

Plum Piece
Evidence for Archaic Seasonal Occupation on Saba,
Northern Lesser Antilles around 3300 BP

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Recent investigations on the island of Saba, northern Lesser Antilles, revealed evidence of preceramic occupation in the northwestern part of the island at an elevation of approximately 400 m above sea level. The inland location of dense midden deposits in a tropical forest environment makes the Plum Piece site unique for studying the preceramic occupation of the Antilles, a period that is otherwise mainly known from coastal settings. The recovered artifacts and the radiocarbon dates support an attribution to the Archaic period of the preceramic Age. The nature of the tools and the restricted number of exploited food sources suggest a temporary, probably seasonal, occupation of the site for a unique activity.

Archaeological investigations on the island of Saba, northern Lesser Antilles (Figure 1) during the summers of 2001 and 2002 revealed evidence of preceramic occupation at the site of Plum Piece in the northwestern part of the island dating from approximately 3300 BP. Prior to these investigations a preceramic date of 3155 ± 65 BP had been obtained from the Fort Bay area in the northeastern sector of Saba (Roobol and Smith 1980). This date came from a shell adze with a poor context. No additional proof was ever found for preceramic occupation in that area, or elsewhere on Saba, except for some isolated stone tools reported from the interior of the island and two flint blades recovered from construction activities at The Level in Windwardside. In contrast to the limited data on the preceramic occupation of Saba, Ceramic Age settlements are known from along the north and southeastern side of the island dating between approximately AD 400 and 1400 (Hofman 1993; Hoogland 1996).

Contemporary preceramic sites and tool assemblages comparable to Plum Piece are known from other northern Lesser Antilles, but most are from coastal settings. Faunal assemblages in these sites point to a focus on

coastal exploitation in which shellfish predominates. The species collected are related to the exploitation of specific coastal environments, varying from mangroves to shallow-water and shallow-reef habitats.

The atypical location of the site of Plum Piece in the tropical forest area of Saba at an elevation of 400 m above sea level provides another picture. The dense midden deposits consist mainly of landcrab and bird remains, though fish and especially mollusks are present in very small quantities. The restricted variety of exploited food sources suggests a temporal and seasonal occupation of the site. The tool assemblage at Plum Piece is similar to the Archaic preceramic complexes known from nearby islands defined by Rouse (1986, 1992) as the Ortoiroid series dating between 5000 and 1000 BP. Rouse suggested a northern South American origin for the Archaic groups of the Lesser Antilles because of the close resemblance in toolkits between the mainland and the islands. Tools at Plum Piece include stones for hammering, pounding, battering and grinding, shell adzes, and large quantities of flaked-flint tools. Other remains are comprised of coral and ochre.

