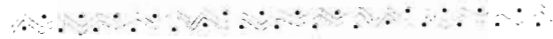


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VOLUMEN I

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On The Road To State? El Cascal De Flor
De Pino And Its Surroundings During
The Formative Period Of The Caribbean
Coast Of Nicaragua



Abstract

The original aim of the research project carried out on the Caribbean Coast of Nicaragua was to excavate one of the coastal sites (Karoline, KH-4, 340 BC-350 AD) to determine the levels of evolution and development of the prehistoric societies that populated this Caribbean region. Written ethno-historical sources for the Misquito Coast from the 17th-19th centuries, suggested that this was a society composed of small groups, basically devoted to hunting/fishing and gathering, probably with incipient subsistence agriculture. However, the recent discovery of the site of El Cascabel de Flor de Pino (KH-31, 750 BC-340 AD) seems to indicate the possibility of a society with a rather more complex level of social organisation.

Introduction

The descriptions of the social groups of the Caribbean Coast by both pirates such as A.O. Exquemelin and W. Dampier, and travellers, social scientists and agents of a range of governments, such as E.G. Squier (Corizemius 1932, Hodgson 1990 [1759], Roach 1991 [1798], Romero 1995, Squier 1891, Steward 1948), give an overall idea of a very under-populated zone which had hardly been modified by human activities. Normally, they describe a highly dispersed habitat of small human groups with a low level of technological development. Although they recognise certain abilities in the fields of hunting and fishing, they also highlight the lack of metallurgical knowledge in general and of ceramic production in the particular case of the Misquito groups. References to agricultural activities are confused and occupy a small space in the descriptions of subsistence strategies, while in some sources nomadism is mentioned as a common practice. This condition would have limited both the development of sedentary agriculture and the possibility of large settlements, with the resulting low level of political centralisation. Until the creation and expansion of the "Mosquito Kingdom", under the aegis of British imperialism, there would have been no power structure with any meaningful territorial coverage. Nor, apparently, would there have existed any mechanisms of institutionalised political organisation of the different communities of a single linguistic group beyond those deriving from kinship. There is no mention even of any marked relations of inequality, other than those resulting from differences in age and sex within each community. All these characteristics are in contrast to the strongly stratified state societies of the lowlands of Northeast Honduras, Guatemala, Belize and Mexico.

The scarcity of empirical data from archaeological works in the region has been the main reason for the continued use of this image, obtained from ethnographic data, for the representation of the prehistoric aboriginal populations. For this reason, although researchers from the first half of the 20th century, such as Steward (1948) and Strong (1948) suggested the existence of much more "complex" pre-Hispanic societies along the Caribbean Coasts of Nicaragua and Honduras, they could not explain why these societies had undergone a process of "regression" to much simpler forms of social organisation for subsistence. The absence of remains from Mayan, Aztec or other "Mesoamerican" societies, or of sites such as those known in the higher lands of Costa Rica's Atlantic watershed validated this impression. At the same time this conception, allowed the supposition that the low levels of anthropisation of the humid tropical forest in the modern era also reproduced the prehistorical reality: very small populations which hardly modified their natural surroundings (Magnus 1978; Nietschmann 1973).

series of excavations in several shell middens, which allowed the development of the first ceramic sequence, and the first four 14C datings for the zone. Additionally, in the early 1970s the Nicaraguan researcher Jorge Espinosa directed a number of digs at Angi, a shell midden at Monkey Point, south of Bluefields. Unfortunately, the results of his work have not been published yet, and currently there are only some indirect references from radiocarbon dates and lithic materials, which could have been from the Archaic period (Veloz 1991). The few test pits made by Joaquín Matilló during this time, also on shell middens at Monkey Point, complete the small number of archaeological works in this area (Matilló 1993), discontinued in later years.

