5. SURVEY RESULTS

5.1 INTRODUCTION

This chapter presents the survey results and comments on the efficiency and accuracy of the fieldwork, taking into account the biases related to the fieldwork method, environmental circumstances and natural and cultural post-depositional processes. These biases are important as they influence the contents of the site catalogues on which the presentation of pre-Columbian site patterns in chapter 6 will be based. Subsequently, the identification of different site types is described. Finally, the archaeological sites of Pointe des Châteaux, La Désirade and Petite Terre are summarily presented.

Although archaeological sites on Guadeloupe are generally labelled with both their, usually topographical, names and DRAC registration numbers, it has been decided to use site names only. DRAC registration numbers have been listed in the site catalogues (appendices 2-4). The reader is also referred to the site catalogues for detailed site descriptions and a presentation of the collected archaeological material.

5.2 EFFICIENCY AND ACCURACY OF THE FIELDWORK

5.2.1 Possible biases related to the surface surveys

The surveys provided a detailed regional site inventory. Site patterns can certainly be observed. The survey results cannot be regarded, however, without estimating how they represent the actual archaeological record or even the actual pre-Columbian situation. Notwithstanding the use of an intensive systematic survey technique as the one applied during the East-Guadeloupe project, it is obvious that several factors may affect the observation and collection of site and off-site material and thus entail a biased site record. These are related to the intensity and the method of surface observation, the use of surface material, the characteristics of the archaeological material, personal observation of the survey crews, environmental factors and natural and cultural post-depositional processes.

Some authors attempted to provide a quantification of biasing effects related to archaeological surveys. For example, Shennan (1985) demonstrated that for surveys in East Hampshire (United Kingdom) 40% of find density variations could be explained by environmental variables, 18% by distorting variables and only 3% by personal observation factors. Inter walker variation hardly appeared to influence find densities observed by Shennan. These outcomes are supported by the results of the Agro Pontino study in Italy (Verhoeven 1991). Van de Velde (2001:28), however, warns that both the Shennan and the Verhoeven studies are seriously defective since they excluded sampling units without finds from their calculations, thus biasing quantification of the effects of external factors on archaeological finds. In addition, during the workshop 'GIS techniques for regional archaeology' organised by the RPC (Regional Pathways to Complexity) project in Groningen, the Netherlands (April 15 2000) it was argued that inter walker differences do form an important factor biasing the outcomes of surface surveys. It was suggested that walker effects could be reduced by eliminating the extent of subjective decisions the survey participants have to make by moving towards total collection of artefacts from the surface.

5.2.1.1 Intensity of surface observation

Transect interval distances inevitably cause survey biases as sites with diameters smaller than the transect intervals may have been missed. At Pointe des Châteaux and on Terre de Haut intervals were set at 10 m; the smallest sites of importance to this study were thought to measure 10 x 10 m at least (Bodu 1985[c]). Smaller concentrations can provide information on the relative use and importance of different environmental zones, but their functions and dating are usually hard to establish. They were hardly found anyway. Regular interval inspection during field walking confirmed this tenet. The results of the 1998 fieldwork at Pointe des Châteaux and on Terre de Haut suggested that hardly any site of importance to the study would be missed by using 20 m intervals. Intervals were thus enlarged in 1999 for the La Désirade and Terre de Bas surveys. Moreover, since no single zone was completely excluded from the survey, the site inventory is expected to represent at least a sample of all types of site locations and functions. It may be important to note that transect intervals determine the observation of off-site material as well. Merely a 10% sample of off-site material is expected in areas where 10 m intervals and 1 m wide transects have been used.

Site information may be absent from the archaeological record as parts of La Désirade and Terre de Bas could not be completely surveyed (section 2.2.3; fig. 2.2 and 2.3). By generalising data from the areas that could be surveyed on La Désirade it can be hypothesised that the non-surveyed areas would yield indistinct sites in particular. It is possible that

habitation sites are present in the non-surveyed areas on Terre de Bas, but since most of these areas have been investigated in a non-systematic manner it appears unlikely that large sites are missing in the archaeological record.

5.2.1.2 Method of surface observation and use and characteristics of archaeological surface material

The simple fact that observations are limited to the surface generates some biases as well. The study of the surface material itself is rather complex anyway as it usually lacks context and it is often eroded. Moreover, chronological and cultural assignments are limited to diagnostic (read: decorated) artefacts, which are not necessarily present in the surface record. This situation severely hinders local off-site or non-site archaeological studies but for site surveys it is difficult as well since for many of the sites only surface collections could be made. An attempt was made to overcome this problem by studying general pottery characteristics, such as style, morphology, and finishing. This provides rough chronological assignments to Early Ceramic or Late Ceramic Ages, allowing only very basic chronological overviews with limited time-depth. Many of the other artefact categories, such as lithic, shell or coral artefacts, could not be dated at all when lacking a clear archaeological context. This is the reason why six of the La Désirade sites could not be dated.

The characteristics of the archaeological record itself also largely influence the outcomes of surface surveys. Different site locations, site types and material categories of archaeological material may influence visibility at the surface. Pottery, for example, is relatively easy to detect while untrained eyes probably face problems in identifying lithic artefacts on the surface.

5.2.1.3 Personal observation of the survey crews

Walker effects include personal interest and training, and personal reactions to variations in visibility related to the time of survey, cloud cover or position and intensity of the sun, and humidity of the terrain. An attempt was made to reduce walker effects to a minimum by having a trained field walking crew, familiar with ceramic, lithic and shell artefacts. As for survey time or cloud cover, the position and strength of the sun clearly hinder accurate observation between 12.00 and 16.00 p.m. During these hours no field walking was done and finds were washed and labelled instead. Around 17.00 p.m. floodlight slowed down surface observations, but no evidence was found that the quality of observations was hindered as well. The fact that humidity improves the visibility of ceramics and flint at the surface was used to study and re-study areas where sites had been expected at the start of the project but where no archaeological material was found. This did not, however, result in the discovery of archaeological material. Since these areas were intensively rewalked and no survey biases were signalled for these areas, they are considered to have been actually archaeologically 'empty' and to accurately reflect pre-Columbian site location choices. Despite the warning by Bintliff and Snodgrass (1988:509) that their surveys demonstrated sites to "appear and disappear in one locality from season to season" other areas in Eastern Guadeloupe were not revisited as a result of time constraints.

5.2.1.4 Environmental factors

Environmental factors notoriously biasing survey results include vegetation, accessibility, ground cover type and ground cover percentage. Vegetation negatively influences surface observations as it complicates the accessibility of terrain. This is particularly true for areas that are densely covered by acacia or mancenilla trees, which characterises important parts of the research area. It should be remarked, however, that surface visibility within acacia areas is remarkably good. In addition, dense acacia cover forces surveyors to slow down and to concentrate on small areas, "lying full-length on the ground and inspecting small areas by eye" (*cf.* Bintliff *et al.* 1999:158). If not related to traversing problems, vegetation did not further influence observation, since all transect surfaces were cleaned. Accessibility problems related to other factors than vegetation, such as angry bulls, dogs, or landowners could be solved in most cases.

As for the effects of ground cover type and ground cover percentage on the visibility of archaeological surface material, Van de Velde (2001) suggested to correct the outcomes of transect surveys by estimating the visibility of the surface. This turned out to be impossible for the East-Guadeloupe project since no useful generalisations could be made using known and controllable surveys. Yet, an attempt was made to estimate the impact of survey and environmental biases using descriptions of transects and survey zones that had been made in the field (De Waal 1998[b]:12-13). However, the most important means to delimit the influence of external factors, was to simply clear the transect surfaces using machetes and thus to enhance uniform observation. This was relatively easy since local circumstances are not favourable to the growth of dense grass patches. In most cases, clearing the surfaces meant removing a thin leaf cover. This was deemed preferable over compensating for possibly biased results and thus risking broad generalisations of the surface record.

5.2.1.5 Natural post-depositional processes

The impact of natural post-depositional processes is probably one of the most uncontrollable yet important factors influencing presence and visibility of surface material. These consist of processes of erosion and sedimentation, and coastal dynamics, including sea level changes and

coastal erosion. As outlined in section 3.2.2, sedimentation and erosion appear to be quite modest in the research area, except for the borders of the La Désirade central plateau and its slopes, which are gradually eroding. Site coverage as a result of mud streams, slope wash and deposits from volcanic activities is thought to be non-existent or at least limited. Coverage of archaeological layers by geological deposits may be expected on sandy beaches with dynamic dune formations. On Pointe des Châteaux, series of auger tests separated by 20 m intervals were carried out on all the beaches of the northern coast in order to check the presence of hidden concentrations of archaeological material but no archaeological material was identified. Coastal dynamics, including changes in sea level, coastal erosion, the presence and stability of the salinas and the formation and stability of dune formations, have more dramatic effects on preservation and visibility of sites. Low-lying sandy beach areas, characterising great parts of the study area, are particularly vulnerable to these processes.

At Pointe des Châteaux, these include parts of low-lying coastal areas at Anse à la Gourde, the bay east of Pointe à la Gourde, the western part of Anse à Plume, the salina that is in open connection to the sea, and Anse des Châteaux (fig. 2.1). Anse à la Gourde, the western part of Anse à Plume and the open salina harbour archaeological sites that are thought to have been larger than what remains of them today. On La Désirade, low-lying coastal areas at Anse d'Échelle, the beach south of the airport, Les Sables, and Pointe à Godard have probably eroded (fig. 2.2). Archaeological sites found at the airport and at Les Sables are thought to have been larger than they appear to be nowadays. The Pointe à Godard site, reported by Bodu in 1984, has been almost completely destroyed by coastal erosion. At Anse d'Échelle, no pre-Columbian sites were found. It is not clear if this is a result of the almost complete destruction of the beach. On Petite Terre, the northern and the western coasts of Terre de Bas are swiftly eroding. The impact of this process is well-visible at the Est de Mouton de Bas site, on the northern coast of Terre de Bas (fig. 2.3). In four years, the coastline appears to have retreated at least 2.5-3 m (personal observations 1997-2000). Coastal erosion of the southern beaches at Terre de Haut is known to have resulted in the almost complete destruction of the Pointe Sablé site.

In spite of the efforts of the Amsterdam geological team to provide an insight into the local coastal dynamics (section 3.2.3), it turned out to be difficult to give accurate estimates of destroyed areas and of the number of sites that may be missing in the archaeological record; the impact of coastal dynamics largely depends on prevailing winds and on the degree to which locations are protected by fringing reef systems (Troelstra personal communication 2002).

