FLINT COLLECTING STRATEGIES ON LONG ISLAND.

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Abstract

This paper will summarize the current available data on the prehistoric occupation and related activities at Long Island, a small islet to the north of Antigua. This low-lying limestone island is well known for its abundant natural flint occurrences, which attracted Amerindian peoples during the whole prehistoric era. Archaeological evidence suggests differentiation within quarrying behaviour through time. While numerous scatters of blade working debris dated to the pre-Ceramic period point to core preparation at the source to reduce weight for further transport, Ceramic period flaked material indicates that flint was only worked for local use. This correlates well with evidence from surrounding islands, where unworked flint appears to have been imported at Ceramic sites. This difference in quarrying behaviour is explained from two perspectives. One relates to differences in mobility between pre-Ceramic foragers and Ceramic horticulturalists and the other focuses on difference in lithic technology.

Résumé

Cet article offre un résumé des informations actuelles disponibles concernant l'occupation préhistorique – et les activités s'y rapportant- de Long Island, un petit îlot au nord d'Antigua. Cette île, basse, calcaire est reconnue pour ses ressources naturelles abondantes en silex, lesquelles ont attiré les peuples Amérindiens pendant toute l'ère préhistorique. Des évidences archéologiques suggèrent des différences quant aux méthodes d'extraction à travers les âges. Alors que de nombreux éparpillements, relevant de la production de lames, datant de la période pré-Céramique, indiquent la préparation des nucléus à la source d'extraction afin d'alléger le transport à venir de la matière extraite; le matériau taillé de la période Céramique indique que le silex était seulement travaillé sur place pour d'utilisation locale. Ces preuves sont corroborées par des évidences supplémentaires accumulées sur les îles environnantes, sur lesquelles il semble que du silex non travaillé ait été importé sur les sites Céramiques. Cette différence dans la méthode d'extraction peut s'expliquer sous deux angles de perspective. D'une part l'angle de mobilité, différente entre les glaneurs de la période pré-céramique et les cultivateurs de l'ère céramique; d'autre part l'angle de la technologie lithique, différente entre les deux périodes.

Resumen

Este escrito sintetizará los datos actualmente disponibles sobre la ocupación prehistórica y las actividades relacionadas en Long Island, una isleta pequeña al norte de Antigua. Esta isla baja de roca calcárea es bien conocida por sus ocurrencias naturales abundantes del pedernal, lo cual atrajo a la gente Amerindia durante toda la era prehistórica. La evidencia arqueológica sugiere que se diferenció el comportamiento de extracción a través del tiempo. Mientras que dispersiones numerosas de desechos del trabajamiento de pedernales datados al período Precerámico señalan la preparación de nucléos en la fuente para reducir el peso para transporte adicional, los desechos de talla del período Cerámico señala que el pedernal sólo fue trabajado para el uso local. Esto correlaciona bien con evidencia de islas circundantes, donde el pedernal no trabajado parece haber sido importado en los

sitios Cerámicos. Esta diferencia en comportamiento de extracción se explica de dos perspectivas. Uno se trata de diferencias en la movilidad entre forrajeadores Precerámicos y horticultores Cerámicos y el otro se enfoca en una diferencia en tecnología lítica.

Introduction

Long Island, a small islet just off Antigua's northern coast has been known as a natural source of high quality flint for the past 30 years. Desmond Nicholson and Fred Olson were the first to mention the presence of this prehistorically much valued material on the island after short visits during the late 1960's and early 1970's (Nicholson 1974, 1976; Olson 1973). They found in particular high concentrations along the cobble beach of Flinty Bay. Some ten years later Jeff Walker reported the presence of Long Island flint at Saladoid settlement of Sugar Factory Pier on St. Kitts (Walker 1980a, b). Other evidence on the archaeological distribution of this material outside Antigua and its satellite islands followed (Crock 2000; Crock and Bartone 1998; Knippenberg 1999a,b,c). This regional importance was one of the reasons to perform a small-scale survey on the island and to carry out test-excavations at specific site locations in 1989 by a team of archaeologists from Leiden University under supervision of Annelou Van Gijn, Corinne Hofman, and Menno Hoogland, (van Gijn 1996; Verpoorte 1993). During the summer of 2000, I continued their work and led a short fieldwork-campaign, focused on any possible evidence of exploitation and primary reduction of flint within the Ceramic period. Although the archaeological work done during these past 30 years on the island has remained small-scale, I have summarised the data into a first general overview of prehistoric occupation. This paper will present this overview and will pay particular attention to the exploitation of flint material and related activities.