Our research on the Atlantic Coast of Nicaragua has been developed within this context of knowledge, through two research projects carried out since 1998, which have taken account both of surveys and archaeological excavations. The examination of the current and former/prehistoric coastlines between Laguna de Perlas and Bahía de Bluefields (see FIG. 1) has allowed the identification of 21 archaeological sites with more than 80 shell middens (FIG. 2). The 17 absolute datings carried out have allowed us to locate 8 of these sites in the period between 1400/1200 cal. BC and 700/900 cal. AD (see TABLE 1), as well as to define, in greater detail, a provisional ceramic sequence for the whole zone (Gassiot and Palomar in press; Gassiot et al. in press). A survey of inland areas (in 2002 and 2003) in the municipality of Kukra Hill allowed the identification of another series of sites of a different type. One of them, El Cascal de Flor de Pino (KH-31), has large constructions that have been dated from somewhere between 790 cal BC and 530 cal AD (Gassiot et al. 2003 a, b and c; Clemente et al. in press). These recent archaeological discoveries have meant that our initial hypotheses, coinciding with the ethno-historical data indicating the existence of small, probably nomadic social groups devoted to hunting/fishing and gathering, and possibly incipient agriculture, had to be modified.

Excavations in a shell midden in the Karoline site (Kukra Hill)

Setting out from the recently-postulated initial hypothesis we began, in February 2002, an excavation in one of the shell middens in Karoline (KH-4) in the municipality of Kukra Hill. A second field work programme was undertaken over four weeks in March-April 2003. The site represents an ancient settlement made up of at least 12 shell middens associated with their respective habitational units, which were simultaneously occupied between 400 cal. BC and 350 cal. AD. In order to examine the validity of the initial hypothesis, it was decided to carry out an extensive excavation, so as to cover both the area of the shell midden (initially considered to be a waste disposal area) and the zone immediately next to it, where it was supposed the habitational units would be found, as is the case today in various coastal communities (FIG. 3). As a whole, 50 sq. m. have been opened up for digging. This open area excavation allowed us, among other things, to discern a clear difference between the two parts of the excavation (shell midden – northern zone of the excavation / residential area – southern zone).

The digging followed the natural and anthropogenic stratigraphy of the site. Within the shell midden we have been able to observe the existence of different structures related to a range of hearths and associated post-holes (FIG. 4). These hearths, more or less rectangular in form, were dug directly into the shell midden. These structures constituted areas for the preparation of food, both for direct and indirect consumption such as fish smoking (which is still practised today, as well as being recorded in ethnographic sources (Nietschmann 1973). The location of the hearths on top of the shell midden is clearly related to the intense rainfall which affects the tropical humid regions, since the rain filters down between the shells (in this case, mainly of *Donax* sp.), making them the driest places in the settlement. To the south of the shell midden, where the sediment is principally clay deposits with a few pebbles, it has also been possible to see a differential spatial distribution of the domestic remains. Thus, for example, in the area near the shell midden there are large quantities of domestic pottery forms with greater sides and with traces of high frequency of use, such as the *cazuela* (a large



forms related to the distribution and consumption of foodstuffs (plates and little bowls). We have also been able to document the presence of a range of stone tools and one made from a ceramic fragment, which present traces of use indicating ceramic production (Semenov 1964, Keeley 1980, Gassin and Garidel 1993, Clemente 1997, López Varela et al. 1999, 2001 and 2002). These were used to smooth, polish, and make incisions on the clay. These archaeological data indicate that at least a part of the production of the ceramic recipients used was carried out in KH-4.

Thanks to the favourable physical and chemical conditions in the more alkaline sediments of the shell middens, archaeological remains which in humid tropical contexts do not tend to be preserved (bones, seeds etc), have been. For this reason, we were able to note the consumption of a large range of wild fauna and vegetables: fish, molluscs, land mammals (including wild pigs and deer), as well as aquatic mammals (manatees), turtles, birds, reptiles and a wide range of wild fruits. The hunting of manatees and of some fish species (dwarf sharks), as well as the transport of marine molluscs (*Donax* sp.) over great distances, indicates a more than probable use of canoes. In the absence of the results of the analyses in process, the archaeological documentation of abundant fragments of grindstones (metates) and the hand-held stones used with them allows the conjecture that perhaps agriculture complemented the alimentation of these people.