In spite of the fact that coastal erosion is dramatic in certain parts of the study area, the site inventory is considered to be more or less representative of the actual archaeological record. In view of the large sizes that are generally reported for Early Ceramic sites it is not plausible that sites from this phase have been destroyed completely. Parts of the sites are thought to have survived at least. The sites of Morel and Anse à la Gourde, where extensive coastal erosion has been reported and the sea has eroded significant parts of Early Ceramic occupation phases, illustrate this situation (Delpuech *et al.* 2001); (section 3.2.3). In the research area, however, no Early Ceramic A sites were found. It appears even more unlikely that coastal dynamics destroyed Late Ceramic sites since these have been exposed to the same forces of nature for a considerably shorter period of time than the Early Ceramic sites. The situation for the pre-ceramic period was probably less favourable for site conservation. Small coastal sites dating from this period will have been eroded.

5.2.1.6 Cultural post-depositional processes

Cultural post-depositional processes have badly damaged the archaeological record as well. This process may have already started during the pre-Columbian period. Superposition of younger archaeological deposits may cover older age sites or other sites with deep deposits and the different components of multi-component sites are hardly ever equally represented at the surface. It is known that tropical lowland groups on the South-American mainland clear garden plots of so-called fertile black-soils that result from old settlements and their trash and ash debris. They thus inflict considerable damage on the surface and sub-surface record (Hoogland personal communication 2000). At merely one site, the Late Ceramic A Petites Salines site, was an older archaeological layer discovered. All the other tested sites consisted of one single archaeological component. These observations contrast with those by Versteeg *et al.* (1993:158), but they are in accordance with observations by Bradford (2001) for sites on the Windward Islands.

The recent construction of houses and roads has severely disturbed the archaeological record in particular. Bulldozing activities at the airport on La Désirade and at Anse Petite Rivière destroyed important parts of archaeological sites. In addition, the construction of the marina on La Désirade led to the complete destruction of the Grande Anse beach. The original location was easily accessible from the sea and had great exploitation potential – factors that must have made the location attractive for pre-Columbian settlement – and it is well possible that it was inhabited during pre-Columbian times. Some non-diagnostic isolated pre-Columbian ceramics and lithic artefacts were discovered near the marina, but unfortunately, this location can no

longer be investigated as a result of its dramatic alteration and destruction.

In addition, at Pointe des Châteaux and on La Désirade and Petite Terre intensive cotton cultivation took place in the eighteenth and the early nineteenth century. Notwithstanding the fact that cotton cultivation entails only shallow perturbation of the soil, it compounds the negative effects of erosion and trampling processes on the archaeological record. It is deemed that even though intra-site distributions have been negatively influenced, the chance that complete sites have been destroyed remains limited. Non-stable and presumably non-representative site dimensions and surface distributions of archaeological material were found at the À l'Escalier site. Bodu described the surface concentration of this site to be large and dense in 1984, but during a visit in 1997 hardly any archaeological material was found. In 1999 and 2000, a small concentration of surface material was identified on the surface again. Some other sites, including Les Sables, Tropique and Site du Phare, had smaller surface distributions in 1999 when compared to Bodu's 1984 and 1985 observations. This probably reflects differential conservation situations through time, related to ploughing.

No indications were found in the research area for the addition or removal of soil to increase local soil fertility. Agricultural activities also disturbed archaeological contexts but, since they consist of extensive horticulture, their influences have remained limited and their effects can largely be estimated. They can be observed on the surface and in the sections of the test units.

5.2.2 Biases related to small-scale sub-surface testing

Sub-surface testing was the most time consuming part of the fieldwork and was therefore carried out on a very small scale only. This entailed unavoidable biases. First, sub-surface testing consisted of the excavation of small test units at only a limited number of sites. Secondly, the excavation of small test units involves certain biases, since (at some of the sites) they provide relatively limited samples of archaeological material. In addition, test unit locations were more or less randomly selected, and therefore it is not clear how representative these are of the sites. Surface surveys and small randomly situated units provide only, literally, superficial and small-scale insights, especially regarding site structure and intra-site distributions and it is difficult to generalise the data collected. However, the surveys did at least provide general site characterisations. Finally, almost all test unit material has been dry screened using 2/5 inch mesh screens, biasing sampling methods of faunal remains in particular (*cf*. Nokkert in appendix 5).

Apart from the excavation of test units, auger test series were carried out at the northern beaches at Pointe des Châteaux in order to investigate the presence or absence of archaeological material. The picture provided by the auger tests is far from complete since only one east-west running series of auger tests could be completed across the Pointe des Châteaux beaches, situated halfway between the shoreline and the dunes. The dunes themselves, and halfway positions inland from the dunes could not be tested in the project's time frame. In addition, the maximum depth that was reached was limited to approximately 200 cm below surface and therefore does not provide information for deeper levels.

At some of the sites, including Est Petite Saline Orientale, Est Pointe Tarare and Nord Morne Zambi and Pointe Séraphine, only small amounts of archaeological material were collected from the test units while a lot of surface material had been found. For the À l'Escalier site, the situation is the other way around. It is not exactly clear how to interpret these situations. It may be true that dense surface concentrations represent well-preserved sites with abundant sub-surface material. On the other hand, it may be equally true that archaeological layers have been eroded, exposing larger quantities of material at the surface than can be found in the test units. Both explanations may be valid and they can be tested only in cases where obvious perturbations have taken place.

For many other sites in the research area, excavated test-units demonstrated that the surface information reflected the sub-surface situation rather well, even though several sites appear to have been superficially eroded at least. At Pointe Séraphine and Pointe Gros Rempart the quantities of surface material were greater than what was found in the test units as well, but this probably had a different reason. The dense, but thin and widely dispersed deposits of material at these sites are considered to be the result of the fact that the sites were used only incidentally. At the Cocoyer site, the quantity of material excavated was very disappointing. The surface distribution, which is much denser in other parts of the site, suggests that the test unit location was just an unlucky choice.

5.3 SITE IDENTIFICATION

This section contains information on site parameters that have been used for the identification of different types of sites. These parameters include site location, site dimensions and site area, site function, duration of use or occupation and chronological assignment (section 1.4.4).

5.3.1 Site parameters

5.3.1.1 Site location

Regarding site location, rough distinctions have been made between coastal and inland sites. No real inland locations

exist, however, as a result of the limited dimensions of the various parts of the study area. This is true for Pointe des Châteaux and Petite Terre in particular, their maximum width being 1 km. Although several of the sites, when plotted on a map, appear to be close to the coast, some are situated at elevations that are difficult to reach and these were therefore considered inland. This distinction between coastal and inland sites was emphasised, as inland sites would have been missed in traditional surveys, focusing on coastal areas. Still, notwithstanding the fact that as a result of the homogeneity of the area no great ecological differences occur between coastal and inland locations, it is deemed that these entail different selection criteria. On La Désirade, for example, the eastern plateaus and the central plateau are difficult to reach from the coast but they offer special opportunities related to defence or observation.

For the immediate surroundings of all sites, artificially set at 250 m distance from the sites at maximum, presence or absence of certain location variables has been scored (section 1.4.4). These include fresh water sources or streams, flat terrain, accessible bays with canoe landing-spots, coastal reefs, soils suitable for small-scale horticulture, lithic raw materials, views of other islands, parts of islands or possible sea routes, strategic elevated spots, salinas and mangrove areas (table 5.1).

5.3.1.2 Site dimensions and site area

Areas representing spatially bounded distributions of surface material have been recorded. Unfortunately, as a result of logistical limitations, it turned out to be impossible to map fixed numbers of artefacts per square meter. The grab-samples made during the survey were too small and unsystematic to allow insights into intra-site variation. This complicated the understanding of site layouts, a situation which was made even more difficult since the composition of the surface material at some of the sites appeared to change from time to time (section 5.2.1). Several sites have probably been documented as being larger than they actually were as a result of site recording methods as well as post-depositional processes (section 1.4.4).

The problem related to the obscuring of different chronological components of sites turned out to be smaller than feared at the beginning of the project since only three multi-component sites were found. It is true, however, that for all three sites, dimensions of the earliest occupations could not be distinguished. The surface material at Petites Salines, for example, only represented Late Ceramic A occupation, while evidence for Early Ceramic B occupation was found in one of the test units. The other four test units, excavated west, east and south of this unit, did not provide any evidence for this earlier occupation, nor did auger tests at the beach north of it. At this moment there is absolutely no information available on the extensions of the Early Ceramic B site. Only more intensive sub-surface investigations can provide this information. But even at sites where such detailed studies have been carried out, such as Anse à la Gourde, it proved to be difficult to estimate the dimensions of the different occupations. This was mainly the result of the local coastal processes (Hofman *et al.* 2001[a]). Early Ceramic B occupation at the third multi-component site, Anse Petite Rivière, is represented by a handful of sherds only, of which the exact context is not known since they stem from old, undocumented excavations. The dimensions of the site during this period remain unidentified as well. Although dimensions of the eldest components could not be investigated, the simple fact that sites have been occupied during different periods and that people deliberately selected a certain location over a long time frame, indicates the relative importance of the sites.

