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South American Indigenous Weapons Aboard the *San Pedro* Shipwreck of 1596

Joanna Ostapkowicz
School of Archaeology, University of Oxford,
36 Beaumont Street, Oxford, OX1 2PG, UK
Joanna.Ostapkowicz@arch.ox.ac.uk

Fiona Brock
Cranfield Forensic Institute, Cranfield University, Defence Academy of the United Kingdom, Shrivenham, SN6 8LA, UK

Alex C. Wiedenhoeft
Center for Wood Anatomy Research, USDA Forest Service, Forest Products Laboratory, 1 Gifford Pinchot Drive, Madison, WI, US

Warwick Bray
Professor Emeritus, Institute of Archaeology,
University College London,
31–34 Gordon Square, London, UK

ABSTRACT: In 1596, the San Pedro*, en route from Colombia to Spain, went down in a hurricane off Bermuda, with the loss of its entire cargo. Among the ship's contents, salvaged between 1950 and 1961, was the most complete collection of 16th century Indigenous weapons recovered from a maritime context, including bows and arrows, darts, stone axes, and two examples of a rare, distinctive style of club. These clubs, featuring a flaring terminal end embellished with recessed two-dimensional geometric design panels, are documented in 16th and 17th century accounts of Indigenous warriors in the Lesser Antilles and northeastern South America. Other examples entered European collections as exotica from the "New World," eventually becoming part of the earliest museums in the 17th century; only a small corpus of approximately 80 examples survives today. This paper recontextualises the clubs recovered from the* San Pedro*, documenting their recovery, and providing a chronological and cultural framework through radiocarbon dating, wood identification and a comparison to other clubs of this style.*

INTRODUCTION

In 1596, the *San Pedro*—a *nao* or carrack (three or four-masted sailing ship fit for heavy seas)—en route from Cartagena, Colombia to Cadiz, Spain, was lost in a hurricane off Bermuda's coast.[1] The entire cargo went down with the ship, and remained undisturbed for over three centuries—one of the most complete shipwreck cargos to survive from the first century of European expansion in the Americas. Among its rich array of artifacts, including gold, silver and pearls, were pieces brought together from widely-scattered sources: Venetian glass earrings, French pewter and ceramics, Chinese porcelains and glass and Spanish colonial coins purportedly from Mexico, Peru and Bolivia.[2] But the artifacts identified as the "most unusual"[3] and "most historically significant"[4] were carved of wood and stone: an assortment of Indigenous weapons from the Americas, including two clubs, five bows, three darts and a mace head, all now in the collections of the National Museum of Bermuda (NMB).

This is the earliest and largest documented collection of 16th-century Indigenous wooden artifacts recovered from a shipwreck. The weapons can be considered a near-complete Indigenous arsenal, one often depicted in early accounts and images of South American Indians (e.g., *Fig. 1*). The large, distinctive clubs—the focus of this article—featuring elegantly flaring terminal ends embellished with recessed two-dimensional geometric design panels, join some 80 similarly carved clubs now in European museum collections, many acquired prior to 1700.[5] Little is known about the possible source of these clubs, though their similarities to much smaller, 19th-century weapons from the South American mainland, particularly the Guianas and northeastern South America, suggest they may have originated there. Previous attributions of the *San Pedro* weapons—based specifically on the designs on the most complete of the clubs—were to a Colombian Muisca source,[6] although this identification is unlikely.[7] Rather, these distinctive long clubs are illustrated in 17th-century ethnographic accounts from the Lesser Antilles, suggesting they may have been part of the Kalinago (Island Carib) arsenal of weapons, which also included bows and arrows (*Fig. 1*). Where this particular style of club originated and the span of its distibution through Indigenous exchange networks is currently unclear—although it may well encompass northeastern South America and the Antilles. Our study aims to better understand this distinctive style of club, its chronological range, distribution and manufacture, and so better explore, where possible, the Indigenous context and meaning. The NMB's clubs and some of the associated wooden finds have been sampled for wood identification and radiocarbon dating, and together with ongoing work on other clubs in major European collections, the results will inform on this historically significant, but currently poorly

