# ARCHAEOLOGY AT PEARLS, GRENADA: THE 1990 FIELD SEASON

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## Introduction


Grenada is a small, mountainous island of volcanic origin located about 90 miles north of Trinidad and Venezuela. Ovate-shaped, xcept for the Point Saline peninsula, the island is 21 miles in greatest length and 12 miles in greatest width. The highest volcanic peak rises to an levation of 2,756 feet. Easterly trade winds blowing across the island are deflected upwards by the central mountains. Thus cooled they deposit enough rain to average 150 inches of water per year. Many small, deeply entrenched streams radiate outward from the high central areas carrying this water to the sea. The central mountains, even today, support a tropical wet-forest vegetation.

The Pearls site is located on the windward eastern coast on rich agricultural land along the north side of the Simon River. The site is about one-quarter mile inland from the Atlantic Ocean. The coast is low and the river's gradient gradual. The airport and river are to the south, level farmland to the north, a low hill above the bend in the river to the west, and low, swampy land that separates the site from the ocean to the east.

Grenada is the crucial first link in the stepping-stone chain of islands that extend from mainland South America to the Atlantic coast of Florida. The late Ripley P. Bullen was the first modern professional archaeologist to investigate Grenada. During the fall of 1962 he examined 14 archaeological sites. At the Pearls Airport site, Bullen excavated two 7.5 by 10 foot units to a maximum depth of 16 inches. Bullen's (1964) excavations were near the airport runway in an area that lacked evidence of earthmoving associated with airport construction. A substantial portion of the artifacts recovered by Bullen, including his type collection, are curated at the Florida Museum of Natural History. A catalog of the collection is available on request.

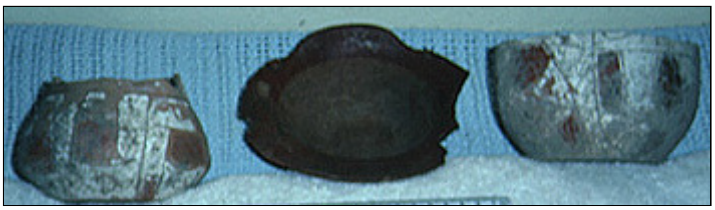
Ripley Bullen excavating the Pearls site in 1962.

For the 25 years following Bullen's investigations the island of Grenada received almost no attention from professional archaeologists. There was a brief survey by Dr. Henry Petitjean Roget in the 1980s, and avocational archaeologists collected information on site locations, but little came of those efforts. This lack of attention was due, in part, to the unspectacular character of Bullen's finds, the site's location adjacent to an active runway, Grenada's sometimes unstable political situation, and the false sense that the Island-Arawak colonization of the West Indies could be explained with the data already available from Grenada and other islands.

In August of 1988 and January of 1989, the Foundation for Field Research sponsored surface surveys and test excavations, led by Thomas Banks and Annie Cody, at the Pearls site. According to their report the work comprised a portion of a feasibility study looking in the possibilities for a major excavation. However, their investigations failed to establish the most basic outline of site parameters.

In August 1989, a third expedition, led by William Keegan and Annie Cody, was undertaken. At that time I directed efforts toward

determing the spatial configuration of the site and to evaluate the impact of airport construction on the southern side. The main objective was to obtain the information needed to formulate an appropriate research strategy (Keegan and Cody 1990).



Nearly complete Saladoid pots looted from the Pearls site.

The site has been the focus of local looting for at least a generation. Prior to 1987, the main booty was pottery "adornos," which are zoomorphic (animal-like) heads that served as handles on the top or sides of pots. These heads were sold to the tourists who frequented the Pearls Airport, which was the island's main airport until 1986. In 1987, a carved "green stone" pendant was found and what might be called a "jade rush" ensued. These artifacts, often shaped like small frogs, are made from a variety of green-color stones including nephrite. At least 10 carved green stone artifacts have been found and sold during the past two years. In addition, at least 20 complete pottery vessels (bowls, platters, bottles, pitchers, and incense burners) have been recovered and sold.

The knowledge gained from scientific investigations, combined with that coming from the activities of looters, suggested that Pearls could be the best location in the West Indies to investigate cultural developments during Saladoid/Huecoid times (ca. 300 BC to AD 400). The site's significance is that the artifacts link Pearls stylistically to sites in the Lesser Antilles, Puerto Rico and on the South American mainland. True to Bullen's expectations, the artifacts of Pearls bear witness to the cultural developments which archaeologists in the region now contest (see Siegel 1989). Most notable is the cultural florescence known as Huecoid or Guapoid named for the la Hueca site on Vieques Island, east of Puerto Rico, or the Rio Guapo site in Venezuela.

Bullen's excavations were too limited, his pottery typology too ideosyncratic, and his chronology too general to serve present objectives. Our preliminary test excavations indicated that Bullen's collection characterizes only the disturbed area adjacent to the airport. It also became clear that the site has a very complicated layout, and that much more information was needed about this layout and the surface distributions of deposits before systematic, controlled excavations could be started. Of immediate necessity were three types of base maps: topographic, electromagnetic conductivity, and stratigraphic. These maps were needed to make possible the identification of the areas most suited for the study of cultural development at Pearls.