5.3.1.3 Site type or site function

As expected, the functional assignment of sites turned out to be the most complicated aspect, although this was not only attributable to the small samples, as had been foreseen at the start of the surveys. Initially, it had been thought that information on site types was to be drawn from other, more extensive, archaeological studies in the Caribbean. This turned out to be more complicated than envisioned because motivation for functional assignments often remains obscure in Caribbean publications. Antczak (1998), Boomert (1996, 2000), Haviser (1987[a]) and Hoogland (1996) are positive exceptions to this rule. More importantly, the systematic and intensive nature of the East-Guadeloupe surveys resulted in the discovery of 'marginal' and under-exposed sites, characterised by shallow and dispersed distributions of fragmented and weathered ceramics at the surface, that were not reported in detail before (De Waal 1999[b], 2002[a-c]). At some of the sites lithic artefacts and shell and coral fragments were found as well. The limited quantities of pottery and the heavy fragmentation of the sherds did not allow estimates of numbers and shapes of vessels represented by the samples collected from the sites. This is unfortunate since such estimates would have helped improve the understanding of the functioning of these sites. The indistinct sites may have been used as temporary habitation sites, campsites or special activity sites that may have been related to habitation sites. While it is tempting to label indistinct sites with unambiguous functions in order to facilitate site pattern descriptions, it has been decided not to do so since archaeological evidence is rather limited. The term 'indistinct' has been used instead of 'unknown' or 'unidentified', since information on site functions is not completely lacking. It is not clear, however,

Site name	F	L	Period	Site area	Depth	1	2	3	4	5	6	7	8	9	10	N	Cer	Grid	Lith	Sh.A	Cor	Sh.F	Faun	Hum
Anse à la Gourde	H	C	ECB-LCB	45,000	10, 150, ?	?	+	+	+	+	-	+	+	?	-	8	++	++	++	++	++	++	++	++
Site 7	H	I	LCA	17,000	10	+	+	-	-	+	-	+	+	-	-	5	+	+	+	-	+	+	+	-
Montagne Petites Salines	H	I	ECB	15,500	40	+	+	+	+	+	-	+	-	+	-	7	++	++	+	-	+	+	+	-
Est Pointe Tarare	H	I	LCA	13,700	10	+	+	-	-	+	-	+	+	-	-	5	+	+	+	-	+	+	-	-
Grande Saline	H	C	LCA	12,200	60	-	+	+	+	-	-	+	-	+	-	5	++	++	++	-	++	++	+	-
Village des Pêcheurs	H	C	ECB	10,000	20	+	+	+	+	+	-	+	-	-	-	6	+	+	-	-	+	+	-	-
Est Petite Saline Orientale	H	C	LCA	7700	<5	+	+	+	+	+	-	+	-	+	-	7	+	-	-	-	+	+	-	-
Nord Morne Zambi	H	C	LCA	5400	30	-	+	+	-	+	-	+	+	+	-	6	+	+	+	-	+	+	-	-
Petites Salines	H	C	ECB-LCA	5200	20, 90	-	+	+	+	+	-	+	-	+	-	6	++	++	+	-	++	++	+	-
Fond Caraïbe	H	I	LCA	2400	Unident.	-	-	-	-	+	-	-	+	-	-	2	+	+	+	-	-	+	-	-
Degrat	H	C	LCA	1200	30	-	+	+	+	+	-	+	+	+	-	7	+	+	+	-	+	+	+	-
Ouest Pointe Tarare	Ih	I	LCA	11,000	Unident.	+	+	-	+	+	-	+	+	-	-	6	+	+	+	-	-	+	-	-
Pointe à Cabrits 1	Ih	I	LCA	10,000	Unident.	-	+	+	+	+	-	-	+	?	-	6	+	-	-	-	-	+	-	-
Pointe à Cabrits 2	Ih	I	LCA	2500	Unident.	-	+	+	+	+	-	+	+	?	-	7	+	+	+	-	-	+	-	-
Site 1	Ih	C	LCA	2200	30	+	+	+	-	+	-	+	-	-	-	5	+	-	-	-	+	+	-	-
Ouest Morne Zambi	Ih	I	ECB	1800	20	+	+	+	-	+	-	-	-	+	-	5	+	+	+	-	+	+	-	-
Ouest Résid. Kahouanne	Ih	I	LCA	1600	20	+	+	-	-	+	-	+	+	-	-	5	+	+	-	-	-	-	-	-
Fond St. Bernard	Is	I	LCA	1000	Unident.	-	+	-	-	+	-	-	+	-	-	3	+	-	-	-	-	+	-	-
Site 9	Is	I	LCA	600	<5	+	+	+	-	+	-	-	-	-	-	4	+	-	-	-	-	-	-	-
Site 10	Is	I	LCA	400	<5	+	+	+	-	+	-	-	-	-	-	4	+	-	-	-	-	-	-	-
Ouest Anse à Plume	So	I	LCA	400	<5	-	+	+	-	+	-	+	+	-	-	5	+	-	-	-	+	+	-	-
Anse Petite Rivière	H	C	ECB-LCA	50,400	Unident., 35	+	+	+	+	+	-	-	-	-	-	5	++	++	++	++	++	++	++	+
Aéroport	H	C	LCA	28,200	100	-	+	+	+	+	-	+	-	+	-	6	++	++	++	+	++	++	+	-
Les Sables	H	C	ECB	19,000	70	-	+	+	+	+	-	+	+	+	-	7	++	++	++	+	-	+	+	-
Pointe à Godard	H	C	LCA	15,200	Unident.	-	+	+	+	+	-	+	-	+	-	6	+	+	+	+	-	+	-	-
Anse des Galets	H	C	LCA	14,800	30	-	-	+	-	+	-	-	+	-	-	3	+	+	++	-	+	+	+	-
Grand Abaque 1	H	I	LCA	10,000	30	-	+	-	-	+	-	-	-	-	-	2	+	++	++	+	-	+	-	-
Pointe Colibri	H	C	LCA	9700	30	+	+	+	+	+	-	+	-	-	-	6	+	++	++	-	++	+	-	-
Cocoyer	H	P	LCA	9400	10	-	+	-	-	+	-	-	+	-	-	3	+	++	+	+	-	-	-	-
Morne Souffleur	H	P	LCB	2800	20	-	+	-	-	+	-	+	+	-	-	4	+	+	++	+	++	++	+	-
À l'Escalier	H	C	LCA	1700	80	+	+	+	+	+	-	-	-	-	-	5	++	++	++	++	++	++	++	+
Morne Cybèle-1	H	P	LCB	700	30	-	+	-	-	+	-	+	+	-	-	4	++	++	+	+	-	++	-	-
Pied de la Montagne	Ih	I	Unident.	39,000	50	+	+	-	-	+	-	+	+	-	-	5	+	-	+	+	+	+	+	-
Ravine à Moko	Ih	P	LCA	16,800	Unident.	-	+	-	-	+	-	-	+	-	-	3	+	+	+	-	-	-	-	-
Morne à Marthe	Ih	I	LCA	14,100	<5	-	+	-	-	+	-	+	+	-	-	4	+	+	+	-	-	-	-	-

Tropique	Ih	P	LCA	7800	Unident.	-	+	-	-	+	-	+	-	-	-	3	+	-	++	+	-	+	-	-
Les Éoléens	Ih	P	LCA	5500	Unident.	-	+	-	-	+	-	+	+	-	-	4	+	+	+	-	-	+	-	-
Au Vent	Ih	I	LCA	2700	<5	-	-	-	-	+	+	-	-	-	-	2	+	-	+	-	-	+	-	-
Ravine César	Ih	P	LCA	400	Unident.	-	-	-	-	+	-	-	-	-	-	1	+	-	+	-	-	+	-	-
Morne Cybèle-2	Ih	P	LCA	300	20	-	+	-	-	+	-	+	+	-	-	4	+	-	+	-	-	+	-	-
Chemin de la Montagne	Is	P	LCA	19,300	<5	-	+	-	-	+	-	-	-	-	-	2	+	-	+	-	-	-	-	-
Site 19	Is	I	LCA	13,100	<5	-	+	-	-	+	-	-	-	-	-	2	+	-	+	-	-	-	-	-
Grande Ravine	Is	I	LCA	6800	Unident.	+	-	-	-	+	-	-	-	-	-	2	+	-	+	-	-	-	-	-
Trou Madame	Is	P	LCA	6300	<5	-	+	-	-	+	-	-	-	+	-	3	+	-	-	-	-	-	-	-
La Ramée	Is	I	LCA	4500	<5	-	+	+	-	+	-	-	-	-	-	3	+	-	-	-	-	-	-	-
Site 29	Is	I	LCA	2700	Unident.	-	+	+	+	+	-	-	+	+	-	6	+	-	-	-	-	-	-	-
Site 8	Is	I	LCA	2400	<5	+	+	-	-	+	-	+	-	-	-	4	+	-	+	-	-	-	-	-
Site 28	Is	I	LCA	1800	<5	-	+	-	-	+	-	-	-	-	-	2	+	-	-	-	-	-	-	-
Site 5	Is	I	LCA	1200	<5	-	-	-	-	+	-	-	-	-	-	1	+	-	-	-	-	-	-	-
Site 17	Is	C	LCA	1000	Unident.	+	+	+	+	+	-	-	-	-	-	5	+	-	-	-	-	-	-	-
Grand Abaque 2	Is	I	LCA	900	Unident.	-	+	-	-	+	-	-	-	-	-	2	+	-	+	-	-	-	-	-
Site 4	Is	I	LCA	800	<5	-	-	+	-	+	+	-	-	-	+	4	+	-	+	+	-	-	-	-
Chemin du Latanier	Is	I	LCA	600	<5	-	+	-	-	+	-	-	+	-	-	3	+	-	-	-	-	-	-	-
Grotte le Baigneux (cave)	Is	I	Unident.	30	Unident.	-	+	-	-	+	-	-	-	-	-	2	-	-	+	+	+	+	-	-
Voûte à Pin	CF	P	LCA	70	40	+	+	-	-	-	-	-	+	-	-	3	+	+	+	-	+	+	+	+
Chemin de M. De l' Orme	CF	P	LCA	<1	12	-	-	-	-	+	-	-	-	-	-	1	+	-	+	-	-	-	-	-
Pointe Séraphine	LW	C	Unident.	11,200	20	-	-	-	-	-	+	+	-	-	-	2	-	-	++	+	-	-	-	-
Pointe Doublé	LW	C	Unident.	9900	Unident.	-	-	-	-	-	+	+	-	-	-	2	-	-	++	+	-	+	-	-
Morne de Baie Mahault	LW	C	Unident.	4500	Unident.	-	-	+	+	-	+	+	-	-	+	5	-	-	++	-	-	+	-	-
Pointe Gros Rempart	LW	C	Unident.	3600	20	-	+	+	+	+	-	+	-	-	+	6	+	-	++	+	++	+	-	-
Parc à Jojo	Cs	I	LCA	100	Unident.	-	+	-	-	+	-	-	+	+	-	4	+	-	-	-	-	-	-	-
Grotte de Grande Anse	Cs	I	LCA	6-20	Unident.	-	+	-	-	+	-	-	-	-	-	2	+	-	+	-	-	-	-	-
Morne Frégule	Cs	I	LCA	Unident.	Unident.	-	+	+	-	+	-	+	+	-	-	5	+	-	-	+	-	-	-	-
Grotte de Morne Blanc	Cs	I	LCA	Unident.	Unident.	-	-	-	-	+	-	-	-	-	-	1	+	-	-	-	-	-	-	-
Site du Phare	H	C	LCA	25,100	70	+	+	+	+	+	-	+	-	+	-	7	++	++	++	+	++	++	+	-
Baleine du Sud	H	I	LCA	9500	70	-	+	+	+	+	-	+	-	-	-	5	+	+	-	-	++	++	+	-
Est de Mouton de Bas	H	I	LCA	8200	70	-	+	+	+	+	-	+	-	+	-	6	++	++	++	+	++	++	++	-
Pointe Sablé	H	I	LCA	8400	60-80	-	+	+	+	+	-	+	-	-	-	5	++	++	++	-	+	+	++	-
Trou Canard	H	I	LCA	Unident.	Unident.	-	+	+	+	+	-	-	-	-	-	4	+	+	-	-	-	-	-	-
Mouton de Bas	Ih	I	LCA	12,800	Unident.	-	+	+	+	+	-	-	-	+	-	5	+	+	-	-	-	+	-	-
Est de Trou Canard	Ih	C	LCA	4900	Unident.	-	+	+	+	+	-	+	-	-	-	5	+	-	-	-	-	+	-	-

how the available information should be interpreted unambiguously. Few references to similar sites where more extensive research had taken place could be found that could help further analysis.

