school teacher, and environmental activist, as evidence to the site's significance. The tooth, an upper pre-molar, does not match the attrition described in Figueredo's report or the two teeth encountered in 2005. Therefore, it appears that there were at least three individuals interred in Units P18 and P18-A. When added to the three individuals encountered in Unit U15 (also in 1986), there have been a total of six individuals interred at site 12VAm1-5, demonstrating at least two forms of burial—primary flexed and secondary disarticulated—and possibly bundled. This is an unusual find, as most contemporaneous archeological sites from the region typically demonstrate only one form of burial practice.



Figure 33 (above). Ground hammerstone, FS# 61.29, cat. # SARI 1054.



Figure 34 (left). Groundstone tools and flakes. Left to right: FS# 61.28, cat. # SARI 1053; (top) FS# 61.30, cat. # SARI 1055; (bottom) FS# 61.31, cat. # SARI 1056; FS# 27.55, cat. # SARI 308.

DISCUSSION

All of the historic ceramics were encountered in Excavation Unit Z29, in the upper 15 centimeters of the northern 1/3 of the unit. This concentration of historic sherds and metal objects was labeled Feature #2, and was located in the northeastern quadrant of the unit, along the north wall. The soils consisted of an intrusion of darker 10YR 3/4 dark yellowish brown coarse sandy loam into the Ap and B horizons. Whether or not this feature represents a small, intentionally excavated pit or a disturbance such as a tree fall that then filled with erosional wash of humic soils and historic materials remains unknown. The dating of the feature based on the assemblage of ceramics (creamware, pearlware, whiteware, and salt glazed stoneware) and metal objects (machine cut and wire nails) suggests an early to mid-nineteenth century time frame for historic occupation in this area of the site.

Excavation Unit R12 represents an intact deposit of cultural remains that can be dated, just by pottery styles, to the late Saladoid and early Ostionoid transitional period. Due to time constraints the unit could not be completely excavated to sterile subsoil. At the base of Level 5 (50 cmbd), the amount of midden materials, after a gradual decrease in density, was beginning to increase again. Groundstone tools, like reused celts and a large, egg-shaped grinding stone were found. Decorations on pottery included red filming on rims, red filmed exteriors, and single incised bands at the exterior rim, all of which date to the Saladoid-Ostionoid transitional period (ca. A.D. 600–900).

While there is evidence that the southeastern portion of the site (Unit Z29) was occupied dur-

ing the late Saladoid and early Ostionoid periods, the extent of the occupation remains unknown. Faunal and ceramic remains were not as densely concentrated in Unit Z29 as in Unit R12.

The small Excavation Unit V15-A proved to consist of a light scatter of midden material, primarily fish and small mammal bone and very few ceramic remains. The roughly upper 18 centimeters of the unit could be attributed to organic and A horizon fill, probably deposited during Figueredo's 1986 excavations. Below 18 cmbd, however, the soil consistency changed to an Ap horizon and an intact deposit was encountered.

The extension of Excavation Unit P-18 into the northern bank provided evidence for a strong possibility of the presence of additional human remains throughout the site. There are two distinctive forms of interment—flexed and disarticulated—and based on the descriptions provided in Figueredo's 1986 report they tend to be clustered. It is unclear if the people who lived on the eastern side of Salt River Bay were burying their dead near their houses, as was done during the Ostionoid period at the Tutu site on St. Thomas, or in a central cemetery, as was the Saladoid period custom. The fact that some individuals were apparently disarticulated and reburied could be indicative of either a change in belief system or differential social status. These issues cannot be resolved without further testing and excavation.

Finally, this site is actively eroding into the Caribbean Sea. The exposed northern bank regularly produces ceramic and lithic artifacts, fish bones, and opercula. At the moment there is no way to confidently address just how much of the site has been lost to erosional processes and to what extent erosion is likely to continue.



Summary and Recommendations

The shovel testing portion of the Phase I survey, conducted within the areas identified as potential locations for the marine research and education center, identified a possible shell sheet midden in the southern portion of the survey area; and, relocated the cultural resources identified by New South Associates, Inc., in 1989. These resources were just south of Vescelius' Site 5, and may represent the southernmost remnants of Vescelius' site. The northern area, as evidenced by the stratigraphy and geomorphology identified in the shovel tests, has been extensively scraped and removed with little in the way of a humic O/A horizon; this removal of upper soil horizons may have destroyed

the majority of Vescelius' site. The southernmost area of the shovel testing survey also identified cultural resources in the northernmost area of the purported locale of Hatt's Site 5 (Figure 7).

Site 12VAm1-5 (the Lignum Vitae site) is fairly intact and has the potential to reveal much information about the lives of prehistoric communities in the Salt River watershed. Radiometric testing of wood, shell, and a human tooth obtained during the 2005 excavations have dated the site to cal A.D. 540–890 (Table 9 and Appendix 4). The site contains intact remains of prehistoric human settlement, including carbonized wooden posts and both primary and secondary human burials.

Table 9. Results of Radiometric Testing

<i>Sample Data</i>	<i>Measured Radiocarbon Age</i>	<i>13C/13C Ratio</i>	<i>Conventional Radiocarbon Age (*)</i>
Beta – 209047 SAMPLE: SARI19534801 ANALYSIS: Radiometric-Standard Delivery MATERIAL/PRETREATMENT: (charred material): acid/alkali/acid 2 SIGMA CALIBRATION : Cal AD 540 to 770 (Cal BP 1410 to 1180)	1400 +/- 70 BP	-25.6 o/oo	1390 +/- 70 BP
Beta – 209048 SAMPLE: SARI19535501 ANALYSIS: Radiometric-Standard Delivery MATERIAL/PRETREATMENT: (shell): acid etched 2 SIGMA CALIBRATION : Cal AD 620 to 890 (Cal BP 1330 to 1060)	1250 +/- 60 BP	-0.1 o/oo	1660 +/- 70 BP
Beta – 209049 SAMPLE: SARI19537701 ANALYSIS: AMS-Standard Delivery MATERIAL/PRETREATMENT: (tooth): collagen extraction: with alkali 2 SIGMA CALIBRATION : Cal AD 660 to 790 (Cal BP 1290 to 1160)	1160 +/- 40 BP	-16.2 o/oo 15N/14N= +10.6 o/oo	1300 +/- 40 BP
Beta – 209050 SAMPLE: SARI19538301 ANALYSIS: Radiometric-Standard Delivery (with extended counting) MATERIAL/PRETREATMENT: (charred material): acid/alkali/acid 2 SIGMA CALIBRATION : Cal AD 540-690 (Cal BP 1410 to 1260)	1430 +/- 60 BP	-25.9 o/oo	1420 +/- 60 BP