The primary objective for the 1990 field season was to define the Pearls site in three-dimensional space, both above and below the surface, and to investigate changes in the site and its environment through time. To accomplish these objectives several specialists were brought to Grenada and other specialized analyses were undertaken at the Florida Museum of Natural History. This report is composed of descriptions of the data that were collected and their analysis by the specialists who are conducting these studies. These studies include the analysis of aerial photographs, topographic mapping, electromagnetic conductivity, soils, and excavated materials. A second objective was the study of diet at Pearls. This objective is being met through the analysis of human bones, animal bones, and fossilized plant remains. Until artifacts can be placed in the larger context of the site, they are of little value.

## PRIMARY OBJECTIVE: DEFINE THE PARAMETERS OF THE SITE

1990 Field Team with Lindsay Keegan.

### Overview by William F. Keegan

By the 1980s, most archaeologists had realized that archaeological sites were not composed of homogeneous layers of cultural remains. Rather, sites are composed of complicated assemblages of daily life that are distributed in discrete spatial arrangements. And, to make matters more complicated, these archaeological remains are often disturbed by postdepositional processes. These realizations made it clear that artifacts recovered from 'telephone booth' excavations (deep one by one meter squares) and a scattering of test excavations were of limited scientific value. To obtain artifacts that can be used to address important questions about the past the artifacts must be collected in ways that identify their place in the larger plan of the site.

When I arrived at Pearls in 1989 all that had been achieved was two small excavations on either side of the field that comprises most of the site. Almost nothing was known of the site's contents and their spatial arrangements. A research program to answer the most basic of archaeological questions was implemented for the 1990 field season. This program included the analysis of aerial photographs and the topographic mapping of surface features combined with an electromagnetic study of soil conductivity across the site in conjunction with horizontal and test excavations. The justifications for this program are described below.

Archaeological investigations throughout the West Indies have demonstrated the importance of detailed topographic mapping. At En Bas Saline, Haiti (Williams 1989); MC-6, Turks and Caicos Islands (Sullivan 1981); Maisabel, Puerto Rico (Siegel and Bernstein 1987); Bois Neuf, Haiti (Rainey and Aguilu 1983); and Sorcé, Vieques Island (Narganes 1989), topographic maps have been used to identify earthen mounds, structural remains, open plaza area, and midden deposits. In every case, these surface featurs were not apparent until the topographic map was completed.

The Pearls site is similar to those mentioned above in that plant cover and surface disturbances make it impossible to detect prehistoric earthworks. A number of rises and depressions do occur on the site, but without the systematic controls afforded by surveying equipment any pattern in these large areas of relatively small-scale topographic relief are not discernable.

A topographic map provides information about large-scale aboriginal earthworks and recent disturbances (e.g., bulldozer piles from airport and ballfield construction, looter's pits, etc.). It cannot, however, be assumed that surface features accurately reflect buried deposits. Moreover, prehistoric activity areas did not always produce topographic relief. For instance, two areas of refuse, known as midden deposits, at Pearls are more than three feet deep and complete pottery vessels have been recovered from that depth. The depth of the midden and presence of pottery styles at the bottom of the midden are not apparent from surface features. The experiences of Kathleen Deagan and Maurice Williams in Haiti and the Dominican Republic, Peter Siegel in Puerto Rico, and Anna Roosevelt in Brazil, have demonstrated the usefulness of both geophysical surveys and test excavations (Williams 1986, 1989; Siegel and Bernstein 1987; Roosevelt 1989).

Two techniques were used to evaluate the subsurface distribution of materials in the Pearls site: electromagnetic conductivity and excavations. A Geonics EM31, electromagnetic induction meter, owned by the Florida Museum of Natural History, was used. The EM-31 makes it possible to rapidly survey a large area by simply holding the instrument above the ground at measurement points on a site grid. A two person team (instrument carrier and recorder) can take readings almost as fast as they can walk. The machine

measures the apparent conductivity of the ground in millimhos per meter. The readings are used to produce a "contour" map that indicates differences in conductivity related to subsurface features in the site.

Electromagnetic surveys delineate features whose electrical conductivity contrasts with the soil (Froelich and Ortner 1982; Bevan 1983). Features high in organic matter or moisture have a low resistivity and features of coarser texture are more resistant. The EM-31 averages conductivity over depths between 0 and 3 meters. It is useful for detecting features such as earthworks, midden deposits, filled pits and ditches, buried rock, and cavities.

Grenadian workers waterscreening in the river.

Small size test excavations were conducted during the August 1989 field season at Pearls. At that time 50 by 50 cm test units were dug with trowels and all soil was screened through 1/8th inch mesh. Because the soil at Pearls has a high clay content, test excavations proceeded slowly. It took an entire day for a three person crew to complete the excavation of one 70 cm deep test unit. In addition, it was found that such units could be excavated only to a maximum depth of 80 cm. In two cases archaeological deposits continued below that depth, and in two other areas of the site we were not certain that there were not additional cultural deposits at deeper levels. It was clear that we needed to undertake a horizontal excavation in which a large area was opened.

