

## ***A RADIOCARBON SEQUENCE FOR THE SABAZAN SITE, CARRIACOU, WEST INDIES***

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*Recent archaeological survey on the island of Carriacou in the West Indies revealed numerous sites that were heavily eroding and under threat of destruction by visitors, looters, or developers. In an attempt to record these rapidly disappearing sites and provide the first chronology for the island's prehistory, we collected samples for radiocarbon dating from the Sabazan site on the eastern coast. Results suggest that the site was occupied intensively from about AD 700-1130. These dates compare well with the only other dates from Carriacou and nearby Union, indicating a strong post-Saladoid presence in the Grenadines.*

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Since the development of radiocarbon dating in the 1940s, Caribbean archaeologists have been working to construct and refine phases of prehistoric Amerindian occupation and associated artifact assemblages. Rouse (1963; Rouse and Allaire 1978; Rouse and Alegria 1990; Rouse and Bullen 1978) and Bullen (1964; Bullen and Bullen 1968, 1972; Bullen and Sleight 1963) were instrumental in first actively using radiocarbon dating in the region for answering questions about prehistoric settlement patterns and how artifacts, particularly

ceramics, changed through time. As a result of their efforts and subsequent attempts by others to develop chronologies for the West Indies, we now have a better and more complete picture of when the Caribbean was settled, subsequent periods of occupation, and the cultural developments that occurred over a period of at least 6,000 years (Keegan 2000).

Unfortunately, although there has been an increase in archaeological research in the West Indies, it has primarily focused on those islands

in the northern Antilles (e.g., Puerto Rico, Antigua). The islands south of Martinique remain understudied and the paucity of well dated sites has resulted in chronological gaps for the region. The lack of extensive dating is surprising considering the number of archaeological sites found here (Bullen and Bullen 1968, 1972; Bullen and Sleight 1963; Drewett 1991, 2000; Suttly 1990; Kaye et al. 2004) and the implications the southern Antilles have for understanding the migration of both Archaic and ceramic making peoples from South America (Bullen 1964:1; Rouse 1986; Keegan 2000).

To improve the information now available about southern Antillean prehistory, we conducted the first comprehensive archaeological survey on the island of Carriacou in the Grenadines. Our investigation revealed multiple sites along the coastline that were rapidly eroding due to storm, wave, and tidal action, and active sand dredging by local developers. One of our major research goals was to determine the age of sites, especially important because only one  $^{14}\text{C}$  date existed for the island to document its antiquity. Based on our assessments, we estimated that some of these sites had a great likelihood of continuing to succumb rapidly to both natural forces and human induced destruction. This made the recording and dating of these sites all the more critical. The  $^{14}\text{C}$  dating of archaeological sites in coastal and erosional environments during survey has also shown to be an effective technique for examining patterns of palaeoenvironmental change, settlement and demography, and site survival, among other issues (Erlandson and Moss 1999). Following this strategy, we collected several samples for  $^{14}\text{C}$  dating along an eroding coastal profile at the Sabazan site.

In this paper, we report the first radiocarbon chronology for Carriacou. Investigations at Sabazan revealed exposed stratified profiles stretching over 100 m along the coastline. To provide a chronology for the site, we submitted a suite of four radiocarbon dates from three

distinct strata. Results suggest that the primary occupation of the site was post-Saladoid, dating from ca. AD 700-1130. These dates correspond well with the only other dates (n=2) from Carriacou and nearby Union Island (Bullen and Bullen 1972).

### ***Background***

Carriacou is located in the eastern Caribbean approximately 250 km north of Venezuela and 30 km north of Grenada (Figure 1). The island measures 10.4 km from north to south, 8.7 km across at its widest point, and is roughly 32 km<sup>2</sup> in area. Geologically, Carriacou is composed of a mixture of volcanic lava and Miocene-aged fossiliferous limestone that reach heights of up to 290 m in both the island's northern and southern half. Other nearby islands include Petite Martinique, Petite Dominique, Petite St. Vincent, Palm Island, and Union, only the latter of which has been investigated archaeologically (Bullen and Bullen 1972; Iosif Morovetz pers. comm.).