Analysis of find material and site locations suggested that three types of indistinct sites should be distinguished. The first type is characterised by very small quantities of material that are indicative for the local preparation of food, such as griddle fragments and shell food remains. This suggests that people stayed at these specific spots a while, at least long enough to consider it necessary to prepare food on the spot instead of bringing it in a prepared form. This is not evident for short stays since cassava-griddles are less easily transported than cassava-bread, which can be kept for long periods. The surface distributions further consist of small numbers of lithic artefacts and at some of the sites shell and coral artefacts were found as well. The archaeological material of some of the sites is considered settlement refuse, but the density of material is very limited. It appears to be likely that some of the sites were temporary habitation sites used by a small group of people. Regarding the superficial and dispersed distributions of archaeological material, it is not very likely that these sites played a role of regional significance. Temporary habitation sites do provide, however, valuable information on local social, economic and political organisation.

The second type lacks evidence of local food preparation. These sites are characterised by small surface distributions consisting of heavily fragmented and weathered ceramics, without griddle fragments. Some of these sites may be related to pre-Columbian subsistence. These may include areas marked by repeated actions related to food procurement, such as horticultural activities, fishing, catching terrestrial fauna, collecting wild plants or collecting water, or related to the exploitation of non-subsistence resources, such as wood, calabashes, feathers, fibres and pigments. As they are inland sites near soils suitable for small-scale horticulture and situated close to fresh water sources, it may be suggested that they were related to gardening activities. Pottery found at the sites may have been used for carrying water, crops or food for consumption during a day's work in the fields.

The third type of indistinct sites includes cave sites with indistinct functions. These have only been found on La Désirade. These sites are all situated inland at special places within the landscape, such as at high elevations overlooking parts of the southern coastal plain of the island. The cave site category does not specifically relate to site function but to a site type that allows various different functions, including habitation, shelter, ceremonial use, or other, unidentified, special activities and combined functions. Until quite recently, inhabitants of La Désirade went to seek shelter in caves for hurricanes. The cave sites with indistinct functions were probably used for a similar purpose, though they can also have offered shelter to other environmental or possibly human threats as well. This interpretation is considered plausible since most of the cave sites are close to pre-Columbian habitation sites so that they can be reached rather quickly in times of need, except for Grotte de Grande Anse. This site, however, is near the Grande Anse harbour, the probable location of a large pre-Columbian site regrettably destroyed during the construction of the marina. No evidence could be found for habitation or ceremonial use of these caves.

For other sites rather distinct functions could be suggested. These include habitation sites, lithic workshops, ceremonial sites and a strategic outpost. Habitation sites may comprise the remains of one house or a cluster of houses that were

Table 5.1 (preceding two pages). Site information per site type for Pointe des Châteaux, La Désirade and Petite Terre. The table successively lists site name, site function (F), location (L), period of use, approximate surface area (m^2), and maximum depth of the separate archaeological deposits (cm). Site functions include habitation site (H), strategic outpost (So), indistinct site, probably temporary habitation (Ih), indistinct site, probably special activity (Is), lithic workshop (LW), site with ceremonial function (CF), and cave site, probably used as shelter (Cs). Site locations are coastal (C), inland (I) or on the plateau (P). Periods of use cover Early Ceramic late phase (ECB), Late Ceramic early phase (LCA) and Late Ceramic late phase (LCB). Subsequently, presence (+), absence (-) or possible presence (?) of fresh water (1), flat terrain (2), accessible bays with canoe landing-spots (3), reefs (4), soils suitable for small-scale horticulture (5), lithic raw materials (6), view points (7), strategic elevated spots (8), salinas (9) and mangrove (10) has been scored, as has the total number of site location variables (N). Finally, the table lists incidental presence (+), frequent presence (++) or absence (-) of various categories of archaeological material, including ceramics (cer), griddles (grid), lithic artefacts (lith), shell artefacts (Sh.A), coral artefacts (Cor), shell food remains (Sh.F), faunal remains (Faun) and human skeletal remains (Hum).

occupied on a permanent basis. Duration of occupation ranges from very short periods to many generations, influencing the thickness of sub-surface deposits. Although the sites primarily have a settlement function, ceremonial or other special activities probably took place as well. Habitation sites may be characterised by rather large site areas, locations favourable for habitation and large quantities of habitation refuse, which generally includes pottery, shell food and faunal remains, and lithic, shell and coral artefacts. In some instances, human skeletal remains do occur as well. Pottery samples may be characterised by a variety of vessel shapes, of which simple, rather large open vessels with thick walls, that may have functioned for storage or cooking, will be predominant. Griddle fragments, spindle whorls and pot-stands may be present as well. Intensity and duration of occupation, as well as preservation of the settlement, determine the amount and diversity of different archaeological materials. Surface material distributions are generally dense and concentrations and empty areas, relating to activity areas, may be visible at the surface. Off-site material, mostly consisting of ceramics or lithic or shell tools, is usually found near habitation sites.

Lithic workshops consist of sites where lithic raw materials were worked into semi-manufactured objects or finished artefacts. The sites yield lithic artefacts in different stages of production, refuse material resulting from the production process and coral and lithic tools used during the manufacturing process. The sites usually lack habitation refuse. Lithic workshops are generally situated on or very close to sources of the raw materials worked, thereby reducing the expected amounts of off-site material. Dimensions of the site area and thickness of sub-surface deposits depend on the intensity and duration of use.

Sites have been labelled ceremonial sites when their main use appears to have been aimed at ritual or ceremonial practices. These are expected to be rather small sites, located at impressive or 'special' spots in the landscape, intensifying their special character. Archaeological material probably consists of pottery with special forms or decorations, human skeletal remains, as well as lithic, shell or coral objects that are not directly aimed at daily use, such as *spatulae* or three-pointed *zemis*. Duration of use can range from one single ritual activity to repeated activities, the character of which influences the thickness of the sub-surface deposits. The use of the sites, however, is considered special and restricted, thereby resulting in small, shallow deposits and the total absence of off-site material.

Strategic outposts are probably relatively close to habitation sites. They may represent sites that had a local or regional importance in defence or communication. The main characteristic is the site location, providing a commanding view over other islands, parts of islands or possible sea routes. Strategic outposts are thought to be small sites, used for short periods by only a few people, maybe even one person. This will result in very small and shallow archaeological deposits. Off-site material is probably absent.

5.3.1.4 Duration of use or occupation

Duration of occupation could only be investigated at Anse à la Gourde. Long-term and intensive archaeological investigations demonstrated that this site had been occupied between approximately AD 500 and 1350 (Hofman *et al.* 2001[a-b]). It is possible, however, that habitation was less continuous than it now appears in the archaeological record, but it is expected that occupation at Anse à la Gourde was, if not continuous, probably only occasionally interrupted for a short period and swiftly recommenced (Bright 2003:51). Relatively short, successive phases could not be distinguished at any of the sites.

Moreover, it was impossible to excavate test units at all pre-Columbian sites. Several of these sites provided a limited amount of archaeological material suggesting that these sites were used for a short period or for activities that do not result in dense deposits. Some of the sites may have been slightly eroded as a result of local conservation or perturbation factors but it is thought that this is not the only factor accounting for the shallowness of the deposits. Depositional behaviour appears to have been more important, involving, for example, refuse discarding over extended areas, precluding the development of dense midden deposits. In addition, at some cliff sites refuse material may also have been thrown in the sea.

Information on seasonal use of sites could not be obtained due to the small samples of faunal remains.

5.3.1.5 Chronological assignment and temporal resolution

At the start of the project, ^{14}C dates were available for Anse à la Gourde, Morne Cybèle-1, Morne Cybèle-2 (Hofman and Hoogland 1994; Hofman *et al.* 2001[a]) and Anse Petite Rivière (De Waal 1996[b]). For À l'Escalier and Aéroport, ^{14}C dates were obtained from *Cittarium pica* samples that were analysed in the Groningen Laboratory for Isotopic Research in the Netherlands. The resulting BP dates have been calibrated using CALIB 4.2 by Stuiver *et al.* using the marine shell calibration curve.[1] For the other sites, rough chronological assignments were made on the basis of stylistic and technological aspects of the ceramics (section 1.4.4). Sites could be labelled Early Ceramic B, Late Ceramic A, and Late Ceramic B. The chronology of six sites remains unidentified since no (diagnostic) pottery could be collected. The three multi-component sites represent Early Ceramic B

and Late Ceramic A occupations. A very small Late Ceramic B component has been reported for the multi-component site of Anse à la Gourde as well (Hofman *et al.* 2001[a]). Multi-component sites were counted as single sites during the surveys, but in site pattern analyses occupation periods have been presented separately.

5.3.2 Off-site material

A large amount of off-site material has been collected and mapped during the 1998-2000 surveys. Off-site material reflects the use of activity areas around sites, areas on the islands that were used for horticultural practices, harvesting areas, fresh water sources, lithic raw materials or other exploitation of natural resources. Paths of movement through the landscape, *i.e*. trails that were often frequented may become visible in the archaeological record as well (Lindblom 1991). This has been reported, for example, for pre-Columbian Saba (Hoogland personal communication 2000). Therefore, the study of off-site material may be useful in the understanding of pre-Columbian use of the landscape. Unfortunately, as mentioned earlier (section 2.2.3), the project's timeframe did not allow detailed analysis and study of the non-site data collected. In some instances, the presence of off-site material could be used as complementary information to the site data collected.

