Archaeological Investigations at Spanish Water, Curaçao

Menno L.P. Hoogland and Corinne L. Hofman
Faculty of Archaeology, Leiden University, The Netherlands

Abstract: In this paper the results of the recent archaeological investigations at Spaanse Water, Curacao will be presented. The site is located in the southeastern part of the island. The archaeological project has been carried out in cooperation with the Santa Barbara Plantation, prior to the construction of a golf course. A cluster of shell deposits dating from pre-ceramic and ceramic periods borders the shorelines of the inland water. The deposits are interpreted as temporarily visited shell-collecting and processing stations. The contexts of the sites and the procurement processes of the resources will be discussed.

Resumé: Dans ce papier les résultats des investigations archéologiques récentes à l'Eau de Spaanse, Curacao sera présenté. Le site est localisé dans la partie du sud-est de l'île. Le projet archéologique a été exécuté dans la coopération avec la Plantation de Barbara de Santa, avant la construction d'un golf. Un groupe de dépôts de coquille qui date des périodes pré-en céramique et en céramique borde les rivages de l'eau intérieure. Les dépôts sont interprétés comme temporairement visité coquille-recueillant et les stations de traitement. Les contextes des sites et les processus d'acquisition des ressources seront discutés.

Resumen: En este papel los resultados de las investigaciones arqueológicas recientes en Agua de Spaanse, Curacao será presentado. El sitio es ubicado en la parte del sudeste de la isla. El proyecto arqueológico ha sido llevado a cabo en la cooperación con la Plantación de Santa Barbara, antes de la construcción de una cancha de golf. Un grupo de los depósitos de esqueleto que datan de los períodos pre-cerámicos y cerámicos bordea las costas del agua interior. Los depósitos son interpretados como temporiamente frecuentado esqueleto-reunindo y el procesamiento las estaciones. Los contextos de los sitios y los procesos de adquisición de los recursos serán discutidos.

Introduction

The Amerindian shell deposits at the Santa Barbara Plantation along the shore of Spanish Water, Curaçao (see Figure 1) have been known for many decades. Since 2006 these deposits were actually threatened by the construction of a so-called mixed-use resort consisting of a Hyatt Hotel, marina, golf course and villas. The area to be developed is located in an archaeologically rich micro-region that extends over the southeastern part of Curacao.