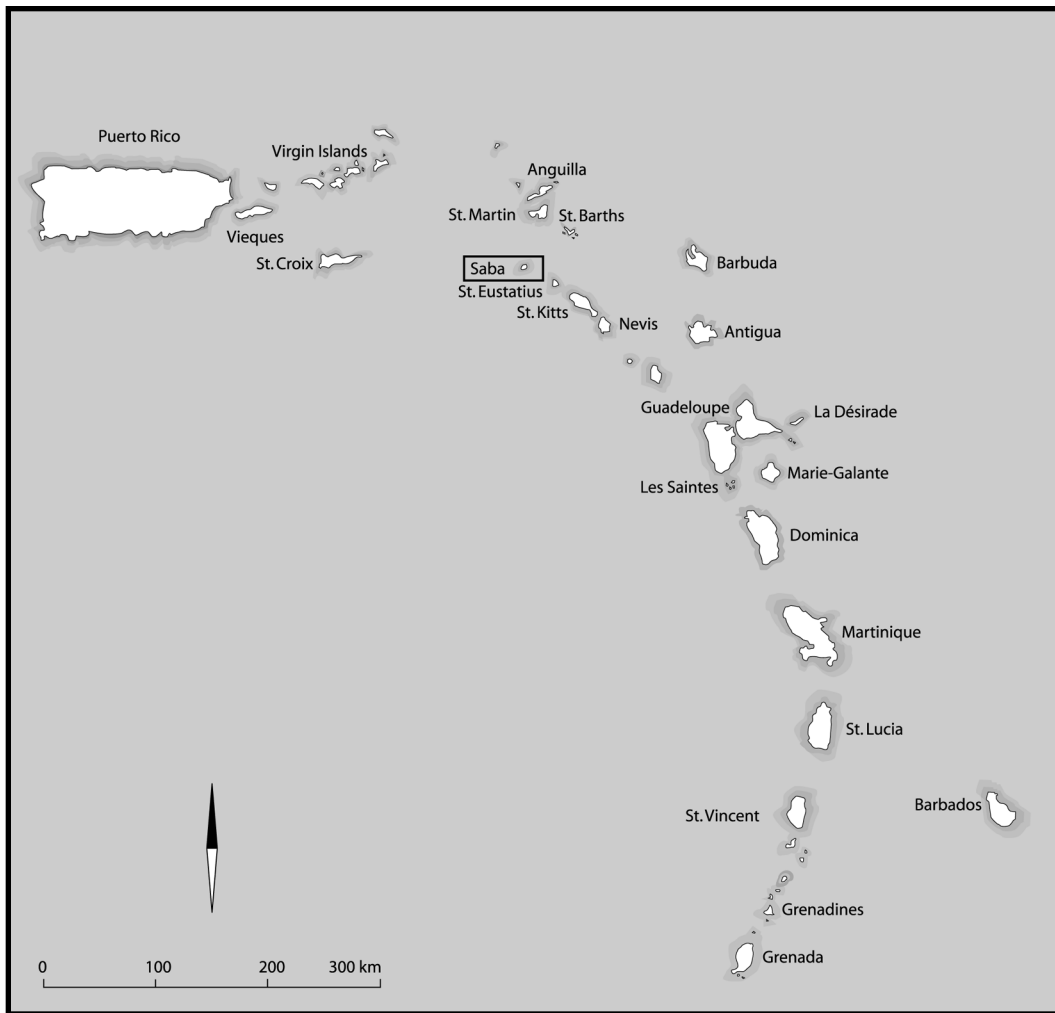


Figure 1. The location of Saba within the arc of the Lesser Antilles.

The remote location of this site, the restricted exploitation of food sources, the character of the tools and the provenance of the materials used for their manufacture are expected to provide interesting and new perspectives on choices of settlement location, and on a more general level, on the lifeways, mobility and interaction patterns of the Archaic peoples of the Lesser Antilles.

The island of Saba: geomorphology and land use

Saba is situated at 63° 14' W, and 17° 38' N, approximately 50 km south of St. Martin and 30 km north-west of St. Eustatius. The island of St. Croix, U.S. Virgin Islands, lies 80 km in a

westerly direction.

Saba is one of the smaller islands of the Lesser Antilles and has a surface area of only 13 km² (Figure 2). Its small surface area, the pronounced relief, which leads to a slightly higher level of precipitation than the surrounding islands, and its difficult access, give Saba an exceptional and unique character.

The island is the upper part of an extinct Pleistocene volcano, which rises steeply from the seabed from a depth of 600 m. The summit, Mount Scenery, stands 870.4 m above mean sea level (amsl) and is often cloaked in fog. The

outlines of the volcano attest to a complex structure. The summit of the island is situated in the middle and is enclosed by numerous smaller peaks. There is only one large relatively flat area, which is the location of the main village, The Bottom. The villages of St. John's and Windwardside are situated on other relatively flat areas. The majority of the island has slopes of more than 15°, while along the coast they even exceed 45°.

The landscapes of Saba are strongly affected by erosion. Along the numerous radial steep-sided gullies or guts, rainwater flows into the sea. Steep cliffs characterize the coast all around the island. A gentler sloping coast occurs in the few inlets of bays, like Cove Bay and Spring Bay on the windward side of the island. But here, heavy breakers on the boulder beach hamper access from sea. The leeward side of the island offers a good anchorage at Ladder Bay and Well's Bay, but the shore is very steep.

Due to the relief of the island the climate can be subdivided in three meso climates. Based on temperature and precipitation the lower elevations (0 - 450 m) can be classified as a savannah climate. Between 450 and 800 m there is a tropical rainforest climate with a dry season. On the higher elevations there is a tropical rainforest climate (Augustinus et al. 1985:2).

Today the vegetation of Saba shows a

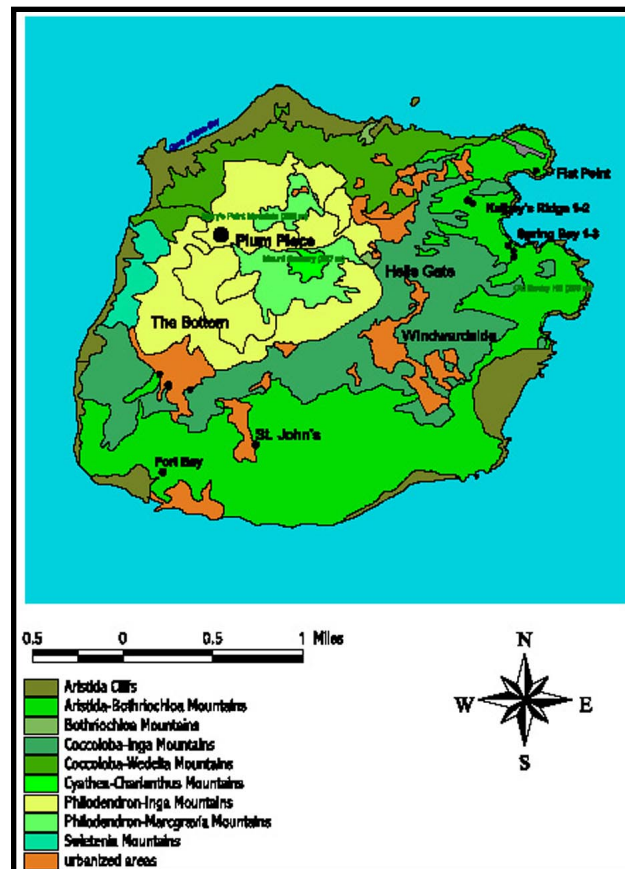


Figure 2. Map of Saba with vegetation zones and known archaeological sites.

zonation more or less parallel to these climatic zones. The vegetation of the low areas up to 350 m can be described as either Croton thickets, dry evergreen woodland or secondary woodland. From 350 to 650 m the vegetation consists of secondary rainforest with some species reflecting the remnants of the original forest. Treefernbrake and palmbrake¹ are the vegetation of the higher elevations, while elfin woodland is characteristic for the summit above 825 m (Stoffers 1956; Augustinus et al. 1985).