5.4 ARCHAEOLOGICAL SITES ON POINTE DES CHÂTEAUX

Pointe des Châteaux has a dense site distribution consisting of 21 sites (fig. 5.1; appendix 2; table 5.1).[2] These include 11 habitation sites, that yield typical habitation refuse and generally have attractive site locations in the sense that they are generally well accessible from the sea and have good exploitation potential and observation facilities. In addition, a strategic outpost – dominating the northern coast of the peninsula – and nine indistinct sites, of which some have evidence of local food preparation, were found. Most of the sites, 16 in total, were dated Late Ceramic A, three others could be assigned to the Early Ceramic B and two sites are multi-component. No pre-ceramic sites were found (De Waal 1999[b], 2001, 2002[a-c]). Few sites are well-preserved, as a result of erosion or cultural post-depositional processes.

5.4.1 Habitation sites

The Pointe des Châteaux site inventory consists of 11 habitation sites (table 5.1). Two of these can be dated Early Ceramic B, two others are multi-component and the remaining seven are Late Ceramic A. The sites have a settlement function primarily, but ceremonial or other special activities may have been carried out as well. The substantial burial area and the abundant and delicately worked ceramics, lithic, shell and coral artefacts excavated at Anse à la Gourde, for example, suggest that this site played a role of local, and possibly regional, importance. The long occupation of the site, ranging from the end of Early Ceramic B (AD 500-700) until the start of Late Ceramic B (median date AD 1350), demonstrates the importance of the site as well (Hofman *et al.* 2001[a]). Early Ceramic B and Late Ceramic A Anse à la Gourde yielded ritual paraphernalia such as *zemis*, inlays, *spatulae*, body-stamps, shark-shaped and frog-shaped pendants and anthropomorphic and zoomorphic *adornos*, depicting caiman, lizard, duck, frog, parrot and pelican. *Zemis* were also collected from the Degrat site and at Nord Morne Zambi an *adorno* representing a manatee was found (fig.A2.25a), an animal that is associated with the underworld (Boomert 2000:474).

The habitation sites are large, ranging between 1200 m^2 and 45,000 m^2. Although Caribbean archaeological studies usually emphasise coastal habitation sites, inland sites are remarkably large. Their surface material distributions, however, are usually less dense than those of coastal sites, and their sub-surface deposits appear to be more shallow as well. Depths of archaeological deposits range between less than 5 cm to 150 cm. Many of the sites are rather shallow. This may be the result of conservation factors, as most of the sites have been damaged by coastal erosion, cultivation and constructions, and of biases linked to the selection of the test unit locations but it may be indicative of relatively short occupation periods as well.

As mentioned before, the survey method did not allow analyses of intra-site distributions or site layout, but attention during the fieldwork was probably mainly directed at (parts of) refuse areas. The sites yield typical habitation refuse, including pottery, shell food remains and faunal remains, and lithic, shell and coral artefacts. At Anse à la Gourde, human skeletal remains have been found as well. Of course, the composition of the archaeological assemblages varies from site to site since these depend not only on intensity, duration and significance of occupation, but also on site preservation. Pottery samples can be roughly characterised by a variety of vessel shapes, among which simple, rather large and thick open functional vessels are predominant. Decoration is not abundant. Griddle fragments, spindle whorls and pot-stands are present on several of the sites as well. Apart from Anse à la Gourde and Petites Salines, the Pointe des Châteaux habitation sites yielded hardly any faunal remains (Nokkert in appendix 5). This can be explained by preservation factors, the small scale of the investigation or simply through the absence of the material. The large mesh sizes of the screens used are not thought to

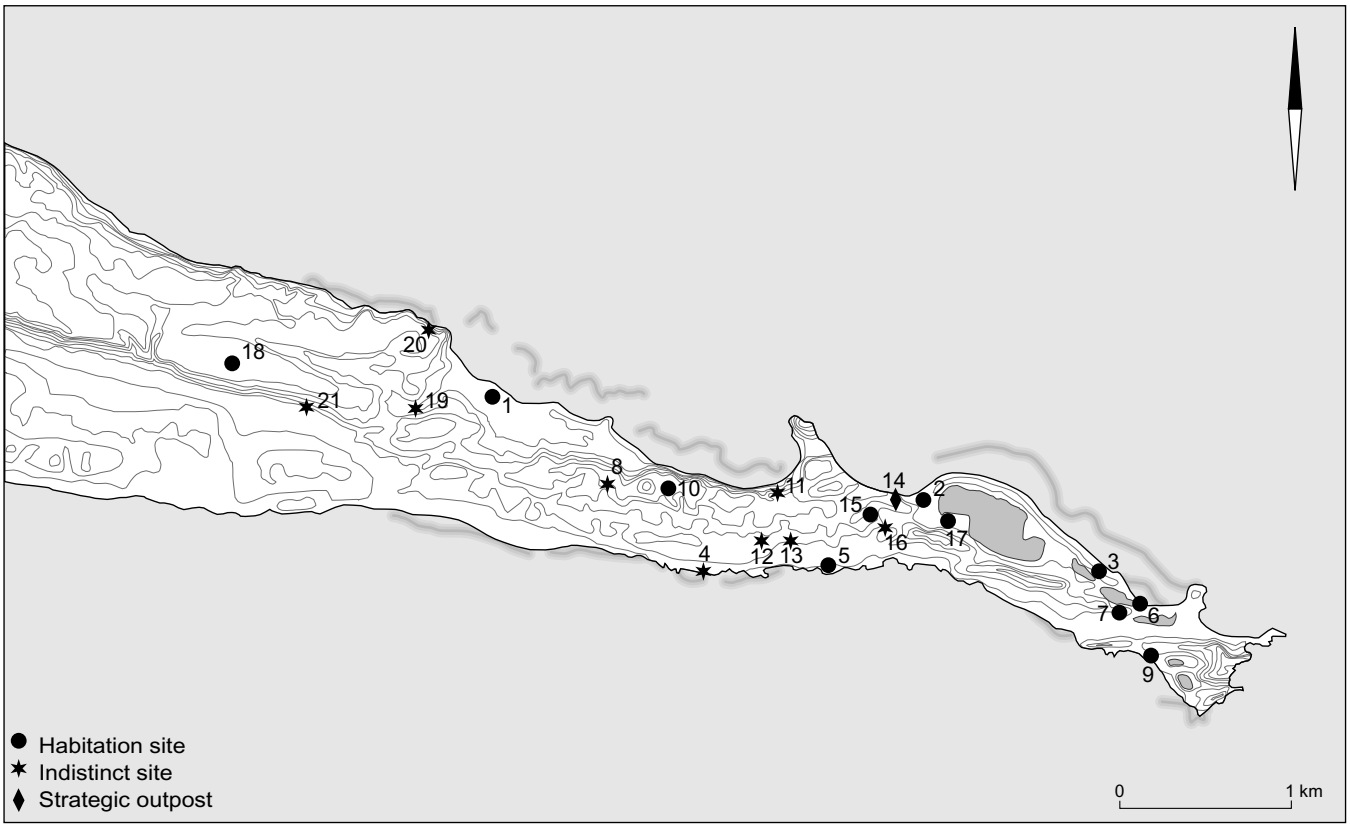

Fig. 5.1. Archaeological sites on Pointe des Châteaux.

have contributed to this absence, since it is expected that faunal remains, no matter how small, would not have gone unnoticed entirely while excavating. Almost all the sites have ceramic off-site material.

Seven habitation sites are coastal, while four others have inland locations. The sites typically have attractive locations, characterised by a large number of location variables relating to exploitation potential, access and observation. The largest habitation site, Anse à la Gourde, has the most attractive site location in this sense, also when compared to La Désirade and Petite Terre habitation sites, even though the other sites follow close behind. Almost all habitation sites are on flat terrain and near soils suitable for small-scale horticulture, and provide clear views of their surroundings. Some of the sites are close to reefs, salinas, strategic points or fresh water sources. The Fond Caraïbe site, which is one of the smallest habitation sites, occupies the least favourable location.

5.4.2 Special activity sites: strategic outpost

None of the sites could be assigned distinct economical functions, related to pre-Columbian subsistence and use of the landscape or distinct ceremonial functions. A function as a strategic outpost has been suggested for the Late Ceramic A Ouest Anse à Plume site on the basis of its remarkable site location on a small flat terrain situated on a protruding plateau on the northern coast. The site provides a commanding view of La Désirade, Marie-Galante, Pointe des Châteaux, Anse à Plume, the Grande Saline and the archaeological sites near the Grande Saline. The site, which appears to be the result of periodic short-term use, is characterised by a small (25 x 22 m) and probably shallow distribution of archaeological material, consisting of pottery, coral and shellfish remains. Hardly any off-site material was found.

5.4.3 Sites with indistinct functions

The nine indistinct sites include one Early Ceramic B site

and eight Late Ceramic A sites. Some of these sites had been listed as small habitation areas in a preliminary presentation of the Pointe des Châteaux fieldwork (De Waal 1999[b]), but it now appears that these functional assignments may require revision.

The sites consist of small distributions of fragmented and weathered ceramics that appear to be largely limited to the surface. The sites may represent short periodic visits but also activities by a small group of people. Although the sites may have played an as yet unknown role on the local level, their regional importance appears to have been limited. The sites appear to be largely destroyed, which explains the shallowness of the archaeological layers. Hardly any off-site material was found, except near Ouest Pointe Tarare and Ouest Morne Zambi. The indistinct sites, of which areas range between 400 m^2 and 11,000 m^2, are generally smaller than habitation sites on Pointe des Châteaux.

The indistinct sites have only slightly less attractive site locations when compared to the habitation sites. Eight sites are inland sites, while the ninth is coastal. Most indistinct sites are on flat areas near soils suitable for small-scale horticulture and fresh water sources and possible canoe landing-spots. Some are close to strategic locations, viewpoints and reefs.

Six indistinct sites, where indications for local food preparation were found, have been tentatively labelled temporary habitation sites that were probably used by a small group of people. Site areas are between 1600 m^2 and 11,000 m^2. The sites have quite attractive locations, being situated on flat areas near soils suitable for small-scale horticulture. Many of them are situated close to fresh water sources, the coast, viewpoints, strategic locations and reefs. The three other indistinct sites lack evidence of local food preparation, are slightly smaller with site areas ranging between 400 m^2 and 1000 m^2, and they have less attractive locations. They may have been related to gardening activities.