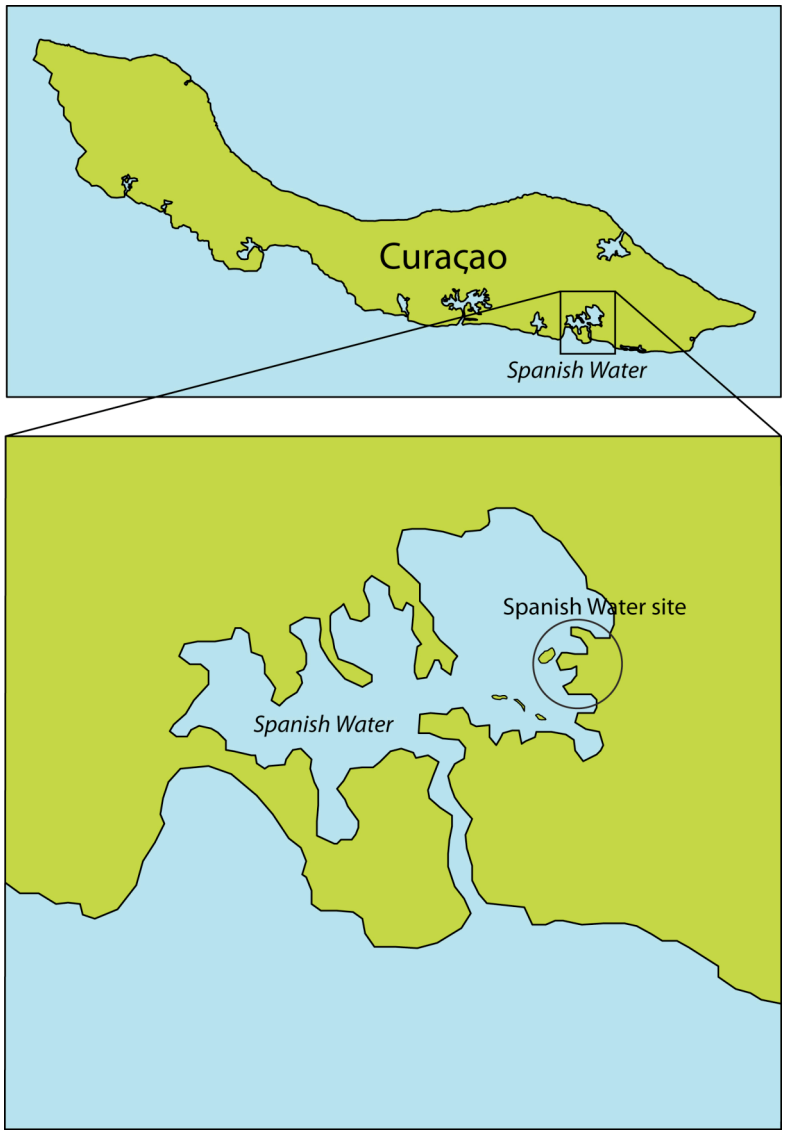

Figure 1. Curaçao and the location of Spanish Water site.

Santa Barbara Estate is situated in the southeastern part of the island at the foot of a table mountain. The area is characterized by volcanic deposits, mostly basalts and is part of the Curaçao Lava Formation. Soils are shallow (10–40cm) and consist of clayish sand with some humus material on a layer degraded bedrock.

The most characteristic element of the landscape at Santa Barbara is the Spanish Water Bay, a deeply intruding salt water inlet. Spanish Water was formed during the Ice Ages due to a combination of lower eustatic sea level and the erosion of a system of valleys by rainwater. Today the vegetation consists of mangroves in the shallow parts of the lagoon up to the high tide line. On land the vegetation type can be characterized as mixed deciduous Acacia shrubland. Brasilwood, Acacia and cactus are the most common species in this xerophytic environment .

The earliest occupation of the Northern coast of South American dates from about 16.000 years B.P. (Before Present) and the material culture of these late Pleistocene hunters is characterize by chipped stone work. El Jobo is one of the type sites of this Lithic period on the Venezuelan coast. The earliest occupation of Curaçao dates from 5000-4000 B.P. Haviser concludes that the earliest inhabitants on Curacao were hunters and gatherers of the Archaic Age but they had certain technological traditions which exhibit their progression from the Lithic Age modes of implement production (1987:45).

In 1968 an archaeological inventory of the eastern part of Curaçao was made by the Archaeological and Anthropological Institute of the Netherlands Antilles (AAINA). The resulting data have been placed in context by Jay Haviser in his PhD thesis (Haviser 1987). He carried out test excavations at the site of Spanish Water in the 1990's, and published four radiocarbon dates ranging from 3105 ± 40 to 1965 ± 35 BP (Haviser 2001). The shell deposits of Spanish Water are of high archaeological value and their investigation is crucial in the discussion on the relationship between species composition of the deposits and cultural affiliation. The date of the disappearance of shellfish species as *Melongena melongena* in the waters around Curacao in Archaic or Ceramic times is another issue to be solved.

In the summer of 2007 we visited the Santa Barbara Plantation for the first time and we mapped 10 shell scatters. Half of the deposits along the shore are heavily eroded or consist of slope wash material. The interior of this project area was virtually inaccessible due to the dense vegetation. A rough delimitation was made of the project area. From the beginning it was clear that the construction of the golf course and the development of the area will have a serious impact on the archaeological deposits. In consultation with the Santa Barbara Plantation, the Monuments Bureau and the National Archaeological Anthropological Memory Management (NAAM) a design has been made for the investigation of the shell deposits within the perimeter of the development and recommendations have been formulated to address the integration of unthreatened deposits in the plans for the general landscaping. In the summer of 2008 and the winter of 2009 a team from Leiden University investigated the Spanish Water site prior to the construction of the two fairways, number 8 and 9, on the golf course in the project area. The project has been co-financed by the Santa Barbara Plantation and the Leiden University Fund.

A proper survey of the interior of the project area required the removal of the dense vegetation. Seven more shell deposits were identified next to the 10 deposits already known. The Spanish Water site is characterized by at least 12 discrete, intact shell deposits (see Figure 2). These deposits extend over an area of 0.4 km^2, and include the three small peninsula's of Bacuval, the central hill of Bacuval and Isla Xagüeis. The latter is part of the protected area in Spanish Water. The deposits reflect two different periods of occupation as indicated by the archaic and ceramic artifact assemblages.