Our initial suggestion was that these coastal settlements could have been temporary or seasonal. They would have been occupied precisely at the moment at which the "aji" (*Donax* sp.) is collected by digging in the sands of the Caribbean beaches (May/September; Nietschman 1973). This supposition is supported by the recurrence of thin layers with small charcoal pieces and charred clay covering the whole excavated area outside the shell midden. This evidence can be interpreted as resulting from regular cleaning activities carried out by burning the grass that grew there during the inhabited season. However, this initial hypothesis could change with the discovery of El Cascal de Flor de Pino, a site some 14 km to the south of Karoline (Gassiot et al. 2003 a and b).

El Cascal de Flor de Pino: the contribution of a new archaeological discovery

During the 2002 excavation campaign in Karoline, oral information was gathered about other potential archaeological sites in the zone. This led to a series of directed surveys with the aim of systematising a database of archaeological sites and, in this way, to articulate the dispersed and segmented knowledge held by the local population about archaeological evidence. The archaeological site known as "El Cascal de Flor de Pino" was found thanks to the information provided by the engineer Nicolás Jarquín, employee of the "Kukra Hill Development Corporation" with its headquarters there. During the first visit, the tasks of clearing the summit of El Cascal Hill allowed the identification of three platforms. The topographical characteristics of these clearly indicate that the structures are man-made in origin (FIG. 5). Furthermore, ceramic fragments were found in the surrounding area, as well as stone remains in the form of worked flint.

This existence of monumental architecture in the form of at least three very clearly defined platforms initially led us to the hypothesis that the place must have a much more recent chronology than that of the closest coastal settlements (Karoline, Brown Bank and Sitetaja). These had a fairly complete dating series which located them in the period 400 cal. BC-350 cal. AD, with a chronology well before that of sites with habitational mounds in the centre, north and west of Nicaragua and in the Central Valley and the Atlantic Watershed of Costa Rica (Espinoza and Rúa 1994, Fonseca 1992, Gassiot and Palomar 2003, Gassiot et al. 2003a, Gutiérrez and Mora 1988, Hurtado de Mendoza and Gómez 1985, Lange et al. 1992, Palomar and Gassiot 2002, Rigat and González 1996, Snarskis 1992, Vázquez 1989). As such it would seem coherent to argue that El Cascal de Flor de Pino represented populations from a period posterior to those established for Karoline, Brown Bank and Sitetaja. The archaeological site is located in the area which from 600-800 cal. AD has been



half of Nicaragua. The possible late chronology of the site of Garrobo Grande (Espinoza, personal communication 2003), in the inland part of the Atlantic Plains of Nicaragua, would support this initial proposal. On the basis of these conjectures, two operations were planned for November 2002 and March/April 2003, with the aim of better defining the internal structure of the site and its architectural form, and to obtain precise data with respect to the time of its construction and occupation.

In November 2002, a rapid survey was undertaken, to determine the size of the El Cascal de Flor de Pino site. A topographical survey was made of the three main platforms and of the two closest mounds, as well as a small test pit of 0.5 sq. m. on the top of platform no. 1 (the southernmost, and largest one). Thanks to this test pit, we were able to recover stone and ceramic materials, as well as fragments of charcoal, which allowed us to make the first radiocarbon datings, between 800/550 cal. BC and 400/440 cal. AD (Gassiot et al., 2003a)¹.