In pre-Columbian times the area between 350 and 650 m amsl was presumably covered by rainforest.

Colonial and more recent land-use has modified the original landscape and vegetation of Saba in many respects. In the past, the landscapes of Saba were mainly impacted by activities related to agriculture and cattle grazing. Today, the most important threats are goats and the destruction and degradation of habitat caused by unregulated development in general.

Historic ruins and agricultural terraces are encountered all over the island suggesting intensive occupation during the first half of the 20th century. The present day habitation centers only along the western side of the island. The eastern side has been desolate since the mid-twentieth century when the last inhabitants of

¹ Treefernbrake forms dense groves, about 4 m high, almost solely of *Cyathea arborea*, *Cyathea grandifolia* and sometimes also *Cyathea muricata*. Palmbrake consists mainly of *Euterpe globosa* (Augustinus et al. 1985:61-62).

Mary's Point moved to The Bottom and Hell's Gate. Most of the present agriculture is practised in the zone between 350 and 650 m on scattered, small-cultivated plots all over the island. On the eastern side such cultivated plots constitute the only remaining activity.

Pre-Columbian occupational history and cultural chronology

Saba's occupational history and cultural chronology has been defined on the basis of several archaeological investigations carried out by Josselin de Jong in 1923 (1947), Haviser during the mid-eighties (Haviser 1985) and Hofman and Hoogland between 1987 and 1992 (Hofman 1993; Hoogland 1996; Hoogland and Hofman 1993, 1999). Except for the find of four shell tools with a preceramic date suggesting an occupation of the island at around 1000 BC (Roobol and Smith 1980) and the recent discovery of Plum Piece, Saba's pre-Columbian occupational history is limited to the ceramic period (i.e., between AD 400 and 1400). Saba appears to have been inhabited for the first time by Ceramic Age people during the late phase of the Early Ceramic Age (i.e., around AD 400) as is evidenced from the sites of Spring Bay 1a and Kelbey's Ridge 1. Ceramics from this period are characterized by traits of the Cedrosan Saladoid subseries. The major period of Saba's pre-Columbian occupation is situated between AD 800 and 1200 (i.e., the early phase of the Late Ceramic Age), as is evidenced by the The Bottom, St. John's and Spring Bay 1b, 2 and 3 sites. Ceramics from these sites belong to the Mamoran Troumassoid subseries. The sites of Spring Bay 1c and Kelbey's Ridge 2 provide occupation evidence for after AD 1200. In accordance with the regional settlement pattern, a decline in sites is noticeable during this period. Ceramics from the Spring Bay 1c and Kelbey's Ridge 2 show affiliations to the Chicán Ostionoid subseries of the Greater Antilles, dating to ca. AD 1200-1500 (Hofman 1993).

Test excavations at Plum Piece

Plum Piece is situated in the northwestern part of the island, on the leeward side (Figure 3).

This part of the island is densely vegetated today which hampers the view and restricts the discovery of pre-Columbian sites during field surveys. The plot of land on which the site is situated was cultivated during colonial times, as is testified by the presence of terraces. The land is currently under cultivation of root crops. The landowner, Mr. Carl Zagers, discovered and reported the presence of Amerindian tools while working his land.

A survey during the summer of 2001 confirmed the presence of an Amerindian occupation at Plum Piece through the recovery of numerous pieces of flint and ground-stone and shell tools from the surface. In addition, a large *in situ* grinding stone was identified at the site (Figure 4).

Two test pits measuring 1 x 1 m were dug to investigate the presence and depth of eventual cultural deposits. It appears that the site was partially disturbed by hundreds of years of cultivation and by the construction of the terraces. Fortunately, the cultivation of root crops did not exceed 40 cm in depth, resulting in restricted damage to the underlying rich archaeological deposits.

During the 2002 campaign an additional 7 m² were excavated to obtain a better insight into the stratigraphy of the deposits and to collect a sample of material and faunal remains (Figure 5). The units were dug in 10 cm arbitrary levels

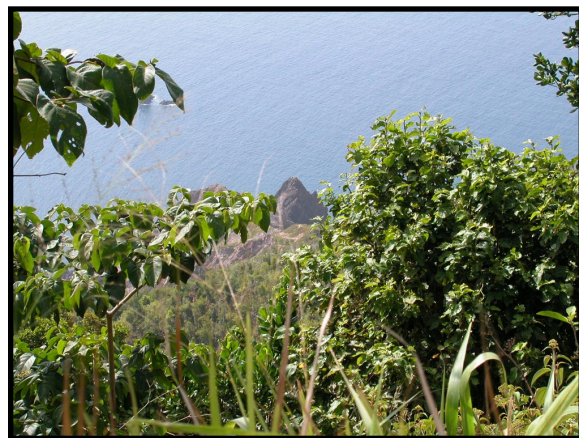


Figure 3. View of the Plum Piece site situated 400 m amsl. Below is Well's Bay.

Figure 4. *In situ* grinding stone.

Figure 5. View of the excavation unit.

