Caribbean Archaeozoology

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ABSTRACT. The current archaeozoological knowledge in the Caribbean seems ill-matched and fragmented, we should set the Caribbean archaeological research in its historical, epistemological and economical context. Initially practiced by naturalists and scientists from Occident, then by Caribbean, north-American and Europeans academics, this research reflects in one hand the major occidental thoughts in anthropology and human sciences, but on the other hand the political and economical regional diversity of the Caribbean. Indeed, since the beginning of the XXth century, the Europe an excitement about the Tainos of the Greater Antilles allowed both academic (governement and university) and rescue archaeology in the whole Caribbean. It is based on survey and excavation techniques adapted to the tropical environments, as well as on specialized studies, such as Archaeozoology, following European practices. Moreover, an increasing number of excavations occurred in the Caribbean for the past decades. Regional Museums have opened, and European and North American universities and academic institutions have settled in several islands. Researches have developed on subsistence, on environmental exploitation, on technology, on villages organization, on exchanges and chronocultural shifts. Finally, a number of archaeozoological researchers provided micro-regional and regional synthesis for the Caribbean.

This paper introduces the particular geography of the Caribbean, a brief history of the pre-Columbian archaeology and archaeozoological researches in the Caribbean, and the major cultural pre-Columbian changes found through Archaeozoology.

Key words. Lesser and Greater Antilles, pre-Columbian archaeozoology, pre-Ceramic, Saladoid, post-Saladoid, European Contact, Chroniclers.

RESUMEN. Los conocimientos arqueozoológicos actuales del Caribe pueden parecer disparatados y fragmentados, por lo que conviene colocar la investigación arqueológica antillana en sus contextos histórico, epistemológico y económico. Practicada inicialmente por naturalistas y eruditos occidentales, después por universitarios caribeños, norteamericanos y europeos, esta investigación refleja no sólo las grandes corrientes de pensamiento de la antropología y de las ciencia humanas occidentales, sino también del mosaico político y económico regional del Caribe. En efecto, desde el inicio del siglo XX, el entusiasmo creciente de Europa por los periodos Tainos de las Grandes Antillas permitió desarrollar una arqueología institucional, universitaria y de salvamento sobre el conjunto del Caribe. Esta se basa sobre las técnicas de prospección y de registro adaptadas al medio ambiente tropical, pero también con estudios especializados similares a los practicados en Europa, particularmente la arqueozoología.

Por otra parte, en las últimas décadas se conocen un número creciente de registros arqueológicos sobre el conjunto de las islas de las Antillas. Los museos regionales se han

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abierto, las universidades y los institutos de investigación norteamericana y europea se han instalado sobre diferentes islas. Las investigaciones se han desarrollado sobre las economías de subsistencia, la explotación de los ambientes insulares, la tecnología, la organización de las ciudades, los intercambios y los cambios cronoculturales asociados. Finalmente, un número seguro de investigaciones arqueozoológicas recientes han llegado a síntesis micro-regionales y regionales en el Caribe.

Este artículo presenta la geografía particular del Arco Antillano, la historia de la arqueología y de la arqueozoología del Caribe y expone los cambios culturales precolombinos principales vistos por la arqueozoología.

Palabras clave. Antillas Mayores y Menores, Arqueozoología precolombina, Pre-cerámica, *Saladoïde*, *post-Saladoïde*, Período de contacto, Cronistas.

RÉSUMÉ. Si les connaissances archéozoologiques actuelles aux Antilles peuvent sembler disparates et fragmentées, il convient de replacer la recherche archéologique antillaise dans son contexte historique, épistémologique et économique. Pratiquée initialement par des naturalistes et savants occidentaux, puis par des universitaires caribéens, nord-américains et européens, cette recherche reflète non seulement les grands courants de pensée de l'anthropologie et des sciences humaines occidentales, mais aussi la mosaïque politique et économique régionale de la Caraïbe. En effet, depuis le début du XX^{è} siècle, l'engouement croissant de l'Europe pour les périodes "Taïnos" des Grandes Antilles a permis de développer une archéologie institutionnelle, universitaire et de sauvetage sur l'ensemble de la Caraïbe. Celle-ci se fonde sur des techniques de prospection et de fouilles adaptées à ces milieux tropicaux, mais également sur des études spécialisées similaires à celles pratiquées en Europe, notamment l'archéozoologie. Par ailleurs, ces dernières décennies ont connu un nombre croissant de fouilles archéologiques sur l'ensemble des îles des Antilles. Des musées régionaux se sont ouverts, des universités et des instituts de recherche nord-américains et européens se sont installés sur différentes îles. Des recherches se sont développées sur les économies de subsistance, l'exploitation des environnements insulaires, la technologie, l'organisation des villages, les échanges et les changements chronoculturels associés. Enfin, un certain nombre de recherches archéozoologiques récentes ont aboutit à des synthèses micro-régionales et régionales dans la Caraïbe.

Cet article présente la géographie particulière de l'Arc Antillais, avant de faire une brève présentation de l'Histoire de l'archéologie et de l'archéozoologie dans la Caraïbe et d'exposer les changements culturels précolombiens majeurs vus par l'archéozoologie.

Mots clefs. Petites et Grandes Antilles, Archéozoologie précolombienne, Précéramique, Saladoïde, post-Saladoïde, Période de contact, Chroniqueurs.

This paper presents the history of archaeozoology in the Caribbean and gives an overview of the chief results from the last sixty years. However, it presents more a state of art than an exhaustive inventory. In reality, istory of the Pre-Columbian Caribbean is recent, and the sites, artifacts, and knowledge that were already put in broad daylight, give an overview of the potentialities of the future archaeological researches. In this context, the current archaeozoological knowledge of the Caribbean seems illmatched and fragmented because it reflects in one hand the major occidental thoughts in anthropology and human sciences, and, in a second hand political and economical regional diversity of the region.

The evolution of research was determined by the geopolitical structure of the archipelago and the local dynamics, different according to the territories. Yet, geographical and historical fragmentations do not make impossible for archaeology to become a skilled reader of

linked cultures. Thus, since the beginning of the XXth century, Europe infatuation about Tainos of Greater Antilles allowed both academic and rescue archaeology in the whole Caribbean. Moreover, an increasing number of excavations occurred in the Caribbean for the last ten years. Regional Museums, European and North American Universities and Academic Institutions settled in several islands. Yet, much of Prehistory of this area remains obscure, and there are unresolved questions concerning who colonized these islands, when they arrived, and how they lived. The pottery classification does provide an initial spatiotemporal framework for the region; however, for the time being it is necessary to suspend debate concerning the identification of peoples based on potsherds, and to develop more researches on foodgetting behavior as a daily activity, that should provide more information on cultural identity and social practices. This paper introduce the particular geography of the Caribbean, before presenting short general History of the Pre-Columbian archaeology and archaeozoological researches in the Caribbean, then it presents the major cultural changes seen through Archaeozoology.

Regional mosaic

To understand the Caribbean, consideration must first be given to the extent of the region, its insular make up, its wealth and environmental diversity. As a geographical space, the Caribbean is united by the sea, a sea which ties together cultural diversities and at the same time imposes a certain scale of contrasts among islands of varied nature and dimension. The Caribbean World is an extended region, constructed as an insular mosaic, with a high environmental richness and diversity. In addition, the Caribbean forms a multifaceted whole, of forms of multicultural transmissions in which memory has, sometimes, been built of pacts of silence.

The high visibility between islands in the Caribbean allows a conception of the territory as a multi-component of a same space: the site, the island, the group of islands[1] the sea and its different zones (canals, rocky zones, reefs, currents, etc.). This high visibility allows a mental cartography of the whole archipelago, with the farthest islands.

This region therefore transcends the carved up geographical and state concept in which properties with comparable characteristics are placed (each island has its own petroglyphs, Pre-Columbian villages, open field, forests, coral reefs, etc.). Then, there is a cultural cohesion of this region, particularly if we have in mind the sea as a link and a large road. Furthermore, this region combines luxurious nature and an anthropization of several millenniums. However, these human work remain fragile in the face of natural risks and climatic effervescence (tornadoes, earthquakes, volcanic eruptions).

The insular Antilles arc (figure 1) constitutes the visible part of a vast tectonic structure linking the Greater Antilles and the northern Bahamas, up to the north-east area of South America. The Greater Antilles, to which is attached the archipelago of the Bahamas, comprising five big islands[2], represents about nine-tenths of the surface of the visible Antilles arc. The area is mountainous and the biotope very diversified. The archipelago of the Lesser Antilles is formed by about twenty main islands that run in a line from North to South over 900 km and separate the Caribbean Sea from the Atlantic Ocean. Their area varies from 2 to 100,000 km. Tectonic movements have developed successive volcanic insular arcs from East to West. The Lesser Antilles comprise islands grouped in a double arc: an eastern arc, of ancient volcanic formation with eroded relief[3], and a western arc, of recent volcanic formation, fairly high mountainous area[4].

