

**ORGANIC ARTIFACTS FROM THE MANANTIAL DE LA ALETA, DOMINICAN  
REPUBLIC: PRELIMINARY OBSERVATIONS AND INTERPRETATIONS**

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*The Manantial de la Aleta is a flooded cavern in the southeastern Dominican Republic. Organic artifacts recovered from the site include carved wooden objects, gourd vessels, and basketry. The artifacts are of Taíno manufacture and have calibrated dates ranging from A.D. 1035 to 1420. Some of the artifacts are of types previously unreported from the Caribbean, while others differ significantly from commonly illustrated Taíno specimens. This paper provides preliminary descriptions of the organic artifacts and offers initial discussions of their cultural implications.*

La Aleta ("The Fin") is an important Taíno site in the province of La Altagracia in the easternmost Dominican Republic (Figure 1). In 1492 this area was part of the aboriginal chiefdom of Higüey, one of the five principal *cacicazgos* of the island of Hispaniola at the time of European contact (Las Casas 1967:I:22-26).<sup>1</sup> The site now lies within the boundaries of the modern Parque Nacional del Este, about 5 km inland from the closest point on the shoreline. The local landscape is formed of flat limestone bedrock with many cracks and solution cavities. Groundwater percolating

through the limestone supports a dense subtropical forest vegetation that covers the site area.

La Aleta has been known to archaeologists for 20 years, ever since José Guerrero (1981) carried out a brief reconnaissance for the Museo del Hombre Dominicano. It is possible, moreover, that La Aleta is a site that was visited by the early Spanish chronicler Bartolomé de Las Casas and described in his *Apologética Historia Sumaria* (Las Casas 1967:I:24-25; Guerrero 1981:14).<sup>2</sup>



Figure 1. Map of the Caribbean Basin showing the location of La Aleta.

Guerrero (1981:14-15) reported the presence of one ceremonial plaza at the site, and recent investigations have discovered three more (Ortega 1997; Conrad et al. 1997). In Taíno chiefdoms such plazas were the setting for important public ceremonies, including ritual dances called *areítos* and ball games. The presence of at least four plazas marks La Aleta as a prominent place in the chiefdom of Higüey (see Alegría 1983; Siegel 1999). Basing his interpretation on a preliminary analysis of food remains recovered during excavations in and around the plazas, Elpidio Ortega (1997:9) has suggested that La Aleta had relatively few permanent inhabitants, and that its importance was primarily religious and political, rather than as a center of population. This hypothesis remains to be tested by future investigations, because at present the total extent and exact composition of the site are not known. For the moment, however, La Aleta is tentatively characterized as a major Taíno ceremonial center, rather than as a large town.

### *The Manantial de la Aleta*

The most spectacular feature of the site is the so-called Manantial de la Aleta ("Spring of the Fin"), a flooded cavern in the limestone bedrock (Figure 2) about 75 m north of the nearest of the four plazas. The cavern, a circular chamber roughly 40 m in diameter, is visible through seven "eyes," or holes in the surface rock, spread over an area of about 10 m. The largest eye measures 2 x 3 m and offers a dramatic view of the surface of the water 15.5 m below. The water is clear on top, but at a depth of 10.5 m below the surface a milky sulfide-laden layer blurs visibility. The water clears again at 20 m. At 34.5 m below the surface a cap rock protrudes from dark silt. This cap rock is the top of an underwater hill formed by limestone blocks collapsing from above; the sides of the hill slope downward to a depth of 73 m (Foster and Beeker 1997:27).

The slopes of this hill are thickly covered with cultural materials, including ceramics, stone tools, carved wooden objects, gourd

vessels, baskets, and so on. In a series of brief field seasons between August 1996 and April 1999, researchers from Indiana University and California State Parks conducted preliminary investigations of these underwater remains as part of larger project involving collaboration between Dominican and North American scholars. The investigations took the form of controlled surface collections rather than excavations; selected artifacts were mapped in three dimensions and then brought to the surface (Figures 3, 4).

The nature and condition of the recovered artifacts suggests careful placement into the water, rather than simple discard as trash. For example, many of the ceramic vessels are intact. Our working hypothesis is that the local Taíno population saw the Manantial as a portal to the watery underworld known as Coaybay, "the house and dwelling place of the dead" (Pané 1999:17-18; Stevens-Arroyo 1988:185-186, 230).<sup>3</sup> The view upward from the surface through the largest eye was essentially a view along the *axis mundi* uniting the surface of the earth with the heavens and the underworld (Figure 5; compare Siegel 1997:108, Figure 1).

If this interpretation is correct, the artifacts in the Manantial were probably placed there originally as offerings to the spirits of the ancestors in the underworld, whose veneration was a central element of Taíno religion (Pané 1999:18-21; Stevens-Arroyo 1988:59-62; Siegel 1997; Roe 1997:154-155).<sup>4</sup> The presence of the milky sulfur layer may have been particularly important in this regard. Sinking objects disappear from view as they pass through the sulfur layer, and the moment of their disappearance may have been seen as the precise moment of their transition into the underworld.

### *The Organic Artifacts*

Many of the artifacts visible underwater are made of organic materials. They have been

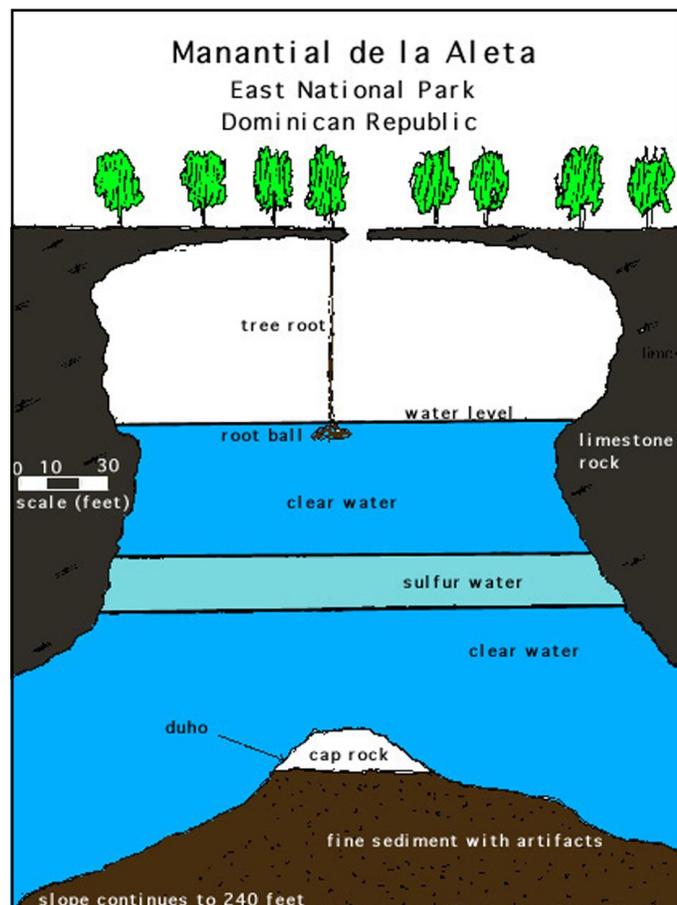


Figure 2. Cross-section of the Manantial de la Aleta.

perfectly preserved in the anoxic environment; there is no oxygen below depths of 11 m (Jones 1997:39). Conservation concerns, however, dictated that most organic objects should be left in place for the time being. Accordingly, most of the 244 artifacts recovered during the test dives were made of ceramic or stone. Nonetheless, 23 organic artifacts were brought to the surface. Twenty of the organic artifacts were made of wood, two of gourd, and one was a basketry fragment. Commentaries on these specimens are given below.