In March-April 2003, the first archaeological excavation of the site was carried out. The objective was to examine a section in the external part of the platform which we had dated, to observe the techniques and methods employed in its construction. At the same time, we continued mapping the settlement (FIG. 6), carried out a new 1 sq. m. test pit in the second platform, and continued with surveys in the zone which allowed us to document new archaeological sites which were presumably related. The mapping of the central area of El Cascal de Flor de Pino provided more details about the intra-site structure of the settlement. This is defined by a central open area or "plaza" covering nearly 2.2 Ha., around which are at least 22 earth mounds and platforms. The three largest and highest ones are lined up on the western side of the "plaza". The overall mapped surface of the site is about 6.6 Ha.

The three biggest platforms were constructed using a combination of earth and stones, a technique that has been documented for other Mesoamerican societies categorised as "complex", from the same period (Medrano 1993, Weaver 1993). The trench allowed us to partially determine the constructive techniques of the P1. This platform has at least two containing walls at different levels, formed of a course of uncut basalt blocks. This wall-building technique has been documented in some formative sites of so-called "Mesoamerica" (Healy, personal communication 2003, Hohmann and Ponce 1999; Hohmann et al. 1999). Despite this, there are differences in the construction techniques, especially in the case of Platform 1, which displays a more limited use of stone than in the two other big mounds. At the moment it is impossible to determine if this is a result of different construction periods or techniques. But we can infer, due to the large size of the platforms, an important labour input in their construction.

Other archaeological sites documented in the study area

In parallel with the excavations carried out in March and April 2003 in El Cascal de Flor de Pino and Karoline, we continued to survey areas for which we had received information on possible archaeological sites. As a result, we found a range of petroglyphs on basalt rocks (FIG. 7). However the most important, on the basis of their characteristics, are the two sites of Las Limas and Bella Vista, which are very close to one another. Las Limas (FIG. 8) is defined by an accumulation of more than 75 basalt monoliths or "columns", circular in section and with a longitudinal axis which varies between something less than 1m to almost 3m. The predominant arrangement of the monoliths, all composed of a single piece, follows a north-south arrangement. To a large extent the "columns"

¹ Both dates were obtained on charcoal samples. The youngest date comes from a hearth layer linked to the last occupation of the structure and it is interpreted as the date of the moment of its abandonment. The oldest date proceeds from a level that can be interpreted as the collapsed ceiling of the building on the top of the platform, which nowadays covers the hearth. Although its older date is congruent with the interpretation of the stratigraphic record, we must consider the important time interval that exists between them. On the other hand, the reduced area tested limits the definition of the contexts. Further dates will give light on this discussion. Nevertheless, there seems to be no doubt that the construction of Platform 1 was done during the Formative Period.

or monoliths are covered by the reddish clay which constitutes the edaphic horizon of the extensive plain, which runs from the hills of El Cascal to the basin of Big Lagoon in the south, and to the Kukra Hill, and the town of this name to the east. The size of this accumulation is around 30 m long by not much more than 15 m wide. Their arrangement allowed us to exclude the possibility of their resulting from the collapse of a habitational structure or a temple. Rather, it seems to have arisen in an orderly fashion, in a concrete place, perhaps for the later use of the monoliths in other places.

No indications have been found of the manufacture of monoliths in the zone. Some of them have fractures of modern origin, the result of the flaking of the basalt associated with meteorism. The distal ends are not homogeneous. In the majority of cases, they are rounded. However, in some pieces the bases are completely flat, and in others one of the two extremes appears to contain jointing elements. In some of the blocks there are what could be marks resulting from manufacture, and some incisions. However, not having moved any of the pieces from their original positions, the observations are still highly preliminary. In the place with the most important accumulation there are fragments of worked flint and sherds.

In some parts of America, outcrops of cylindrical basalt have been documented. Although a natural origin for these basalt blocks appears highly probable (in the surroundings there are a natural outcrop of cylindrical basalt), their location is over a clay plain, many hundred meters away from the basalt horizon. Either some traces of the presence of archaeological materials illustrate the existence of prehistoric activity in this location. Finally, the lying of monoliths in the floor looks in a very ordered way.