Furthermore, in the southern part on the continental Venezuelan plateau, the Caribbean is made up of Continental islands, previously attached to the continent[5]. These offshore islands have always been strongly subjected to the consequences of the animal, plant and human migrations from the continent, the circum-Caribbean countries[6].

The Antilles were, along with Micronesia and Polynesia, one of the archipelagos most recently occupied by man. The Pre-Columbian ceramists of the Caribbean are defined as slash-and-burn horticulturists, but they also used to be gatherers, hunters, and fishermen. They gathered in semi-nomadic communities. They colonized the Caribbean from

1. Watters (1997) has noted the importance of an "archipelagic" view in which sites from throughout the islands are evaluated in archaeological discourse. Yet, most Caribbean archaeologists continue to focus on a single island with little regard to the larger patterns expressed across archipelagos.

2. Cuba, the Cayman Islands, Haiti, Jamaica and Puerto Rico.

3. Virgin Islands, St. Croix, Sombrero, Anguilla, Saint Martin, Saint-Barthelemy, Barbuda, Antigua, Grande-Terre de Guadeloupe, la Désirade, the islands of Petite Terre, Marie-Galante, south-west Martinique and Barbados.

4. Saba, St. Eustatius, Saint-Kitts and Nevis, Redonda, Montserrat, Basse-Terre de Guadeloupe, les Saintes, Dominica, north Martinique, St Lucia, St. Vincent, Grenadines, Grenada.

5. Tobago, Trinidad, Margarita, Los Roques, Tortuga, Curaçao, Bonaire, Aruba, Saint André, Providence.

6. Mexico, Bélize, northern Colombia, northern Venezuela and the Orinoco Delta, Guyana, Surinam and French Guyana.

7000 BC to 1500 AD, date of European colonization. Then, the almost complete disappearance of the Amerindians occurred in this region. Following the course of the South Equatorial Current as it curved up into the Caribbean, and aided by the close proximity of the islands to one another along the chain, various groups of mainland people moved from the Orinoco delta northwards (figure 1).

General History of the Pre-Columbian Archaeology in the Caribbean

The Prehistory of this region is poorly known, except the archipelagic colonization, the population origins and the major cultural colonization periods. Moreover, the mixed and fragmented archaeological researches in the Caribbean reflect the political and economical patchwork of this region.

The first encounters, the chroniclers and missionaries wrote on the native Amerindians and their natural history (XV to XVIIth centuries). The historical data from the Contact Period (colonial manuscripts and European missionary) are rare and it supplies little information on the first encounters. It used to describe the Amerindian customs and habits, but also the fauna, the natural history, the daily activities, the exploitation techniques and the subsistence of the late human groups met in the Caribbean (Colomb 1492-1506; Anghera 1511; Fernandez de Oviedo y Valdes 1556; Acosta 1598-1606). From the XVIth century, travel to America is an excuse for dreams and utopia (Chinard 1976-1977; Duviols 1985) and provide narratives more or less imaginative, where the wild's picture dominate. Most of the manuscripts concern the second half of the XVIIth century, period of the Caribbean colonization by the French. Incomplete and ethnocentric, these descriptions describe disorganized and destructed societies that sustained almost two centuries of wars, epidemics and cultural overthrows, without historical depth (Colliard 1981; Keegan 1992a, 1996b; Wilson 1997). Since the second half of the XVIth century, Europe had hard time in colonizing the Caribbean, but Spanish, French, English, and Dutch had contacts with the local populations. According to Moreau (1991), smugglers and pirates dropped the anchor in order to careen

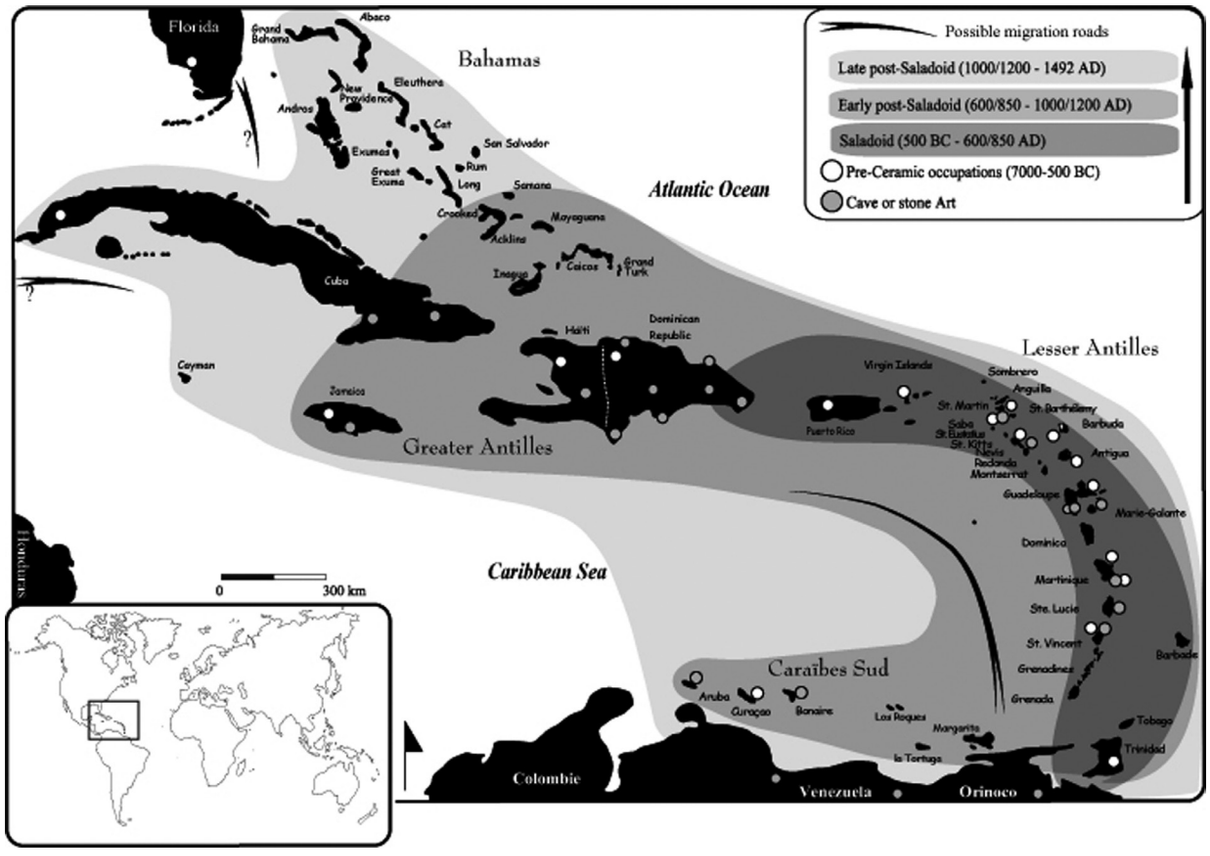

Figure 1. Map of the Caribbean with the major pre-Columbian cultural phases and major cave and stone art (Grouard 2005a, from Atlas Mondial Hatier 1985; Hofman 1993; Grouard 2001a, 2004; Serrand 2002).

the boats and to exchange European products with fresh products. But, the contacts were fairly often made far from the coast, with canoes, and then observations were sometimes superficial. Yet, a French boat sunk in 1618, and the sailors were taken in Martinique by an Amerindian community. One of the sailors, "Anonyme de Carpentras" related the year he spent with them (1618-1620). This narration is unique, because of its absence of evangelization or installation project, without moral or religious prejudges, and with a favorable opinion on the culture and customs. The first reliable document is written by the Père Breton (1635-1636, 1647, 1665, 1666), a Dominican father, that was a witness of the five first years of Guadeloupe's occupation (1635-1640); then, in he went to Dominica to evangelize the Amerindians, where he learned the "Carib" language and culture. This text is fundamental, because it is precise rich for the natural and physical descriptions, and for the Caribs ethnography. Other authors wrote manuscripts on their Caribbean travels. In 1640, the Père Bouton related the first installation and colonization of Martinique, but he also described the island and the Amerindians he met there (Bouton 1640). The Père Du Tertre (1654, 1667-1671) lived in Guadeloupe (1640-1642) and Martinique (1647-1648), but lot of information was provided by intermediaries (texts from other writers, like Père Breton, and old inhabitants from Saint-Christopher). In 1658, De Rochefort wrote a manuscript on the natural history and the colonization of Saint-Christopher and Guadeloupe, but he profited information by pioneer period's witnesses (De Rochefort, 16581663). The Anonymous from Grenada and from Saint-Vincent described these islands and her History (Anonyme de la Grenade 1659; Anonyme de Saint-Vincent, XVIIth century). La Borde also lived in Saint-Vincent, where he described the natural history and the daily activities of the Amerindians (La Borde 1674).