During the course of the excavations two more sites were discovered on the Santa Barbara Plantation southwest of Spanish Water site (see Figure 2). The C-215 site was recovered in the profile of a drain channel. The Seru Boca (C-216) site is located in a rock shelter with rock paintings. These sites are 600 m and 1000 m from the Spanish Water site.

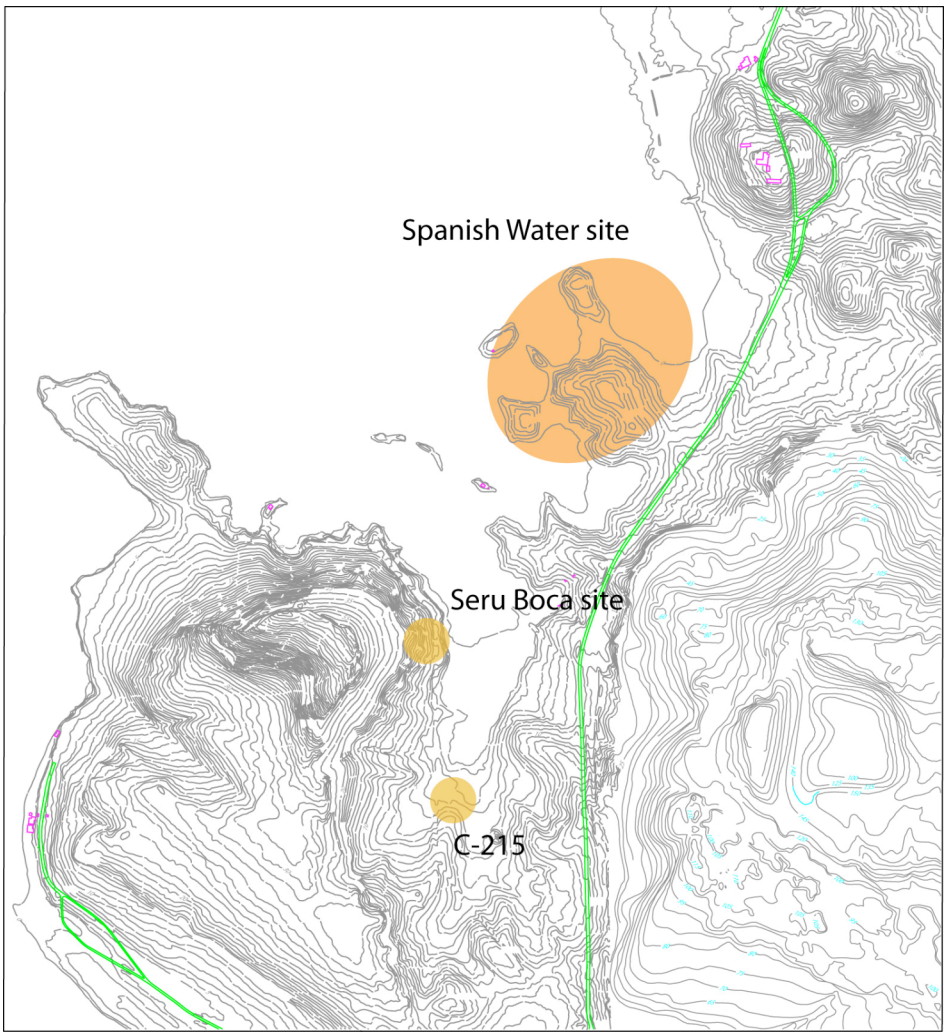

Figure 2. Archaeological sites in the project area of the Santa Barbara Plantation.

The sites at Santa Barbara are interpreted as temporary shell collecting and processing camps. This paper presents the preliminary results of the survey and excavations at the sites.

Spanish Water project 2008/2009

The aim of the research at Spanish Water was to develop an understanding of the nature of the occupation, the stratigraphy and chronology as well as the nature of the cultural remains. Further, the investigations were aimed at recognizing landscape use in the eastern part of the island by the Archaic and Ceramic age occupants.