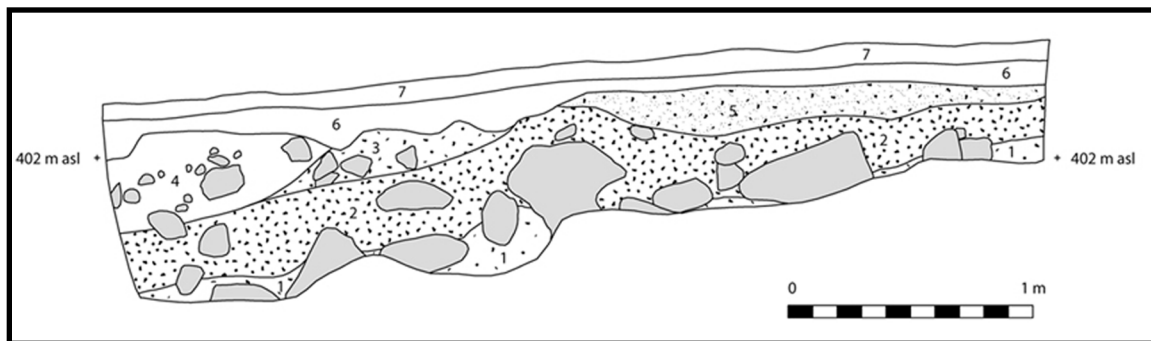


Figure 6. The stratigraphy shows a dense midden layer covered by a disturbed plough zone.

taking into account changes in the stratigraphic layers. The material was dry sieved through a 6.4 mm (1/4") mesh. A sample from one 1 x 1 m unit was water screened through a 3.2 mm (1/8") mesh to obtain an adequate sample for faunal analysis and to collect flint chips.

The archaeological deposits encountered during the two campaigns consist of dense midden deposits composed of vast quantities of faunal remains intermixed with a number of flint, ground-stone and shell tools, coral (*Arcopora palmata*) fragments and red ochre.²

The stratigraphy shows a dense midden layer reaching a depth of 50 cm in some parts covered by a disturbed humic plowzone mixed with charcoal varying in thickness from 10 to 40 cm (Figure 6). The latter is the result of

² A mixture of clay, silt and iron oxide of a red color (Munsell chart color 10R 5/8). When pounded the ochre is very suitable to be used as a pigment.

charcoal burning at the site during colonial and recent times. Charcoal holes with a diameter of 30 cm penetrate the midden deposits in some areas.

Three radiocarbon dates of landcrab samples from undisturbed midden contexts have provided dates of 3430 ± 30 BP (GrN-27562), 3300 ± 30 BP (GrN-27563) and 3320 ± 30 BP (GrN-27564). Calibrated at a 2 sigma interval the dates fall between 1875 and 1520 cal BC.

Pre-ceramic subsistence economy and toolkit

Preliminary results of the faunal analysis carried out by graduate student Peter van den Bos supervised by Dr. Thijs van Kolfschoten of the zooarchaeological laboratory, Faculty of Archaeology at Leiden University point to a fairly restricted exploitation of food sources in the vicinity of the site. The abundance of exoskeletal fragments of landcrabs and bird bones in the deposits indicates a heavy reliance

on terrestrial faunal sources. Fish and shellfish remains are well preserved in the deposits but are scarce and seem to have been of minor importance in the diet of the preceramic occupants of Plum Piece. The presence of conch lip adzes suggest that the inhabitants of Plum Piece likely captured and ate conch, though they probably extracted the meat down at the beach and did not take the shells up to the site.

The mountain or black crab (*Gecarcinus ruricola*) dominates the faunal assemblage. The mountain crab is a frugivorous species, foraging nocturnally and hiding under debris in the forest and rocks during daytime. This species occurs at high elevations on the island but is endangered today through modern-day hunting. Generally, they are harvested during breeding migrations when they migrate to the seashore to spawn. The second species of crab present in the assemblage, though in minor quantities, is the soldier crab (*Coenobita clypeatus*), a purple-clawed hermit. This species, however, could have been foraging on the refuse deposits and as such be no part of the Amerindian diet.

Next to the land crab species, there is also evidence of a reliance on birds. Most, if not all, of the recovered bird bones belong to the Audubon's shearwater (*Puffinus lherminieri lherminieri*), a breeding visitor to Saba (Figure 7). The bird breeds on the island during a limited period of the year (i.e., between February and July). The shearwater, or 'wedrego' as it is called today, is a small, long-tailed pelagic bird, approximately 30 cm in length. The bird is dark blackish-brown above and white below, but with dark undertail coverts. Today, they are found at night in nesting colonies or during the day far out to sea over deep water. They return to land only for the breeding season. The adults will leave the nests at nighttime, which is the only time that they can be found throughout the island. Nests are located in cliff crevices, caves, under vegetation, under rocks, or the birds will dig a burrow 60-90 cm in length. The lays consist of one white egg.³

³ It is estimated that there are 3000 to 5000 pairs in the West Indies today of which a large number, around 1000 pairs, come to breed on Saba (EPIC 2003).

Potential nesting habitats can be found throughout Saba. These birds are known to breed in sheltered places in the higher parts of the island (Voous 1955). The restricted period during which the Audubon's shearwater breeds on the island might point to a seasonal occupation of the site related to the breeding season of these birds.

Tools are made of flint, other stones and shell. The functional analysis of the different artifact categories is being carried out in cooperation with Dr. A. van Gijn of the Artifact Laboratory of the Faculty of Archaeology at Leiden University.