Numerous maps of the Caribbean where drawn, with animal illustrations in the margins (Anthiaume 1916). During the XVIth, the pictures about fauna are still often impressed by medieval reminiscences, close to fantastic animals (figure 2). The authors only illustrate the remarkable plants and animals, those that were unknown in Europe, the specimens that present some particularities. From the XVIIth century, pictures and illustrations came more often in the publications (Plumier 1705; Feuillée 1711, 1714). The pictures of Père Plumier were reused by Claude Aubriet in the King's *Encyclopaedia* (Colliard 1981).

The eighteenth century saw the beginning of the collection of all the documentary sources, to extract history from the remains of material culture and create categories of classification and interpretation of the past. At this time, the Père Labat (1722-1742) who lived twelve years in the Lesser Antilles, principally in Martinique from 1694 to 1705, did not known the first colonial period, and he only repeated his predecessor's chronicles (Du Terte) with new folkloric evidences (figura 2). He marks the end of the chroniclers that witnessed the disappearance of the Caribbean Amerindian civilization (Duviols 1985). A last Anonymous manuscript (Anonyme de 1776) drafts the "Dissertation sur les pesches des Antilles", and constitutes a relay between the first encounters and the modern ethnographic observations: here, the fishes and their methods of catching and fishing are very well described. Finally, we should do not forget that during the XVIIth century a lot of terrestrial animal species were already introduced from South America, Europe and Africa, and most of the endemic species were extinguished.

After the chronicler's narrations about the Amerindians of the Caribbean, the birth of Caribbean archaeology aspired

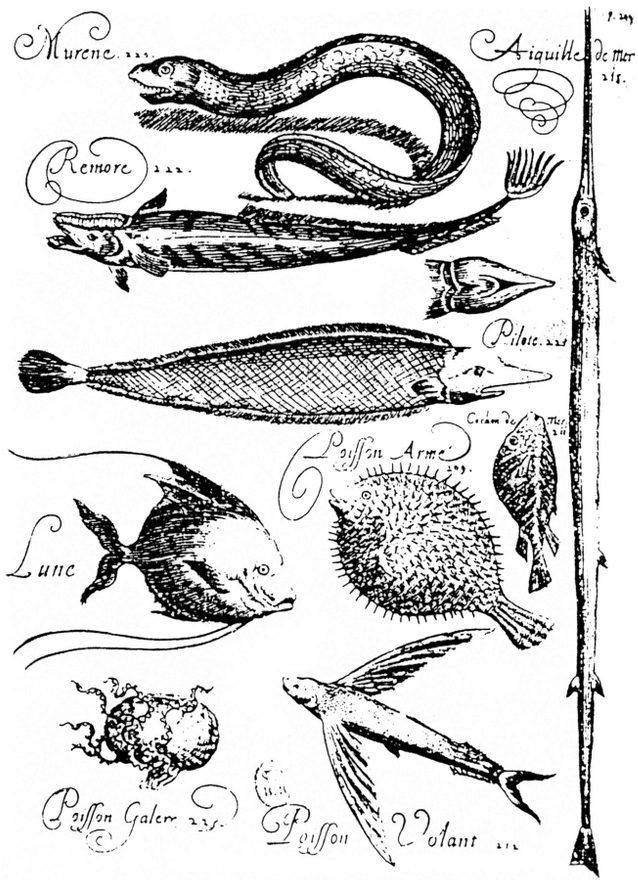

Figure 2. Chroniclers pictures about fauna: an example of Père Labat (1722).

to be scientific in the nineteenth century, but study of the past has, since them, been invoked repeatedly to legitimise political entities, and also to challenge them. However, archaeology has often helped to outline a sense of political and cultural identity expressed at national and regional levels. For decades, archaeology in the Caribbean has been a scientific and social practice which has advanced a systematic set of methodological lines and ethical professional codes at the national or international levels (Rouse 1992; Keegan 1994, 1996a, 2000; Hofman 1993, Whitehead 1995). The first publications based on the Pre-Columbians started in the middle of the XIXth century (Giraud 2000; Bérard 2005): some Caribbean scholars and European travelers presented and described major artifacts and petroglyphs. Since the end of the nineteenth century, collections of objects were being published without chronology or spatial context, in an attempt to disclose formal similarities with the neighbouring continental shores. Yet, outwards the work of the geologist W. M. Gaab (1872) in Dominican Republic, the first attempts of chronological classification started on the beginning of the XXth century, with Fewkes (1904) on Cuba, and later, with de Hostos (1919) on Santo Domingo. Some years later, M.R. Harrington marked a further milestone in the elaboration of hypotheses on the forms of autochthonous population of the Antilles (1921).

However, the beginning of a real scientific archaeology appeared in the thirties, with the scholars of Yale University: first F. Rainey (1936) and I. Rouse (1939), who described and classified the ceramics. Rouse worked on the Caribbean, but also on the Continent, when a cultural link was obvious.

In the French islands, the first excavations, which the purpose was a classification of the different cultures that lived on the islands, were made by R. P. J.-B. Delawarde (1937) on Anse Belleville and le Marigot in Martinique. He was followed by E. Revert in 1939-1940, then H. Reichlen, P. Barret and R. d'Harcourt (1940-1950). Finally, R. P. Pinchon had continued the works of Delawarde between 1940 and 1950 (Pinchon 1952), where he had excavated several Amerindian sites in Martinique and later in Guadeloupe. In 1949, E. Revert excavated Morel in Guadeloupe, followed during the sixties by E. Clerc (1964) and M. Barbotin (1969), who both have excavated several sites in the Guadeloupe archipelago.

The most important impulse made for the archaeological researches in the Caribbean was the creation of the International Association for Caribbean Archaeology[7] The first Congress of the IACA was held in Martinique in July 1961, called by R. Pinchon, who wanted to compare his finds with those from other territories of the Caribbean, in the advancement of science. Officers were appointed at the second meeting and a trilingual biennial congress was formalised, to be hosted in voluntary rotation each two years by the Historical Societies and Governments of different Caribbean countries.

During the sixties and the seventies, M. MacKusick (1959), R. Bullen (1964), and L. Allaire (1977) completed the first researches in the Caribbean. Subsequently, the cultural History of the Caribbean is based on the taxonomical and evolutionist classification developed by I. Rouse (1939). Distinct *styles* of pottery, divided into successive ceramic *series* extending along the island chain from the mouth of the Orinoco River. In his sixty years of working in the region, he has had to make numerous revisions to his Pre-Columbian map of the region as new material has emerged (Rouse 1986, 1989, 1992, 1995), but this schema is still employed as the general spatial and chronological frame for the region. During the last twenty years, the general frame of the Pre-Columbian Cultures was improved, especially with data on Huecan Saladoid culture (Chanlatte Baik 1981; Rodriguez Lopez 1991; Siegel 1991; Oliver 1999) and late Troumassoid and Suazoid periods (Delpuech *et al.* 1997; Delpuech and Hofman 2004). Nevertheless, from the eighties, the major changes of the new researches are a renewal of the problematic and of the analytical methods. Since the 90's, a systemic observation of the remains was adopted: the archaeological context underwent as important as the object itself. New meticulous excavations started, and paleoenvironmental studies were developed (Grouard 2001a; Serrand 2002; Bérard 2004; Pagan, 2003). Thus, the Caribbean archaeologists work now on Man/environment relations, on technique resources, on exchanges network, on village's organization, or on chiefdoms sociopolitical organizations (Bérard 2005; Honychurch, 2005).

The evolution of research was determined by the geopolitical structure of the archipelago and the local dynamics, different according to the territories: the rich vestiges of the Taino of the Greater Antilles, with ball courts and spectacular artifacts, attracted early attention in the Dominican Republic and in Cuba, but was lacking in Haiti and Jamaica; the Bahamas Islands, Porto Rico, Vieques, Mona and Culebra, and the Virgin Islands benefited from the action of local, federal and academic bodies; in the Lesser Antilles,

7. The original name of the association was the International Congress for the Study of Pre-Columbian Cultures of the Lesser Antilles.

in an intermediary position between the continent and the Greater Antilles, the multiplication of work is more recent, with European scholars for the Windward islands, and varies according to the initiatives of the bodies and the local or international institutions. Lastly, the continental islands are fairly well documented. These inequalities increase the differences between islands in the cultural perception of the Caribbean archaeology and in the occupations' frame.