Across the bay, the lowest elevations below the future Visitor Contact Station and near the main road, were not tested because of unclear lines of jurisdiction between the Government of the Virgin Islands and the National Park Service. This area should be tested prior to any park development, such as the establishment of parking spaces, fences, gates, and any additional buildings proposed to be constructed as part of this complex. Privately owned lands within the legislated boundaries of SARI were not tested because permission could not be obtained from the landowners.

The only site encountered during this survey that is potentially eligible for nomination to the National Register of Historic Places is the *Lignum Vitae* site (Judith's Fancy, 12VAm1-5). Salt River Bay National Historical Site and Ecological Preserve was automatically listed on the National Register as a whole in 1992, when the park was created. The Salt River Point/Columbus Landing site itself was listed on the Register in 1966. The *Lignum Vitae*/Judith's Fancy site can be listed individually under Criterion D, as it has yielded and is likely to continue to yield important information on the prehistory of St. Croix. Though the site has been partially excavated, it still retains intact archeological deposits that contain critical information on the lifeways of St. Croix's prehistoric populations.

In terms of selecting a location for constructing the proposed research and education center that will have the least negative impact on archeological resources, the hotel peninsula is currently considered the best candidate, assuming that the acquisition of other privately owned lands is not forthcoming. If the hotel peninsula is deemed unsuitable for construction because it is located in the coastal barrier and flood plain zone, the low density of cultural remains in the area of Vescecius' Site 5 and the prior disturbance of the area would make this area the second choice for the center. Of course, the least favorable location is the *Lignum Vitae* site with its dense concentration of intact cultural and interred human remains.

Assuming that the location of the research and education center's operations is placed either

at the hotel peninsula or SARI 2.003 (Vescecius Site 5), the recommended entry and access to the site is the old road that runs south from the project area, then west toward Triton Peninsula. This road may be a historic road, possibly the remains of a road illustrated on the 1647 Spanish map of St. Croix (see Figure 3). If either the hotel peninsula or SARI 2.003 is chosen for construction of the center, the areas to be impacted should be subjected to an intensive testing regimen for the following purposes:

1. Determine the extent to which past dredging activities have altered the original shoreline.
2. Identify any cultural resources that may have been missed during the Phase I survey, or that may be located along the proposed entry to the facility.

If these recommendations are followed, a Phase II cultural resource survey should be conducted for both the selected construction area and a corridor surrounding and following the old road (Figure 35). This survey would cut across SARI 2.005 (Hatt's Site 5), and will potentially identify historic resources associated with the seventeenth century occupation of the bay. The survey would follow the road into lands owned by the Government of the Virgin Islands, pending their permission to clear and make the road accessible to vehicular traffic. Therefore, additional testing is recommended for SARI 2.005.

In short, the following actions are recommended:

1. Additional systematic testing at SARI 2.005 (Hatt's Site 5), to determine if the area is an archeological site or the remnants of an ancient mangrove.
2. Additional systematic testing at SARI 2.001, in order to determine the southernmost boundary of the site and to minimize potential impacts.
3. Monitoring of all earth disturbing and construction activities, especially those in and around SARI 2.005 and 2.001.