### *Wooden Artifacts*

The 20 wooden artifacts consist of the following objects:

- 1 small intact *duho* stool (PNE-01-A-0228)

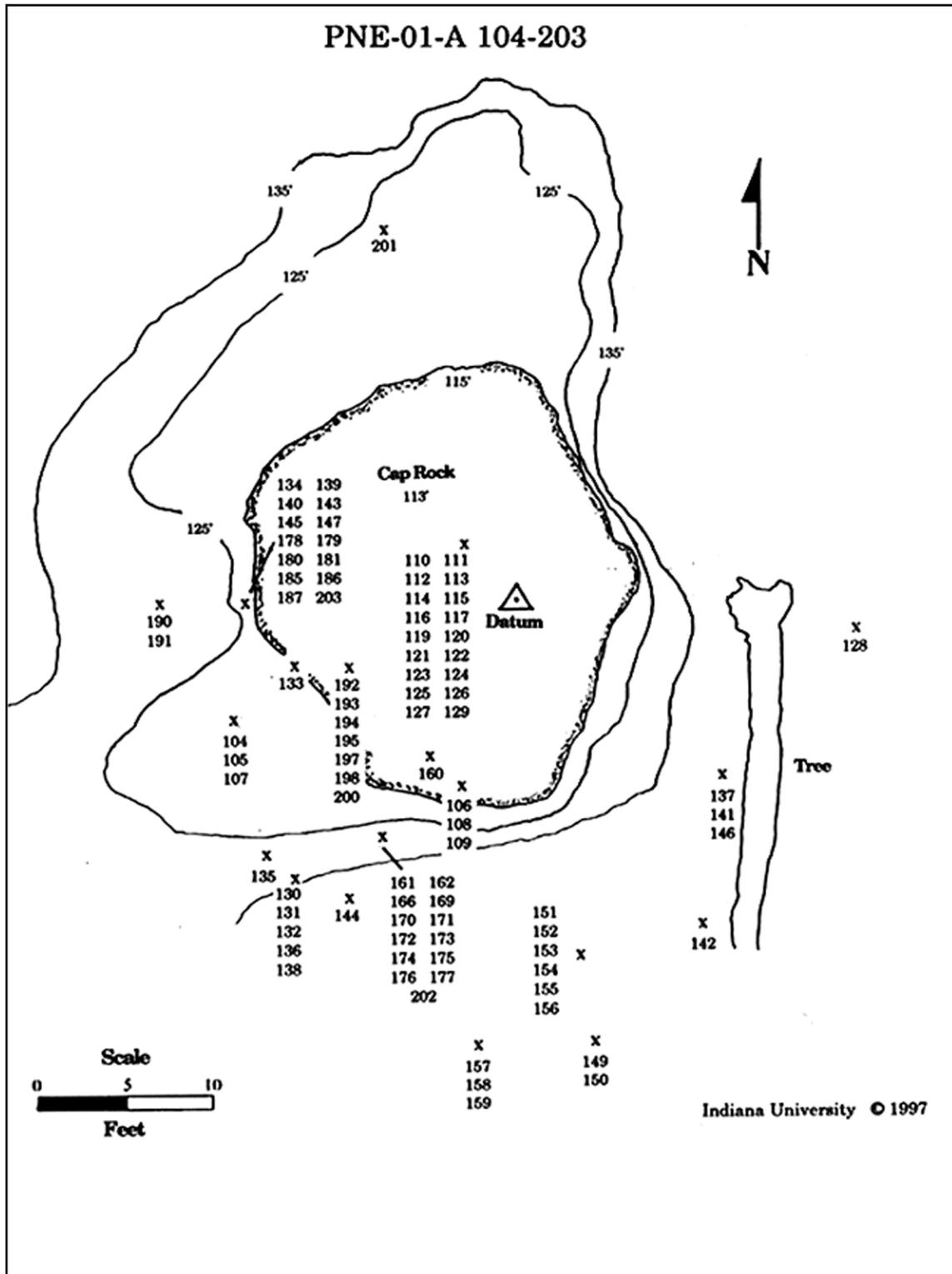


Figure 3. Sample site plan of the Manantial de la Aleta, showing the recovery locations of specimens PNE-01-104 through 203.



Figure 4. John Foster bringing the *macana* war club discussed in the text to the surface.

- 1 fragment of another *duho* (PNE-01-A-0005)
- 6 bowls (PNE-01-A-0081, -0164, -0215 A and B, 0220, and 0221)
- 1 small vessel possibly used in the *cohoba* ceremony (PNE-01-A-0224)
- 3 large hafts, or helms, presumably for petaloid celts (PNE-01-A-0080, -226, -0227)
- 1 smaller haft, possibly for a small celt or shell blade (PNE-01-A-0231)
- 1 fragment of a canoe paddle (PNE-01-A-0235)
- 1 *macana* war club (PNE-01-A-0202)
- 1 small carved crocodilian figure (PNE-01-A-0225)
- 4 small, unidentified fragments (PNE-01-A-0027, -0033, -0065, -0129); these items are pieces of larger objects whose functions are unknown.

The woods have yet to be identified, although one specimen, the *macana*, appears to be made of a species of palm. Identification of

the woods is a high-priority future project. Such analysis is a potential source of information on important questions about Taíno prehistory, including environments and environmental alteration, forest resource management, systems of procurement and production and their role in the development of complex society, and the symbolic meanings and cultural values attached to different types of wood (Berman 1992; Berman and Pearsall 2000; Ostapkowicz 1998; Saunders and Gray 1996).

Obvious decoration appears on only five of the artifacts—two bowls, two large hafts, and the crocodilian figure—and is described below. The recent discovery of small, subtly carved wooden objects at the Deadman's Reef site on Grand Bahama Island (Berman et al. 1999, 2000) raises the possibility that more of the artifacts will turn out to be decorated when they can be examined under magnification.