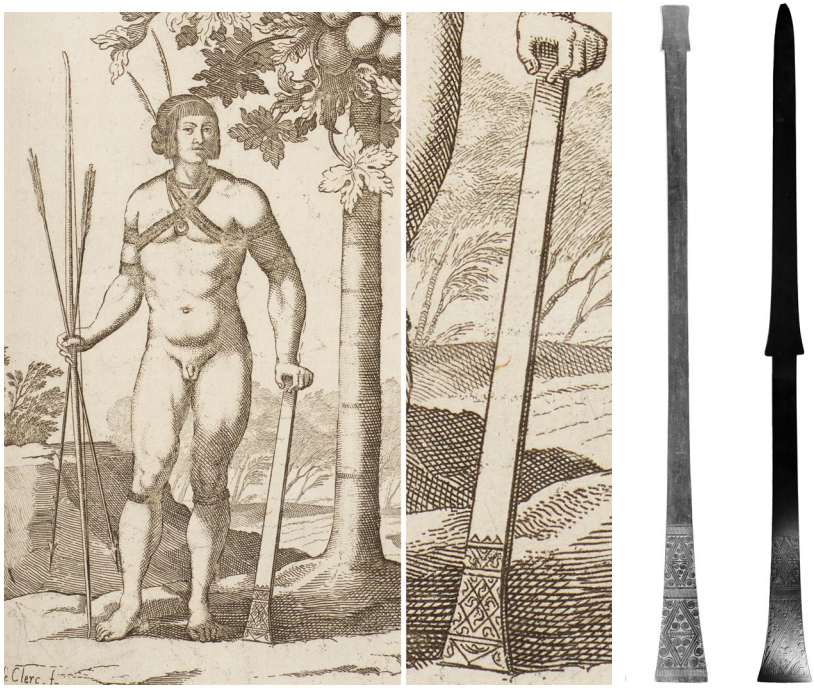


Fig. 1: A double-handed long club in the hand of a Kalinago (Island Carib) warrior, the head inverted and placed on the ground. Left and centre left: details from the 1667 edition of du Tertre's Histoire générale des Antilles Habitées par les François, *source: Bodl, BB 122 Art., Vol. 2, between pages 365 and 367 (Bodleian Library, Oxford). Centre right: One of four long clubs originally part of the Ashmolean's founding collection, acquired via John Tradescant the Elder (b.* c. *1570, d. 1638) or his son John (b. 1608, d. 1662). L: 140 cm; W: 11 cm; D: 2.5 cm, calAD 1311–1421 (95.4 percent), AN1685 B.128 (Ashmolean Museum). Right: Long club recovered from the* San Pedro *shipwreck (NMB)*

known, class of objects. This paper explores our current results on the NMB corpus.

THE *SAN PEDRO* INDIGENOUS WEAPONS: RECOVERY HISTORY

In 1950, Bermudian divers Edward (Teddy) Tucker and Robert Canton discovered a shipwreck in a coral pocket 12 miles off Hamilton Harbour; they managed to salvage and sell six iron cannon and a copper bucket from the site.[8] They returned in 1955 to the wreck dubbed by Tucker "my old Spaniard,"[9] and found that changes in the sediment had exposed a bronze apothecary mortar dating to 1561 and further investigation revealed a cache of silver coins and a gold cube. Over the course of 10 days, before bad weather brought the salvage operations

Fig. 2: The club post-1955 (NMB)

to a halt, a spectacular assortment of material was recovered, including 200 Spanish and French coins, all pre-dating 1592. It was at this time that the weapons that are the focus of this paper were recovered (*Figs. 2 & 3*). Mendel Peterson, then Head Curator of the Division of Military and Naval History, US National Museum, Washington, was called to advise on the finds and their conservation—the latter particularly relevant to our re-assessments of the artifacts. He called the artifacts recovered from the wreck "the most important find of Tudor-period material of our time."[10] Tucker and Peterson worked the site over the summers of 1957, 1960 and 1961. Based on the presence of several pewter dishes bearing the French house name Legendre, Peterson initially thought that "the wreck was that of a French private or privateer which had Spanish American loot aboard and was wrecked on its passage to France,"[11] though Tucker thought it was a "Spanish 'plate ship' returning with gold bullion from South or Central America by way of Cuba."[12] Peterson subsequently identified the wreck as the Spanish *nao San Pedro*, lost in 1596 on her return voyage to Spain, though there still remains some uncertainty over this assessment.[13] The assumption is that she was en route from Cartagena, Colombia to Cadiz, Spain, as part of the Flotas de Nueva España, and was blown off course in a hurricane onto Bermuda's reefs. The Bermuda government claimed the salvaged material under English Admiralty Law, purchasing the collection in 1961; it was displayed at the Bermuda Maritime Museum in 1976.[14] Some pieces remained with Tucker and were loaned to the NMB (they bear a "79" accession prefix), officially transferring to the Museum afer his death in 2014.[15]