The flint artifacts are being studied by graduate student Iris Briels. The assemblage consists of more than 700 pieces of flint, of which the majority has a Long Island, Antigua, provenance (Knippenberg, pers. comm.). The majority of the flint assemblage is characterized



Figure 7. Audubon's shearwater (*Puffinus lherminieri*) (top) and its archaeological remains.

by unretouched whole flakes (with striking platform, bulb of percussion and an intact distal end) of irregular sizes and most often without cortex (Figure 8). Some of the flakes are long and have a blade-like appearance. Prepared blade cores are absent. There is no evidence of blade production at the site. However, the large quantity of waste-material in the form of very small flakes and flake cores points to an expedient flake technology.

Freehand percussion was used for the flaking. The bipolar technique used for flint knapping at Ceramic sites on Saba was not employed by the Archaic people. Flake production seems to be better controlled than during ceramic times. Currently a use-wear analysis program is being carried out in order to identify traces of use and define the possible function of the flint artifacts. Experiments have been carried out on wood, fish, fibers, grasses, reed, calabash and cultigens.

Other stone artifacts include tools for hammering, pounding, pecking and grinding made of volcanic rocks locally available along the shoreline below Plum Piece (Figure 9). Twenty *Strombus gigas* artifacts were recovered from the midden deposits, including about twenty ground shell adzes (Figure 10a-c). All specimens have a length of between 15.0 and 18.9 cm. The tools have either rounded or squarish edges. A number of blanks and lip fragments were recovered as well, while other parts of the shell and whole conch shells were absent from the site.

Plum Piece in a regional context of the Lesser Antilles

The preceramic Age is still not very well known for the Lesser Antilles and the virtual absence of sites from this period in the southern part of the Antillean archipelago still

poses many questions regarding the origin of these peoples. Several preceramic sites are known, however, from the Leeward Islands and can be dated to the Archaic Age (i.e., between 2000 and 400 BC). From north to south these are Krum Bay, St. Thomas (Figueredo 1974; Gross 1976; Lundberg 1989); Whitehead's Bluff, Anguilla (Crock et al. 1995), Norman Estate (Knippenberg 1999; Nokkert et al. 1995) and Baie Orientale (Bonnissent et al. 2001; Serrand 2001), St. Martin, Corre Corre Bay, St. Eustatius (Versteeg, pers. comm.), Sugar Factory Pier, St. Kitts (Armstrong 1978, 1980; Goodwin 1978), Hitchman's shell heap on Nevis (Wilson 1991), several sites on Barbuda



Figure 8. Flint flakes (the upper right specimen is 67.5 mm in length). The flint was transported to the site from Long Island, Antigua.

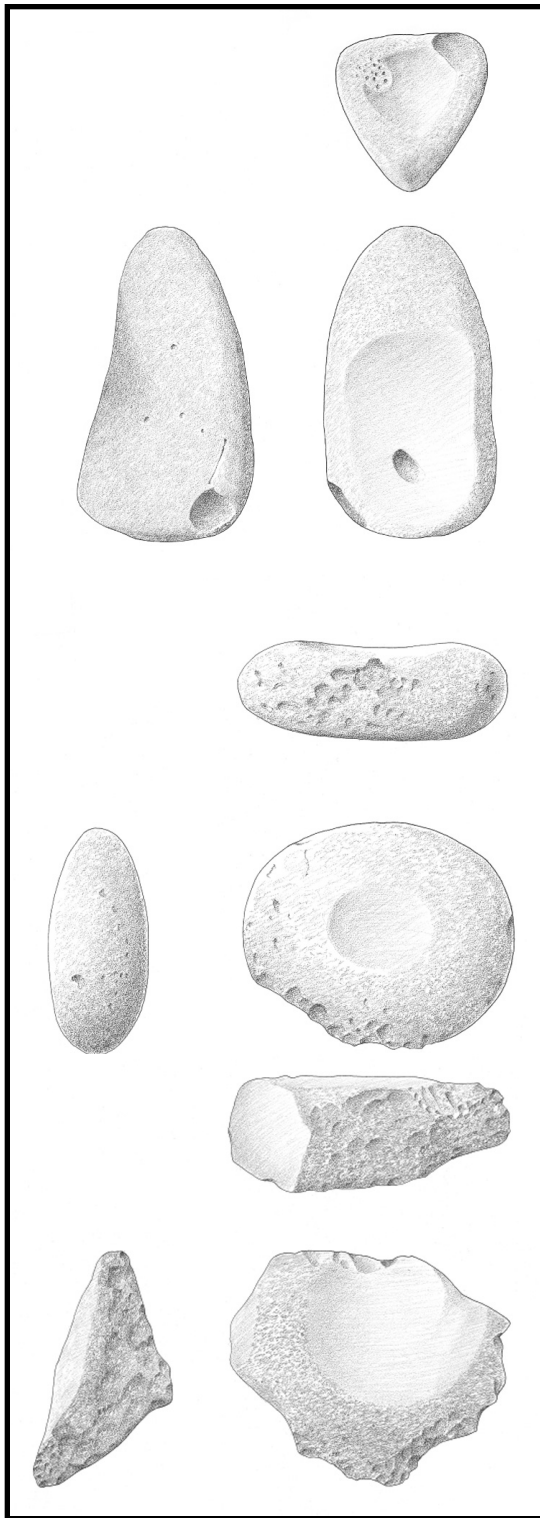


Figure 9. Ground-stone artifacts (lower right specimen is 144 mm wide).