Setting

The natural occurrence of flint on this small island can be explained by the exclusive limestone build-up of Long Island. This limestone is part of the Antigua formation, an Oligocene carbonate sequence, which covers the whole north-western part of the main island of Antigua (Martin-Kaye 1959; Multer et al. 1986; Weiss 1994). Despite the abundant presence of flint on Long Island, this fine-grained rock has a relatively restricted occurrence within the Antigua Formation itself, suggesting conditions in which flint could form were rarely met. Flint only resides within a fine-grained carbonate mudstone deposit, which outcrops at Little Cove on the eastern coast, and Soldier Point on the north-western coast of Antigua (Martin-Kaye 1959). On Long Island this mudstone deposit has disappeared, likely the result of erosion, and high concentrations of flint have remained scattered on the surface as secondary material. As a result, it is abundantly present and therefore easily accessible.
From the present-day distribution of the material it is hard to elucidate the situation in which the prehistoric populations must have met it, as several episodes of construction activities and land clearing during historic times, and especially during the past twenty years, have altered the landscape. Large artificial piles of flint situated in the central part of the island, erected as collecting spots after clearing fields are among the most obvious examples of such disturbing behaviour (van Gijn 1996). Still a general assumption can be made of its original distribution: basically flint occurs everywhere on the

island. Even in the southern parts of Long Island, where it is more rare, excavations have revealed that natural blocks are present in the topsoil. The concentration, however, is small and the blocks can be generally considered as poor raw material for lithic tool production. This background noise of flint gradually changes if one moves into northern direction. There flint occurrences become more abundant, and larger in size. The surface and the topsoil within the areas just behind the Flinty Bay coast in particular, are full of different sized cobbles of flint, with a characteristic brown cortex, including many suitable boulders for flaking. Highest concentrations of flint are located on the Flinty Bay coast itself, which literally consists of flint.

In addition to these secondary occurrences, flint can be rarely found as primary material within the limestone host-rock. Along Flinty Bay cylinder shaped configurations of flint occur within the hard limestone ledges. These flints can be considered as tubes, which formed around animal burrow tunnels (Hans Zijlstra personal communication 1998). In addition to Flinty Bay, isolated pockets of primary material can be found at the eastern coast between Buckley Bay and Cistern Point and along the north-western coast near Pond Bay (van Gijn 1996; Verpoorte 1993).

Archaeology

From the work done during the past 30 years we can present a preliminary overview of prehistoric occupation of the island. Although we lack absolute radiocarbon dates, there is evidence that Amerindian populations have visited the island during the pre-Ceramic period. The strongest argument for these visits is the presence of numerous sites where flint was worked into blades (van Gijn 1996; Verpoorte 1993). Such a blade tool technology has exclusively been attributed to the pre-Ceramic age within the Caribbean (Keegan 1994; Rouse 1992).

Among the locations where these blades are found it is possible to broadly distinguish two types of sites. The rarest one is the shell midden site, characterised by highly concentrated deposits of food debris in the form of shellfish remains and animal bone, in addition to flint artefacts and rare ground stone items. Such a site has likely been a place where pre-Ceramic shellfish collectors and fishers have settled for some time. An example could be found at Cistern Point, where Dave Davis conducted test-excavations during the early seventies (Davis 1974, 2000). In his recent book on Jolly Beach, he presents some data on the flint artefacts of this site. Despite the small sample, he sees strong similarities in characteristics with the Jolly Beach site. Both technologies were directed towards producing blades. As the greater blade length and thickness at Cistern Point were comparable with material from the younger deposits at Jolly Beach, he considered the former to be younger in age (Davis 2000: 76-77, Nowadays the Cistern Point site has been destroyed as a result of the construction of hotel apartments).