Discussion

Although the work carried out to present is very preliminary, there are a number of circumstances which allow us to develop various hypotheses for further discussion. In the first place, as we have argued above, the radiocarbon datings obtained have caused us to adjust the hypotheses made during the research. The fact that El Cascal de Flor de Pino has older datings than those taken in other sites with mounds on the Pacific Coast and the inland plains of Nicaragua was surprising. This finding contradicts the diffusionist hypotheses (Bransford 1881, Lothrop 1926) which suggest that these "civilisations" arrived in Nicaraguan territory during the classic period, from the north and from the Pacific, to later expand towards the Atlantic. It was on this basis that we initially believed that the coastal settlements would also be older than El Cascal de Flor de Pino, rather than contemporary, as is indicated by the datings (cf. Table 1). The former could be settlements with small populations which occupied and exploited the coast on a seasonal basis, using the canoe as a means of production and transport, hunted, fished, collected wild fruits and, on the basis of the metates (grindstones) found, could have had some form of agriculture (as indicated by ethno-historical sources for the 17th-19th centuries). These small, dispersed groups could have later constituted (as a result of internal evolution and the development of their means of production or through contact with other groups) a society with more stable and larger settlements, such as El Cascal. These were some of our initial hypotheses, postulated previous to the results of the datings and pottery analysis from El Cascal de Flor de Pino.

However, once the dating results were known, and on the basis of the direct relations through chronology and material remains between the different settlements, the situation began to look rather different. El Cascal de Flor de Pino could have carried out the role of a political and strategic centre for a society which occupied a specific territory. As well as the El Cascal hill having visual control over large areas in all directions, the constructions of large platforms and numerous mounds, reproducing the pattern of a central plaza as in other areas of the "Mesoamerican" Formative Period (Bové et al. 1993, Hammond 1991, Hohmann and Petrus 1993, Hohmann et al. 1990, Messenger 1987), could be indicative that this was an important centre in the economic and political organisation



of this society. If this is indeed the case, it is also possible that the coastal villages (Karoline, Sitetaia, Brown Bank, etc) were not seasonal settlements for the exploitation of molluscs and other aquatic resources, but rather were permanently occupied. In this way, they would also have served as places for observing and controlling the "frontiers" of the territory occupied by this society, thus avoiding the entry of other groups by sea, river or canal. However, some caution is needed in further interpretations. Instead of a small urban centre, El Cascal de Flor de Pino could have been a large village, with people engaged in productive activities, and with no differential political power over surrounding communities or capacity for the private accumulation of surpluses. This other hypothesis must also be examined.

Another finding is that although in both sites (El Cascal de Flor de Pino and Karoline) the same types of ceramic vessels were used, El Cascal de Flor de Pino did not have the role of a craft centre from which the products were distributed. This supposition has been possible to verify through the presence in Karoline (KH-4) of a range of stone tools (and one made from a shard) which have traces of having been used for pottery production. Evidence of tool making at the site is completed by the finding of indications of different activities and processes of lithic production, from the cortex removal of the primary materials to the exploitation of the cores and the forming of the tools and their participation in other productive processes.

Conclusion

The research carried out on the Atlantic Coast of Nicaragua has resulted in a substantial increase in the data on the prehistoric population of the zone, and has shown a more complex sequence than the reading of the ethno-historical sources might have indicated. The main group of available data at present covers the Middle, Later and Terminal Formative Periods, approximately between the beginning of the 8th century cal. BC and the first half of the 5th century cal. AD. During this time settlements coexisted in this part of Nicaragua, close to the coast and made up of more than half a dozen units of habitation with at least one settlement of larger size, with large mounded architecture and a location which facilitated a great visual control of the territory. The analysis of the shell middens in the settlements, and the excavation of one of them has allowed the documentation of a highly diversified exploitation of the environment, even with variable strategies in the different villages (Gassiot 2002, Gassiot et al. in press). In Karoline, these activities included hunting and the collection of a wide range of land and marine species. They also consumed, as a minimum, a wide variety of wild fruits. In El Cascal de Flor de Pino, by contrast, monumental stone and earth structures were built, distributed around a plaza, or central space. Up to now, the known part of the settlement occupies more than 6 Ha. and contains at least 22 platforms and mounds.