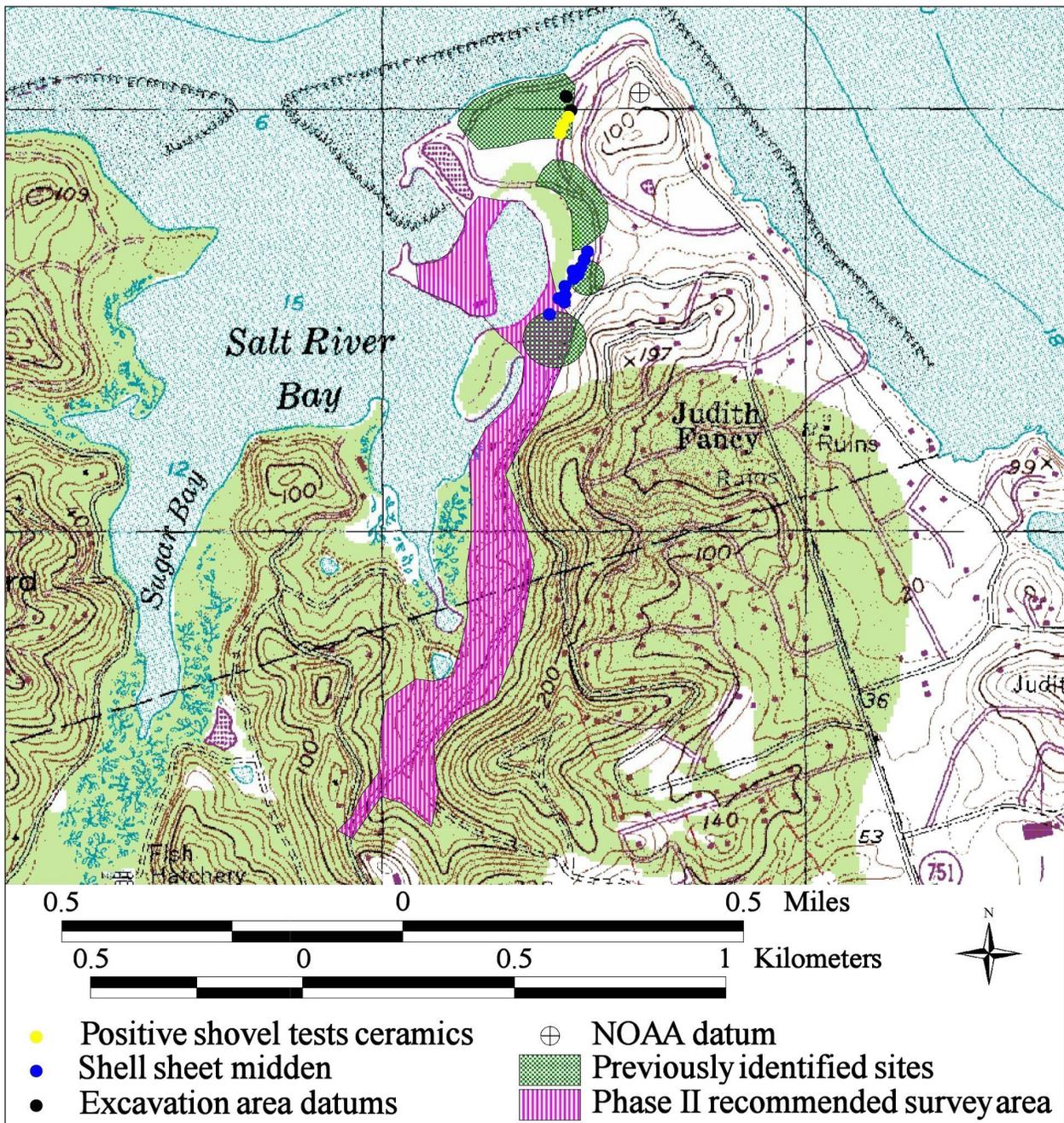


Figure 35. Map of Judith's Fancy with previously identified sites, locations of positive shovel tests, and recommended areas for further excavation.

Appendix 1

Faunal Analysis from the Judith's Fancy Site (12VAm1-5)

by Brian E. Worthington

This is a summary of the faunal analysis from the Judith's Fancy site (12VAm1-5) at Salt River Bay on St. Croix, U.S. Virgin Islands. Analysis was carried out at the Southeast Archeological Center utilizing comparative collections at Florida State University's Department of Anthropology and the Environmental Archaeology Range at the Florida Museum of Natural History. A total number of individual specimens (NISP) of 948 vertebrate remains and 1,070 invertebrate remains were recovered from the site. The minimum number of individuals (MNI) was only calculated for select species due to the limited nature of the overall assemblage. The preservation of the fauna ranged from good to poor. Many of the vertebrate remains were too fragmentary to identify. The identified remains included both native and introduced inhabitants of the land and coastal sea.

The vertebrate fauna consisted mostly of aquatic species. Nineteen species of fish were identified, representing three different aquatic habitats: pelagic (open water), offshore banks, and inshore banks and reefs.

Parrotfishes (*Scarus* sp. and *Sparisoma* sp.) were the most abundant species identified in the sample (NISP=106 /MNI= 40). The parrotfish remains consisted of dentaries, premaxillae, and pharyngeal plates. *Sparisoma* was the most frequently occurring of the two. The next most abundant species was tuna (*Thunnus* sp.) with an NISP of 58 and a MNI of 11. Other osteichthyes species identified include: *Diondon hystrix* (porcupine fish), *Stromylura* sp. (houndfish), Ballistidae (triggerfish), *Lutjanus* sp. (snapper), *Haemulon* sp. (grunt), *Caranx* sp. (jack), *Acanthurus* sp. (surgeonfish), *Centropomus* sp. (snook), *Diapterus plumier* (striped mojarra), and *Epinephelus* sp. (grouper). Only one species of shark was recovered, identified

as *Carcharhinus perezii* (FS# 22.10, cat. # SARI 119). The specimen consisted of a single vertebra. The centrum of the vertebra is drilled. This was the only vertebrate species skeletal element that had been worked.

In addition to fish species, the remains of sea turtle (Cheloniidae) and a marine mammal (cf. Cetacean) were also identified.

Four terrestrial mammal species were identified, including a probable dog (cf. *Canis* sp.) and an agouti (*Dasyprocta* sp.). Both these species were introduced by Saladoid culture aborigines from South America (Wilson 1997:5). The probable dog was recovered from EU P18-A at 38 cmbd (FS# 76.09)—the small unit excavated next to Figueredo's EU P18—and consisted of an innominate fragment. Dog remains have been previously identified from other archeological sites in the West Indies, including the Sorce site (Puerto Rico), Indian Creek site (Antigua), White Marl site (Jamaica), and Silver Sands site (Barbados).

The agouti, from EU R12, Level 4, Zone 3 (FS# 37.115, cat. # SARI 668), was identified by a dentary fragment with the first premolar, first molar, and incisor. The agouti is also frequently recovered from sites in the West Indies.

The other two terrestrial species represented included a medial phalanx of an unidentified rodent (Rodentia) and a tibia fragment from a probable subadult pig (cf. *Sus scrofa*). This tibia appears to be modern and is most likely intrusive. Six unidentified vertebrates (FS# 61.83, cat. # SARI 1108) and one unidentified bird phalanx (FS# 61.64, cat. # SARI 1089) were burnt. Another two unidentified vertebrates were cut (FS# 23.24, cat. # SARI 147).

Few invertebrate species could be positively identified; most were too fragmentary. Twenty-

three different invertebrates could be identified to genus and species. The most abundant species was a variety of turban snail (Turbinidae). These were represented by opercula, which provide an excellent means of determining the minimum number of individuals (MNI) since there is only one operculum per snail. A total of 163 individuals were present in the faunal sample. Other species abundant in the sample include queen conch (*Strombus gigas*), West Indian topshell (*Cittarium pica*), West Indian chiton (*Chiton tuberculatus*), and knobby keyhole limpets (*Fissurella nodosa*).