Fieldwork Methods & strategy

At first, transect surveying was conducted in the area directly affected by the construction of the golf course. The survey revealed the pattern of the deposits in areas densely covered by cactus and acacia. Sub-surface testing included more than 100 shovel tests of 50 x 50 cm and revealed the depth and nature of the deposits. On the basis of this stratigraphic information 15 excavation units varying from 1 x 1 m to 10 x 10 m were set out in seven of the deposits. Open area excavations by means of a mechanical excavator were performed outside the concentrations to search for features.

All archaeological materials were water screened using a mesh of 4 mm, processed and catalogued. The materials currently are kept at Santa Barbara Plantation and will be deposited at the depot of the National Archaeological Anthropological Memory Management (NAAM) after completing the analysis and report.

The study of the physical aspects of the landscape was carried out in a chronological context, and was done in cooperation with Peter Siegel in the context of his regional paleoclimatological research, along with Mike Field, paleobotanist at Leiden University.
For the geomorphological and paleobotanical research two cores have been recovered from the mangrove at Spanish Water. Wood specimens have been collected in order to establish a reference collection for macro-remains from the archaeological deposits.
Malocological studies are being carried out by Dennis Nieweg. Zoological analysis is being carried out in The Netherlands.

Preliminary results

In total nine shell deposits have been entirely or partly excavated. The size of the deposits ranges from 10 to 120 m². They are interpreted as temporary shell collecting and processing camps because they consist of 99.9% shell, mostly food remains and a large number of Strombus shell percussion tools. The remainder of the archaeological material consists of faunal remains, stone flakes, beads and potsherds, all in very low numbers. Three shell deposits had features, in all cases a fireplace or a cooking pit.

Twelve shell and four charcoal samples were submitted for radiocarbon dating. The resulting dates point to an occupation or the use of site area over a long span of time (see Table 1). The earliest dates coincide with the dates from Rooi Rincon and fall in a range of 2900 to 2550 cal BC. The next set of six dates range from cal BC 1150 to cal AD 450 and shows an occupation of the site late in the Archaic Age and the transition to the Ceramic Age. A third set of four dates range from cal AD 1300 to 1655 and point to a recurrent interest in the area during the Ceramic Age and the contact period. The chronology becomes more complicated if the occurrence of potsherds in the deposits is considered. Four deposits containing some potsherds date in the early or late Archaic Age and we can only conclude that locations with shell deposits have been reused in the Ceramic Age.

Gr-#	Site	Unit	Sample	BP	Two sigma
GrN-32015	Seru Boca 02 10-77-35	1	shell	4570 ± 35 BP	cal BC 2908-2701
GrN-32016	Seru Boca 07 S77-01	F01	charcoal	450 ± 30 BP	cal AD 1415-1478
GrN-32017	Seru Boca 08 S77-01	F01	charcoal	370 ± 25 BP	cal AD 1449-1524 and 1558-1631
GrN-32018	Spaanse Water C-215	1	shell	4455 ± 20 BP	cal BC 2822-2586
GrN-31915	Spaanse Water C-215/6	1	shell	4415 ± 20 BP	cal BC 2742-2538
GrN-31916	Spaanse Water C-215/ 9	1	shell	4400 ± 20 BP	cal BC 2695-2492
GrN-31917	Spaanse Water 13	1	shell	4435 ± 15 BP	cal BC 2753-2563
GrN-31918	Spaanse Water 139	4	shell	3195 ± 20 BP	cal BC 1153-955
GrN-31919	Spaanse Water 176	8	shell	1915 ± 20 BP	cal AD 423-565
GrN-31920	Spaanse Water 296	8	charcoal	280 ± 15 BP	cal AD 1524-1558 and 1631-1657
GrN-31921	Spaanse Water 297	12	shell	2680 ± 20 BP	cal BC 501-359
GrN-31922	Spaanse Water 300	3	shell	2625 ± 20 BP	cal BC 415-257
GrN-31923	Spaanse Water 301	2	shell	2450 ± 15 BP	cal BC 207-55
GrN-31924	Spaanse Water 307	6	shell	2005 ± 15 BP	cal AD 303-446
GrN-31925	Spaanse Water 333	7	shell	2255 ± 20 BP	cal AD 15-AD 157
GrN-31926	Spaanse Water 378	1	charcoal	605 ± 15 BP	cal AD 1301-1367 and 1382-1400

Table 1. Calibrated at 2σ with the program CALIB 5.1 (Stuiver and Reimer 1993; Stuiver et al. 1998).