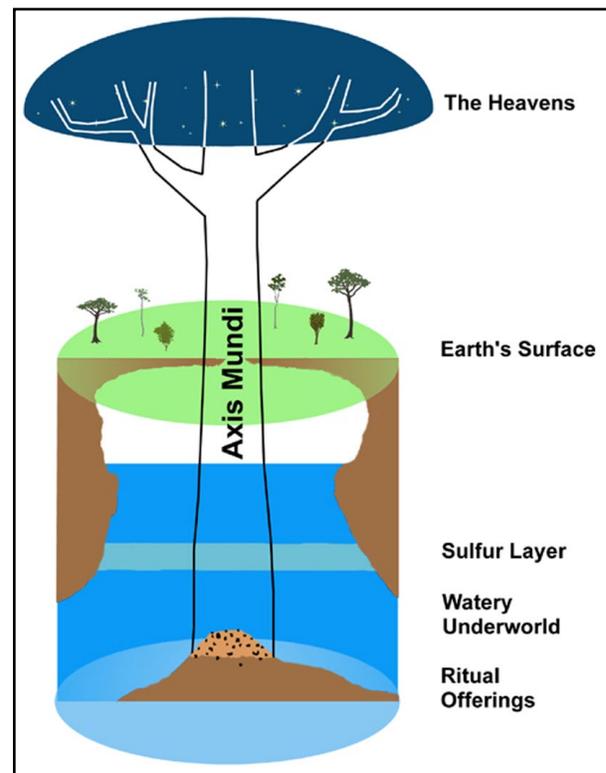


Figure 5. The Manantial de la Aleta as the *axis mundi* (modified from Siegel 1997:108, Figure 1).

### Duhos

*Duhos* were ceremonial stools that figured prominently in the maintenance of Taíno political and ideological systems. Owned by high-ranking individuals, most notably chiefs (*caciques*), *duhos* were literally seats of power, prestige, and ritual.

*Duhos* were used during important ceremonial occasions, and their presence separated their high-ranking owners from the rest of the community, marking them as distinct. An indispensable part of ritual paraphernalia, the *duhos* were intimately linked to hallucinogens and communication with numinous powers. The often elaborate carvings of the *duhos* represented *zemis* and ancestors, visually and



Figure 6. *Duho* (PNE-01-A-0228).



Figure 7. *Duho* fragment (PNE-01-A-0005). Length 20 cm.

symbolically supporting the seated individuals and lending authority to their position and status (Ostapkowicz 1997:56).

Both wooden and stone examples exist; many rank among the masterpieces of Taíno art (Bercht et al. 1997).

*Duhos* have recently been the subject of an encyclopedic and masterful study by Joanna Ostapkowicz (1998; see also Ostapkowicz 1997). She divides *duhos* into two main formal categories, "high-backs" and "low-backs." High-backed *duhos* have a projecting back or "tail" that sweeps upward from the seat of the stool. Low-backed *duhos* lack this extension of the seat.

The intact *duho* from La Aleta (PNE-01-A-0228; Figure 6) is low-backed. It is one of the smallest *duhos* known, measuring only 19 cm long by 9 cm high. Possibly it was intended to be the seat of one of the Taíno religious figures known as *zemis*, rather than a stool for a human being (Ostapkowicz 1997:64, 1998:141, 274-275). The *duho* fragment (PNE-01-A-0005; Figure 7) measures 20 x 10 cm and obviously comes from a larger specimen, possibly but not definitely high-backed. Unlike the commonly illustrated examples (see Bercht et al. 1997), neither of the *duhos* from La Aleta is decorated with carved designs or inlays.

### Bowls

The bowls (Figures 8-11) have a variety of forms but are largely cup- or bucket-shaped, with walls 0.8-1.5 cm thick and circular to oval mouths 12 to 30 cm in diameter. Two of these bowls (PNE-01-A-0215 A and B; Figure 8) were found together, with the smaller one nested tightly inside the larger one. One bowl is not cup- or bucket-shaped, but has two long, flaring sides and a profile vaguely reminiscent of a wing nut (PNE-01-A-0164; Figure 11). The mouth of this specimen measures 30 x 15 cm. Decoration in the form of a raised band around the lip appears on two of the bowls (PNE-01-A-0220, 0221; Figures 9-10).

Ostapkowicz (1998:104-115) discusses 40 known wooden vessels from the Caribbean. Most appear to be relatively shallower and more platter-like than the Aleta specimens, as well as

more elaborately decorated. There are, however, several deeper, more roughly manufactured bowls that more closely resemble the Aleta pieces, including examples from Cuba (Harrington 1921:354-355, Plate C) and the Turks and Caicos (Ostapkowicz 1998:113-114, 345); the Cuban specimen is not necessarily Taíno (Lovén 1935:479; Ostapkowicz 1998:105). There is a vessel somewhat reminiscent of the Aleta "wing nut" bowl in the Museo del Hombre Dominicano (Veloz Maggiolo 1972:185, Plate 29C; Ostapkowicz 1998:112-113), but it is more finely made than its Aleta counterpart and has carved anthropomorphic decoration.



Figure 8. Nested bowls (PNE-01-A-0215A, B). Scale in cm.



Figure 10. Bowl (PNE-01-A-0221). Diameter 16 cm.



Figure 9. Bowl (PNE-01-A-0220). Diameter 21 cm.



Figure 11. Bowl (PNE-01-A-0164). Length 30 cm.

*Cohoba(?) Vessel*

*Cohoba* was a hallucinogenic snuff made of the seeds of *Anadananthera peregrina*; it gave its name to a ceremony through which Taíno leaders communicated with the spirit world (Pané 1999:21, 25-26).<sup>5</sup> One small wooden vessel from La Aleta (PNE-01-A-0224; Figure 12) has been tentatively identified as a piece of paraphernalia used in the *cohoba* ceremony. This bowl is roughly symmetrical and 13 cm long. Seen in cross-section, it has flared ends; in plan the flared ends appear as projecting handles on both sides of a central circular opening.



Figure 12. *Cohoba* vessel (PNE-01-A-0224). Length 13 cm.

The form of this object is similar to that of a number of small vessels from the Dominican Republic, Puerto Rico, and Cuba made of wood, cactus, and manatee bone (García Arévalo and Chanlatte Baik 1978:51; Bercht et al. 1997:142-143, Figures 112-113; Ostapkowicz 1998:109-111, 115-117, 566-568; Pendergast 1998:1). There is even one example from the Dominican Republic made of a human patella (Veloz Maggiolo 1972:190, Plate 30E, 193, Plate 33A). Peter Roe (1997:146) identifies two of these vessels—one made of manatee bone in the collections of the Museo del Hombre Dominicano and another wooden example in the Museo de Historia, Antropología y Arte, Universidad de Puerto Rico, Río Piedras—as bowls used to hold seeds or powder for the *cohoba* ceremony. Likewise, Ostapkowicz (1998:111) interprets two similar bowls from a cave near El Majagual in the Dominican Republic as "personal ritual objects, containers of highly important substances such as *cohoba*...." All of these specimens, however, are finely made and bear elaborately carved, usually anthropomorphic, decorations. In contrast, the example from La Aleta is rough-hewn and undecorated.