A total of 55 invertebrate specimens appeared worked; most were cut and ground. Of particular interest was a cut, ground star coral (*Solenastrea*) in a roughly brick shape (FS# 27.64, cat. # SARI 317) that weighed 283.3 grams and was 106.22 millimeters long, 66.94 millimeters wide, and 38.10 millimeters thick. Five queen conchs (*S. gigas*) showed evidence of being cut and ground. Eight columellas (*Strombidae*) have been either cut or ground; one (FS# 22.12, cat. # SARI 121)

appeared to be an unhafted hammer, showing pounding damage along the tip.

Overall, the aboriginal occupants of this site were highly dependent on aquatic resources. High percentages of aquatic species are commonly seen for faunal samples from many West Indian sites where no large native terrestrial species were available. Most of the fish and invertebrate species present in the sample are common inhabitants of inshore regions and reefs. These reef species include parrotfishes, jacks, grunts, porcupine fishes, requiem sharks, and triggerfish. Tuna however, are a pelagic species. Most of the fish identified could be caught with fish hooks, spears, and nets. Sea turtles would be easy targets for human exploitation during the turtles' seasonal nesting on beaches. The agouti is easily tamed, and is widely eaten in areas where they are native. The fauna sample of the Judith's Fancy site is thus very similar to other Saladoid culture sites with its high abundance of aquatic species and minute terrestrial species, along with the presence of dog and agouti.



Appendix 2

Lithic Analysis by Thadra Palmer Stanton

The largest group of lithic artifacts was comprised of flakes and cores made from local materials. The bulk of the lithic material is metamorphic rock with several granite, sandstone, chert, quartz, and quartzite flakes making up the rest of the assemblage. Only 4 flakes exhibit retouching or use wear; the other 123 flakes are unmodified. A total of 24 cores were recovered: 18 are irregular flake cores; 6 are tested cobbles. Tested cobbles are defined as waterworn cobbles that have only had one or two flakes removed.

The most notable lithics were made from a greenstone, possibly argillite. A possible source of the greenstone is located on the nearby cliff side above the site and would have been easily transported to the Judith's Fancy site. Several flakes, a core fragment, a celt and a smoothed discoidal fragment made from the greenstone were recovered for a total of 19 pieces. The only manuport recovered was an unmodified piece of greenstone (FS# 43.45, cat. # SARI 813). A portion of a smoothed greenstone biface, measuring 22.5 millimeters in length, 13 millimeters width, 6.2 millimeters thickness, and weighing 2.8 grams, was recovered from Excavation Unit (EU) U15, South Profile, (FS# 18.12, cat. # SARI 78). This artifact was a possible awl with the tip and base broken off. Another piece of greenstone shatter was also recovered from the southern wall profile. An incomplete or broken celt made from greenstone was recovered from Excavation Unit R12, Level 5, Zone 3, (FS# 61.28, cat. # SARI 1053). A large hammerstone and 6 flakes of metamorphic material were also recovered from the same unit and level, as were 2 greenstone flakes. The celt measured 88 millimeters in length and 43.8 millimeters at its greatest width, weighs 220.9 grams, and was battered along its edges and smoothed/polished on the other sides. Regarding the two flakes, one was a darker greenstone, smoothed on the dorsal side and terminated with a hinged fracture, while the other was noncortical and also terminally hinge fractured. A possible plummet from EU R12,

Level 3, Zone 1, (FS# 27.55, cat. # SARI 308) was made of greenstone, but the surface exhibits cortex and is unpolished. From EU R12, Level 3, Zone 2, (FS# 30.29, cat. # SARI 380), a fragment of highly smoothed/polished greenstone was recovered that may have been part of a larger disc or a discoidal fragment. The fragment measures 24.3 millimeters wide, 24.9 millimeters long, and 18.6 millimeters thick and weighs 20 grams. The other sides have been broken cleanly in a manner that can not be attributed to any use fractures. In addition, a greenstone core was recovered from EU R12, Feature 1, Level 2, (FS# 28.13, cat. # SARI 343). This core had a waterworn cortex, and several flakes have been removed. It weighs 72.4 grams and measures 46.8 millimeters long, 47 millimeters wide, and 22.9 millimeters thick.

Another artifact of interest was a partial adz recovered from the southwest corner of EU V15 (FS# 41.16, cat. # SARI 750). The adz measures 32.3 millimeters long, 35.4 millimeters wide along the cutting edge, and 12.2 millimeters thick. It has possible hafting scars on one side, and its base may have been broken. It is the only fragment with utilized edge and with hafting scars on one side; the other side and base were broken. The adz was made from a metamorphic rock, and was found in close proximity to some shatter of the same material and a greenstone flake (though the shatter did not appear to refit).

Stone artifacts occurred in such low frequency, 311 total, that it can be postulated that the initial stages of lithic reduction occurred elsewhere. The low level of noncortical flakes and formal tools at the site suggests that this was neither a primary lithic reduction site nor an acquisition site. Most of the lithic items found at the Judith's Fancy site were made of a local metamorphic stone that has been roughly reduced. It appears that lithic tools were not extensively used at this site, and, except for the ground greenstone items, were mostly expedient tools.

Appendix 3

Analysis of Human Skeletal Remains from the Judith's Fancy Prehistoric Site

by Rachel K. Wentz, Ph.D.

Excavation of Unit V15-A began on July 5, 2005. Unit V15-A was a 50-by-50-centimeter unit that extended off the southwest corner of Unit V15. A small shaft of long bone approximately 10 centimeters in length had been exposed in the southwest corner of Unit V15, extending into V15-A. V15-A was excavated to expose the remainder of the shaft and any adjacent bone. Once the base of V15-A was exposed, several small faunal elements were recovered, which appeared to be from a rodent. The small long bone was exposed but also appeared to be faunal.