In conclusion, since sixty years, studies illustrated the daily activities of the Pre-Columbian inhabitants, and demonstrated the diversity of cultural groups and chiefdoms. Now, the Caribbean Pre-Columbian archaeology is based on solid foundations, but a lot of work still to be done, by integrating all the specialized studies in a regional perspective conception of the cultures.

History of the archaeozoological researches in the Caribbean

Since the eighties, the renewal of problematic, the new field strategies, and the pluridisciplinarity of the studies, elaborate a real dynamism in the researches, leaving out the rigid taxonomical frame of the Caribbean archaeology.

In this way, few faunal studies were realized before the sixties (Friant 1941; Chabanaud 1946; Hoffstetter 1946), but numerous archaeozoological studies were engaged after that. The first researches regarding food consumption in prehistoric West Indian contexts had focused on identifying subsistence patterns. Archaeozoologists typically produced reports that were little more than a list of identified taxa with general distinctions of habitat preferences for the animals identified (Wing *et al.* 1968; Wing 1969; Allaire and Wing 1980; Emond 1980; Mattioni 1980; Fraser 1981). But quickly, some authors made a protocol of sampling and sieving depending on the different sectors of the sites (Wing and Brown 1979). Then, the archaeozoologists created new methods, like an estimate of biomass using average body weight calculated from appropriate allometric formulae, and the application of a mean trophic level index for each species, as provided by modern research (Wing and Reitz 1983; Reitz *et al.* 1987; Wing 2001a, 2001b; Wing and Wing 1995, 2001; Reitz and Wing 1999; Grouard 2001a, 2001b, 2003). Counting bones and fine analysis were developed in order to compare the sites together: the research of these authors reflects the emphasis on the fundamental importance of methodological accuracy for interpretation in zooarchaeological researches. The introduction or extinction of the species, their capture and utilization by men, their relationship with men were taken into account recently in the definition of the Caribbean Pre-Columbian cultures (Reitz and Wing 1999).

Studies of diet and domestication of animals incorporated aspects of the symbolic nature of landscapes and the ritual associated with domesticated species in most societies. The funeral practices were also studied (Wing 1991; Narganes Storde 1985; van der Klift 1992; Grouard 2001a), where the offerings link Nature and Culture. Zooarchaeological research on human impacts with untouched environments considered direct and often intentional manipulation of species communities through the creation of new habitats, transportation of species to new locations, and the process of domestication (Narganes Storde 1991; Wing 1989, 1990; Grouard 2001a).

Actually, the archaeological researches on Pre-Columbian diet not only focused on the nutrition, but on environmental exploitation, with analogies between biogeography and ecology. In this way, Pre-Columbian populations gathered vegetables and animals around 3 to 5 km around the site (Wing and Wing 2001), and the biogeographical location of the site (calcareous / volcanic islands) was determinant (Stokes 1998).

On many Caribbean islands, a robust archaeological and paleontological database provides clear evidence of a direct association between human colonization and extinction events (Pregill 1981; Pregill and Olson 1981; Steadman *et al.* 1984; Pregill *et al.* 1994; Steadman and Stokes 2002; Wing 2001a, 2001b). The characteristics of island biogeography make these locales particularly susceptible to extinction, and the effect of human colonization is most dramatic on smaller islands (Grouard and Vigne 2005). Wing's years of research on marine fish communities in the Caribbean have provided extensive information on the impact over time of human predation on marine fish populations. Using trophic level analyses, some authors, have shown the effects of ancient human predation on reef fishes from various Caribbean islands and has emphasized the remarkable similarity between ancient and modern processes despite differences in hunting or fishing techniques (Wing and Scudder 1983; Reitz 1989, 1994; van der Klift 1992; Wing and Wing 1995, 2001; Grouard 2001a, 2001b, 2003; Wing 2001a). Moreover, in the studies on alimentation, the social and cultural contributions to fishing and catching techniques are not anymore ignored.

Finally, even if the islands were not equally studied through the Caribbean, regional and microregional studies were realized in order to determinate the major chronological variations (Wing 2001a; Grouard 2001a; Serrand 2002; Newsom and Wing 2004). In conclusion, if the fundamental

diet of the populations that lived on the Caribbean islands is linked to the obvious marine environment, but according to the islands and the periods, the principal component of the alimentation varied in quantity and variety: (cultural?) choices were made.

In conclusion, this short History of Archaeozoology in the Caribbean contributes to validate the fact that we can define the Pre-Columbian cultures through the techniques of animal exploitation, like it was already demonstrated in the world (Vigne 1998).

Major chronological and cultural changes

This chapter presents the different alimentation particularities of the Pre-Columbian Caribbean cultures for each major period.

Pre-Ceramic period

The pre-Ceramic populations had colonized some island in the Caribbean between 5500 and 500 BC (figure 1), but the sites are rare (Keegan 1994; Wilson 2001). Lithics and shell artefacts from the Ortoiroïd[8] (or Archaic Age) were developed from 5000 BC (between cal. 5500 and 6500 BC) in Trinidad (Banwari Trace and Ortoire), and later, moved across to the islands of Saint-Martin, Antigua, Saba, St. Kitts, Guadeloupe, Martinique[9] and St. Vincent, the Virgen Islands and the Greater Antilles, like Puerto Rico and Cuba, between 2500 and 500 BC (Bérard 2004). This culture is badly known, but seems to be extended (Rouse 1992; Keegan 1994; Dacal Moure and Rivieiro de la Calle 1996; Wilson *et al.* 1998). These foragers are recognized by their manufacture and use of flaked-stone tools (Pantel 1987), and grind stones. These sites also revealed a large quantity of raw material transported from the continent to the Caribbean, sometimes on long distances. At the same time, carved lithic tools from Casimiroid groups (or Lithic Age) are known from 3600 et 2000 BC in eastern Cuba (Levisa site, 5140 BP, thus between cal. 4250 and 3700 BC) and on Hispaniola (Casimiran Vignier, Haiti, 5580 BP, thus between cal. 4510 and 4350 BC; Mordan-Barrera on Dominican Republic, around 4560 BP), and from 2500 BC, perhaps in Puerto Rico and Jamaica. These populations The Casimiran[10] Casimiroid groups, which could come from the Yucatan peninsula (Wilson *et al.* 1998), used to produce long flint industry and pedonculated points. In parallel, during the third millennium before Christ, in the Greater Antilles, and from The Virgin Islands up to Antigua, a ground-stone producing culture was associated to the Casimiroid serie. During the Saladoid period, some pre-Ceramic groups were still alive in Hispaniola and Cuba (Veloz Maggiolo 1976, 1991).

In the Greater Antilles and the Virgin islands, the data on faunal remains are scarce: Beach Access on St. John (Wild 2001), Krum Bay on St. Thomas (Lundberg 1989; Reitz, 1989), Puerto Ferro on Vieques (Narganes 1991), Maruca and Maria de la Cruz on Puerto Rico (Newsom and Wing 2004). The Lithic and Archaic sites in the Caribbean delivered few crustaceans and bone remains, because of the bad conservation conditions, but they provided a lot of shell remains. The West Indian Lithic sites exhibit a subsistence strategy of mangrove zone gathering along with the hunting of medium-sized terrestrial fauna (Veloz Maggiolo 1991). The large, unifacial blades may have been used for hunting large fauna such as manatees, sea turtles, and sloth, although we currently lack bone evidence for such hunting (Veloz Maggiolo 1976). Typical Archaic age sites are composed of large quantities of marine mollusks (Davis 2001). The presence of conch lip adzes suggest that the inhabitants captured and ate conches, though they probably extracted the meat down and reused the shells on the site for making tools. The Archaic sites show a diet of primarily marine gathering, especially of near shore shellfish (Davis 2001; Lundberg 1989), but Archaic populations may not have been exclusively coastal, as originally believed (Keegan 2004): they used to exploit the sea coast and the mountain forests in the same proportions. In addition, the Archaic populations introduced a number of fruit trees and edible seed species to the region (Newsom and Wing 2004), evidently practicing a form of arboriculture and garden tending.