Peterson, interviewed by the Bermuda *Mid-Ocean News*, noted that

Fig. 3: Club fragment photographed alongside other finds from the San Pedro, c. *1955 (Wendy Tucker)*

even within the context of the gold and silver finds "the 'big find' from a historical standpoint would only bring approximately threepence 'on the lumber market.' It's a piece of fire-hardened black palm, one end of which has been meticulously carved in intricate pattern…identified as a ceremonial spear [club] fashioned by the Carib Indians."[16] It was, according to the American Museum of Natural History, classified as a "major discovery since ancient woodwork by the Carib tribe (inhabiting Guiana, Venezuela, some of the Lesser Antilles and the Caribbean coast of Central America) is practically non-existent. Despite an estimated three and one-half centuries beneath the waves, its wood is perfectly preserved."[17]

In his autobiography, *Treasure! A Diver's Life*, Tucker clearly recounted finding the weapons, though the description of quantities and materials differs from those that eventually made it into museum collections of the National Museum of Bermuda: "[S]everal black

wood spears [clubs/macanas], measuring five and a half feet in length and many bows and arrows [were recovered]. The large arrows were approximately two and half to three feet long, and the arrowheads were made of metal, or in some cases quartz or chert… There were small arrows or darts that appeared to have had poisoned tips. We could never quite distinguish which of these weapons were souvenirs and which were for actual use."[18] Noteworthy here is the distinction Tucker makes between large arrows—*c.* 60–90 cm in length and tipped with not only stone, but metal, arrowheads[19]—and the smaller darts, three of which are currently in the Museum collections. Mendelson notes also that there were wooden barbed arrows;[20] clearly a variety of styles were present that can no longer be traced.[21] Further, Tucker's description of the clubs suggests that there were "several" examples, including undecorated clubs: "Another oddity found in the wreckage is a ceremonial Carib spear [club/macana] made, like the other [clubs], out of black palm wood[22] but in this instance with an elaborate geometrical design on the handle. The broken handle of a smaller palm wood [club] with a more circular motif was also retrieved as well as several stone axes from the Americas."[23] Of the stone weapons, only an eight-pronged mace head resides in the Museum collections. Tucker clearly distinguished between various weapon categories—clubs (which he and Peterson called "spears"), bows, arrows, darts and stone "axes"—only some of which were acquired by the Museum. This is not unusual for the Tucker finds—of the thousands of coins recovered, for example, only one was available for study by Hoyt.[24] The study of the weapons in the NMB therefore cannot accurately reflect the diversity that was likely on board the *San Pedro*, bound for the curiosity cabinets of Europe.

THE WEAPONS: OVERVIEW

The NMB collections contain 10 wooden ethnographic artifacts recovered from the *San Pedro*: two clubs (a complete double-handed long club and a fragment of a second club), five bows and three darts, as well as the eight-pronged stone mace head. The following provides a brief description of the stylistic attributes of the artifacts now in the Museum, and places them, where relevant, within the context of the wider corpus of similar extant artifacts.

Complete long club

At nearly 149 cm in length, the complete club is an impressive example of a double- handed long club; indeed, it constitutes the longest example of this style of club thus far known (*Fig. 4*). These clubs range upwards from *c.* 80 cm, with the largest in European collections reaching 147 cm in length (Völkerkundemuseum der Universität Zürich, Inv. no. 3152). They typically show a gently flared distal end carved with

Fig. 4: Complete club and detail of its top design panel, L: 149 cm; W: 13 cm (max); D: 2.3 cm (max), consistent with some Libidibia/ Stahlia/Caesalpinia*; calAD 1440–1619 (95.5 percent, of which the greatest probability is 1440–1509, 84.2 percent). (NMB 79:155.211; photo: Joanna Ostapkowicz)*

geometric designs along approximately one fifth of the club's top length. The remainder of the shaft lacks design panels, terminating in a slightly bevelled rectangular "handle" (*Fig. 1, right*). They are typically rectangular in cross section along their entire length: but the NMB long club is an exception to this rule, and features a number of elements that distinguish this club from others in this category.