5.5 ARCHAEOLOGICAL SITES ON LA DÉSIRADE

The La Désirade site inventory consists of 43 sites (fig. 5.2; appendix 3; table 5.1), namely 11 habitation sites, four lithic workshops, two ceremonial sites and 26 indistinct sites. One ceremonial site and five indistinct sites are situated in caves. A total of 33 sites was assigned to the Late Ceramic A. One Early Ceramic B site, two Late Ceramic B sites, and one multi-component site were found as well. For six sites the period of use could not be identified. These include four lithic workshop sites that can probably be assigned to the Ceramic Age (Knippenberg personal communication 2002). No pre-ceramic sites were found (De Waal 1999[f], 2000, 2001, 2002[a-c]).

5.5.1 Habitation sites

The 11 habitation sites include one Early Ceramic B site, while seven are Late Ceramic A, two others are Late Ceramic B and one is multi-component. Most of the sites are quite large and, with site areas ranging between 700 m^2 and 50,400 m^2, they are larger than the Pointe des Châteaux habitation sites. Surface material distributions are usually rather dense but some of the sites appear to have shallow archaeological deposits. Similarly to the Pointe des Châteaux habitation sites, archaeological deposits are 10-100 cm thick.

No insights were obtained on site structure, although refuse areas were probably most prominently represented by distributions of archaeological material at the surface. At Cocoyer, however, a concentration of griddle fragments was found in the eastern part of the site, probably representing a special activity area at the site. At Anse Petite Rivière, the 1984 and 1995 investigations provided some information on where refuse areas, living areas and a burial area were most likely situated (De Waal 1996[b]).

All habitation sites, except for the almost completely destroyed site of Pointe à Godard, yield typical habitation refuse, including pottery, shell food remains and faunal remains, lithic, shell and coral artefacts and, at Anse Petite Rivière and À l'Escalier, human skeletal remains were found as well. Very small amounts of faunal remains were found, which may be the result of research or preservation biases, but which may reflect the actual situation as well. These reflect a mix of everyday activities (Nokkert in appendix 5). Pottery samples can be roughly characterised by a variety of vessel shapes, among which simple, rather large and thick open functional vessels are predominant. Decoration is not abundant, except at the Early Ceramic B site of Les Sables. Griddle fragments, spindle whorls, pot-stands and an occasional body-stamp were found as well. Ceramic off-site material has been found near all the sites.

Apart from a settlement function, some habitation sites served ceremonial or other special activity functions as well. At the Late Ceramic A settlement of À l'Escalier, for example, preforms of *spatulae* and a *zemi*, an anthropomorphic head carved in beach-rock which may have been used as a *zemi* (fig. A3.5), one ceramic pelican-head modelling (fig. A3.3a), and polished shell discs and a shell inlay were collected (fig. A3.6). It seems unlikely that this latter object belongs to a garment decorated by shell ornaments, as it is extremely fragile and it would only be conserved if kept on a firm base. It may have functioned as an eyepiece for a statue or figurine made of clay, wood or other perishable materials. Wooden statues, decorated by

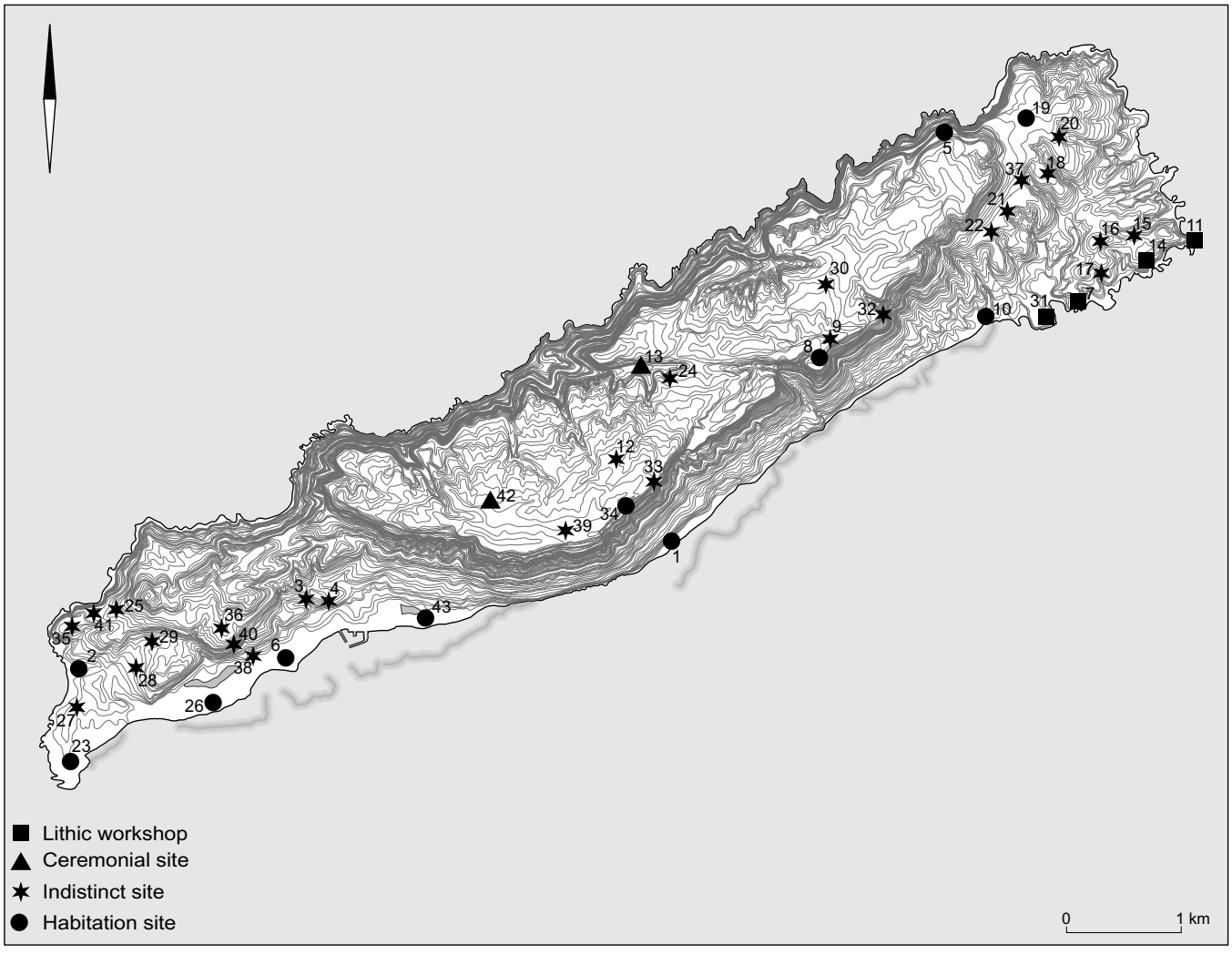

Fig. 5.2. Archaeological sites on La Désirade.

similar shell inlays, are known from the Greater Antilles, and these are usually labelled Taíno style (see for example Dacal Moure and Rivero de la Calle 1996: colour plate 7). It is possible, however, that on the Lesser Antilles statues were made in a local style. Although one small human skull fragment was found in the À l'Escalier midden area, there is no evidence for the existence of a burial area. Late Ceramic A occupation at Anse Petite Rivière yielded some stone and coral three-pointed *zemis* (fig. A3.17), anthropomorphic and zoomorphic *adornos* (fig. A3.15) and body-stamps (fig. A3.13). In addition, three burials were found, of which one individual had been buried with a ceramic vessel. Notwithstanding the fact that local informants reported that at least 15 pre-Columbian individuals had been removed from the site during construction works in 1983 before the area could be properly investigated by archaeologists, the existence of a larger burial area, could not be demonstrated (De Waal 1996[b]). At Early Ceramic B Les Sables, some anthropomorphic *adornos*, seemingly adorned with headdresses, and bird *adornos*, were collected (fig. A3.9).

Site locations are generally rather attractive. Most habitation sites are located on a flat terrain near soils that are suitable for small-scale horticulture and close to a reef and canoe landing-spots. Remarkably, the close proximity of

fresh water could only be reported for three coastal sites. No fresh water sources could be found in the near surroundings of the three sites located on the central plateau and the inland site. For Morne Cybèle-1 and Morne Souffleur, fresh water can be obtained near Souffleur and in the Cybèle ravine, but it is virtually impossible to climb the slope towards the sites from these sources. It takes more than half an hour and quite some effort to climb the slope from the southern coastal plain towards the site, even when using both hands and not carrying water. The peculiar site locations were probably considered attractive features.

Morne Cybèle-1 and Morne Souffleur, which are among the smallest habitation sites on La Désirade, are the most remarkable habitation sites on La Désirade, when regarding site location, archaeological material and chronological assignment. Unfortunately, both sites have been largely destroyed. The sites have spectacular locations on the southern border of the plateau at elevations of approximately 250 m above sea level. The site locations are strategic locations that can be defended easily and they provide commanding views of significant parts of La Désirade and its surroundings. They appear to emphasise the significance of the sites as well and are most impressive when viewed from the southern coastal plain and particularly in the morning when the first rays of sun accentuate the site locations. The protruding plateau, the steep slope towards the sites, and its eye-catching white limestone cornice, exceptional features in the landscape, were probably visually more dominant than the sites themselves. Tilley (1994:99) described a similar phenomenon, claiming that in some instances rock outcrops on which monuments are situated "are far more visually impressive than the monuments themselves". Being dominant focal points in the landscape, they function as landmarks and orientation points and in this manner they indicate and emphasise the location of the site, even when looked upon from a large distance. This makes them special places and consolidates their significance.