**Analysis of Aerial Photographs**
**by Judith Fandrich**

Aerial photo interpretation, a remote sensing technique used in archaeology, proviudes a way of obtaining information about the past in a nondestructive manner. This is important because excavation destroys the context of an archaeological site. Remote sensing methods, both photographic and nonphotographic imagery, can be used to locate sites, identify features within a site, and define site parameters. In addition, remote sensing can reveal changes to the landscape that were caused by human activity. Aerial photographs of the Pearls site were used to both define the site perimeters in relation to the topography and to identify modern land-use activities that affected the prehistoric site.

Black and white aerial

Aerial Photograph of the Pearls Airport. The site is north of the airport in the cleared field.

photographs, taken in 1966 and in 1977, were obtained from British Ordinance in London. The overlapping pairs of vertical photographs, when inspected with a stereoscope, provided a three-dimensional view of Pearls. This view has given us the first detailed view of the site and its surrounding environments.

Information about the history of the site is scant. The airport at Pearls was constructed during World War II on land that had previously been a golf course and prior to that a pasture. Archaeologist Ripley Bullen (1964) reported that the land use/land cover at the site was primarily bananas.

The aerial photographs revealed a dramatic change in land use between the two sets of photographs. The 1966 aerial photos show sugar cane growing over the site, with a few coconut trees. The sugar cane crop was obviously planted intensively at this time. By 1977, the land use had changed from sugar cane monoculture to mixed planting. Because the site begins at the surface, all of the agricultural activities have disturbed the site.

In addition to changing agricultural uses, the aerial photographs provide information about roads and house construction on the site, and better relate the prehistoric site to the airport and the area. This information will significantly advance our interpretation of archaeological remains and their spatial distributions.

**Topographic Mapping by Joseph Southerland**

The topographic survey of Pearls consisted of random sideshots from instrument points along an open traverse. The datum was tied into a benchmark (GT200/02m) on the east side of the runway

Joseph Southerland using a topcon laser theodolite.

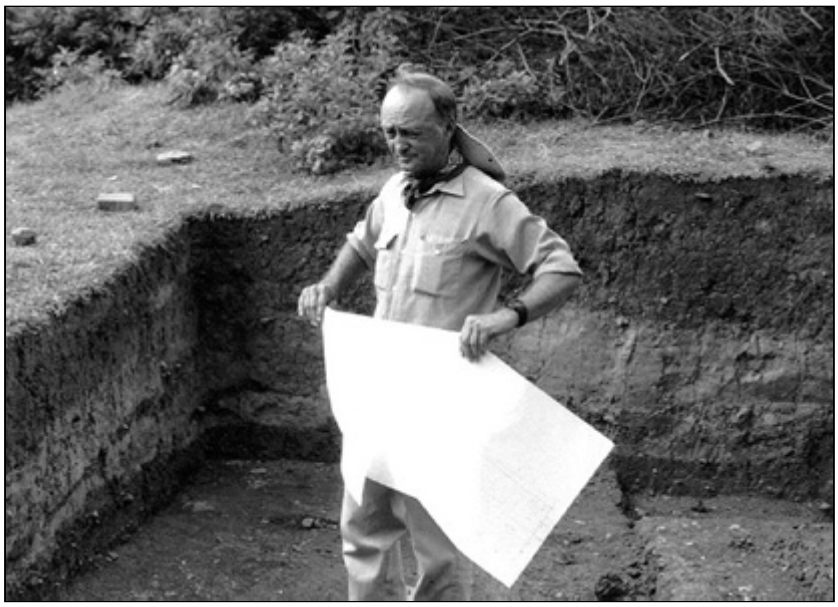
for

Oscar our "Rasta rod man."

elevation above mean sea level. The datum was tied into another benchmark (GT201/20m) on the west side of the airport to create a closed loop traverse for triangulation. The survey was conducted with a Topcon Electronic Total Station ET-1. All of the data was recorded by hand and reduced on a 386-20mhz clone using Survey System 1.1c by C&G Software. The data was then gridded and plotted using Golden Software's Surfer.

The datum consists of a nail in the runway on the north side of the runway approximately 645 meters east of benchmark GT201. Grid north was established as magnetic north. The primary instrument point (IP#2) was located on top of an abandoned pump house 4.3 meters high and approximately 70 meters north of the datum. The data was gathered systematically with the most detail given to the areas being excavated in order to create a site map with 20 cm contours.

The survey focused on post depositional site disturbances and cultural activity impacting in the immediate vicinity. Thge most recent disturbances were a result of airport construction in the 1940s and extension of the runway in the 1960s. Presently, looting activity, characterized by irregular sized and shaped depressions is having a major impact on the site. Part of the site is currently being used as a soccer playing field and is relatively flat with approximately one meter of relief. The soccer field lies within a large circular shaped depression visible on a three-dimensional plot. The runway is south of the soccer field and is oriented east-west for a distance of 1684 meters. There is approximately 18 meters of relief.



Reed Toomey displays profile map of large excavation block at the Pearls site.