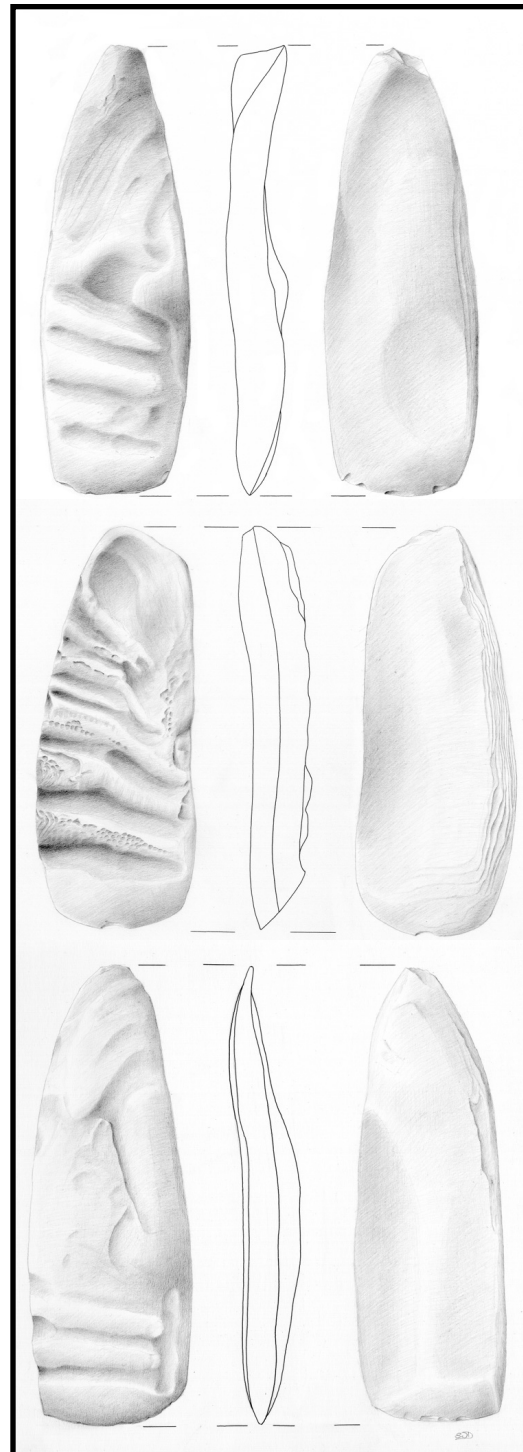


Figure 10. Ground shell adzes (*Strombus gigas*) (bottom specimen is 179 mm in length).

(Watters et al. 1992;) and Antigua (Davis 1974, 1982, 1993, 2000; Nodine 1990; Olsen 1976) and Pointe des Pies, Guadeloupe (Richard 1994).

At this point Antigua appears to have been the most densely occupied island in the northern Lesser Antilles during preceramic times known until now. The Archaic settlements are all situated on the low-lying limestone plain along the northeast coast of the island (Davis 2000) and on Long Island, a tiny island situated just off this coast (Gijn 1993; Knippenberg 1995, 1999, 2001; Verpoorte 1993). The site of Jolly Beach, which is located on Antigua's west coast, is an exception. Marine food resources and easy access to the flint sources situated along the northeastern shore and on Long Island (i.e., Flinty Bay) probably determined preceramic site locations on Antigua (Davis 2000:93-94).

All of the above-mentioned sites are situated in coastal environments and rely heavily on fish and shellfish exploitation. Like Krum Bay, Norman Estate also shows high percentages of fish from reef habitats (Reitz 1989; Brokke 1999; Nokkert 1999; Nokkert et al. 1995). Dependency on a restricted number of species is a common feature of preceramic sites (Brokke 1999; Crock et al. 1995; Lundberg 1989). The variability of species between sites might be related to local availabilities (Keegan 1994:270), focused collecting strategies and site function (Lundberg 1991:74). According to Lundberg (1991:74) the location of the Krum Bay site in a small sheltered bay within good reach of fishing grounds and pearl oyster beds can be related to a focused collection strategy towards certain shellfish species and reef fishes and also to the exploitation of pearls during successive reoccupations of the site spanning more than a thousand years.

Archaic subsistence on Antigua was oriented toward shallow marine resources (i.e., mangroves, shallow muddy and sandy bottoms, and shallow rocky areas) (Davis 2000:91, 101). At Jolly Beach, shellfish exploitation was focused on about eight major species with smaller quantities of other species. In addition to fish from shallow marine waters and some

turtle and manatee, Jolly Beach is the only site presenting a higher reliance on terrestrial fauna (i.e., lizards and birds) compared to other sites on Antigua's shore. The total absence of land crabs from the deposits at Jolly Beach is remarkable, for they were a common food source in all Ceramic sites on Antigua (Davis 2000).

Archaic northern Lesser Antillean assemblages comprise a combination of flint, ground-stone and shell work. The lithic technology can be considered poor and often based on flake instead of blade production. At Krum Bay, no flint was found, but fine-grained rock to produce flakes in a nonsystematic manner was recovered (Lundberg 1989). The Whitehead's Bluff site produced flint flakes (Crock et al. 1995), as did the site of Norman Estate. At both sites there is a total absence of blade production. The site of Jolly Beach on Antigua, where blade production predominates, forms an exception in the region. The existence of blade production at this site has been related to easy access to the sources and abundance of raw material on the island (Knippenberg 1995). In contrast, the dominance of flake technology, on islands distant from Long Island has been related to the fact that they were located far from the source area (Crock et al. 1995; Knippenberg 1995).