The Sites

Three sites will be highlighted in this paper. The Seru Boca site is a rock shelter at the foot of Seru Boca Hill. It consists of a huge boulder fallen from the steep side of the hill. Its main feature is an 80 m² shell midden and some paintings in red on the southern face of the rock. The shell midden contains maybe a million of small Cerion landsnails - we counted more than 4000 in a 50 by 50 cm shovel test – and these snails are very common in Archaic ages sites in Curacao, notably the St. Michielberg site. Other species are Chama, Anadara, Pecten, oysters and

some gastropods such as Cittarium, Melongena and Nerita. Artefacts are rare except for the common Strombus percussion tools. The radiocarbon date of a marine shell points to an occupation between cal BC 2900 and 2700 which is contemporaneous with the Rooi Rincon site near the northern shore of Curaçao.

Central in the rock shelter a stone delimitated fire place by was noticed. It appeared to be a 45 cm deep cooking pit filled with fire cracked stones and abundant charcoal. Hardly any faunal remains were encountered and the cooking pit seems to be used only a couple of times. Two charcoal samples point to a date between cal AD 1415 and 1630. The Seru Boca site is interpreted as one of a series of temporary camp sites revisited by mobile Archaic Age groups. The rock paintings belong to this occupation as well. In the 15th to 16th century the site was incidentally reused by Ceramic age people.

Site C-215 is a small shell midden. Only a couple of square meters were left of the site, which were fully excavated. The shell midden is composed of common mangrove species, mostly oysters and some *Cittarium pica*. Artefacts were relatively abundant and comprise a number of different sized flakes made from a very fine-grained rock, possibly a mudstone or a cherty mudstone. The source is probably the Knip formation, these types of rocks can be found in the northwestern half of island.

The small sample almost exclusively consists of flakes, cores are missing. These flakes have been made using the direct freehand percussion technique. By looking at the dorsal scar pattern on the flakes, the cores most likely were reduced in an opportunistic manner. None of the flakes exhibit any evidence of retouch. Some may have been used as cutting or scraping tools.

Three radiocarbon dates are in the range of cal BC 2800 and 2500 and are contemporaneous with the Seru Boca and Rooi Rincon sites. The species composition and artefacts at Seru Boca and C-215 are completely different, although both are temporary campsites. So we should consider the possibility that Curacao was not occupied by an island bound population, but was frequented in the Archaic age by several groups from other islands or the South American mainland.

Deposit A at the Spanish Water site mostly consists of bivalves like Anadara, Arca, Chama and oysters, gastropods such as Melongena and faunal remains, mostly ear bones or periotica of dolphins. Strombus only occur in this deposit as percussion tools. In the northwestern portion of this shell deposit an 80 by 60 cm and 50 cm deep cooking pit was dug, which was filled with fire-cracked stones, charcoal and faunal remains. The intact structure of the cooking pit and the lack of ash layers in the deposits suggest a single event. The faunal remains in the shell deposit are concentrated around the cooking pit and are probably associated with it. The radiocarbon dates, however, point to a time gap of about 1500 years. The shell deposit has been shell dated to around cal AD 80, while the charcoal sample from the cooking pit point to a date around cal AD 1590. The faunal assemblage of the cooking pit consists of 99% fragmented dolphin bones, partly burned. All parts of the skeleton are present except for the mandible and teeth. Both adolescent and adult animals are represented in this assemblage. The bones could belong to 3 or 4 individuals, however 76 periotica have recovered yielding an MNI of 41 (see Figure 3). At least four species of dolphins of the Stenella and Delphinus family are represented in the assemblage. The large number of individuals could suggest that the animals were victims of a massive stranding. But the cooking pit is too small to process that amount of meat at one time. We conclude that the dolphins were probably hunted in the Spanish Water lagoon and butchered on top of a 1500 years old shell midden. Most of the animals were transported to the settlement uncooked, but a couple of animals were cooked on the spot.

Discussion

The investigations at Spanish Water have revealed 14 shell deposits in three different site locations. From a synchronic perspective the investigations at Spanish Water provide an important contribution to the representation of the Archaic occupation of Curaçao, prior to which the remains have until now been limited to sites such as St. Michielberg, St Joris (C-091 en 092), Jan Thiel (C-045) and Rooi Rincon; see Haviser 1987) and the subsequent Ceramic occupation. The results of the current research confirm the conclusion of Haviser that the Spanish Water site was continuously visited from 2900 cal BC until the Ceramic period. The nature of the late Archaic Age occupation is not yet fully understood.