The other type of site is characterised by sole occurrence of flint artefacts, and can likely be interpreted as a flint working locality. In contrast to the small number of pre-Ceramic midden sites, flint working sites are abundant on the island. In majority, it concerns shallow surface scatters, where the presence of blades suggests pre-Ceramic flint working activities. The "1989 Leiden" team has mapped most of them in the eastern, less disturbed, part of the island (van Gijn 1996; Verpoorte 1993). Some reservations need to be made concerning the locations of these scatters. Annelou van Gijn

admits that their identification had been rather arbitrarily as flint could be found everywhere. Furthermore, the shallowness of most of them combined with the fact that cotton was grown during the historic period makes it very likely that the distribution of flint artefacts had been altered significantly since their deposition. The overall spread can be considered typical of open quarry sites that were regularly visited. Still, a better-preserved and more delimited flint working site was also identified, along Flinty Bay, where a highly concentrated deposit of flint artefacts, including blades, flakes, cores and additional debris is situated (van Gijn 1996; Verpoorte 1993; see also Olson 1973; Davis 1974).

The high percentage of primary and secondary blades, the almost complete absence of retouched implements, and the low occurrence of blade cores, of which the majority bore some sort of flaw, has been supportive for the interpretation that blade cores were pre-worked at this locality for further transport (van Gijn 1996). Furthermore small variation in sizes of blades and platforms, as well as flaking angles suggest a large degree of standardisation within this pre-working (Verpoorte 1993: 66-72).

Contrary to the abundant evidence on the pre-Ceramic presence on the island, the information from the following early Ceramic or Saladoid period is scarce. From recent research by Reg Murphy we know that these early horticulturalists inhabited the main island of Antigua (Murphy 1999). Long Island, however, has not produced any clear relics from this period. Sites producing Saladoid ceramics are absent and the many flint scatters on the eastern part mainly can be associated with pre-Ceramic blade working activities.

By entering the post-Saladoid period, evidence of Amerindian activity is appearing again. At several locations on the island, notably at the Jumby Bay site along the southeast coast and at the Sugar Mill site near the old Estate house more inland, clear shell middens containing pottery were identified. These sites formed the central focus of a small field campaign during the summer of 2000. Since the flint surface scatters on the island did not yield any signs of systematic flint exploitation during the Ceramic period, one of the research objectives was to see if evidence could be found that would indicate that flint was systematically pre-worked at these sites for further transport to or exchange with other sites.

From a small shovel test campaign at both sites, find distributions were mapped. The two sites exhibit similar features. They are characterised by the presence of highly concentrated but shallow refuse deposits with markedly high proportions of shell remains, when compared to other find categories. At Jumby Bay, the distribution of material was largest, approximately 2500 m? in size. Here a 20 to 30 m wide strip extended for approximately 80 m enclosing a vacant area in the middle. Highest concentrations were found in the northern part where the excavation of a 1 by 1 m test-unit uncovered a 60 cm thick deposit. At Sugar Mill, the find distribution was much smaller, approximately 500 m?, and the deposit much shallower, 25 cm at most. Likely, both refuse areas can be related to small-scale short-term settlements activities on the island, considering the lack of fresh water resources.

Single dates from both sites clearly place them well into the post-Saladoid period. Jumby Bay has produced a calibrated date that would fall between AD 1035 and 1275, if a 95% confidence inter-

val is used (GrA-18850; 860 ± 60 BP), whereas Sugar Mill is younger with a calibrated date, that falls between AD 1291 and 1421 (95% confidence interval; GrA-18849; 600 ± 60 BP). These dates are supported by the limited Ceramic data that were available. Decoration modes for Jumby Bay include broad line incision and curvilinear white line painting on red slip. A strong similarity was noticed with the Muddy Bay site, situated along the north-eastern coast of Antigua and dated between AD 1100 and 1200 (Murphy 1996). The small sample of Sugar Mill only produced broad line incision, and the absence of white line painting is suggestive for a later date. The data on shellfish exploitation exhibit strong similarities between both small sites. Collecting was predominantly focussed on exploiting the rocky inter-tidal zone in search for bivalves such as *Chama sp., Arca Zebra,* and *Pinctada Imbricata.* As such, it was almost identical with shell collecting behaviour at Muddy Bay (Murphy 1996).