Within the corpus of *c.* 80 long clubs of similar style in European collections, the NMB club has several unique features, most notably the flared treatment of the mid-shaft and a V-shaped proximal end. To our knowledge, this is not found on any other pre-17th century club. This treatment is seen in more recent (19th century), dagger-like clubs[25] where the sharp end was reportedly driven "through the ear into the fallen enemy's brain."[26] Typically, the terminal ends of the long clubs feature a short square "handle" with an inward-curving centre; these handles, however, appear to be little more than a stylistic convention. The clubs were likely held in a double handed grip a little distance above this handle, as seen in the illustration from the *Histoire Naturelle des Indes* (the "Drake Manuscript, *c.* 1586) showing the club in action.[27] In less active poses, illustrations feature the warrior's hand leaning on the handle, with the club's head inverted on the ground (*Fig. 1, left and centre*). Whether this stance was more European interpretation/imagination than reality is now difficult to gauge.

The long club's two-dimensional design panels are another distinctive feature within the wider corpus. With the exception of a small number of clubs displaying a similar layout of designs (e.g. two of the four Ashmolean clubs[28]—see *Fig. 1, right*), each club tends to have a

Fig. 5: Two long clubs featuring carved panels with serrated edging. Left: Long club, Cambridge Museum of Archaeology and Anthropology, E1908.108. L: 119 cm; W: 11 cm; D: 2.3 cm. Right: Long club, Pitt Rivers Museum, University of Oxford, 1922.8.15. L: 121 cm; W: 11 cm; D: 2 cm. Photos: Joanna Ostapkowicz

unique assortment of designs typically separated into two distinct panels on each side of the shaft. Serrated edges around the inner diamond frameworks within the main design panels, for example, are rare—they occur only in a handful of known clubs, including one in the collections of the Pitt Rivers Museum, University of Oxford, UK and one in the Cambridge Museum of Archaeology and Anthropology (*Fig. 5*). The NMB club, featuring serrated diamond shapes, can now be added to this small group. There is also a notable size disparity between the top panel diamond and the others featured on the NMB club—typically, these tend to be fairly uniform and quite balanced in layout. Another distinctive feature is the semi-lunar series of dots within the upper and lower corners of each panel. It would appear that while tradition dictated that geometric patterns repeat in each club's upper and lower panels, the way that the panels were configured and the elements they included were at the carver's discretion.

Given that it lay on the seabed for over three centuries, the long club's condition is exceptional, retaining its crisp, two-dimensional designs, which originally held white pigment to bring high contrast to

Fig. 6: Club fragment, L: 24.4 cm; W: 9.5cm (max); D: 2 cm (max). Compares extremely well to some Swartzia*, including* S. cubensis *(NMB 79:155.212; photo: Joanna Ostapkowicz)*

the decorative panels. Remarkably, some of this white pigment survived and could be seen in a photograph of the club published in 1956, shortly after it was recovered;[29] small, darkened remnants of it can still be seen on the artifact. While the original club was most likely dark in colour, its current nearly black matte surface is largely a result of subsequent conservation treatment.

Club fragment

In contrast to the remarkably good preservation seen in the long club, the club fragment—consisting only of the terminal end and its design panels—is in a comparatively deteriorated condition, with a fissured surface that disrupts the carved panels (*Fig. 6*). Assuming that it was another long club, the surviving section constitutes perhaps only one fifth of the club's full length. As the natural durability of the woods from which the two clubs were carved are both high (Record and Hess 1943), their differential preservation suggests they may have come to rest in different positions on the seabed, the long club better preserved perhaps from deeper deposition.[30]

While the two dimensional designs are obscured to a degree by its

deteriorated condition, it is clear the club fragment features the "diamond and curl" motif, a design element depicted on all early long clubs of this style.[31] Variation in the orientation, size and configuration of curlicue designs within the diamond or rhombus frameworks distinguishes stylistic subcategories for this type of long club. For the NMB club fragment, the framework of one central diamond, subdivided into four separate compartments/rhombi, each featuring a pairing of curlicue designs, displays some stylistic parallels to a club in the collections of the Museum fünf Kontinente, Munich (*Fig. 7*), which in turn plays on themes featured in a club now in the collections of the Museo di Storia Naturale, Florence, Italy, and first documented in the inventories of Ferdinand II de Medici in 1631.[32] More nuanced distinctions in the two-dimensional design panels are only beginning to be studied, but hold the potential to stylistically cluster variations within the club categories that could permit the identification of regional and/or temporal styles.