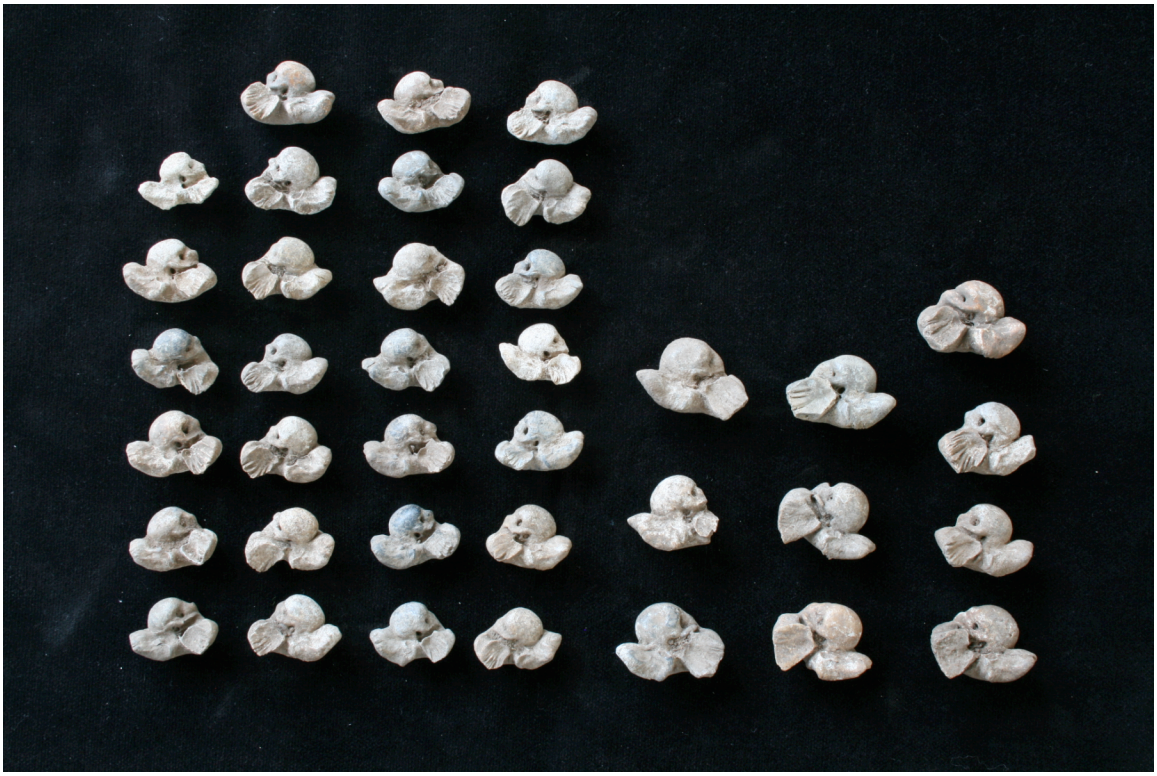

Figure 3. Periotica associated with cooking pit from unit 8.

From a regional and macro-regional perspective such deposits are known from the surrounding islands and mainland areas. The Archaic deposits on Curacao show similarities and affiliation to the El Heneal complex in Venezuela, but also influences of the Manicuare complex. Detailed inter-site analysis will provide a better understanding of the Archaic occupation of the region.

Bibliography

Haviser, Jay B.,

1987. *Amerindian Cultural Geography on Curaçao*. PhD thesis Leiden University.

2001. New Data for the Archaic Age on Curaçao. In: Alofs, Luc and Raymundo A.C.F. Dijkhoff. *Proceedings of the XIX congress for Caribbean Archaeology.* Oranjestad, Aruba. pp. 110-121.

Stuiver, M. and P.J. Reimer,

1993. Extended 14C database and revised CALIB radiocarbon calibration program. *Radiocarbon* 35: 215-230.

Stuiver M., P.J. Reimer, E. Bard, J.W. Beck, G.S. Burr, K.A. Hughen, B. Kromer, G. McCormac, J. van der Plicht and M. Spurk

1998 INTCAL98 Radiocarbon Age Calibration, 24000-0 cal BP. *Radiocarbon* 40 (3): 1041-1083.