*Hafts, or Helves*

The three large hafts, or helves (Figures 13-16), have straight shafts and presumably served as handles for petaloid celts made of ground stone, a common Taíno tool. They range in

length from 36 to 63 cm. Two of the specimens (PNE-01-A-0226, 0227; Figures 14-16) are pierced by holes that go all the way through the head of the shaft. The third specimen (PNE-01-A-0080; Figure 13) has a hole that does not go all the way through; this example may have been broken or incompletely manufactured. Two of the hafts (PNE-01-A-0226, 0227) bear decoration in the form of a raised band around the mid-shaft (Figures 14-16).

Before our project began, looters removed two other hafts from the Manantial (PNE-01-Z-0014, 0015) that were later recovered by Parque Nacional del Este personnel. These examples

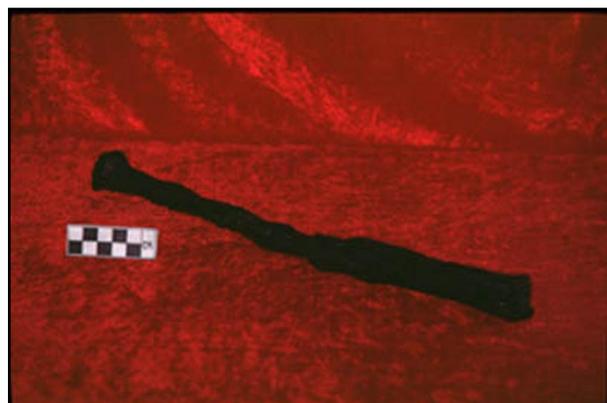


Figure 13. Large haft (PNE-01-A-0080). Length 36 cm.

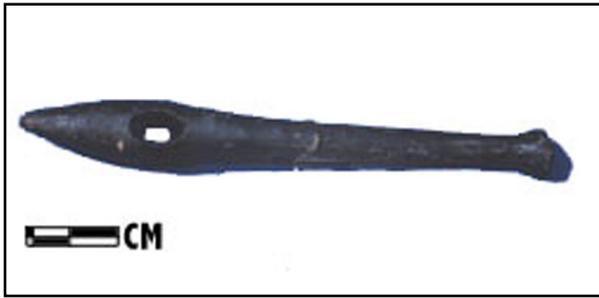


Figure 14. Large haft (PNE-01-A-0226). Length 48 cm.

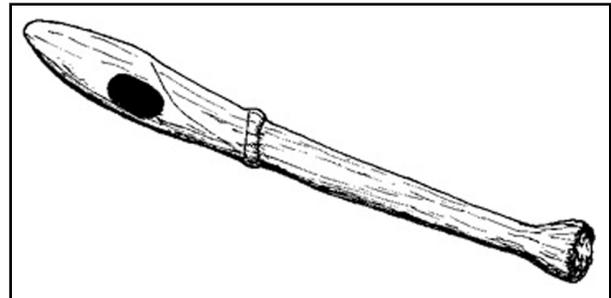


Figure 15. Drawing of large haft (PNE-01-A-0226). Note raised band around the mid-shaft.



Figure 16. Large haft (PNE-01-A-0227). Length 63 cm.



Figure 17. Large haft (PNE-01-Z-0014) removed from the Manantial de la Aleta by looters. Length 48 cm.



Figure 18. Large haft (PNE-01-Z-0015) removed from the Manantial de la Aleta by looters. Length 30 cm.

(Figures 17-18) are similar to the ones found by our project and measure 48 and 30 cm long respectively. Looters also removed a number of petaloid celts, some of which were reclaimed by park personnel (Figure 19), and our project has recovered a fragment of another. To the best of our knowledge, though, no intact blade/haft combination has been found in the Manantial to date.

The small haft (PNE-01-A-0231; Figure 20) is a curved, sickle-shaped handle 22 cm long. Its distal end (on the right in Figure 20) has been notched to permit the attachment of another piece of the tool, perhaps a small stone celt or a shell blade. While we surmise that this object is



Figure 19. Petaloid celts removed from the Manantial de la Aleta by looters (bottom two rows). Caliper jaws set 1 inch apart; the largest celt (bottom left) is 17 cm long.

the handle of a woodworking implement, its exact function is still unknown. Ostapkowicz's (1998:43-154) review of known Taíno wooden



Figure 20. Small haft (PNE-01-A-0231). Length 22 cm.

artifacts does not include any comparable specimens. Jeffery Walker (personal communication 2000) has suggested that the question of function might be resolved by experimental replication.

#### *Canoe Paddle Blade*

The Taínos were skilled mariners who made dugout canoes in various sizes, ranging from one-person craft to large vessels capable of carrying over 100 people. Sven Lovén (1935:417-418) attributed much of the Taínos' seafaring success to a type of canoe paddle called a *nahe*-a meter or more long, with a T-shaped handle and a lancet-shaped blade. This distinctive Taíno paddle was first described in Christopher Columbus's log for Saturday 13 October 1492: "They row with a paddle like that of a baker and go marvelously" (Dunn and Kelley 1989:69). Columbus's son Ferdinand described the paddles as being "like baker's



Figure 21. Canoe paddle blade (PNE-01-A-0235). Length 51 cm. The blade is lancet-shaped; the pointed tip would have been to the left and the handle to the right.

peels or those used in dressing hemp" (Colón 1992:61).<sup>6</sup>

In addition to the specimen from La Aleta, at least eight other Taíno paddles are known: four from the Bahamas, one from Grand Turk Island, two from Cuba, and one from Haiti (De Booy 1913:2-5; Harrington 1921:208; Lovén 1935:417-419; Ostapkowicz 1998:118-122). Of these, only one paddle from a cave on More's Island in the Bahamas (De Booy 1913:2-5), another from a cave near Monte Cristo, Cuba (Harrington 1921:208), and a third from a waterlogged deposit on Grand Turk (Keegan 1997:57-58) have been published in any detail. The first two of these specimens are decorated with carved designs on the blade. Ostapkowicz (1998:119) argues that the quality of a paddle may have "reflected the status of the individual paddler or canoe owner, and may have been personalized with two-dimensional designs."

The example from La Aleta (PNE-01-A-0235; Figure 21) is a nearly complete blade; the handle of the paddle and the tip of the blade are missing. Although it is incomplete, both the form of the blade and the length of the surviving portion (51 cm) correspond well to the early descriptions and the known examples. Unlike the More's Island and Monte Cristo specimens, however, the paddle blade from La Aleta lacks carved designs.