Excavation then began in Unit P18-A, a 100-by-100-centimeter unit extending from the northwest corner of Unit P18. Longbone fragments were protruding from the wall of Unit P18 so Unit P18-A was excavated to expose the remainder of these fragments and to expose any additional skeletal elements. At roughly 25 cmbd, a dispersed layer of large coral block was exposed, which appeared to be part of a midden. This layer produced fragments of aboriginal pottery, fish vertebrae and bits of unidentified skeletal fragments.

At 35 cmbd, more skeletal fragments were encountered, primarily unidentified longbone frag-

ments. At 40 cmbd, a large concentration of intact human skeletal remains was exposed, including seven rib fragments and a fragment of the inferior angle of a left scapula. The ribs appeared to be mid-thoracic and consistent with an adult. The ribs were in close association with each other, indicating the thorax of the individual was intact upon interment. The rest of the remains were commingled elements and not in anatomical association.

A total of 196.3 grams of human skeletal fragments were recovered.

Two permanent canines were recovered with moderate attrition and calculus buildup on labial surfaces. The teeth are in excellent condition. The roots are straight and exceptionally short. Attrition and root morphology made siding problematic. Dental metrics are provided in Table 10.

In addition to the ribs and teeth, two vertebral bodies and a proximal shaft fragment of a right ulna were exposed. Measurements for the complete vertebra (T-9) are provided in Table 11.

The second vertebra was fragmented but appeared to be upper thoracic. The borders of both vertebral bodies show clean margins with no osteophytic lipping. The superior and inferior surfaces

Table 10. Dental Metrics for Teeth Recovered from EU P18-A

<i>Tooth No.</i>	<i>Length</i>	<i>M/D at Widest Point</i>	<i>B/L at Widest Point</i>	<i>M/D at CEJ</i>	<i>B/L at CEJ</i>	<i>Crown Height</i>	<i>Wear Stage</i>	<i>Calculus</i>
1	21.24	6.63	6.74	5.24	6.15	9.48	4	2
2	18.70	6.59	6.74	5.51	6.05	8.34	5	2

Standards according to Buikstra and Ubelaker, 1994; measurements in millimeters; widest point taken on crown
M/D – mesial/distal B/L – buccal/lingual CEJ – cemento enamel junction

Table 11. Vertebral Metrics for Bones Recovered from EU P18-A

<i>Vertebra</i>	<i>Anterior Body Height</i>	<i>Maximum Body Breadth</i>	<i>Anterior/Posterior Body Breadth</i>
T-9	19.63 millimeters	32.26 millimeters	28.22 millimeters

of the bodies are level and there appears to be no degeneration or pathology present. All processes have been broken off postmortem.

Further examination of tooth and bone fragments that could not be easily attributed as faunal or osteological was conducted by Dave Dickel, Ph.D., Supervisor, Conservation and Research Laboratory, Florida Bureau of Archaeological Research. Dickel identified two fragments of a deciduous lower molar, weighing 0.3 grams (FS# 35.12, cat. # SARI 501), and 32 long bone fragments that were most likely an adult fibula, weighing 22.2 grams (FS# 47.38, cat. # SARI 942).

SUMMARY

The remains from Unit P18-A appear to be the fragmented remains of an adult. Dental attrition and the condition of vertebral margins indicate a young adult. It appears the thorax of the individual was intact upon interment but the remainder of the skeleton exhibits no anatomical association. Due

to the fragmentary nature of the remains, sex and stature are indeterminable. There are no diagnostic elements present and dental attrition impedes sexing using dental metrics.

In 1986, an approximately 35-year-old female was excavated from Unit P18 (Figueredo and Winter 1986). The description of this individual does not appear to be consistent with the remains excavated from Unit P18-A. Figueredo describes severe dental attrition and vertebral pathology, which is not present in the individual from P18-A. Also in 1986, local residents recovered skeletal fragments from Unit P18, which included an upper premolar exhibiting very little wear. It appears to represent a third individual from within the same unit.

Because of the fragmentary nature of the remains and poor preservation, it is difficult to absolutely define the unit in relation to use. There appears to be little sub-surface disturbance across the site but it appears the individuals may have been deposited within a midden, due to the close association of ceramic and faunal remains.



References

Alegría, Ricardo E.

- 1983 *Ball Courts and Ceremonial Plazas in the West Indies*. Publications in Anthropology 79, Yale University, New Haven.

Allaire, Louis

- 1997a The Lesser Antilles Before Columbus. In *The Indigenous People of the Caribbean*, edited by Samuel M. Wilson, pp. 20–28. University Press of Florida, Gainesville.
- 1997b The Caribs of the Lesser Antilles. In *The Indigenous People of the Caribbean*, edited by Samuel M. Wilson, pp. 179–185. University Press of Florida, Gainesville.

Boomert, Arie

- 1987 Gifts of the Amazons: ‘Greenstone’ Pendants and Beads as Items of Ceremonial Exchange in Amazonia and the Caribbean. *Antropológica* 67: 33–54.

Boyer, William W.

- 1983 *America’s Virgin Islands: A History of Human Rights and Wrongs*. Carolina Academic Press, Durham.

Buikstra Jane E., and Douglas H. Ubelaker (editors)

- 1994 *Standards for Data Collection from Human Skeletal Remains*. Arkansas Archeological Survey Research Series No. 44. Fayetteville.

Chanlatte Baik, Luis A.

- 2003 Agricultural Societies in the Caribbean: the Greater Antilles, and the Bahamas. In *General History of the Caribbean, Volume I, Autochthonous Societies*, edited by J. Sued-Badillo, pp. 228–258. UNESCO Publishing, London.