In contrast to what was initially expected, the absolute datings available for the small coastal villages and for El Cascal de Flor de Pino are from the same time period. Other traces, such as ceramics and stone production also have similar characteristics in all the contemporary sites, suggesting the existence of shared technological and normative patterns. It remains, however, to define the chronological relation of these sites with those of Las Limas and Bella Vista. At the merely hypothetical level, it can be suggested that these were potentially coetaneous with El Cascal de Flor de Pino, where a possible monolith has also been found. More research is needed, however, to clarify this question.

Having reached this point, we must not forget to mention two elements which we feel are highly relevant. In the first place, the normative characteristics of some objects and elements from the archaeological record, which suggest links with traces identified in sites of a similar age in the north. It is well known how basalt monoliths were used for ideological ends in the last phase of some "Olmec" sites. Also, in the northern coast of Honduras, for example in the Plan Grande site on Isla Patuca Strong (1933, 1934, 1935) documented an accumulation of monoliths, both standing



and fallen, with no apparent order or architectural function. On the other hand, the settlement structure with a large central space surrounded by buildings, some of large size (and with a possible "public" use) also suggests recurrences with the parameters of the second half of the Formative Period in so-called "Mesoamerica". Once more, on the North-eastern Coast of Honduras there are some known sites with a similar mounded architecture, such as Los Aguacates or Walkibilya (Clark et al. 1980, Strong 1933, 1935). Unfortunately, the absence of chronological dates precludes more detailed inferences about the broad prehistoric context. Finally, some decorative patterns in ceramics, especially in the carinated and globular forms brings to mind contemporary sites on the Belize Coast (Kosakowsky 1987), while the similarities with middle and later Formative pottery from Southern Central America seems to be less evident (Corrales 2000, Hoopes 1994). This reality does not necessarily imply the existence of processes of diffusion during this period of the region's prehistory. It simply suggests the possibility that the prehistorical contexts which led, in the north of Central America to the emergence of state forms could have had a larger geographical extension than previously thought, including a broad part of the Atlantic Plain of present-day Nicaragua. If such was the case it would still be necessary to explain why in this area the process did not result in similar circumstances to those documented in the North of Honduras, Guatemala and Belize.

In the second place, the co-existence in a single territory of settlements of very different characteristics gives rise to interesting historical questions. In this sense, future work should attempt to define with precision the relations between El Cascal de Flor de Pino and the settlements scattered around it, of which those of Kakabila, Brown Bank, Sitetaia and, perhaps, Bella Vista were some. The similarity of this potentially hierarchical pattern with that documented for the same period for the lowlands of Eastern Guatemala, Belize and Northeastern Honduras could suggest the existence of a society with certain forms of social inequality and a level of political centralisation. However, this analogy could hide peculiarities in the settlement patterns of the Atlantic Coast of Nicaragua if it is not accompanied by a detailed archaeological research project. This is the next challenge, together with determining the relationships of these Nicaraguan findings with the prehistoric settlements of the Atlantic Watershed of Costa Rica during Formative times. For the time being, it can be considered certain, at least, that the work carried out to the present has allowed the documentation of an unknown prehistoric society, with a limited connection to the ethnographically documented reality, principally from the 17th century onwards.