In the Lesser Antilles, few sites delivered information on faunal diet: Whitehead's Bluff on Anguilla, Hichman's Shell Heap on Nevis, Sugar Factory Pier on St. Kitts, Twenty Hill and Jolly Beach on Antigua (Wing *et al.* 1968), Baie Orientale and Norman Estate on Saint-Martin (Hofman and Hoogland 1999; Bonnissent *et al.* 2001; Serrand 2003), Plum Piece on Saba (Hofman and Hoogland 2003), Corre Corre Bay on St. Eustatius, several sites on Barbuda, Antigua (Davis 2001), Pointe des Pies on Guadeloupe, Heywoods on Barbados.

At the Saint-Martin sites, most of the shells were used and re-used as artifacts, and their attribution as food or technology is difficult to establish. The most common

8. These sites are a conch middens excavated in 1953 by I. Rouse, which found polished bone, shell and lithic artefacts. These Ortoiroid occupation can be linked with the Orenoque Delta in Venezuela at the same period.

9. Sites of Boutbois and Godinot in Martinique.

10. This sub-serie got its name from the Casimir site, located in the Fort Liberté region in Haïti, and it was firstly described by I. Rouse (Rouse 1939).

mollusks were gastropods from sandy bottoms and seagrass beds: queen conch (*Strombus gigas*), West Indian top shell (*Cittarium pica*), and bivalves as turkey wing (*Arca zebra*) (Serrand 2003). In other hand, few crab remains were collected. The vertebrate remains are exclusively fish: *Sparisoma* parrotfish dominate most assemblages. Other species were mostly herbivorous and carnivorous inhabitants of the shallow reefs and rocky intertidal environment. Reptiles, amphibians, birds and mammals are not present. However, this taxonomic poverty and small diversity of collected species may reflect differential preservation more than they do cultural behaviour. On Plum Piece on Saba, the mountain or black crab (*Gecarcinus ruricola*) dominates the faunal assemblage, with the Audubon's shearwater (*Puffinus lherminieri*), a breeding visitor to Saba, and few shells and fishes. On Barbados, Antigua and Nevis (Newsom and Wing 2004), coralline fish dominate the faunal remains, especially parrotfish (Scaridae). The rice rats (Oryzomyini) were also abundant. Some coastal birds (Sulidae and Rallidae), iguanas (Iguanidae), cetaceans, monk seals (*Monachus tropicalis*), and sea turtles (Cheloniidae) were found, associated with needlefishes (Belonidae), barracudas (Sphyraenidae), groupers (Serranidae), surgeon-fish (Acanthuridae), and few other fish species (41 taxa).

On the Continental Islands, few sites delivered faunal remains: Malmok on Aruba, St. Michielsberg on Curaçao, Bonaire and La Blanquilla (Antczak and Antczak 1992). The two first sites (cemeteries) provided artifacts made on shells and sea turtles shells associated with burials. The two last sites (villages) provided artefacts made on Queen Conch and Sea Turtle bones (Newsom and Wing 2004).

Ceramic Age: Saladoid sites

The first groups to make ceramics, called the Saladoid, appeared around 500 BC in the Caribbean islands (figure 1). The ceramic forms were homogeneous, for the most part, throughout the archipelago during one millennium, but variations in the styles of decoration suggest complex cultural processes[11]. They introduced ceramics and horticulture which was concentrated on the cultivation and processing of cassava (*Manihot esculenta*). The Saladoid chronology starts around 2000 BC in the middle ranges of the Orinoco River, at the confluence with the Rio Apure. The sites from this period are dated between 2140 BC and 620 BC. In the middle and lower basin of the Orinoco, from the second millennium BC, the ceramic culture was denominated Ronquinan Saladoid. They had migrated along the riverine route from the head waters of the Orinoco valley to the South American coast, Guyanas and the Paria Gulf, near Trinidad. Here, they developed a new sub-series called Cedrosan Saladoid. This they carried to the Antilles. The islands conquest started during the Vth century BC (325-300 BC Hope Estate in Saint-Martin, 440-260 BC Trants in Monserrat, 430 BC Hacienda Grande in Puerto Rico), but dates before 250 BC are still rare (Bérard 2004). Around 200 BC (Early Cedrosan Saladoid phase), according to present data, these ceramist groups were present in most of the islands of the Lesser Antilles with the exception of the small calcareous islands and in the Greater Antilles, up to the Eastern Hispaniola. These groups firstly colonized the best fertile soils. Since the first implantations, some very large villages appeared, like Pearls in Grenada, Vivé in Martinique, Cathédrale de Basse and Gare Maritime in Guadeloupe, Trants in Montserrat or Hope Estate in Saint Martin. The Saladoid expansion stopped suddenly, and the Saladoid culture was locally developed in each island during one millennium, while a lot of relations and exchanges between islands were developed (Knippenberg 2006), as attested by large centers of production and diffusion, like Trants (cornaline beads), Pearls (amethyst beads), or South American minerals. From 350 to 650 AD (Modified Cedrosan Saladoid phase), a synchronic modification of the ceramics on the whole islands was probably linked to the Barrancoid[12] groups which came from Trinidad. The groups colonized some lower islands they had forsaken until now, like Antigua or Anguilla. At the same time, the implantation locations for the villages were more and more diversified. As they moved into the Greater Antilles, the Cedrosan Saladoid spread too widely to impact closely with one another and so they grew apart, diverging into separate subseries and series (Honychurch 2005). From the VIIth century, the cultural space of the Caribbean started to be parceled out (Bérard 2004). Archaeozoological analyses from this period were done for the whole Caribbean islands, but here, we decided to present a synthesis from recent researches made on French islands: Saint-Martin with Hope Estate site (Bonnissent *et al.* 2002; Grouard 2004), Guadeloupe (Grouard 2001a) with Embouchure de la Rivière de Baillif, Morel, and Anse à la Gourde; Marie Galante with Folle Anse and Martinique with Dizac on the Diamond Bay (Grouard and Bérard 2005). If the fish dominated the faunal remains during the Saladoid period (~45 %), the crustaceans (especially the terrestrial crabs

11. Like sites with La Hueca cultural components, that are rare, but presents on the whole archipelago (Oliver, 1999).
12. From the site Los Barrancos in Venezuela (Boomert 2000).

Gecarcinidae) and the terrestrial Vertebrates (Rice Rats, Agoutis, Dogs, Iguanas…) are notably found in the midden deposits (between 30 % and 25 %). They are represented by a very large diversity of species, with 14 taxa (14 families), as the Fish, with 44 taxa (25 families). Five species of sea turtles are present as well as the Manatee in a stratigraphical context. In summary, the subsistence diet was diversified: all the environments were exploited, and the Saladoid period seems to correspond to a maximal diversification phase of subsistence (Grouard 2001a, 2003). The presence of migrating pelagic fishes and sea turtles indicate seasonal and specialized catching activities. These villages could exploit the different environments during the whole year, but according to a precise calendar: lagoons, mangroves, sand beaches, and deep waters canals, as a complement of a regular exploitation of the coral reefs and the forests (Grouard and Bérard 2005). In these islands located far form the Continent, the Saladoid have imported plants and animals from South America, as dogs, tattoos, opossums, Guinea pigs, agoutis, etc. (Wing and Wing 1997; Grouard and Vigne 2005), while using the natural reserves of the Caribbean islands, as the rice rats, doves, or iguanas. Some species, as dogs, rice rats and agoutis were established in most of the islands of the Lesser Antilles, where they were regularly eaten by the Pre-Columbian inhabitants. These islands could provide a natural enclosure for these animals, and then serve as a hunting preserve for these animals more or less tamed or wild (Grouard and Vigne 2005).

The transition from Saladoid to Ostionoid in Puerto Rico is distinguished by an apparent shift from the use of land crabs (Gecarcinidae and Ocypodidae) to marine bivalves. The differences between sites were so dramatic that Rainey (1940) originally described the former as the "Crab Culture" and the latter as the "Shell Culture." Rouse (1992) has since noted that the shift from crabs to mollusks actually began during the terminal Saladoid or "Cuevas" Period (AD 400 to 600). Moreover, there was an important debate regarding whether this shift reflected the decline in natural crab populations due to increased aridity at the end of the Saladoid, or whether mollusks replaced crabs due to the overexploitation of crabs (Rainey 1940). It is likely that both factors played some role (Keegan 2000). Moreover, Stokes (1998) found "no evidence of a dietary shift from terrestrial to marine protein from the Saladoid period to the Ostionoid period." In fact, the overexploitation of crabs and other coastal animals (marine turtles, sea birds, etc.) does not seem to be linked to special cultural nor climatic effects, but instead, it seems to be linked to the first installation of a new site (Grouard 2001a). In other words, during the initial settlement of an island the economy was diversified, each ecosystem was used, and a large number of animal species exploited. However, following a long sequence of occupation a more specialized economy developed progressively, and the economy was concentrated on coastal, lagoon, and reef habitats. Throughout this stage the economy became more and more specialized, and fewer animal species were collected (although they were collected in large numbers), especially crabs (Grouard 2001a). According to E.S. Wing, the longer is the occupation of a site, lower is the trophic level (Wing 2001a, 2001b). In sum, the shift from crabs to mollusks began during the terminal Saladoid because many of the excavated villages had been occupied for a long time. Furthermore, several post-Saladoid sites also illustrate an overexploitation of crabs following the establishment of a new coastal installation (Grouard 2001b).