One of the first attempts to investigate Carriacou and adjacent islands was by Fewkes (1907:189-190) in 1904 who described the artifacts found there as "among the finest West Indian ware that has yet come to the Smithsonian Institution." Intensive archaeological research on the island, however, has been limited. Bullen and Bullen (1972) made a short trip to Carriacou and Union in the 1960s in which they collected artifacts and excavated a foot thick "slice" from the coastal profile at Sabazan. Suttly (1990) conducted a more extensive survey of Carriacou and recorded a number of sites with a wide array of ceramic styles, some of which appeared to have unique designs.

In March/April 2003, we systematically surveyed nearly the entire coastline as well as interior areas that were relatively flat or easily accessible. We recorded 11 locations with evidence for prehistoric occupation, six of which had significant finds indicative of long-term settlement (Kaye et al. 2004). Of these six sites,

two (Sabazan and Grand Bay) had extensive stratified coastal profiles with abundant faunal remains, artifacts, and hearth features that were heavily eroding (Figure 2).<sup>1</sup> To determine the earliest occupation of the site and subsequent periods of activity, we obtained samples from Sabazan and submitted them for radiocarbon dating.

### Methods

Four samples were collected from the profile at Sabazan and submitted to two different laboratories for radiocarbon dating. A charcoal sample (OS-41358) was sent to the National Oceanic Sciences Accelerator Mass Spectrometry (NOSAMS) laboratory in Woods Hole, Massachusetts and three marine shell samples were sent to Geochron Laboratories, Inc. in Cambridge, Massachusetts for conventional dating (GX-30423, 30424, 30425). The samples were collected along one of the tallest sections of the profile (50-51 m from datum and slightly more than four meters in height) from Layers 5, 6, and 7 (Figure 3). These strata had abundant evidence of cultural remains (e.g., pottery, food shell, fishbone, and charcoal) whereas Layer 8 had only minimal

<sup>1</sup> During their brief visit in 1969, Bullen and Bullen (1972:13) described Sabazan as “a small midden presently being badly eroded by the sea.... (with) an exposed vertical face over 20 feet (6 m) in length...” The coastal profile at Sabazan now stretches over 100 m in length along the coast, a testament to how the site has degraded over time. Based on previous photographs taken of the Grand Bay site between 1999 and 2003, we estimate that it has been eroding at the alarming rate of roughly one meter per year. Grand Bay and Sabazan are also two of the largest sites found on the island with a wide array of surface remains, including burials, that are being washed out to sea. Piles of unwanted ceramics scattered around these and other sites on Carriacou testify to locals and/or tourists recently searching for and actively collecting artifacts.



Figure 1. Map of Carriacou with locations of prehistoric activity recorded during the 2003 survey.

shell and no obvious diagnostic artifacts or visible features protruding from the profile. The three strata were clustered together from roughly 1.5 m to 2.5 m in depth and were primarily sandy clays with rich humic topsoils intermixed with inclusions of coral rock debris (Figure 4).

The charcoal sample was dated using high precision AMS and prepared using standard pretreatment procedures, details of which can be found on the NOSAMS web site ([www.nosams.who.edu](http://www.nosams.who.edu)). The shell samples were cleaned thoroughly with an ultrasonic cleaner. They were then leached thoroughly with dilute HCl to remove additional sufficial material which may have been altered, and to be



Figure 2. Looking east along Sabazan's coastal profile.

sure only fresh carbonate material was used. The cleaned shells were then hydrolyzed with HCl under vacuum and the carbon dioxide recovered for analysis (Geochron Labs report 27632, 2003).