#### *Macana War Club*

The *macana* war club (PNE-01-A-0202; Figures 22-24) is 79 cm long and appears to be made of some kind of palm wood. It has a flat handle with a slim, triangular cross-section like the blade of a sword and a cylindrical, club-like head. In these characteristics it matches Las Casas' description of the war clubs used in northern Hispaniola and the south coast of Cuba (Las Casas 1875:I:435, II:57).<sup>7</sup> Considered by early Spanish observers to be the Taínos' most effective and dangerous weapon, the *macana* was swung with both hands and was said to be capable of crushing a man's skull even if he was wearing a steel helmet (Oviedo 1851:I:68;



Figure 22. *Macana* war club (PNE-01-A-0202). Length 79 cm.

Las Casas 1875:I:435; Lovén 1935:451-453).<sup>8</sup> Ostapkowicz (1998:226) suggests that in addition to their utilitarian value as weapons, *macanas* may have been prized symbolic artifacts that expressed the power and prestige of their owners.

Insofar as we know, the *macana* from the Manantial de la Aleta is a unique specimen. Jesse Walter Fewkes (1907:209) wrote that he saw several *macanas* in the Dominican Republic that were claimed to be aboriginal weapons, but his description is brief and ambiguous. It is possible that Fewkes's "*macanas*" were actually some other type of artifact, perhaps ceremonial staffs or batons, that may have been ultimately derived as an elaboration of the war club form (Ostapkowicz 1998:122-127).

#### Crocodilian Figure

This artifact (PNE-01-A-0225; Figures 25-26) is a hook-shaped piece 20



Figure 24. Detail of *Macana* head.



Figure 23. Detail of *Macana* handle.

cm. long. Its most striking aspect is its decoration: the entire object has a crocodilian form, with snout, eyes, body, and tail. In Figure 25, the snout is on the left and the eyes at the upper center, while the body and tail curve around from the right to the lower center. The carver took advantage of the natural form of the wood to create the crocodilian imagery.

This object is most reminiscent of a series of small wooden artifacts recently discovered at the Deadman's Reef site on Grand Bahama, which have been interpreted as *zemis* (Berman et al. 1999, 2000). In fact, the crocodilian form of the specimen from La Aleta was first recognized by Mary Jane Berman, co-director of the Deadman's Reef excavations. Berman (personal communication 2000) suggests that there may be multiple images in this carving (see Figure 26 for a close-up), as is the case with the Deadman's Reef specimens and other Taíno artworks (Walker 1997:84-87; Roe 1997:126-127, 148-149).



Figure 25. Crocodilian figure (PNE-01-A-0225); scale in cm. The crocodilian form is readily apparent.



Figure 26. Close-up view of the tail of the crocodilian figure. Additional carved designs may become apparent under magnification.



Figure 27. Gourd vessels *in situ* in the Manantial de la Aleta.

### *Unidentified Fragments*

The four unidentified wooden fragments are small scraps. They appear to be pieces of larger objects whose forms and functions are not readily recognizable.

### *Gourd Vessels*

Gourds figure prominently in Taíno mythology (Pané 1999:13-14; Stevens-Arroyo 1988:95-111), and gourd vessels are among the most common objects in the submerged deposits at La Aleta (Figure 27).<sup>9</sup> To the best of our knowledge, these gourd artifacts are the first ones that have been discovered in prehistoric Caribbean sites. Two fragmentary vessels have been collected. Both specimens are tree gourds, *Crescentia cujete* (Charles B. Heiser, personal communication 1997; see also Heiser 1979:15-30). One is plain, but the other (PNE-01-A-0060; Figures 28-30) is decorated with incised designs typical of pottery belonging to the Chican Ostionoid (Chicoid) subseries (Rouse 1992:110-112). In fact, the execution of the designs on the gourd is more careful and symmetrical than on any pottery vessel we have recovered from the Manantial to date.

### *Basketry*

A number of intact baskets have been observed and photographed in the Manantial (e.g., Figure 31), the first examples of Taíno basketry discovered archaeologically. To date only one small fragment of a plain weave basket (PNE-01-A-0201; Figure 32) has been brought to the surface; the material has yet to be identified. This fragment unraveled shortly after being recovered, preventing further analyses of its construction except from photographs (although a sample of the fibers was submitted for dating; see below). As a result of this experience, we decided not to attempt to recover any more basketry until we could provide on-site conservation, and all of the other observed baskets-including the one in Figure 31-have been left *in situ*.



Figure 28. Fragments of a gourd decorated with incised designs (PNE-01-A-0060). Note the similarity to incised designs common on pottery of the Chican Ostionoid subseries. Caliper jaws set 1 inch apart; the largest fragment measures 10 x 9 cm.

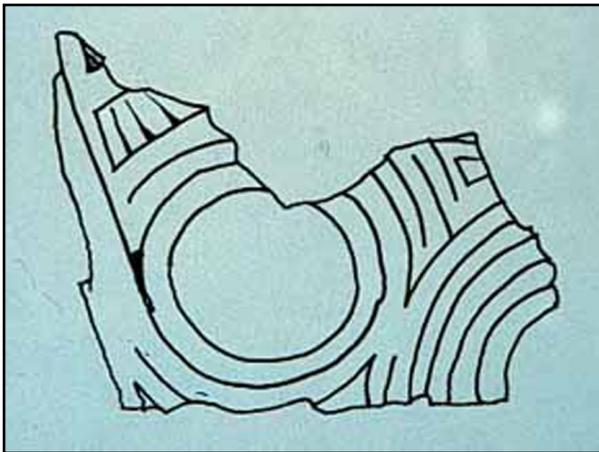


Figure 29. Drawing of a fragment of the incised gourd. See Figure 28 for scale.

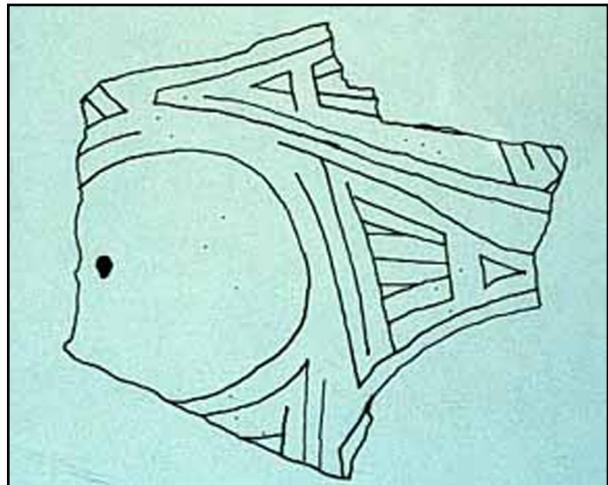


Figure 30. Drawing of a fragment of the incised gourd. See Figure 28 for scale.