The transition Saladoid to Troumassoid in Guadeloupe (Anse à la Gourde, Pointe du Helleux, Petite Rivière and Grande Anse; Grouard 2001a) shows variations in the abundance of several species of fish, that confirms the modifications already seen in the taxa spectrums. The Saladoid sites mostly delivered coralline fishes, as parrotfish or grunts, and pelagic fish as tuna fish or jacks. Their proportion decreased notably from the post-Saladoid periods. Nevertheless, surgeonfish and triggerfish never stopped to increase, and suddenly they were replaced by porcupinefish and squirrelfishes. Moreover, the sizes of these fishes (figure 3) decrease in continue during these periods (Grouard 2001a). The study made by E.S. Wing in several islands (Puerto Rico, St. Thomas, St. Martin, Saba, Nevis and Barbados) indicates that the terrestrial crabs were mostly present in the first deposits (Wing 2001b). Then, the vertebrate remains increased, as the soldier crab (*Coenobita clypeatus*), and marine mollusks, as west Indian top shell (*Cittarium pica*), in parallel with a decline of terrestrial crabs. The size of the West Indian top shell and crabs decreased during the time, as the coralline species of fishes. Moreover, while the diversity of species decreased, most of the carnivorous fishes were replaced by omnivorous and herbivorous fishes (Wing 2001a).

Ceramic Age: Early post-Saladoid sites

Around 600/850 AD (figure 1), local developments and a new wave of migrations profoundly modified the social and economic systems of the ceramist groups. The post-Saladoid colonized all the Lesser Antilles and the eastern part of the Greater Antilles. In 1000 AD, new post-Saladoid influences

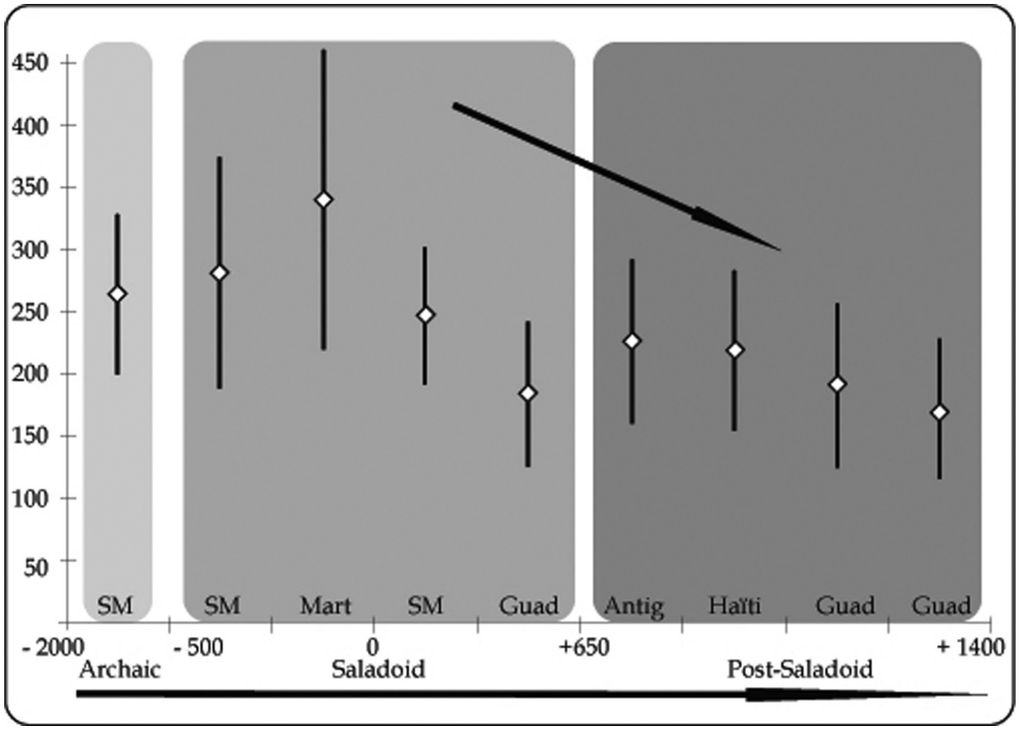

Figure 3. Archaeological fish size from Saladoid to post-Saladoid periods: 500 BC – 1400 AD (Grouard 2001a).

(Ostionoid[13] in the Greater Antilles and the Bahamas archipelago, Ostionoid and Marmoran[14] Troumassoid[15] in the northern part of the Lesser Antilles, the Leeward and Virgin Islands, Suazan Troumassoid and Suazoid[16] in the southern part of the Lesser Antilles and the Windward Islands, Dabajuroid in the continental islands to the South, including the islands of Trinidad and Tobago) brought very different stylistic expressions according to the archaeological sites (Allaire 1977; Rouse1992; Hofman 1993; Oliver 1999). The Guadeloupe was designed as the limit between the Northern and the Southern influences (figure 4). Hispaniola was the base for renewed migration spreading into the Bahamas and Cuba (the Western Taino) and back into the Virgin Islands and the Leeward Islands (the Eastern Taino). The 'Classic' Taino developed on the coast and in the interior of Hispaniola and Puerto Rico (Rouse 1992).

It was a society composed of chiefdoms with ceremonial ball courts[17] (*batey*) and a religion based on the worship of sacred objects carved from wood, bone, shell and stone called *zemis*[18], one of the earliest studies of which was carried out by de Hostos (1919). These periods are characterized by the colonization of new territories and the development of new agricultural techniques (elevated fields: *conucos*). The burial practices were more and more complex all around the Caribbean, and the size of the village could take in more than 3000 inhabitants (Wilson 2001).

In the Greater Antilles, Ostionoid Series pottery is commonly divided into three distinct subseries that are supposedly linked by a unilineal development sequence (Rouse 1992). The Ostionan subserie are dated from 600-800 AD in Hispaniola (Anadel site in Dominican Republic: 695-1245 AD; Haiti, from 860 AD), to 1100 AD in peripheral locations. The Meillacan subserie was common in Hispaniola (especially in the Central Valley and along the north coast), Cuba (Arroyo del Palo site in Cuba: 930-1190 AD), from AD 800 to 1200 and Jamaica (up to 1492 AD). The Ostionan and Meillacan peoples are ethnically and historically separate cultures from two distinct traditions, although their cultural affiliations have yet to be defined. The Chican subserie appeared in south-eastern Dominican Republic

13. From the site Punta Ostiones on Puerto Rico.
14. From the site Marmora Bay on Antigua.
15. From the site Troumassée on Ste Lucie.
16. From the site Savane Suazey on Grenada.

17. More than 200 ball courts were found in Cuba, Hispaniola, Puerto Rico and the Virgins Islands.
18. Large three-pointed sculptures representing a deity made of stone, sometimes engraved with geometric drawings, the foremost of which was named Yúcahu Bagua Maórocoti (Giver of cassava and master of the sea) (Pané 1498).

around AD 800, and it was developed from the Ostionan tradition. This style dominated the region after AD 1200 and up until European contact. In the Virgen Islands, and in the Eastern Puerto Rico, The Elenan Ostionoid culture followed the last Saladoid cultures, from 650 to 1200 AD. It is clear that people making Ostionoid pottery began moving into the western Greater Antilles and Bahamas archipelago after AD 600 (Keegan 2000). This migration proceeded at a rapid pace with colonies established in Jamaica, Hispaniola, Cuba, and the Bahamas by AD 700. It should be remembered that this expansion followed a 1000-year pause in Puerto Rico, during which time distinctive cultural attributes and practices must have developed. It is possible that this new wave of expansion was fuelled by efforts of some social groups to avoid the emerging hegemony of chiefly lineages on the Puerto Rico[19] (Keegan 2000).