Studying flint technology, the typical features belonging to the Ceramic period become evident immediately (Bérard 2001; Bérard and Vernet 1999; Crock and Bartone 1998; Walker 1980a). Small cobbles were reduced in an expedient fashion with the aim to produce ad-hoc flake tools, without any further modification. The number of intentionally modified and retouched tools is very small, and shapes are not standardised. A marked difference with other Ceramic sites is the low proportion of bipolarly flaked artefacts. This may well relate to the easy access to raw material, which would not make it necessary to exhaustively reduce all material. From detailed technological analysis, it was also clear that material was not systematically pre-worked for transport to other sites. No artefact categories were under-represented or missing. Cores, primary, secondary, as well as tertiary flakes were all present. The fact that a proportion of the flakes exhibited signs of use-wear strongly suggests that flint was only worked at this site for local use related to the settlement activities on the island itself.

From this it must be concluded that activities during the post-Saladoid period did not leave any clear archaeological evidence of systematic exploitation and primary reduction of flint material. This absence of any pre-working at the source during the Ceramic period correlates well with de Mille's and my findings from studies related to flint reduction on the surrounding islands. Technological analysis of flint artefacts from settlement sites suggests that material was transported between the islands in unmodified form (de Mille 2001; Knippenberg 2001). Proportions of cortex bearing flakes within samples from distanced sites remain high and can considered to be similar with experimentally found values of reduction of unmodified material (Amick et al. 1988; Shott 1996; Tomka 1989; Walker 1980a).

Discussion

The archaeological evidence at Long Island shows that there is a marked difference in exploitation behaviour between blade-tool producing pre-Ceramic people and expedient flake-tool producing Ceramic settlers. The former performed initial reduction at the source while the latter only collected material, after which they transported it unmodified. How can this difference be explained? I think two possible reasons need to be considered. The first relates to mobility. The pre-Ceramic people are believed to be non-sedentary foragers (Keegan 1994).(1) They probably moved frequently exploiting

the numerous coasts of the different islands, in search for new supplies of fish and shellfish. Minimizing weight that had to be carried every time one had to move would be very efficient in such case. Therefore removing the outer surface and pre-working the cores to such a degree that blades could be produced immediately would discard a lot of unnecessary weight, and would leave a highly productive form of raw material. Such a weight minimizing strategy would be less necessary if people permanently stayed at one place, from where they could direct special trips only intended to collect flint, as likely was the case for the Ceramic people (see also Parry and Kelly 1987).

Another reason that might explain this difference concerns the nature of the technology itself. In case of a blade technology a very specific type of long flake is aimed at, namely the blade. Blade production is usually associated with the fabrication of very formalized tool types. As standardised utensils are the objective, the initial stage of the reduction process can be considered useless. It will mainly produce irregularly shaped flakes, including many cortical ones. Therefore transporting entire nodules with this useless outer surface is highly inefficient if weight to be carried is limited. Following this line of reasoning it is likely to be discarded immediately before transportation.

This contrasts with an expedient flake tool production, where flake shape is usually not an issue. Important are usable edges (Crock and Bartone 1998; Lundberg 1989). These might already be generated during the earlier stages of the reduction, and therefore the whole cobble can be considered as a potential source for tools. This makes pre-working less needed, and material is likely to be transported unmodified.

To support this second argument I want to mention a certain group of knappers, who have been left unspoken yet. These are the pre-Ceramic people well known within the Lesser Antilles region for their production of expedient flake tools rather than blade tools (Knippenberg 1999b; Lundberg 1989; Rouse 1992). As the evidence of systematically pre-working only relates to blade technology on Long Island, this means that also these pre-Ceramic knappers of expedient flake technologies did not perform such activities at the source. This finding is supported by recent studies I carried on pre-Ceramic material from Barbuda. Material from both the River Site as well as the Strombus Line can clearly be considered the remnants of an expedient flake tool technology, in which the high proportion of cortex bearing flakes indicates that unmodified raw material was transported to Barbuda (Watters this volume). Bearing in mind that these people also were non-sedentary foragers, this would strongly suggest that the type of technology rather than mobility was a more deciding factor in choosing to pre-work material or not.