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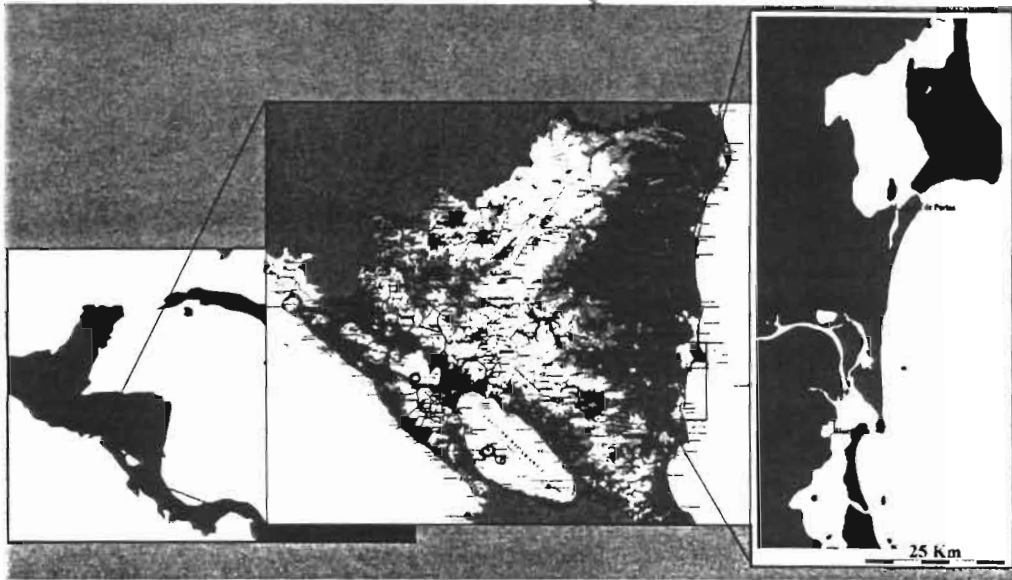


Figure 1. Research area.



Figure 2. Sites identified since 1998. 1: Brown Banh; 2: Coconut's Beach; 3: Long Mangrove; 4: Sitetaia; 5: Rocky Point; 6: Manhattan; 7: Karoline; 8: El Cascal de Flor de Pino; 9: Las Limas/Bella Vista; 10: Finca Zamora; 11: Vermon Creek; 12: Hawkis Point; 13: Gunboat Creek; 14: Punta Masaya; 15: Pilly Point; 16: Big Joe Creek; 17: El Zopilote Island; 18: Mullum Creek; 19: Tiger Creek; 20: Ancient Rama Cemetery; 21: Rama Cay; 22: Mission Cay.



Figure 3. Modern shell midden made of cooking debris (*Crassostrea rizophorae*) of a Rama Indian house, south of Bluefields.



Figure 4. Detail of a posthole in the surface of a shell midden stratum before the excavation.

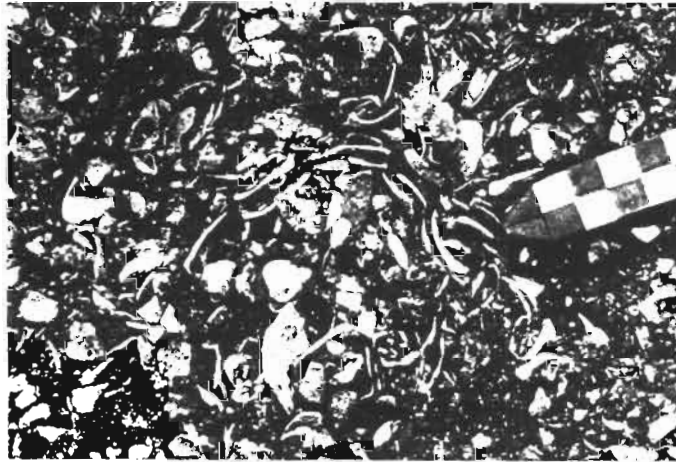


Figure 5. Main platforms at El Cascal de Flor de Pino, at the moment of its discovery (February 2002).