In the Greater Antilles, the Ostionoid populations have principally sea turtles, large fishes and queen conches, like in Turks and Caicos (site GT-3, cal. 705-1100 AD) and in Jamaica (site Wes-15a, cal. 830 +/-60 AD). The numerous terrestrial reptiles (iguanas and tortoises) found in the Ostionan sites reflect probably the natural abundance of these species in the certain environment (Carlson and Keegan 2003). So by the Meillacan period on many of these islands the abundant near shore marine resources and the populous terrestrial iguanas had been overexploited and no longer contributed significantly to basic subsistence. These items had become rare as the tortoises and the small grounddwelling and ground-nesting birds. One other factor that may have contributed to the extinction of terrestrial fauna on these islands is the Amerindian practice of keeping dogs. Their remains have been encountered mostly in burials (Wing 1993). There are numerous examples of overexploitation of the natural environment by humans at this period, as in MC-32, a Meillacan period site on Middle Caicos (13th century), where there was a switch from a predominance of large juvenile and adult conch in the early years of occupation to one of clams and nerite snails later. At this site, over 90% of the remains were from very small fish: silversides (*Atherinomorus stipes*), small schooling fishes about the size of a herring, are the most common species and small parrotfishes (*Sparisoma* sp.) are the second most common. Fine mesh screening techniques are necessary to recover them (Wing 1969). The Meillacan and Chican patterns of subsistence were basically one of fishing and the development of techniques that allowed the intensification of harvests on certain species. At these later period sites, the fish harvested fall within a small size range and represent few species. *Sparisoma* parrotfish dominate most assemblages, with the remainder being mostly herbivorous and omnivorous inhabitants of the shallow reef environment. Wing first reported evidence for trapping at the site of MC-32, a Meillacan period site on Middle Caicos, where the parrotfish vertebrae had a uniform size range between 4 and 8 mm (Keegan 1986). At all the later Bahamian sites, where traps appear to be the primary capturing technique, *Sparisoma* parrotfish provide up to 70% of the fish remains. On the other hand, at GT-3, where no trapping is evidenced, small parrotfish contribute only 2% of the fish MNI. People turned to trapping as a way of gathering species that could not be taken by hook and line or spearing in shallow water. These changes in procurement techniques should result from intensified harvests during the Meillacan period. In the later Chican period, we see the introduction of cooperative foraging strategies (Keegan 1986).

In the Lesser Antilles, from the early Troumassoid, the fish clearly dominated (~65 %), as crustaceans and urchins. The diversity of the gathered fish species was lower during Troumassoid than Saladoid (33 taxa, instead of 44 taxa), as for the terrestrial vertebrates (only 9 taxa) with a majority of sea turtles. However, the crustaceans and urchins diversity was high (18 taxa, 7 families). The Troumassoid showed an economy highly specialized on the coral reef and its lagoon (Grouard 2001a, 2003). For example, on Saint-Martin (Baie aux Prunes, Pointe du Canonnier) the subsistence economy was moderately diversified, but with a high specialization on rice rats and some rocky bottom fishes, as groupers, snappers and squirrelfishes. The alimentation was completed by the four characteristic species of the coralline reefs: grunts, parrotfish, triggerfish, and surgeonfish, then by pelagic fishes as jacks and tuna (Grouard 2005b).

On the Continental Islands, during the Dabajuroid (800 AD – European contact) and Valencioid tradition (1100-1300 AD), the resources from the sea dominate. In Tanki Flip on Aruba, queen conch dominated both shell tools artifacts and alimentation (Versteeg and Rostain, 1997). Within the

19. It is generally believed that the Ostionoid colonists who migrated to Hispaniola entered territories inhabited solely by Archaic peoples. However, it now seems likely that they encountered other ceramic age horticulturalists who had preceded them by more than eight centuries (Keegan 2000, 2004). Recent investigations in the eastern Dominican Republic indicate that pottery making diffused across the Mona Passage as early as 350 B.C. (Veloz Maggiolo 1991). Whether this reflects the transmission of pottery making to the Archaic inhabitants of this area (Dacal Moure and Rivero de la Calle 1984), or an earlier migration of peoples from Puerto Rico, is currently under investigation.

vertebrate remains (Grouard 1997), the coastal, brackish, or coralline fishes predominated, especially bonefishes (*Albula vulpes*), ladyfishes (*Elops saurus*) and jacks (Carangidae). The remains provided also reptiles, as green iguanas, sea turtles and tortoise (*Chelonoidis* sp.), birds as doves and sea birds, and mammals as rice rats, deer (*Odocoileus virginianus*) and ocelot (*Felis pardalis*). The three species from the tropical forest (deer, ocelot and tortoise) were probably imported from the Continent, as it occurred in the other continental islands: Curaçao and Bonaire (Newsom and Wing 2004), Las Aves, Dos Mosquises and Los Roques (Antzac and Antzac 1992). Here, it was found exotic animals, those that do not naturally occur on these offshore islands, as worked bone artifacts or unmodified bones with the status of tools or ornaments, rather than as live animals (Antczak 1995; Newsom and Wing 2004). On the Venezuelan islands, were found pendants made of perforated teeth of peccary (*Tayassu tajacu*), tapir (*Tapirus terrestris*) and crab-eating fox (*Cerdocyon thous*), flutes made of the radius of two species of deer (*Mazama* sp. and *Odocoileus virginianus*), ocelot and margay (*Felis weidii*) mandibles, On Bonaire, were found bones of a juvenile capuchin monkey (*Cebus* sp.) and polished ulna from an ocelot (Newsom and Wing 2004). On Curaçao, agoutis (*Dasyprocta leporina*), and guinea pigs (*Cavia porcellus*) were found. Guinea pigs were domesticated in the Andean region of Peru around 2500 BP, and this specie is endowed with important cultural roles in divination, healing and sacrifices (Lavallée 2000). All these animals have a high symbolic value, linked with the concept of death, ritual and sacrifice, some of them maintained in captivity, tamed, indeed domesticated.

Ceramic Age: Late post-Saladoid sites

This cultural mosaic (figure 1) evolved until the Contact Period with the Europeans (1492/1550). The Chican Ostionoid subseries, assimilated with the Taino society, took shape around 1200 BC, in the Dominican Republic, Puerto Rico, the Virgin Islands, Haiti and Cuba (Hofman 1993; Keegan 2000). At the same time, between 1100 and 1500 BC, a Palmetto subseries was identified in the Bahamas. The Suazoid series (1000-1500 BC) of the southern Lesser Antilles was displaced to Tobago, St Vincent, in the Grenadines and in Dominica by the later Cayo series. Recent information on the northern Lesser Antilles (Antigua, Anguilla, Saba, and Guadeloupe) indicates a complex social system with a later connection to the Taino (Bérard 2004). All of the above branches of the Cedrosan Saladoid have, in historic times, been covered in the literature by the appellations Arawak and Taino (Keegan 1992). These were the people who Columbus met on his first voyage (figure 4).

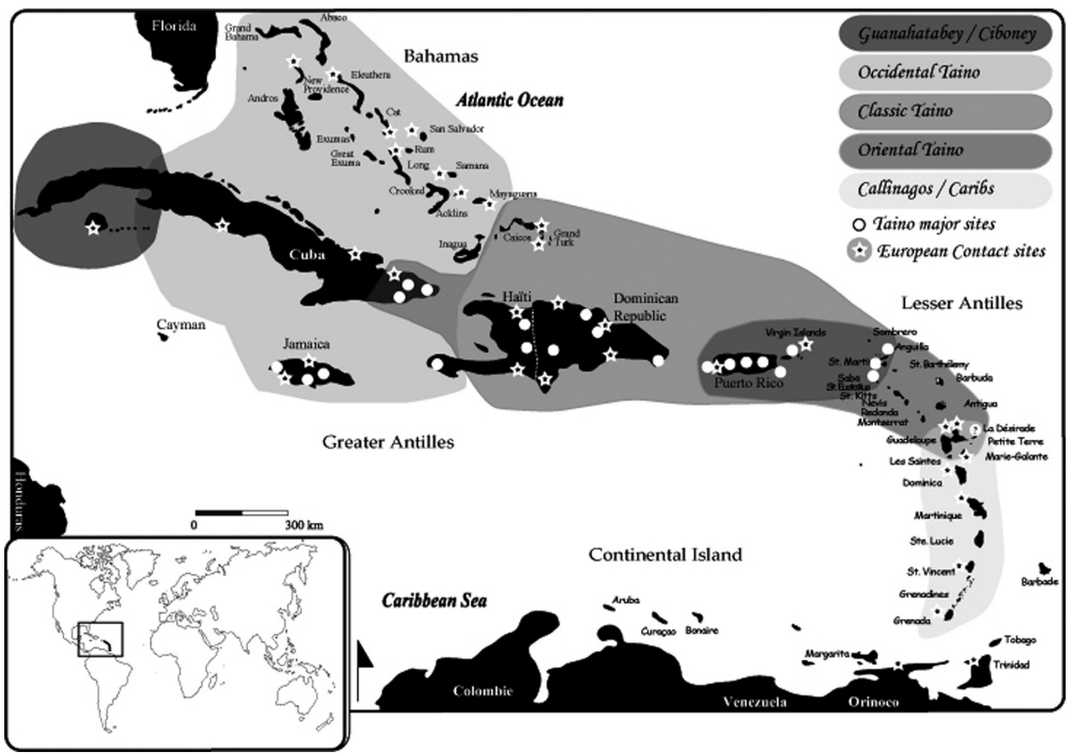

Figure 4. Map of the Caribbean with the major Taino populations (Grouard 2005a; from Atlas Mondial Hatier 1985; Rouse 1992).