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Notes

1. Recently Rodríguez (in prep.) opted that we should reconsider our assumption that pre-Ceramic inhabitants were nomadic food collectors. New evidence from pre-Ceramic sites on Puerto Rico, suggests that they probably stayed more permanently at site locations and that they practised some very minimal form of horticulture. Within the Lesser Antilles, the almost exclusive presence of small shell collecting sites dating to this period does not support this viewpoint on a more sedentary life-way.

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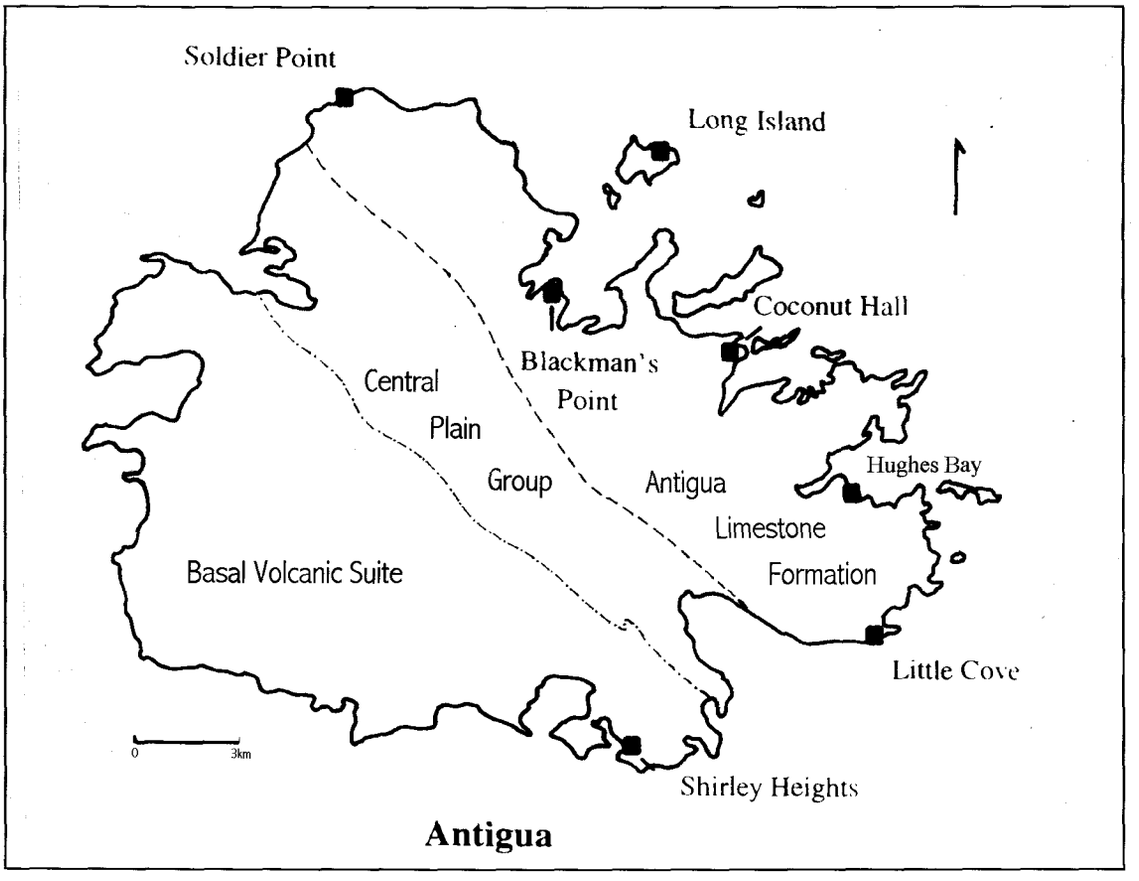

Figure 2. Map of Long Island, showing the location of pre-Ceramic settlement sites, pre-Ceramic workshop sites, Ceramic settlement sites and flint surface scatters, mentioned in the text. The location of the pre-Ceramic settlement site of Cistern Point is by approximation.