All samples were calibrated at both 1 and 2 $\sigma$  using Calib 4.3 (Stuiver and Reimer 1993; Stuiver et al. 1998). A local  $\Delta R$  for shell in Carriacou has not yet been determined so the mean global reservoir correction (ca. 400  $^{14}C$  years) was used (Stuiver et al. 1998).<sup>2</sup>

<sup>2</sup> Few attempts have been made to determine local marine reservoir effects in the Caribbean. Studies in the Cariaco Basin, Venezuela (Hughen et al. 1996), Jamaica, and the Bahamas (Broecker and Olsen 1961) suggest, however, that the  $\Delta R$  may be minimal. The regional average for the Caribbean is now estimated to be around  $-19 \pm 23$ , although this may change as further studies are conducted (also see <[www.qub.ac.uk/arcpal/marine](http://www.qub.ac.uk/arcpal/marine)>).

### ***Results and Discussion***

The four radiocarbon dates from Sabazan range in age from ca. AD 700 to 1130 (2 $\sigma$ ). These statistically overlap with the sample (RL29) collected by Bullen and Bullen (1972:161) from a section of the same profile a few meters east (cal. AD 890-1280 at 2 $\sigma$ ), and from a single date on nearby Union dating to cal. AD 670-1170 at 2 $\sigma$  (Bullen and Bullen 1972:25, 77). It is notable that all three shell dates statistically overlap at 2 $\sigma$  despite coming from three different strata. This does not, however, necessarily suggest any date reversals; it is quite possible these dates fall within the proper stratigraphic arrangement and that the strata represent distinct periods of habitation that occurred over a period of 400 years or so. The charcoal date (OS-41358) from Layer 6 does