Cody, Anni

- 1991 Distribution of Stone Artifacts through the Lesser Antilles: Their Implications for Prehistoric Interaction and Exchange. In *Proceedings of the Fourteenth Congress of the International Association for Caribbean Archaeology*, edited by Alissandra Cummins and Philippa King, pp. 589–604. Barbados Museum and Historical Society, St. Ann’s Garrison, Bridgetown.

Cohen, J. M., editor and translator

- 1969 *The Four Voyages of Christopher Columbus, Being His Own Log-book, Letters and Dispatches with Connecting Narrative Drawn from the Life of the Admiral by his Son Hernando Colon and Other Contemporary Historians*. Penguin Putnam, New York.

Cooper, Vincent O.

- 1997 Language and Gender among the Kalinago of Fifteenth-century St. Croix. In *The Indigenous People of the Caribbean*, edited by Samuel M. Wilson, pp. 186–196. University Press of Florida, Gainesville.

Crock, John G., and Robert N. Bartone

- 1998 *Archaeology of Trants, Montserrat, Part 4: Flaked Stone and Stone Bead Industries*. *Annals of the Carnegie Museum* 67 (3): 197–224.

Curet, Luis Antonio

- 1992a House Structure and Cultural Change in the Caribbean: Three Case Studies from Puerto Rico. *Latin American Antiquity* 3(2): 160–174.
- 1992b *The Development of Chiefdoms in the Greater Antilles: A Regional Study of the Valley of Maunabo, Puerto Rico*. Unpublished Ph.D. Dissertation, Department of Anthropology, Arizona State University, Tempe.
- 1996 Ideology, Chiefly Power, and Material Culture: An Example from the Greater Antilles. *Latin American Antiquity* 7(2): 114–131.

Curet, L. Antonio, and Jose R. Oliver

- 1998 Mortuary Practices, Social Development, and Ideology in Precolumbian Puerto Rico. *Latin American Antiquity* 9(3): 217–239.

Deagan, Kathleen, and José María Cruxent

- 2002 *Columbus' Outpost among the Taíno: Spain and America at La Isabela, 1493–1498*. Yale University Press, New Haven.

deFrance, Susan D., William F. Keegan, and Lee A. Newsom

- 1996 The Archaeobotanical, Bone Isotope, and Zooarchaeological Records from Caribbean Sites in Comparative Perspective. In *Case Studies in Environmental Archaeology*, edited by Elizabeth J. Reitz, Lee A. Newsom and Sylvia J. Scudder, pp. 289–304. Plenum Press, New York.

Figueredo, Alfredo E.

- 1978 The Early European Colonization of St. Croix (1621–1642). *Virgin Islands Archaeological Society* 6: 59–63. Frederiksted, St. Croix, Virgin Islands.

Figueredo, Alfredo E., and George F. Tyson, Jr.

- 1986 *Phase I Cultural Resources Survey of Sugar Bay Land Development, Ltd., Estate Judith's Fancy, St. Croix*. Cultural Resources, Inc., St. Croix.

Figueredo, Alfredo E., and John H. Winter

- 1986 *Phase II Assessment and Data Recovery at a New Site in Estate Judith's Fancy, St. Croix*. Cultural Resources, Inc., St. Croix.

Figueredo, Alfredo E., Bruce E. Tilden, and John H. Winter

- 1989 *Phase I Cultural Resources Survey of Plots 8, 9, 10, 11, and Remainder of Plot 1, Estate Salt River, Northside B Quarter, Christiansted Jurisdiction, District of St. Croix, Virgin Islands of the United States*. Cultural Resources, Inc., St. Croix.

Gill, Ivan P., Dennis K. Hubbard, Peter McLaughlin, and Clyde H. Moore.

- 1989 Sedimentological and Tectonic Evolution of Tertiary St. Croix. In *Terrestrial and Marine Geology of St. Croix, U.S. Virgin Islands*, edited by Dennis K. Hubbard, pp. 49–71. Special Publication 8, West Indies Laboratory, St. Croix, U.S. Virgin Islands.

Godden, Geoffrey A.

- 1966 *An Illustrated Encyclopedia of British Pottery and Porcelain*. Bonanza Books, New York.

Goveia, Elsa V.

- 1991 The West Indian Slave Laws of the Eighteenth Century. In *Caribbean Slave Society and Economy, a Student Reader*, edited by Hilary Beckles and Verene Shepherd, pp. 346–362. The New Press, New York.

Hatt, Gudmund

- 1924 *Archaeology of the Virgin Islands. Proceedings of the 21st International Congress of Americanists* 1, pp. 29–42. The Hague.

Haviser, Jay B.

- 1997 Settlement Strategies in the Early Ceramic Age. In *The Indigenous People of the Caribbean*, edited by Samuel M. Wilson, pp. 59–69. University Press of Florida, Gainesville.

Hayward, Michele Helene, and Michael A. Cinquino

- 2002 *Archaeological Investigations at the Aklis Site, Sandy Point National Wildlife Refuge, St. Croix, U.S. Virgin Islands*. SEAC Technical Reports No. 10. National Park Service, Southeast Archeological Center, Tallahassee.

Helms, Mary W.

- 1980 Succession to High Office in Pre-Columbian Circum-Caribbean Chiefdoms. *Man*, (New Series) 15(4): 718–731.

Highfield, Arnold R.

- 1997 Some Observations on the Taíno Language. In *The Indigenous People of the Caribbean*, edited by Samuel M. Wilson, pp. 154–168. University Press of Florida, Gainesville.

Honychurch, Lenox

- 1997 Crossroads in the Caribbean: A Site of Encounter and Exchange on Dominica. *World Archaeology* 28(3): 291–304.

Hovey, Sylvester

- 1994 Letters from the West Indies: Relating Especially to the Danish Island of St. Croix and to the British Islands of Antigua, Barbadoes, and Jamaica. In *The Kamina Folk: Slavery and Slave Life in the Danish West Indies*, edited by George F. Tyson and Arnold R. Highfield, pp. 185–191. Virgin Islands Humanity Council, U.S. Virgin Islands. (Originally published 1838.)