Figure 31. Nearly intact basket in the Manantial de la Aleta. This basket was left *in situ*.



Figure 32. Basket fragment (PNE-01-A-0201). Scale in cm.

### Chronology

Samples from six of the artifacts listed above were submitted to Beta Analytic for accelerator dating. A seventh sample, taken from one of the hafts brought up by looters before our project began (PNE-01-Z-0014), was also dated. The results are shown in Table 1.

The generally accepted date for the florescence of the Classic Taíno chiefdoms of Hispaniola and Puerto Rico is A.D. 1200 (Rouse 1992:102-106, etc.). After A.D. 1200

Religious paraphernalia increased in number, quality, and size.... The increase in the quality, size, and frequency of religious artifacts has been interpreted by most Caribbeanists as an increase in religious, political, and social complexity (Curet 1996:120).

Object	PNE-01-	Sample #	Radiocarbon Age	Calibrated date: 2-sigma range	Calibrated date: Intercepts
flaring bowl	A-0164	Beta-108313	990 + 70 BP	AD 975-1235	AD 1035
gourd	A-0060	Beta-107023	940 + 30 BP	AD 1020-1180	AD 1045, 1105, 1115
haft	Z-0014	Beta-96782	870 + 60 BP	AD 1025-1275	AD 1195
duho	A-0228	Beta-112400	910 + 40 BP	AD 1225-1275	AD 1260
duho fragment	A-0005	Beta-96781	680 + 60 BP	AD 1250-1410	AD 1295
basket	A-0201	Beta-108314	620 + 70 BP	AD 1275-1435	AD 1315, 1345, 1390
macana	A-0202	Beta-108315	540 + 50 BP	AD 1315-1345 AD 1390-1455	AD 1420

Table 1. Radiocarbon Dates from the Manantial de la Aleta. All samples processed by the accelerator mass spectrometry (AMS) method. Calibrations provided by Beta Analytic following the Beta Analytic/Pretoria Calibration Program [Vogel et al. (1993), Talma and Vogel (1993)].

The radiocarbon dates from the Manantial de la Aleta bracket A.D. 1200 by roughly two centuries on either side. Five of the seven dates, and four of the five dates on carved wooden objects, are either pre-1200 or within a century thereafter. That is, the organic artifacts recovered so far span the time when the Classic Taíno chiefdoms were developing, and a number of the wooden objects—including both *duhos*—seem to date to the early stages of those chiefdoms.

### *Interpretations*

In comparing the wooden artifacts from the Manantial de la Aleta to the wood sculptures usually illustrated as exemplifying Taíno art (e.g., Bercht et al. 1997), one is immediately struck by the simpler, rustic appearance of the Aleta specimens. The woodcarvings from the Aleta lack the fine workmanship and elaborate decorations of the more commonly illustrated pieces. When one contrasts the Aleta artifacts to other known examples, the discrepancy in workmanship and decoration is particularly apparent in the case of the *duhos*, the canoe paddle, and the *cohoba* vessel. Possible explanations for the differences include sampling, function, and chronology, or some combination of the three, and perhaps other factors as well.

### *Sampling Issues*

Two kinds of sampling problems may affect comparisons between the Aleta materials and other Taíno woodcarvings. First, to judge from the materials recently recovered at La Aleta, Los Buchillones in Cuba (Pendergast 1997, 1998), and Deadman's Reef in the Bahamas (Berman et al. 1999, 2000), it is clear that the commonly illustrated corpus of Taíno wooden artifacts is hardly a representative sample. Instead, these latter specimens—whose provenience is usually imprecise and sometimes no more specific than an island—are Taíno masterpieces. Most Taíno woodwork undoubtedly looked more like the Aleta artifacts.

Second, there may well be sampling problems within the Aleta materials themselves. The site has been looted in recent years, and there are rumors that at least two other *duhos*, one of them high-backed, were removed before our project began. While we cannot confirm this rumor, it does suggest that looters have already removed the most elaborate pieces that were readily recoverable. It may turn out that when actual underwater excavations, as opposed to controlled surface collections, are carried out, more finely made and elaborately decorated organic artifacts will be found in the Manantial.

### *Functional Issues*

As Ostapkowicz (1998:568-569) has noted, if our interpretations are correct, the *duhos* from La Aleta are the first to have been recovered from an offertory context. At least in the case of symbolically powerful ritual paraphernalia like *duhos*, it may be that simpler forms were preferred for offerings, which essentially involved the loss of the object being offered. It is difficult to assess the likelihood of this possibility at present. It would be contradicted, however, if more elaborate specimens were eventually recovered from the Aleta, or if it could be shown that looters have removed more ornate specimens in the past.

### *Chronological Issues*

A third possibility is that most of the wooden specimens recovered from La Aleta are early, simpler versions of artifacts that became more elaborate through time. Antonio Curet (1996) classifies the Taíno societies of Puerto Rico and Hispaniola before A.D. 1200 as "emerging chiefdoms" and those of the centuries after 1200 as "mature chiefdoms." Simpler forms of certain artifacts were typical of the pre-1200 emerging chiefdoms, while more elaborate forms characterized the post-1200 mature chiefdoms. The chronological differences in style were material reflections of sociopolitical developments, namely increasing complexity and internal differentiation within Taíno chiefdoms.

Objects of status differentiation and possibly evidence of the control of religious ideology emphasizing the chief's individual power seem not to be present until the Chican Ostionoid subseries [A.D. 1200-1500]. It is during this time that the most elaborate religious paraphernalia appeared, which, according to the descriptions in the chronicles, was controlled by elite groups composed mainly of the chiefs, their assistants, and religious specialists (Curet 1996:126; interpolation added).

The hypothesis that chronological differences in the style of wooden artifacts reflect sociopolitical developments can be further refined. It is generally agreed that symbolically important and powerful Taíno woodcarvings like *duhos* were the products of craft specialists, even though there is considerable disagreement about who those specialists might have been (Ostapkowicz 1998:425-426). Furthermore, the manufacture of ornately carved wooden objects must have been a time-consuming process. Ostapkowicz (1998:442-444) interviewed five Puerto Rican master woodcarvers, asking them how long it would take to produce a large, elaborate *duho* using traditional tools and techniques. Their answers ranged from three to 18 months, not counting the time needed to acquire and season the wood. All but one carver said it would take at least six months. Hence the creation of intricately carved wooden artifacts involved a significant investment of skilled, specialized labor; presumably it also required subsidizing that labor through surplus agricultural production.

Accordingly, one possible explanation for the simplicity of the Aleta specimens is that in local Taíno society before A.D. 1200, leaders lacked the political power and control over resources needed to make sufficient investments in subsidizing skilled, specialized labor. In contrast, as the Classic Taíno chiefdoms grew larger and more powerful after A.D. 1200, *caciques* may have been better able to subsidize specialized production, with one result being an

elaboration in symbolically important wooden artifacts.