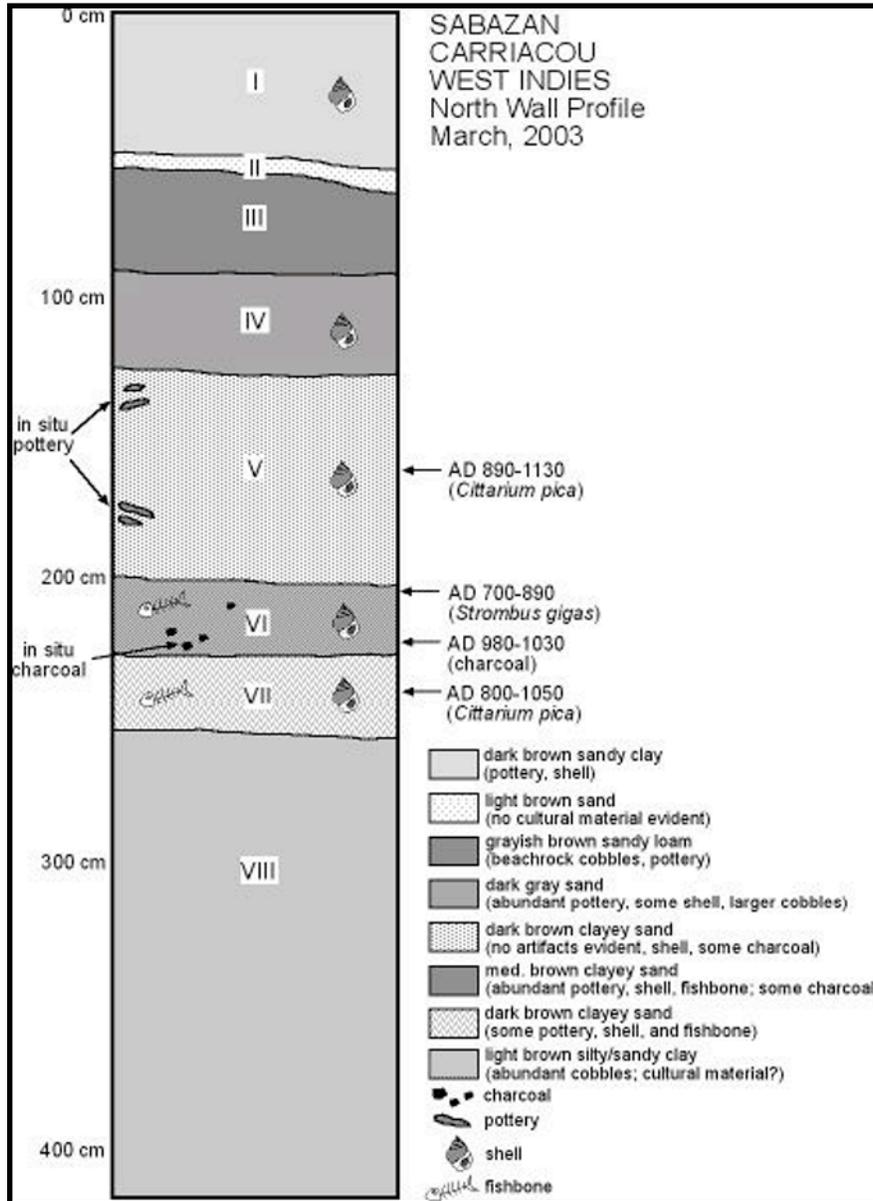


Figure 3. Stratigraphic profile of Sabazan showing stratified deposits. It should be noted that the cultural remains described above are only those observed in the profile. It is likely that additional artifacts and ecofacts would be found during subsurface testing. Layer 8 may correspond with Bullen and Bullen's (1972:14) "yellow brown clay" where they found four Saladoid type sherds (1972:16). The charcoal sample taken by Bullen and Bullen (1972:14, 17) in the "upper half of midden" in "dark brown" soil dating to cal. AD 890-1280 is probably related to our Layers V and/or VI; the <sup>14</sup>C samples we collected date to roughly the same age range. However, given that these strata were not illustrated in detail by Bullen and Bullen (1972:14), it is somewhat difficult to make more positive correlations based on soil descriptions alone.

not quite overlap the calibrated age range of the shell date (GX-30424) from the same context, but was extracted from a heavy charcoal deposit. It is possible that this specimen came from the later occupation in Layer 5 and was introduced into Layer 6 from an intrusive hearth feature, or that they are contemporaneous and statistically meet at their higher and lower age ranges (cal. AD 980 at  $2\sigma$ ).

Bullen (1964:7, 38-52, 68-81; Bullen and Bullen 1972:15-18) described a number of different ceramic wares found in the southern Lesser Antilles ranging from the earliest Insular Saladoid or Pearls tradition (named after the site in Grenada where it was first identified and beginning, according to Bullen and Bullen [1972:10], around 120 BC), to Modified Saladoid (a.k.a. Simon series), Caliviny (ca. AD 1000), and the later Suazey (i.e., Suazoid, ca. AD 1200).<sup>3</sup> Although it is beyond the scope of this paper to describe these ceramic typologies in detail, it should be noted that all four general types were found during Bullen and Bullen's (1972:16) excavation at Sabazan (Figure 5), most of which were undecorated and categorized as either Insular or Modified Saladoid (see Bullen and Bullen 1972:15, Plate I). Our purpose was not to excavate at Sabazan

<sup>3</sup> Bullen (1964:38) classified various ceramic series according to paste characteristics first, and then by other features such as decoration, paint, and modeling. Thus, a ceramics series includes all types having the same temper. A ceramic complex includes all the types found at a site or in a stratigraphic zone of a site (Bullen 1964:28). To codify the significance and elucidate the geologic implications of the different paste types, petrographic study of the sand tempers in thin section would be useful (pers. comm., William R. Dickinson, 2003). This analysis is currently underway because slight or even major temper, paste (L. Drewett 2000) and chemical (Fitzpatrick 2000) variations in ceramics are known to occur contemporaneously within the same site or island in the Caribbean, as well as other parts of the world (e.g., Fitzpatrick et al. 2003). Petrographic analysis might then be able to identify culturally or temporally distinctive trends in pottery manufacture that were not observed in previous classificatory schemes.



Figure 4. Coastal profile at Sabazan near where <sup>14</sup>C samples were collected.

or extract large quantities of material from exposed strata. However, we did collect surface remains during our clearing of the surface and recorded a few sherds which were visible in the profile (see Figures 3, 6, and 7).<sup>4</sup> Examination of photos taken of these artifacts by Mary Hill Harris (Cambridge University; pers. comm. 2003) revealed an array of ceramic types (e.g., Saladoid and Suazoid) similar to those described by Bullen and Bullen (1972:1318). Overall, our investigation of the site (including macroscopic analysis of sherds and recording of stratified layers) suggest that Sabazan was probably occupied by Saladoid peoples sometime around the beginning of the first

<sup>4</sup> All finds collected during the 2003 survey are currently held at the Carriacou Museum and Historical Society. We have created a preliminary catalog of the artifacts and will continue analysis during the 2004 field season.