The archaeological layers at the sites are rather shallow, approximately 20 cm deep at most, and most of the material is found in bedrock cavities. Although this shallowness can be the result of erosion, it is not thought that the sites were used for a very long time. The archaeological material consists of pottery (fig. A3.35-A3.36; see also Hofman *et al*. 2004: fig. 16), including anthropomorphic *adornos*, clay discs, spindle-whorl fragments and griddle fragments, of an extraordinary style, that has been labelled Morne Cybèle, for which influences from the South-American mainland have been suggested (Hofman 1993, 1995). In addition, both sites yielded a *guaiza*, or shell mask, carved out of *Strombus* sp. (fig. A3.38; see also Hofman *et al*. 2004: fig. 17). Similar shell masks, referred to as Taíno style, have been found in the region, for example at the Anse du Coq site on Marie-Galante (Hoogland and Hofman 1999) and at the Rendezvous Bay and Sandy Hill sites on Anguilla (Crock 2000; Crock and Petersen 1999). Punctated headbands not only embellish the Morne Souffleur mask but the anthropomorphic *adorno* (fig. A3.35) collected from the same site as well, suggesting high-status individuals (or deities or dead ancestors) being represented. The style of the shell mask from the Morne Cybèle-1 site is slightly different. Allaire (1990) referred to these kinds of objects as ritual objects in Chican Ostionoid/Classic Taíno style.

The function of the masks is unknown. The Morne Cybèle-1 mask has been drilled in its upper part and the wearing out of the hole suggests that it was used as a pendant. The Morne Souffleur item has drilled holes in the back of the shell, from which the inner spiral had been completely removed, in order to allow the object to be attached to a stick, or to be worn on a belt. In this latter manner it might have functioned as a special container as well. The mask found at Sandy Hill, Anguilla, has two perforations, which allow a similar use (Crock and Petersen 1999:75). Dacal Moure and Rivero de la Calle (1996:43), citing Las Casas, report that one of the *caciques* on Hispaniola had offered Columbus a belt decorated by a golden human face mask, and that other ethnohistoric accounts describe similar practices that possibly involve shell masks.[3] According to García Arévalo (1997:114) masks were used as protective charms. Roe (1997:153) considers masks to be cacical pendants, for which human frontal bones, decorated by incision and worn on Taíno ceremonial belts might have been prototypes. Following this line of reasoning shell masks might have *zemi*-like functions and it was probably this symbolic reference that made them valuable or high-prestige items.

It is not clear why the La Désirade masks had been deposited. Loss seems unlikely as great efforts would have been made to relocate these highly esteemed objects and they would probably have been found when intensively looked for. It is also possible that these valuable objects needed to be hidden for some reason and no one ever came back to recollect them. Deposition of the objects might also have been part of a specific ritual action, for example related to special offerings. No other objects that are related to ceremonial activities were found. Masks might also lose their ceremonial significance after a certain period of use and may then easily be discarded. The last two possibilities appear most likely.

Regarding the unique archaeological material, including the shell masks and the peculiar style of the very fine ceramics, the high percentage of decoration, and the impressive and easily defensible site locations, the sites may have played a role of special significance (De Waal

2002[a], 2003; Hofman and Hoogland 2004). They appear to have been important at least for La Désirade, but possibly for surrounding areas as well, during the latest part of the pre-Columbian period. ^{14}C analysis of a *Cittarium pica* sample collected from Morne Cybèle-1 provided a date of cal. AD 1440-1480 (Hofman 1995). Although no dates were established for Morne Souffleur, similarities in style of the archaeological material suggest that it was probably occupied roughly in the same period as Morne Cybèle-1. This late date is remarkable since sites with similarly late dates have not been found in the research area, and they are rare on other Lesser Antillean islands.

5.5.2 Lithic workshops

The widespread presence of raw materials suitable for the production of stone tools on the south-eastern part of La Désirade is an interesting feature as these materials cannot be obtained on Petite Terre, Pointe des Châteaux or Grande-Terre. Small amounts of lithic off-site material have been found all over the south-eastern part of La Désirade, indicating that this area was incidentally used for the exploitation of local raw materials for the production of lithic artefacts. Concentrated and repeated activity took place at four lithic ateliers, with site areas ranging between 3600 m^2 and 11,200 m^2, situated at the coast.

Simple, mostly *ad-hoc*, artefacts of local raw materials were made there. Archaeological material is largely restricted to the surface and generally comprises lithic artefacts such as pebbles, flakes, flake cores, hammer-stones and shatter pieces of local igneous rock, local chert and possible Long Island flint. Some weathered shell fragments, including *Cittarium pica* and *Strombus gigas*, and coral fragments were observed as well and *Strombus gigas* axes were collected from some of the sites. No settlement refuse was found. Few finished tools were found in the site assemblages but the unsystematic character and the low densities of the worked material indicate that the sites were not used as pre-working sites (Knippenberg personal communication 2003).

The shallow concentrations of lithic material suggest that the sites were not in use very long. Bodu (1984) remarked that the limited quantity of lithic artefacts at Pointe Doublé could be the result of several hours' work by a group, or even by an individual, over a period of several days. People living at different sites on La Désirade in pre-Columbian times probably used the sites on a very small scale from time to time. Chronological assignments have not been made, but the sites are probably ceramic (Knippenberg personal communication 2002).

According to Bodu (1984), the sites of Morne de Baie Mahault and Pointe Doublé produced lithic artefacts for the Anse Petite Rivière site but these were not available for analysis. The worked lithic materials that naturally occur at the sites can be easily exploited and used for the manufacture of a large number of simple stone tools. The red and dark gray chert that has been worked at Pointe Gros Rempart, however, does not surface at this site and it is not clear why reduction took place at this very spot. Pointe Gros Rempart may have been selected as a temporary base to work material that can be collected close-by. It is not likely that Pointe Gros Rempart functioned as an outpost to exert control on the exploitation of La Désirade lithics. The archaeological material found at the site, as well as the limited importance of the La Désirade lithic material, evident from the modest spread over the research area, suggest that the material was not highly valued. The quantity of available raw material was apparently more important than the quality. The material does not equal the qualities of flint, reducing the regional importance to an important degree. Very small amounts of red chert have been found at other sites on La Désirade itself and on other parts of the research area. Two flakes of La Désirade red chert have been reported for the Morel site on Grande-Terre as well (Knippenberg 2006).

5.5.3 Ceremonial sites

Two ceremonial sites were identified on La Désirade on the basis of the special archaeological material encountered and the peculiar characteristics of the site locations: the Late Ceramic A sites of Chemin de M. De l'Orme and Voûte à Pin on La Désirade.

Chemin de M. De l'Orme consists of a deliberate deposition of a small vessel, which functioned as a container for a small stone axe and adze of St. Martin chert (fig. A3.39); (De Waal 2003). The vessel is decorated with an elaborate but rather imprecisely made pelican motif all over. Members of the 1999 survey crew found it outside the survey area, in the middle of a dirt track on the central plateau. Before deposition of the vessel, a small hole had been dug in the bedrock to provide a snug fit and protection for the vessel. The deposition is in an unattractive area with no strategic importance, on a hilly terrain that is difficult to reach and far from the villages and the coast. The vessel has been placed in an 'empty' area, judging from the distributions of archaeological material in the surroundings of the site: hardly any off-site material was discovered.

The function of the deposition is not clear. Close investigation of its surroundings did not provide evidence for the deposition to be a votive offering as part of a habitation structure or a burial. Petitjean-Roget (personal communication 2003) suggested on the basis of analogies from the South American mainland that the vessel functioned

as an offering to spirits related to agricultural fields, made in order to ensure fertility of the soil and good crops. It appears unlikely, however, that the vessel was deposited in an agricultural field, as it is not on flat terrain or close to water. Corrosion of the outer surfaces hindered use-wear analysis of the lithic artefacts. The tools were probably never used and their significance in this deposition is most likely linked to the exotic origin of the material. The deposition appears to reflect a single deposition action, but it remains unknown to what extent the site played a more extensive role of longer ritual or ceremonial importance. It is equally unknown whether the deposition is the result of an individual or a collective action (De Waal 2003). The symbolism of the pelican decoration and the presence of the two axes provide some insight into the meaning of the deposition. Moravetz (1999:188-189) suggests that pelican representations may have been symbolic of the spirit world. According to Crock (2000:227-228) it is very likely that for marine oriented people, pelicans symbolised an abundance of marine resources as their presence is related to the presence of fish, and that pelican bowls therefore had a great symbolic significance. The use of pelican bowls was probably limited to ceremonial contexts only and people handling the vessels had a special status. Crock, however, discussed pelican head *appliqués*, instead of vessels embellished all-over by pelican decoration representing the complete body of the animal, which probably had an even greater symbolic significance.

In depositions, relationships between objects deposited, people involved as well as the location where it takes place are relevant and provide meaning to the action (Fontijn 2003:33-35). According to Fontijn (2003:271) "selective deposition reflects a structured cultural understanding of the land, in which different places and zones had different and possibly even conflicting meanings". Being different from structuring elements that may be visible in the landscape, such as settlements, burial areas or monuments, the persistence of significance of depositions may be largely dependent on the collective memory. The exact meaning of the pelican-vessel deposition remains unidentified, although it appears to have functioned as a votive offering, in honour of ancestors, spirits or deities.

Voûte à Pin is a cave site, situated on the steep west slope some 15 m above the Rivière ravine, which is the major ravine intersecting the central plateau. The site is seriously disturbed. The cave consists of two main chambers, measuring 6 x 5 m and 8 x 6 m and it has an entrance, measuring 2 x 1.5 m, and a small 50 x 50 cm window-like opening. No petroglyphs were encountered at Voûte à Pin. The site is well hidden and one can easily imagine hostile situations when this is an advantage. A natural spring can be found close to Voûte à Pin. Canoes cannot land in the vicinity of the site but a landing spot on the northern coast, at a distance of 700 m from the site, can easily be reached through the ravine. The site location is impressive, particularly when approaching the site by walking through the deep Rivière ravine. The site is quite far from any of the known pre-Columbian habitation sites on La Désirade. Pottery, including griddle fragments, some lithic artefacts, a coral artefact, shell food remains and very small amounts of crab remains and human skeletal remains were collected. No off-site material has been found. The impressive location and special features of the site, and the presence of human remains, suggest that the site was not used for everyday activities.[4] The griddle fragments and food remains indicate that people spent at least enough time to prepare meals, whether they served for the living or the dead.