Curet (1996) has proposed another possibility, grounded in the distinction between emerging and mature chiefdoms. In Curet's argument, emerging chiefdoms are characterized by a tension between increasing social differentiation and older, more egalitarian and communal ideology. Because the position of emerging elite groups is precarious, they mask the increasing differences in power by emphasizing communal rituals and symbolism. Gradually, as chiefdoms mature and the power of the elite becomes better established, ideology comes to emphasize the authority of the elite and the special role of chiefs (usually as mediators with the spirit world). This developmental process is reflected in material culture:

...it is expected that simple, emerging chiefdoms will present a decrease in the number and quality of symbolic representations that reflect personal status, while complex, "mature" chiefdoms should show qualitatively and quantitatively increased differentiation of symbolic representation (Curet 1996:124).

In this scenario, the issue is not so much leaders' ability to invest in specialized labor, but what kinds of production they choose to subsidize. In emerging chiefdoms, leaders make investments in the production of items associated with communal ceremonies and symbolism rather than personally-specific, status-reinforcing objects. In mature chiefdoms, leaders invest more heavily in subsidizing specialized production that serves their own ends by creating symbols of individual status and authority. This argument would predict that the wooden artifacts from La Aleta are relatively simple because they were the products of emerging chiefdoms, not mature ones.

Crucial artifacts for evaluating chronological hypotheses in general, and the two particular sociopolitically grounded versions presented above, are the *duho* and *duho* fragment, the

canoe paddle, and the *cohoba* vessel. All are simple examples of types of artifacts that are mostly known from considerably more elaborate specimens. Furthermore, as was discussed in their descriptions, all are examples of types of artifacts that are believed to have been strongly associated with individual owners in the mature Classic Taíno chiefdoms of the centuries following A.D. 1200.

At this point interpretations must remain tentative, because only some of the wooden artifacts from La Aleta have been dated. Two key pieces, the canoe paddle and the *cohoba* vessel, are undated. Likewise, virtually all of the more elaborate specimens commonly illustrated as examples of Taíno woodcarving are undated (other than stylistically). Nonetheless, there is some support for hypotheses that explain formal differences in terms of chronology and sociopolitical developments. First, the dates of the wooden artifacts from La Aleta—most notably the *duho* and *duho* fragment—are generally early within the time span of Taíno chiefdoms. Second, the undecorated canoe paddle from Grand Turk Island yielded a radiocarbon date ca. A.D. 1100 (Keegan 1997:58; Ostapkowicz 1998:121). Finally, one of the elaborate wooden *cohoba* vessels from Puerto Rico (Bercht et al. 1997:143, Figure 113) contained some glass beads when it was found, indicating that it was used in the post-contact period and was probably manufactured around A.D. 1500 (Ostapkowicz 1998:115-116). At least in these few cases where we have something other than purely stylistic evidence, simpler specimens are earlier, while more elaborate ones are later.

At present the data from La Aleta offer tentative support for hypotheses that formal differences in some types of wooden artifacts might be chronologically significant, and that the chronological differences themselves might reflect sociopolitical developments. As far as the question of subsidizing specialized production is concerned—that is, whether the crucial factor was leaders' ability or leaders' willingness—at this point evidence from elsewhere in the Greater Antilles suggests that

the issue was one of willingness (Curet 1996). The evidence from La Aleta itself, however, is consistent with either interpretation. In fact, the available data from La Aleta do not preclude the possibility that sampling and functional considerations are also involved, along with chronology. Indeed, sampling, functional, and chronological factors are not mutually exclusive, and a combination of them may be reflected in the Aleta assemblage. It is also possible that other factors—for example, the status of the original owners of the artifacts—may be involved.

### *Conclusion*

While the sample of organic artifacts from the Manantial de la Aleta is still small and incompletely understood, for Caribbean archaeology it constitutes a unique assemblage from a unique depositional context. Further investigations will include the identification of woods and basketry materials, the dating of additional objects, and the examination of artifacts under magnification, along with the collection of a larger and more statistically significant sample. These studies will have the potential to reveal new details of Taíno ceremonial life and to provide new insights into Taíno ritual behavior. Included among those potential insights are new understandings of the manufacture and meaning of organic artifacts in Taíno culture.

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## References Cited

- Alegría, R. E.  
1983 *Ball Courts and Ceremonial Plazas in the West Indies*. Yale University Publications in Anthropology 79.
- Bercht, F., E. Brodsky, J. A. Farmer, and D. Taylor (editors)  
1997 *Taíno: Pre-Columbian Art and Culture from the Caribbean*. The Monacelli Press and El Museo del Barrio, New York.
- Berman, M. J.  
1992 Fuel Wood Selection and the Lucayan-Taino Landscape: A Preliminary View. In *Proceedings of the Fourth Symposium on the Natural History of the Bahamas*, edited by W. H. Eshbaugh, pp. 1-12. Bahamian Field Station Ltd., San Salvador, Bahamas.
- Berman, M. J., P. L. Gnivecki, and G. Turner  
1999 Wooden Artifacts from the Deadman's Reef Site, Grand Bahama. Paper presented at the 64th Annual Meeting of the Society for American Archaeology, Chicago.
- Berman, M. J., and D. M. Pearsall  
2000 Plants, People, and Culture in the Prehistoric Central Bahamas: A View from the Three Dog Site, An Early Lucayan Settlement on San Salvador Island, Bahamas. *Latin American Antiquity* 11:219-239.
- Berman, M. J., D. M. Pearsall, and P. L. Gnivecki  
2000 From Naturefact to Artifact: Wooden Objects from the Deadman's Reef Site, Grand Bahama. Paper presented at the 65th Annual Meeting of the Society for American Archaeology, Philadelphia.
- Colón, F.  
1992 *The Life of the Admiral Christopher Columbus by His Son Ferdinand*, translated and annotated by Benjamin Keen. Rutgers University Press, New Brunswick.
- Conrad, G., J. Foster, C. Beeker, L. Uhls, M. Brauner, M. Veloz Maggiolo, and E. Ortega  
1997 Images of Conquest. *Archaeology* 50(4):60-61.
- Curet, L. A.  
1996 Ideology, Chiefly Power, and Material Culture: An Example from the Greater Antilles. *Latin American Antiquity* 7:114-131.
- De Booy, T.  
1913 Lucayan Artifacts from the Bahamas. *American Anthropologist* 15:1-7.
- Dunn, O., and J. E. Kelley, Jr.