Figure 5. An area along the coastal profile at Sabazan (about 70 m east of datum) where Bullen and Bullen (1972) likely excavated their "foot thick slice."

Barbados (Drewett 1991:14, 2000:32-33, 165), Sabazan is the most heavily dated archaeological site between St. Lucia and Trinidad. Prior to our research there was only one other date for the island which was collected over 30 years ago (Bullen and Bullen 1972:161). Although additional dates are needed to determine the exact chronology for each stratified deposit, it appears that Sabazan was exclusively occupied post-AD 0 given the lack of cultural remains observed in Layer 8 and a paucity of surface artifacts with early Cedrosan Saladoid attributes. However, ceramics typical of the Saladoid tradition (e.g., White-on-Red [WOR]; ZoneIncised

millennium AD. The radiocarbon dates, however, indicate that it was occupied more intensively later in time (post ca. AD 500). Excavation planned at Grand Bay in 2004 and future work at Sabazan should help to establish when the earliest settlers arrived to Carriacou and subsequent phases of cultural activity.

**Conclusions**

This is the first suite of radiocarbon dates from Carriacou to establish the island's antiquity. With the exception of the Heywoods site on



Figure 6. Saladoid type ceramic sherds collected from surface survey in Carriacou. The adorno on the far right/center (number 87) was found at Sabazan and is characteristic of other "Pearls" series artifacts found by Bullen (1964:Plates III and IV) in Grenada, Carriacou, and Union (Bullen and Bullen 1972).



Figure 7. Saladoid type ceramics collected from surface survey in Carriacou (numbers 85, 89, and 91 were found at Sabazan).

Crosshatch [ZIC]) were observed on other parts of the island at Grand Bay, Sparrow Bay, and Dover, and it is possible more conclusive evidence will also be found at Sabazan. Food remains in the profile such as *Strombus gigas*, *Cittarium pica*, and crab commonly found in archaeological sites in the Lesser Antilles, suggest that inhabitants exploited many of the same marine resources as those on adjacent islands (e.g., Drewett 2000:148-153). Future excavation beginning in 2004 should help clarify the diversity of foods eaten by prehistoric peoples on the island and how food collecting and other cultural behaviors changed through time.

This research is also a testament to how radiocarbon dating has been sorely underused by archaeologists working in the Caribbean. Between Martinique and South America there are six major islands (St. Lucia, Barbados, St. Vincent, Grenada, Tobago, and Trinidad) and numerous smaller ones such as Carriacou with good evidence for past prehistoric settlement.

However, there are less than 60 published radiocarbon dates for this part of the Caribbean,<sup>5</sup> an area that has the potential to give great insight into the initial movement of Archaic and ceramic making peoples from South America into the West Indies (Rouse 1986). This is unfortunate and we hope that as research continues in the region, archaeologists recognize the need to conduct extensive radiocarbon dating (particularly using the AMS technique for greater precision) for narrowing down age ranges of typologically

distinctive artifacts and investigating a variety of regional issues. Our research thus far supports the observation by researchers over the past four decades (Bullen and Bullen 1972:154; Drewett 1991) that there are very few, if any sites in the Lesser Antilles with strong evidence for an

<sup>5</sup> See Bullen (1964), Bullen and Bullen (1968:142, 1972: 79, 94, 153-154), Olsen (1972), Rouse and Allaire (1978); Rouse (1989:397), Drewett (1989:99, 1991:14, 2000:32-33, 165), Rouse (1989:397), and Haviser (1997:60) for previously published dates from the southern Lesser Antilles. Astonishingly, of the 53 widely reported dates for the region (excluding Trinidad and Tobago; Fitzpatrick n.d.), 18 (34%) are from Barbados, making the lack of radiocarbon dating for most islands in the region even more apparent. It is likely that more dates exist, but remain largely inaccessible or in widely scattered publications and unpublished reports. The development of the Caribbean On-line Radiocarbon Database for Archaeologists (CORDA; Fitzpatrick n.d.) is an effort to remedy this situation by collating <sup>14</sup>C dates for the region. A prototype of this database is now under development and should be freely accessible to researchers in late 2004.