Interagency Archeological Services Division (IASD)

- 1989 *Preliminary Planning, Cultural Resource Reconnaissance, Salt River Bay, St. Croix, U.S. Virgin Islands*. Prepared by IASD, Southeast Region, National Park Service. Ms. on file, National Park Service, Southeast Archeological Center, Tallahassee.

Island Resources Foundation

- 1988 *Old Schooner Channel Proposed Dredging Area, Marine Archaeological Survey, Christiansted Harbor, U.S. Virgin Islands, July–August 1988*. Ms. on file, National Park Service, Southeast Archeological Center, Tallahassee.

Jones, Olive

- 1986 *Cylindrical English Wine and Beer Bottles, 1735–1850*. Studies in Archaeology, Architecture, and History. National Historic Parks and Sites Branch, Parks Canada, Quebec.

Jones, Olive and Catherine Sullivan

- 1989 *The Parks Canada Glass Glossary for the Description of Containers, Tableware, Flat Glass, and Closures*. Studies in Archaeology, Architecture, and History, National Historic Parks and Sites Branch, Parks Canada, Quebec.

Joseph, Joe W.

- 1989 *A Phase I Cultural Resources Survey of the St. Croix Virgin Grand Development Site, Estate Judith's Fancy, St. Croix, USVI*. Technical Report 7. New South Associates, Stone Mountain, Georgia.

Keegan, William F.

- 2000 West Indian Archaeology 3: Ceramic Age. *Journal of Archaeological Research* 8(2): 135–167.

Keegan, William F., and Morgan D. Maclachlan

- 1989 The Evolution of Avunculocal Chiefdoms: A Reconstruction of Taíno Kinship and Politics. *American Anthropologist* 91(3): 613–630.

Keel, Bennie C., John E. Cornelison, Jr., and David M. Brewer

- 1996 *Regionwide Archeological Survey Plan, Southeast Field Area, National Park Service*. National Park Service, Southeast Archeological Center, Tallahassee.

Knox, John P.

- 1852 *A Historical Account of St. Thomas, V.I., and Incidental Notices of St. Croix and St. John*. Charles Scribner, New York.

Lathrap, D. W.

- 1970 *The Upper Amazon*. Praeger, New York.

Lewisohn, Florence

- 1970 *St. Croix Under Seven Flags. Being a "Cruzan" Cavalcade of the Islands of St. Croix in the Virgens: A History of Many Sorts of Famous Men, Infamous Events, Pirates and Planters, West Indian Folk and Their Lore. Recounting Five Centuries of Lively Events on One Little Island*. The Dukane Press, Hollywood, Florida.

Morse, Birgit Faber

- 1989 Saladoid Remains and Adaptive Strategies in St. Croix, Virgin Islands. In *Early Ceramic Population Lifeways and Adaptive Strategies in the Caribbean*, edited by Peter E. Siegel, pp. 29–42. BAR International Series 506, British Archaeological Reports, Oxford.
- 1993 The Origin and Development of the Caribbean Ball and Dance Court. In *Proceedings of the Fourteenth Congress of the International Association for Caribbean Archaeology*, edited by Alissandra Cummins and Philippa King, pp. 446–458. Barbados Museum and Historical Society St. Ann's Garrison, Bridgetown.

-
- 1995 The Sequence of Occupations at the Salt River Site, St. Croix. In *Proceedings of the 15th ICCA, July 25–31, 1993, San Juan, Puerto Rico*, pp. 471–484.
- 1997 The Salt River Site, St. Croix, at the Time of the Encounter. In *The Indigenous People of the Caribbean*, edited by Samuel M. Wilson, pp. 36–45. University Press of Florida, Gainesville.
- 2004 At the Onset of Complexity. In *Late Ceramic Age Societies in the Eastern Caribbean*, edited by André Delpuech and Corinne L. Hofman, pp. 183 – 193. BAR International Series 1273, British Archaeological Reports, Oxford.
- Nagle, Frederick, and Dennis Hubbard
- 1989 St. Croix Geology Since Whetten: an Introduction. In *Terrestrial and Marine Geology of St. Croix, U.S. Virgin Islands*, edited by Dennis K. Hubbard, pp. 1–7. Special Publication 8, West Indies Laboratory, St. Croix.
- National Park Service (NPS)
- 1984 *Museum Handbook, Museum Records, Part II*. U.S. Department of the Interior, National Park Service, Washington, D.C.
- 1990a *Alternatives Study and Environmental Assessment, Columbus Landing Site, St. Croix, U.S. Virgin Islands*. National Park Service, Division of Planning, Design, and Compliance, Southeast Region, Atlanta.
- 1990b *Catalog Manual for Archeological Objects*. National Park Service, Southeast Archeological Center, Tallahassee.
- Nellis, David W.
- 1994 *Seashore Plants of South Florida and the Caribbean. A Guide to Knowing and Growing Drought- and Salt-Tolerant Plants*. Pineapple Press, Sarasota.
- Newsom, Lee Ann
- 1993 *Native West Indian Plant Use*. Unpublished Ph.D. dissertation, University of Florida, Gainesville.
- Newsom, Lee Ann, and Elizabeth S. Wing
- 2004 *On Land and Sea: Native American Uses of Biological Resources in the West Indies*. University of Alabama Press, Tuscaloosa.
- Olazagasti, Ignacio
- 1997 Material Culture of the Taíno Indians. In *The Indigenous People of the Caribbean*, edited by Samuel M. Wilson, pp. 131–139. University Press of Florida, Gainesville.
- Oliver, José
- 1999 The ‘La Hueca Problem’ in Puerto Rico and the Caribbean: Old Problems, New Perspectives, Possible Solutions. In *Archaeological Investigations on St. Martin (Lesser Antilles), the Sites of Norman Estate, Anse des Péres and Hope Estate with a Contribution to the ‘La Hueca Problem,’* edited by C. L. Hofman and M. L. P. Hoogland, pp. 253–297. Archaeological Studies Leiden University, Netherlands.
-

Petersen, James B.