- 1989 *The Diario of Christopher Columbus's First Voyage to America, 1492-1493*, abstracted by Fray Bartolomé de Las Casas. University of Oklahoma Press, Norman.
- Fewkes, J. W.  
1907 *The Aborigines of Porto Rico and Neighboring Islands*. 25th Annual Report of the Bureau of American Ethnology, 1903-1904:1-220. Smithsonian Institution, Washington.
- Foster, J. W., and C. D. Beeker  
1997 The Conquest of a Sinkhole: Initial Archaeological Investigations at El Manantial de la Aleta, East National Park, Dominican Republic. *Underwater Archaeology* 1997:27-32.
- García Arévalo, M. A., and L. Chanlatte Baik  
1978 *Las Espátulas Vómicas Sonajeras de la Cultura Taína*. Museo del Hombre Dominicano and Fundación García Arévalo, Santo Domingo.
- Guerrero, J. G.  
1981 Dos Plazas Indígenas y el Poblado de Cotubanamá, Parque Nacional del Este. *Boletín del Museo del Hombre Dominicano* 16:13-30.
- Harrington, M. R.  
1921 *Cuba Before Columbus*. 2 vols. Indian Notes and Monographs, Museum of the American Indian. Heye Foundation, New York.
- Heiser, C. B.  
1979 *The Gourd Book*. University of Oklahoma Press, Norman.
- Jones, B.  
1998 Exploring the Mysteries of the Manantial de la Aleta. *LakeLine* 17(4):12-13, 39-40.
- Keegan, W. F.  
1997 *Bahamian Archaeology: Life in the Bahamas and Turks and Caicos Before Columbus*. Media Publishing, Nassau.
- Las Casas, B. de  
1875 *Historia de las Indias*. 5 vols. Imprenta de Miguel Ginesta, Madrid.  
1967 *Apologética Historia Sumaria*. 2 vols. Instituto de Investigaciones Históricas, Universidad Nacional Autónoma de México, México.
- Lovén, S.  
1935 *Origins of the Tainan Culture, West Indies*. Elanders Bokfryckeri Akfiebolog, Göteborg.
- Ortega, E.  
1997 *Arqueología del Parque Nacional del Este*. Submitted to the Patronato Rector, Parque Nacional del Este. Copies available from the author, Faro á Colón, Santo Domingo, Dominican Republic.
- Ostapkowicz, J. M.  
1997 To Be Seated with "Great Courtesy and Veneration": Contextual Aspects of the Taíno Duho. In *Taíno: Pre-Columbian Art and Culture from the Caribbean*, edited by F. Bercht, E. Brodsky, J. A. Farmer, and D. Taylor, pp. 56-67. The Monacelli Press and El Museo del Barrio, New York.
- 1998 *Taíno Wooden Sculpture: Duhos, Rulership and the Visual Arts in the 12th-16th Century Caribbean*. Unpublished Ph.D. Dissertation, School of World Art Studies, University of East Anglia.
- Oviedo y Valdés, G. F. de  
1851 *Historia General y Natural de las Indias, Islas y Tierra-Firme del Mar Océano*, edited by J. Amador de los Rios. 4 vols. Imprenta de la Real Academia de la Historia, Madrid.
- Pané, R.  
1999 *An Account of the Antiquities of the Indians*, edited by J. J. Arrom and translated by S. C. Griswold. Duke University Press, Durham.
- Pendergast, D. M.  
1997 Up from the Shallows: A Look at the ROM's First Archaeological Excavation in Cuba. *Rotunda* 30(2):28-35.  
1998 *The Royal Ontario Museum in Cuba*. Royal Ontario Museum, Toronto.  
<http://www.rom.on.ca/digs/belize/cuba.html>
- Roe, P. G.  
1997 Just Wasting Away: Taíno Shamanism and Concepts of Fertility. In *Taíno: Pre-Columbian Art and Culture from the Caribbean*, edited by F. Bercht, E. Brodsky, J. A. Farmer, and D. Taylor, pp. 125-157. The Monacelli Press and El Museo del Barrio, New York.
- Rouse, I.  
1992 *The Tainos: Rise and Decline of the People Who Greeted Columbus*. Yale University Press, New Haven.
- Sauer, C. O.  
1966 *The Early Spanish Main*. University of California Press, Berkeley.
- Saunders, N. J., and D. Gray  
1996 Zemís, Trees, and Symbolic Landscapes: Three Taíno Carvings from Jamaica. *Antiquity* 70:801-812.
- Siegel, P. E.  
1997 Ancestor Worship and Cosmology among the Taíno. In *Taíno: Pre-Columbian Art and Culture*

- from the Caribbean*, edited by F. Bercht, E. Brodsky, J. A. Farmer, and D. Taylor, pp. 106-111. The Monacelli Press and El Museo del Barrio, New York.
- 1999 Contested Places and Places of Contest: The Evolution of Social Power and Ceremonial Space in Prehistoric Puerto Rico. *Latin American Antiquity* 10:209-238.
- Stevens-Arroyo, A. M.  
1988 *Cave of the Jagua: The Mythological World of the Taínos*. University of New Mexico Press, Albuquerque.
- Talma, A. S., and J. C. Vogel  
1993 A Simplified Approach to Calibrating C14 Dates. *Radiocarbon* 35:317-322.
- Veloz Maggiolo, M.  
1972 *Arqueología Prehistórica de Santo Domingo*. McGraw-Hill Far Eastern Publishers, Singapore.
- Vogel, J. C., A. Fuls, E. Visser, and B. Becker  
1993 Pretoria Calibration Curve for Short Lived Specimens. *Radiocarbon* 35:73-86.
- Walker, J. B.  
1997 Taíno Stone Collars, Elbow Stones, and Three-Pointers. In *Taíno: Pre-Columbian Art and Culture from the Caribbean*, edited by F. Bercht, E. Brodsky, J. A. Farmer, and D. Taylor, pp. 80-91. The Monacelli Press and El Museo del Barrio, New York.
- Wilson, S. M.  
1990 *Hispaniola: Caribbean Chiefdoms in the Age of Columbus*. University of Alabama Press, Tuscaloosa.
- <sup>8</sup> Oviedo, Book III, Chapter 5; Las Casas, *Historia de las Indias*, Book I, Chapter 67.
- <sup>9</sup> Pané, Chapters 9-10.

### Notes

- <sup>1</sup> Las Casas, *Apologética Historia Sumaria*, Book I, Chapter 3. For the convenience of readers with different editions of the chronicles, we are including book and chapter references as notes. See Sauer (1966) and Wilson (1990) for discussions of the different ways the aboriginal chiefdoms of Hispaniola have been named and delimited.
- <sup>2</sup> Las Casas, *Apologética Historia Sumaria*, Book I, Chapter 3.
- <sup>3</sup> Pané, Chapter 12.
- <sup>4</sup> Pané, Chapters 13-15.
- <sup>5</sup> Pané, Chapters 15, 19.
- <sup>6</sup> Colón, Chapter 24.
- <sup>7</sup> Las Casas, *Historia de las Indias*, Book I, Chapters 67, 95.