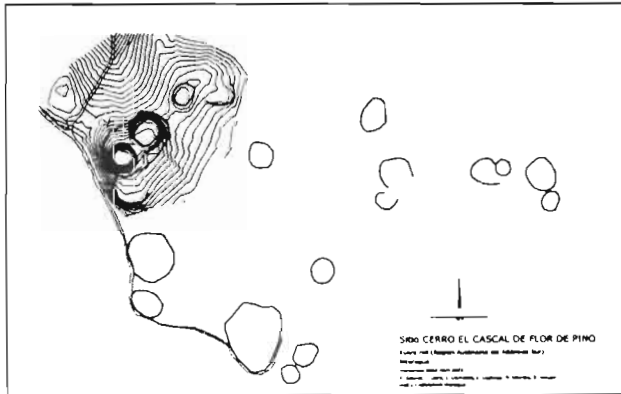


Figure 6. Partial plan of El Cascal de Flor de Pino, showing some of the platforms and mounds of the site and the central "plaza".



Figure 7. Petroglyph found at Bella Vista site.



Figure 8. Accumulation of basalt monoliths at the moment of its discovery (March 2003).



Table 1. Radiocarbon dates from sites of the Caribbean Coast of Nicaragua.

Code	Site and shell midden	Material	Date bp	Date cal (1 sigma)*
Beta-143966	Coconut's Beach (LP-12)	shell	3070±60	1410-1270 BC
Beta-143965	Long Mangrove (LP-7)	shell	2860±80	1280-830 BC
Beta-176242	El Cascal de Flor de Pino (P-1)	charcoal	2520±40	790-760 & 680-550 BC
Beta-137649	Karoline V (KH-5)	shell	2330±50	405-380 BC
I-7450 ^a	(Sitetaia?)	shell	2195±60	384-170 BC ^b
Beta-143962	Karoline V (KH-5)	shell	2180±70	370-155 BC
KIA-17648	Karoline IV (KH-4)	charcoal	2195±25	360-290 & 260-200 BC
Beta-137648	Karoline V (KH-5)	charcoal	2170±40	350-300 & 220-170 BC
KIA-17650	Karoline IV (KH-4)	charcoal	2140±25	350-310 & 230-60 BC
Beta-140707	Sitetaia I (LP-8)	shell	2120±60	355-324 & 178-50 BC
Beta-143963	Cox Site I (LP-2)	shell	2090±60	185-40 BC
Beta-143964	Sand Bank II (LP-5)	shell	2090±70	190-30 BC
Beta-143967	Sitetaia V (LP-13)	shell	2120±70	340-320 & 205-50 BC
KIA-17649	Karoline IV (KH-4)	charcoal	2030±25	50 BC -20 AD
I-7100 ^a	Sitetaia, I?	charcoal	2195±60	55 BC -115 AD
Beta-143968	Sitetaia VIII (LP-18)	shell	1900±70	45-215 AD
KIA-17978	Karoline IV (KH-4)	<i>Cervus</i> sp. bone	1735±25	250-350 AD
Beta-173457	El Cascal de Flor de Pino (P-1)	charcoal	1640±40	395-434 AD
Beta-143969	Rocky Point (LP-20)	shell	1160±70	780-980 AD
Beta-143960	Cukra Point (B-5)	shell	1130±80	795-1000 AD
I-7451 ^a	Cukra Point	shell	1185±80	782-1021 AD
Beta-143961	Red Bend I/ Cukra Point (B-48)	shell	121±0.77%	modern

NOTE: Except for cases in which is indicated, the dates are from Gassiot (in press), Gassiot and Palomar (in press), Gassiot et al. (2003a) and Gassiot et al. (in press). They have been calibrated by means of Calib 4.2 using INTCAL98 curve (Stuiver et al. 1998). Stimulated values of $\delta^{13}C$ have been introduced when they were not available.

a Data from Magnus (1974:201)

b Data from Magnus (1974). For I-7451 we estimated the values $\delta^{13}C$ as if all the shells were *Polymesoda*. However, possibly the presence of *Donax* shells is the cause of this excessively high value discordant with the rest of the results available for the Sitetaia site.

* p=.68