initial Saladoid colonization (especially in the form of  $^{14}\text{C}$  dates; Fitzpatrick n.d.). This is in stark contrast to the northern West Indies where the earliest Saladoid dates appear. This may lend support to the hypothesis that peoples voyaging from South America landed first in Puerto Rico rather than the Lesser Antilles (Callaghan 2001; Keegan 2000:138) and eventually migrated south, not in the stepping stone pattern northward as suggested by Rouse (1986) and others.

In conclusion, Erlandson and Moss (1999:439) noted that for the western coast of North America:

The alarmingly rapid loss of sites to erosion, development, looting, and other destructive processes strongly suggests that we must do more to evaluate the age of existing sites, placing them firmly in both space and time before they are lost forever. By placing a wider range of sites in a well-defined chronological framework, archaeologists may more effectively evaluate the significance and research potential of individual sites and components.... Increasing the number and percentage of  $^{14}\text{C}$ -dated sites within a region also has the potential to enhance the resolution of local and regional chronologies and the utility of chronological databases.

We would argue that a similar approach can be an effective means for filling in the many chronological gaps in Caribbean prehistory and at the same time, encourage local communities, outside researchers, and other interested parties to preserve and protect these important, but rapidly disappearing sites. Although archaeologists in the Caribbean are fortunate to have some ceramic typologies that are fairly time-sensitive, enabling cultural chronologies to be constructed, this does not preclude the widespread use of radiocarbon dating for helping us understand trends in island settlement patterns and assigning age ranges for artifacts and sites identified during survey or

excavation. The construction of radiocarbon chronologies for this part of the Caribbean will ensure that the hypotheses we develop regarding migration, settlement, and sociocultural changes through time are fully testable, and that the unique cultural traits which occurred in this region are given the close attention they deserve.

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#### **ARCHAEOLOGICAL SAMPLES FROM SABAZAN**

**RL-29. Sabazan** **940 ± 100**

$\delta^{13}\text{C}$  = unknown

This determination was obtained from wood charcoal in a midden deposit (Bullen 1972:161). Calibrated date range at 1 $\sigma$ : AD 1000-1220; 2 $\sigma$ : 890-1280.

**OS-41358. Sabazan** **1030 ± 30**

$\delta^{13}\text{C}$  = 23.9‰

This determination was obtained from wood charcoal (0.5 g) in Layer 6 at a depth of approximately 210 cmbs. Calibrated date ranges at 1 $\sigma$ : AD 990-1020; 2 $\sigma$ : 980-1030.

**GX-30423. Sabazan** **1400 ± 60**

$\delta^{13}\text{C}$  = 2.4‰

This determination was obtained from a *C. pica* shell (11.0 g) in Layer 5 at a depth of approximately 160 cmbs. Calibrated date ranges at 1 $\sigma$ : AD 960-1050; 2 $\sigma$ : 890-1130.

**GX-30425. Sabazan** **1460 ± 60**  
 $\delta^{13}\text{C} = 2.5\%$

This determination was obtained from a *C. pica* shell (24.8 g) in Layer 7 at a depth of approximately 230 cmbs. Calibrated date ranges at 1 $\sigma$ : AD 890-1020; 2 $\sigma$ : 800-1050.

**GX-30424. Sabazan** **1570 ± 60**  
 $\delta^{13}\text{C} = 0.2\%$

This determination was obtained from a *S. gigas* shell (8.4 g) in Layer 6 at a depth of approximately 210 cmbs. Calibrated date ranges at 1 $\sigma$ : AD 760-900; 2 $\sigma$ : 690-980.

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