Although only very small amounts of human skeletal remains have been found, it is tentatively suggested that the site was used as a burial site. It is not known whether this involved one or more burials and what other rituals may have been associated with this practice at the site. It is possible that the site was used for communal activity. It is remarkable that people were buried in the cave taking into account that settlement sites such as Anse à la Gourde and Anse Petite Rivière had their own burial areas. It is not known why people were buried at Voûte à Pin instead of in these communal burial areas. The small amounts of human skeletal remains at Voûte à Pin do not suggest a change of burial location from village cemeteries to caves. Instead, it can be suggested that only some individuals, people with a special status, or only some bones, were buried here, away from the communal burial areas in the settlements. Although children that died before they received their names were on some occasions buried at special locations outside the settlement (Kraan 1998:11), it is thought that the Voûte à Pin human remains belong to adults. The presence of human skeletal, or 'ancestral', remains seems to point to ancestor veneration cults or to consulting and worshipping the spirit world. Usually crania or long bones are worshipped as *zemis* for this purpose (Hoogland 1996). The Voûte à Pin sample, however, only consists of fragments of a radius, an ulna and several other, much smaller, bones.

As Keegan (1985:214) suggested, the prominence of caves in pre-Columbian Amerindian mythology implies that they were significant locations for ritual activities. Voûte à Pin may have played a role of, at least local, significance.[5] Regional significance cannot be advanced on the basis of the present evidence, however.

5.5.4 Sites with indistinct functions

A total of 26 sites have been listed as indistinct sites with

functions. One of these is a cave site. All the sites were dated Late Ceramic A, except for two undated sites. The sites are characterised by shallow and dispersed distributions of fragmented and weathered ceramics. In some cases lithic artefacts and shell and coral fragments occur as well. Ceramic off-site material was found near almost all the sites. The sites are damaged as a result of building activities, erosion and cultivation. This may explain the thin archaeological layers of the sites to some extent, although it appears more likely that the sites are shallow since they only represent short periodic visits or incidental activities by a small group of people, therefore reducing the regional importance of the sites. They may have played a role at the local level, however. Excluding the cave sites, site areas are between 300 m^2 and 39,000 m^2. The indistinct sites are larger than the Pointe des Châteaux indistinct sites but smaller than the La Désirade habitation sites. Most indistinct sites, 18 in total, are located inland, seven sites are on the central plateau and only one site is coastal. The indistinct sites have less attractive locations than the habitation sites, since they are further removed from fresh water sources, reefs, canoe landing-spots and salinas. All are situated near good soils and most are on flat terrain.

Eight indistinct sites, with site areas between 300 m^2 and 39,000 m^2, provided evidence for local food preparation. The limited density of settlement refuse at some of the sites suggests that they functioned as temporary habitation areas or campsites. The sites can swiftly be reached from the habitation sites. Long stay-overs, related to special activities carried out on the spot or in the immediate surroundings, such as the exploitation of non-subsistence resources or activities related to food procurement, would therefore not have been necessary for inhabitants of the settlements on La Désirade. Site location variables are slightly less attractive than those of the habitation sites, since most of the sites are inland and only one of the sites is close to a fresh water source.

A total of 14 indistinct sites, lacking evidence of food preparation on the spot, may have been used for gardening activities. These sites have areas between 600 m^2 and 19,300 m^2. Being predominantly situated inland, they have less attractive locations, near soils suitable for small-scale horticulture and mostly on flat terrain, but only few are close to fresh water. Most of these sites may have been related to gardening activities. The Grotte le Baigneux site, however, was probably used for activities related to the exploitation, preworking or finishing of non-subsistence resources, as the site only yielded lithic, coral and shell artefacts, including a hammer-stone, a grinding-stone, and axes.

Four indistinct sites are small cave sites. The sites are inland, generally at high elevations overlooking parts of the southern coastal plain of the island. These locations do not appear to have been attractive for habitation. It has been suggested that the cave sites may have been used for shelter from hurricanes or other natural or possibly human threats (section 5.3.1).

5.6 ARCHAEOLOGICAL SITES ON PETITE TERRE

The Petite Terre site inventory contains seven single-component Late Ceramic A sites (fig. 5.3; appendix 4; table 5.1), five of which had already been reported by Bodu (1985[c]). The total comprises five habitation sites and two indistinct sites (De Waal 1999[f], 2000, 2001, 2002[a-c]).

5.6.1 Habitation sites

The Petite Terre habitation sites are large, with site areas between 8200 m^2 and 25,100 m^2, and 60-80 cm thick archaeological deposits. The sites are relatively deep when compared to some of the habitation sites on Pointe des Châteaux and La Désirade.

According to Bodu (1985[c]) the Petite Terre sites should be interpreted as temporary camps that were used for short stops on the way from Marie-Galante to La Désirade and vice-versa. This idea is probably linked to the often-voiced assumption that Petite Terre was too small to be settled permanently and too dry to support human occupation. However, archaeological material and site dimensions suggest that the sites could very well have functioned as permanent habitation sites. Thick accumulations of material have been found over large areas, and faunal and ceramic assemblages appear to suggest permanent use. The idea that Petite Terre is too small to allow permanent habitation appears to be guided by recent perceptions of preferred living conditions. The islands of Petite Terre are very attractive for habitation: horticulture is possible for almost all areas and they are surrounded by easily accessible, large stretches of shallow water. They have an extremely high potential for exploitation of marine resources, providing ideal natural conditions for marine turtle life, reef fish and molluscs. This situation can be compared to the shallow water Saba-bank (Hoogland 1996) and the Anguilla-bank (Crock 2000) that is reported to have been attractive for pre-Columbian habitants of the nearby region. On Petite Terre, turtles nowadays preferably lay their eggs on the northern coast of Terre de Haut, and the westernmost tip and at the southern coast of Terre de Bas (Diren 1994: map in appendix 24). The Est de Trou Canard site and the Baleine du Sud site are situated rather close to these areas. In addition, the islands appear to have harboured an abundance of fur seals. Breton (1892[1665]:113) translates *Cayóoli* as “Islet entre la desirade & la pointe de la grande terre appellée premierement

Fig. 5.3. Archaeological sites on Petite Terre.

la petite terre du depuis l'islet aux ours marins, enfin l'islet d'hoüel". In addition, regular contacts with inhabitants of La Désirade, Marie-Galante and Grande-Terre would have greatly enhanced the pre-Columbian living environment on Petite Terre.

The sites have attractive locations, being situated on flat areas, near canoe landing-spots, reefs and good soils. Just one source of fresh water, however, could be recorded near the lighthouse, which is in the immediate surroundings of Site du Phare.

No intra-site distributions or site layouts were identified, though at Baleine du Sud, Site du Phare and Est de Mouton de Bas, small concentrations were identified at the surface. These are interpreted as different patches of one extended midden area. The sites have small amounts of ceramic and shell off-site material, less than usually encountered around habitation sites. All the sites, except for Trou Canard, yield typical habitation refuse, including pottery, shell food remains and lithic, shell and coral artefacts. Samples of faunal material, reflecting a mix of everyday activities, could be collected at most sites as well (Nokkert in appendix 5). Pottery samples can be roughly characterised by a large variety in vessel shape, although simple open, often red slipped, vessels predominate. Samples from some of the sites show a rather large variety in rim shape, surface colour, firing technique and surface finishing. Decoration is not abundant. Fragments of griddles, pot-stands and spindle whorls were found as well. Finds of a shell *spatula* (Est de Mouton de Bas; fig. A4.10), a human face bowl (Pointe Sablée; fig. A4.14) and a bird *adorno*, a figurine leg fragment and a *zemi* (Site du Phare; fig. A4.4-A4.5) suggest that ceremonial or other special activities also took place.

5.6.2 Sites with indistinct functions

Two sites on Terre de Bas, measuring 4900 m^2 and 12,800 m^2 and, have been listed as indistinct sites. The locations of the sites, being situated on flat areas, close to the coast, reefs, and good soils, are more attractive than those of indistinct sites on La Désirade and Pointe des Châteaux. The sites are

characterised by small amounts of fragmented and weathered ceramics, representing simple, open vessel forms, and shell fragments on the surface and they appear to be shallow. Mouton de Bas yielded fragments of rather thick and large vessels and two griddle fragments; a spindle whorl preform was collected from Est de Trou Canard. Small amounts of ceramic off-site material were found.

The function of the Petite Terre sites appears to be even more indistinct than the function of roughly similar sites on Pointe des Châteaux and La Désirade. The islands are so small and homogeneous that it appears very unlikely that inhabitants of the Petite Terre settlements used temporary habitation sites or campsites. It appears to be more likely that the indistinct sites at Terre de Bas are satellite sites of habitation sites on Pointe des Châteaux or La Désirade. People were probably attracted to the abundance of marine resources. According to Breton (1978[1647]:32), cited in chapter 4, pre-Columbian inhabitants of Guadeloupe went to Petite Terre to catch sea-turtles. It is not clear whether use of the indistinct sites was contemporaneous with occupation of the Petite Terre settlements, but if it was, people using these sites must have been in close contact with the inhabitants of Terre de Bas, who depended on these resources as well.

5.7 CONCLUDING REMARK

This chapter has demonstrated that the East-Guadeloupe surveys have successfully provided a reliable inventory of pre-Columbian sites in the selected micro-region. Large samples of different geological and ecological zones have been investigated, and a large number of pre-Columbian sites, with various functions, locations and chronological assignments, have been discovered. The detailed Eastern Guadeloupe site catalogues (appendices 2-4) may be considered a direct result of the systematic and intensive survey design used.

The surveys demonstrated shortcomings in the understanding of marginal site types, labelled indistinct sites in this study, characterised by modest distributions of fragmented ceramics largely limited to the surface. Although hardly ever documented in earlier studies in the Caribbean they represent an important part of the Eastern Guadeloupe site inventory (De Waal 1999[b], 2002[a-c]) and it is thought that they must be present in other areas and on other islands too.[6]

NOTES

1 Stuiver, M., P.J. Reimer and R. Reimer, Electronic program, http://www.depts.washington.edu/qil/calib/, accessed October 2002.

2 The 2000 fieldwork campaign enlarged the existing 1998 site inventory, which has been presented before (De Waal 1999[b,d-e]), by adding four sites that were found in the area west of Anse à la Gourde.

3 Casas, Fray B. de las (1951), *Historia de las Indias*. *Vol.1*:271-272. Fondo de Cultura Económica, Mexico City [Originally written 1520/1561, first published in 1875/1876].

4 Apparently, Fathers Guilbert and Pinchon collected remarkably well-finished and decorated ceramics from Voûte à Pin (Bodu 1985[c]). Unfortunately, these ceramics were not available for analysis.

5 Older inhabitants of La Désirade still consider Voûte à Pin to be a ritual place.

6 Similar sites have been reported for the Los Roques archipelago, and no functional explanations could be proposed for these sites either (Antczak 1998).