Ethnohistoric sources are difficult to measure with archaeological data in order to discern the ethnic groups and linguistic affiliations of this mosaic of later groups. The map of chiefs and chiefdoms of the Antilles has only been partially reconstituted by the chroniclers and first explorers. The arrival of C. Columbus and the Europeans in 1492 also greatly perturbed the cultural balance existing in the Antilles. Over a period of about ten years, the Dutch, English, Swedes, Italians, Spanish, Portuguese and the French colonized each island of the Caribbean. The Amerindians practically disappeared from the Caribbean in less than 50 years, through annihilation, assimilation, sickness and slavery. The establishment of towns, trading posts forts, commercial ports and slave plantations gave rise to numerous battles. These first establishments, their political, architectural, commercial and cultural history are still very evident in the Antilles. The surviving Marron slaves and the Amerindians also left archaeological witnesses of this troubled period.

Several Pre-Columbian sites from South-East Martinique have been analyzed using multidisciplinary approaches since the last four years. These sites provide a coherent cultural, micro-regional assemblage of coastal occupations for the late Ceramic period of the Caribbean, between late Troumassoid and Suazoid phases up to the European contact, between 1100 and 1500 AD (Serrand and Grouard, in prep.). The site of Anse Trabaud is dated to between the XIth and XIIIth centuries AD; the site Les Salines is dated to between the XIIth and XIIIth centuries AD; the Macabou and Paquemar are dated to between the XIIth and XVth centuries AD (Allaire 1977; Bérard 2004; Grouard and Serrand 2005).

Les Salines delivered 71 animal species, Anse Trabaud 82 taxa, Macabou and Paquemar more than 170 species. Within these species, 83 are vertebrates (especially tuna Scombridae, surgeonfishes Acanthuridae, rice rats Oryzomyini, and iguanas Iguanidae) and crustaceans (especially terrestrial crabs Gecarcinidae and sea urchins Echinoidea), and 86 are mollusks (especially *Donax denticulatus*, *Crassostrea rhizophorae*, *Protothaca granulata*, *Anomalocardia brasiliana*, and *Tellina* sp.). The inhabitants of these sites exploited the whole environment (deep waters, forests, coral reefs, rocky bottoms, sandy bottoms, and mangroves), and all size of fishes was cached (from 10 to more than 90 cm long). The inhabitants of the four sites gave a preference to coralline fishes, but they also collected bivalves, that were concentrated in bank and were easy to collect in large quantities. At Anse Trabaud, the spectrum is not rich, but diversified, that traduce an economy open but with few species. At les Salines, the faunal spectrum is not rich, and not diversified, that traduce an economy focused on few species. At Macabou, the spectrum is rich and diversified, that traduces an open economy, with a lot of species that contribute in same proportion to the diet (Grouard and Serrand 2005; Serrand and Grouard, in prep.). This enlargement of the diet is linked to a wilder choice of sites' implantation during the postSaladoid period, where mangrove zones and coralline beaches are chosen more and more often for the villages' locations (Bérard *et al.* in press). Some bones show butchery traces and cooking fire signatures, especially agoutis, manatees and sea turtles, that inform the way the inhabitants have cut up the carcasses, particularly the legs. Moreover, sharks vertebras were perforated as pendants, and long bones were polished to obtain pointed tools, and sea turtles shells were polished and shaped as adzes, with a sharp zone. Several shells were also used, perforated, incised and decorated. Several elements from the lips of the queen conch testify the production of tools *in situ* (Serrand and Grouard, in prep.).

Conclusions

The chronological frame of the Prehistory in the Caribbean is complex and still to be defined. The ceramic series are still in studies and the definitions are modified regularly. For the moment, the linear evolution of the ceramic styles as defined by Rouse (1986) can not be verified by calibrated 14C dates, because of their scarceness. Yet, in order to point out the relationships between the different Pre-Columbian groups, a large reflection was elaborated since few years on socio-political elements and on chiefdoms (Keegan 2000; Wilson 2001), on exchanges, on supply of raw material, and on purchase of technologies (Knippenberg 2006; Serrand 2002; Bérard 2004). Depending on the linguistic or cultural group, and depending on their relationships, their habitat, their environment exploitation, the ceramic assemblages seem to be linked to the exchanges of women, those who have made the pottery. Thus, the stylistic exchanges can be explained, and the analysis of animal resources and their techniques to catch, to transport, and to consume, during the different periods permit the definition of the different cultural groups (Grouard 2001a).

Indeed, insularity implicates a majority of faunal remains from the sea. But, depending on the location of the site (volcanic or coralline islands) and depending on the richness of the biotopes, the choices were differently made according to the different cultures.

Moreover, the situations and contexts of each island are so numerous that it is difficult to extract invariants on

animal exploitations. New researches have to be developed on technology, on villages' organization, on subsistence, on environmental exploitation, on exchanges and chronocultural shifts. Furthermore, the researches on foodgetting behavior as a daily activity should provide more information on cultural identity and social practices. Finally new researches on micro-regional have to be done to integrate the data on technical exploitation of animals to define the Cultures. These studies would show the kind of relationships between man and animals and their cultural values.

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De esta forma en la sesión plenaria de la décima reunión del ICAZ celebrada en México, D. F., en 2006, los representantes de Argentina, Bolivia, Brasil, Chile, Colombia, Cuba, Ecuador, México, el Caribe y Panamá (junto con Costa Rica y Nicaragua) mostraron un panorama de la situación actual de la disciplina y plantearon las perspectivas futuras en sus respectivos países o regiones mayores.

Este libro es el resultado de dicha reflexión y con ello se espera dar una visión amplia y balanceada de los estudios arqueofaunísticos en Latinoamérica.

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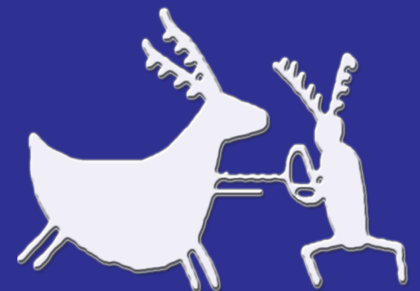

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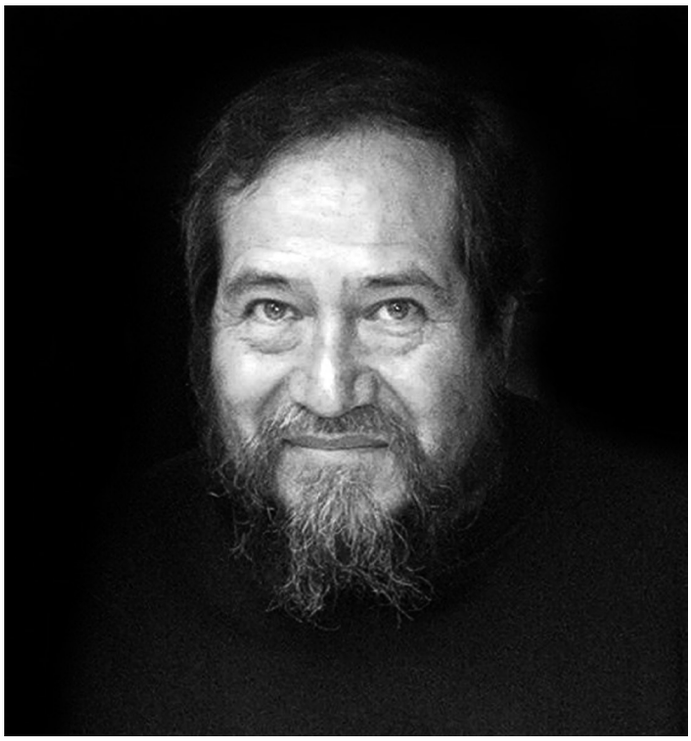

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