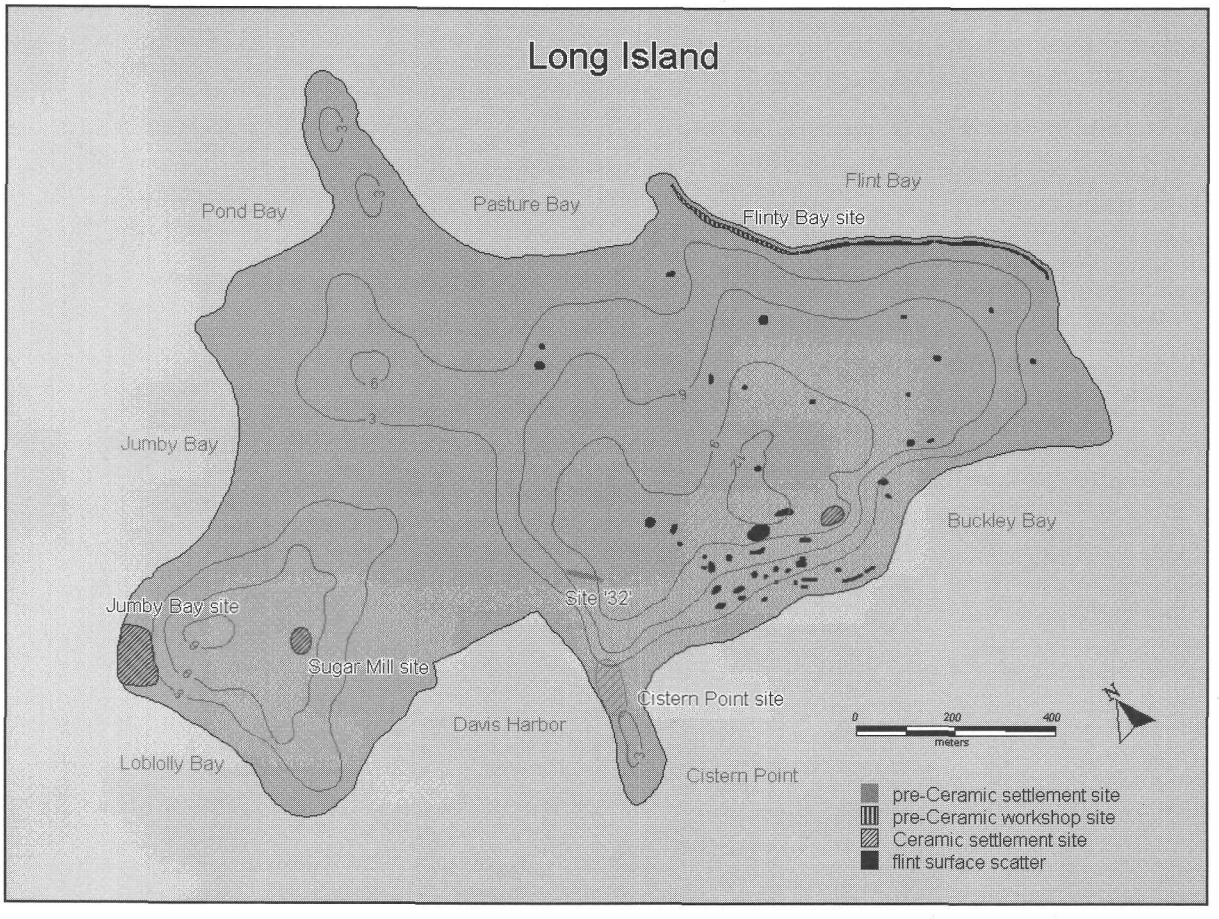

Figure 1. Map of Antigua, showing the three main geological regions and the location of some of the important flint and chert sources.