The combination of flint, ground-stone and shell tools in the aforementioned sites fits the general picture of Archaic peoples of the Antilles defined by Rouse (1986, 1992) as the Ortoiroid series. Veloz Maggiolo (1976, 1980, 1991; Veloz Maggiolo and Vega 1982) describes these assemblages as a technological system that comprises a hybridization of flint, stone and shell technologies based on the Greater Antillean development of a particular economic adaptation. The Archaic occupants of the Lesser Antilles are regarded as fishers and foragers living semi-permanently in mostly coastal settlements and lacking pottery (Boomert 2000; Davis 2000; Keegan 1994). They are generally thought to have populated the islands from the south (i.e., coastal Venezuela through Trinidad and Tobago as far as eastern Hispaniola). The Ortoiroid radiation into the

Lesser Antilles may have occurred from 5000-4000 BC onwards (Boomert 2000:78). In contrast, the western Greater Antillean preceramic cultures of the Casimiroid series were believed to have originated in a migration from Belize also around the fifth millennium BC (Callaghan 1990; Rouse 1992; Wilson et al. 1998). In a more recent publication Callaghan (2003) used computer simulations to explore the probable origins of the earliest preceramic cultures of the Greater Antilles and to get insight in the level of navigational skills, which are necessary for the colonization of the islands from South America, Central America and Florida. He concluded that navigation from northern Central America seems to require foreknowledge of the islands and from Florida the early navigators would have encountered considerable risk. Colonization from the mainland of South America seems to be most likely because of the lower degree of navigational skills involved. In addition, despite certain resemblances in manufacturing technology with northern Central America, many aspects of Belizean assemblages are not found in the Greater Antilles. The likelihood of a South American connection is also suggested by the results of ancient DNA analysis on skeletal samples from Cuban Ciboney (Lalueza-Fox et al. 2003).

Similarities between Lesser and Greater Antillean complexes and their lithic industries, have drawn the attention of various scholars (Davis 1974; Fuebles Dueñas 1991). As such, it was found that the technology of the flaked stone industry of the Jolly Beach complex on Antigua and its related artifacts are generally similar to those found in the contemporary preceramic sites of Barrera-Mordan and Cayo Redondo in the Greater Antilles (Davis 2000:99). Similarly, shell vessels found at Whitehead's Bluff on Anguilla are correlated with the Casimiroid complex as well (Crock et al. 1995). However, at this point too few reliable comparative data are available from both areas to draw firm conclusions about a common origin, their relatedness and inter-regional interaction patterns (see Davis 2000).

Discussion and future research

The location of Plum Piece at a considerable height in the mountainous tropical forest region of Saba impedes comparisons with contemporary settlements in the Lesser Antillean archipelago that are all situated on the coast. For islands to the south of Antigua little information is available on Archaic settlements in similar remote inland locations. The majority of the finds from islands to the south include isolated ground-stone artifacts, which may reflect an ample presence of Archaic peoples in the Windward Islands that are not as yet pinpointed (Clerc 1976; Harris 1973; Keegan 1994:267; Suttly 1991). Two small sites, Boutbois and Le Godinot on Martinique are probably the only readily confirmed Archaic settlements in the interiors of the Windward Islands (Allaire and Mattioni 1983). To the north on the Greater Antilles, however, occupation of inland site locations such as river valleys and hills was common during preceramic times (Kozłowski 1980).

Plum Piece's faunal assemblage points to a temporal and seasonal occupation possibly oriented toward a set of special activities. The size of the actual habitation area cannot as yet be exactly determined, nor are there any precise indications of the occupation length. The depth of the deposits, however, suggests a recurrent occupation of the site by a single group. The composition of the midden deposits is indicative of a habitation by people focusing on terrestrial food sources. Plum Piece stands out because of the presence of huge quantities of crab remains and bird bones, thus far lacking from other sites in the region.

The large quantities of bones of Audubon's shearwater (*Puffinus lherminieri lherminieri*), which breeds on Saba only between February and July, suggest that this was the season that Plum Piece was occupied. The *Gecarcinus ruricola* and probably also the *Puffinus lherminieri* typically are caught at night when both species leave their nests and forage around the island. According to Goodwin (1978, 1979), landcrabs must have been an abundant protein source available at negligible risk and requiring

little energy to capture (see also Davis 2000:90). Goodwin bases his hypothesis on the masses of landcrab remains found at Early Ceramic Age sites on St. Kitts.

The low numbers of fish bones and the nearly total absence of shellfish in the Plum Piece deposits is striking and indicates that little effort was put into the exploitation of marine sources and transport of fish and shellfish from the seashore to the mountainous camp site. This may be indicative of the fact that Plum Piece was occupied only seasonally alternately and complementarily with settlements in coastal locations on one of the nearby islands. The lack of a well-rounded suite of subsistence remains in Archaic coastal sites has been previously related to the fact that people might have moved between resource concentrations during different seasons (Lundberg 1991:76; Keegan 1994:270). Plum Piece, although differentiated by its location, material remains and subsistence strategies, may have belonged to one and the same subsistence/settlement system as these contemporary coastal sites (see also Lundberg 1991:75) and this would at the same time emphasize the highly diversified procurement strategies of the Archaic Amerindians (Boomert 2000:78).