- 1997 Taíno, Island Carib, and Prehistoric Amerindian Economies in the West Indies: Tropical Forest Adaptations to Island Environments. In *The Indigenous People of the Caribbean*, edited by Samuel M. Wilson, pp. 118–130. University Press of Florida, Gainesville.

Prentice, Guy

- 2002 *Standard Field Procedures Manual for the Southeast Archeological Center's Regionwide Archeological Survey Program*. National Park Service, Southeast Archeological Center, Tallahassee.

Raffaele, Herbert A.

- 1989 *A Guide to the Birds of Puerto Rico and the Virgin Islands*. Princeton University Press, Princeton.

Righter, Elizabeth

- 1992 *Statewide Comprehensive Historic Preservation Plan: Prehistoric Context*. Division for Archaeology and Historic Preservation, Department of Planning and Natural Resources, Government of the Virgin Islands of the United States. Charlotte Amalie, St. Thomas.
- 1997 The Ceramics, Art, and Material Culture of the Early Ceramic Period in the Caribbean Islands. In *The Indigenous People of the Caribbean*, edited by Samuel M. Wilson, pp. 70–79. University Press of Florida, Gainesville
- 2002 Site Analysis. In *The Tutu Archaeological Village Site: A Multidisciplinary Case Study in Human Adaptation*, edited by E. Righter, pp. 342–353. Routledge, London.

Riksantikvarieämbetet

- 2003 *Traditional Building Materials of the Baltic Sea Region. Building Preservation and Maintenance in Practice*. Baltic Sea States Heritage Cooperation, National Heritage Board, Stockholm.

Rodríguez, Miguel

- 1997 Religious Beliefs of the Saladoid People. In *The Indigenous People of the Caribbean*, edited by Samuel M. Wilson, pp. 80–87. University Press of Florida, Gainesville.

Rogoziński, Jan

- 2000 *A Brief History of the Caribbean from the Arawak and Carib to the Present*. Penguin Putnam, New York.

Rouse, Irving

- 1992 *The Taíno: Rise and Decline of the People Who Greeted Columbus*. Yale University Press, New Haven.

Rouse, Irving and Louis Allaire

- 1978 Caribbean. In *Chronologies in the New World*, edited by C.W. Meighan, pp. 432–481. Academic Press, New York.

- Sandford, Mary K., Georgieann Bogdan, and Grace E. Kissling
2002 Biological Adaptation in the Prehistoric Caribbean? Osteology and Bioarchaeology of the Tutu Site. In *The Tutu Archaeological Village Site, a Multidisciplinary Case Study in Human Adaptation*, edited by Elizabeth Righter, pp. 209–229. Routledge, New York.
- Siegel, Peter
1992 *Ideology, Power, and Social Complexity in Prehistoric Puerto Rico*. Unpublished Ph.D. dissertation, State University of New York at Binghamton.
1996 Ideology and Culture Change in Prehistoric Puerto Rico: A View from the Community. *Journal of Field Archaeology* 23(3): 313–333.
1997 Ancestor Worship and Cosmology among the Taíno. In *Taíno: Pre-Columbian Art and Culture from the Caribbean*, edited by Fatima Bercht, Estrellita Brodsky, John Alan Farmer, and Dicey Taylor, pp. 106–111. The Monacelli Press, El Museo del Barrio, New York.
- Steward, Julian H.
1948 Culture Areas of the Tropical Forests. In *Handbook of South American Indians, Volume 3: The Tropical Forest Tribes*, edited by Julian H. Steward, pp. 883–899. Bulletin 143, Bureau of American Ethnology, Smithsonian Institution, Washington, D.C.
- Taylor, Charles Edwin
1970 *Leaflets from the Danish West Indies. Descriptive of the Social, Political, and Commercial Condition of These Islands*. Negro University Press, New York. Originally published 1888.
- Tyson, George F.
1977 *The Historical Records of the U.S.V.I.: A Report and Program Plan*. Island Resources Foundation, Red Hook, St. Thomas.
- U.S. Department of Agriculture
1998 *Soil Survey of the United States Virgin Islands*. Natural Resources Conservation Service, U.S.D.A. Washington, D.C.
- Vescelius, Gary S.
1952 *The Cultural Chronology of St. Croix*. B.A. Thesis, Yale University, New Haven.
- Watters, David R.
1997 Maritime Trade in the Prehistoric Eastern Caribbean. In *The Indigenous People of the Caribbean*, edited by Samuel M. Wilson, pp. 88–99. University Press of Florida, Gainesville.
- Watters, David R., and Richard Scaglione
1994 Beads and Pendants from Trants, Montserrat: Implications for the Prehistoric Lapidary Industry of the Caribbean. *Annals of the Carnegie Museum* 63 (3): 215–237.
- Whetten, John T.
1966 Geology of St. Croix, U.S. Virgin Islands. In *Caribbean Geological Investigations*, edited by H. H. Hess, pp. 177–239. Memoir 98, The Geological Society of America, New York.

Williams, Eric

1984 *From Columbus to Castro: The History of the Caribbean 1492–1969*. Vintage Books, New York. Originally published 1970.

Wilson, Samuel M.

1997 Introduction to the Study of the Indigenous People of the Caribbean. In *The Indigenous People of the Caribbean*, edited by Samuel M. Wilson, pp. 1–8. University Press of Florida, Gainesville.

Woodbury, Roy O., and Elbert L. Little, Jr.

1976 *Flora of Buck Island Reef National Monument (U.S. Virgin Islands)*. Forest Service Research Paper ITF-19, Institute of Tropical Forestry, Rio Piedras, Puerto Rico.