The sizeable number of mortars and pestles available from the midden deposits suggests that the site occupants also placed an emphasis on the processing of seeds (and berries) to supplement their diet. Grasses and other plants providing edible seeds and fruits of all kinds but also fibers for the manufacture of baskets, mats and fish pots are present in the settlement's environment. It has also been suggested that certain plant species might already have been cultivated in so-called house gardens by Archaic people in the Antilles (Davis 2000:96; Newsom 1993; Newsom and Pearsall 2002). The preceramic peoples have long been regarded as pre-agricultural foragers, but paleobotanical studies have demonstrated that wild grains and fruits were already 'managed' or even cultivated during this period (Newsom 1993), suggesting that a Caribbean Horticultural Complex may have existed during the Archaic (Keegan 1994:270).

The lower slopes situated below Plum Piece are a suitable habitat for grasses and fruit trees such as papaya (*Carica papaya*), soursop (*Annona muricata*) and sweetsop (*Annona reticulata*), arrowroot (*Maranta arundinacea*) and tuna cactus (*Opuntia spp.*). Keegan (1994:270) provided a list of plants identified in other Archaic deposits in the Caribbean including zamia or coontie (*Zamia debilis*) and cupey (*Clusea rosea*), seeds of the *Sterculia*, sapodilla (*Manilkara [zapota] sp.*), wild avocado (*Persea americana*) and yellow sapote (*Pouteria campechiana*), primerose (*Oenothera sp.*), mastic-bully (*Mastichodendron foetidissimum*), trianthema (*Trianthema protulaca*), and palms (Palmae) (see also Davis 2000:93; Newsom 1993; Pearsall 1989; Rouse and Alegria 1990; Veloz Maggiolo and Rímoli 1976; Veloz Maggiolo and Vega 1982).

The volcanic and tropical soils in the area of Plum Piece also provide extremely suitable conditions for the growing of root crop cultigens. One might think of, among others, bitter and sweet manioc (*Manihot esculenta* and *utilissima*), sweet potato (*Ipomoea batatas*), yam (*Dioscorea alata*) and tannia (*Xanthosoma spp.*).

Grinding stones and mortars for plant processing as well as ground-stone tools for other activities as hammering and pecking are made from volcanic stones which had been carried up the mountain from the seashore where they are found in large quantities on the boulder beaches. The Well's Bay is located below Plum Piece and is characterized by such a boulder beach. Besides the fact that this might have been the landing place for the Plum Piece occupants, trips to the bay were probably made to procure these rocks but also to obtain conch to eat and for making adzes. Conch shells can still be found on the sea grasses situated to the north of Well's Bay. The absence of whole conch shells from the midden and the presence of unfinished lips and waste-products from the manufacturing process suggest that the meat was extracted and the shells were pre-worked at the shore. The lips then were taken to the site for further manufacturing into tools. The large *in situ* boulder with grinding platform might be

indicative of a shell tool *atelier* on the site.

With regard to the type of artifacts recovered and the site's location, woodworking for the building of dugout canoes might be one of the activities for which people would have chosen to temporarily settle in this mountainous tropical environment. It has been suggested that similar activities would have taken place at the inland sites of Martinique (see Boomert 2000:78). At those sites no food refuse was found, suggesting that they were visited only on a daily basis.

The flaked-stone industry, characterized by the presence of unretouched flakes at the site does not differ from most neighboring islands. Only the Jolly Beach complex on Antigua is oriented towards a direct-percussion blade industry along with flaking. The flaked flint artifacts from Plum Piece are predominantly made of Long Island flint. The nearly total lack of cortex suggests the direct procurement of the flint material and primary reduction at the source, in this case Long Island. Prepared cores were then transported to Saba where further reduction took place at the site.

The picture that emerges from the investigations at Plum Piece is that of a campsite occupied for the performance of specific activities (i.e., woodworking for the building of canoes during the spring season, February to July). This period coincides with the Audubon's shearwater nesting season and the spawning of the *Gecarcinus ruricola*. Procuring the shearwater and land crabs would have required a low energy input. The diet of the preceramic inhabitants of Saba was supplemented by root crops, fruits and grass seeds. The toolkit comprising ground-stone and shell tools and flaked flint artifacts, is at first glance not different from that described for contemporary sites in the region. None of the materials used for the manufacture of these tools are available in the site's environment and therefore must have been carried up the mountain from the shore. The procurement, and in some cases preworking, of the raw materials elsewhere on the island (i.e., stone from the shoreline and shell from sea grass beds) and in the region (i.e.,

flint from Long Island) gives the impression that the Plum Piece dwellers consciously selected this remote location.

Future research on the site will be directed toward questions of settlement structure, a thorough analysis of the toolkit and study of the technological system. An in-depth study of the lithic technology and use-wear analysis on the stone and shell tools is expected to yield insights into the Archaic tool industry (including full sequences of core reduction) and function(s) of the chipped flint and ground-stone and shell artifacts.

Attention will also be directed toward the identification of plant remains for the reconstruction of a vegetable component in the diet, which may have formed an important supplement to the protein based diet heavily reliant on crab and bird. Besides further excavation of the midden deposits for these purposes, future fieldwork will focus on the potential presence of features such as pits and hearths in the area next to the midden. A field survey of the entire northern side of island is planned in order to detect and identify possible features and sites related to the Archaic occupation at Plum Piece. Primary attention will be given to plots of land cultivated in the recent past and indications of land clearing activities, which entailed the introduction of secondary growth vegetation in an otherwise nearly impenetrable rain forest.

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