Bows

Three of the five bows recovered from the *San Pedro* and held in the NMB collection were accessed for study while on display in the main gallery (the other two were in long-term cold storage). They are all self bows or hand bows, made from a single stave of wood[33] (*Fig. 8*). They are slender, no more than 2 cm in width and depth, D-shaped in cross section, with slightly tapering ends. They range in length from 153–169 cm. For the most part they are in remarkably good condition, to the extent that one still shows evidence of previous binding at the

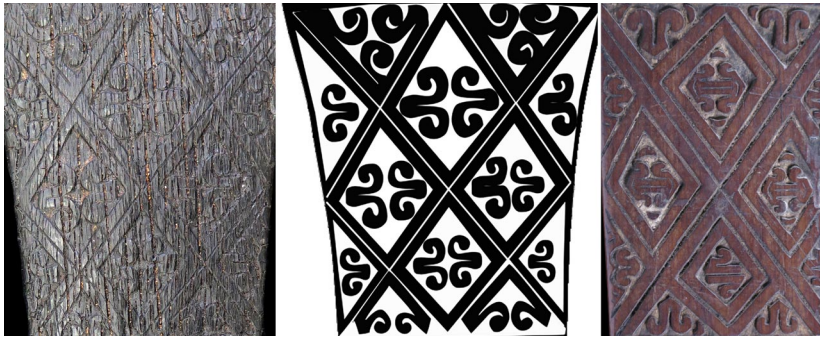


Fig. 7: Similarities in two-dimensional club designs. Left: NMB club fragment. Centre: illustration of NMB club fragment, showing diamond shaped panels filled with paired, inverted and spiral-tipped V-forms. Right: Club in the collections of the Museum fünf Kontinente, Munich, ex-Erlangen University (founded in 1743, with the club transferred to the museum in 1857). NMB 79:155.212 and Museum fünf Kontinente, Munich, Inv. Nr.: Erl–36; illustration and photos: Joanna Ostapkowicz

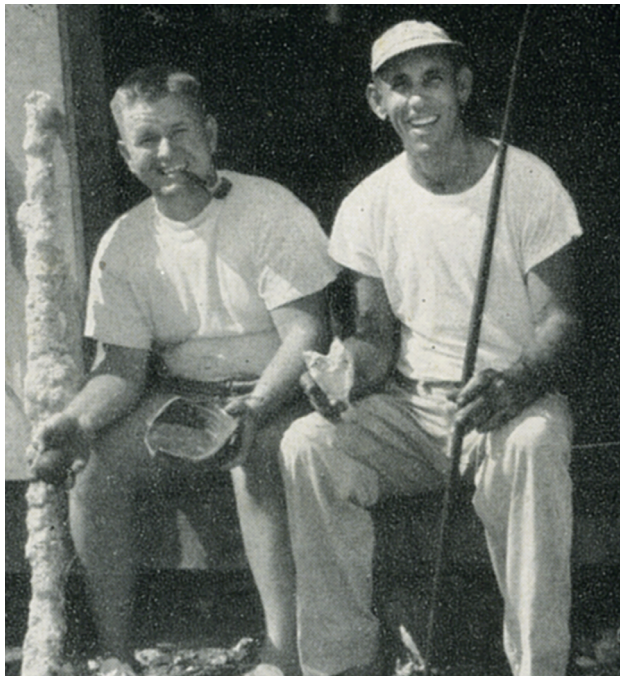


Fig. 8: Teddy Tucker (left) and Robert Canton, the latter holding a bow recovered from the San Pedro *(*The Bermudian *magazine)*

central handle. There is a white pigment-like material coating the surface of two of the bows, though it is not clear whether these were original colourants used on the finished bows, or whether a result of deposition and/or post-1955 conservation treatments.

D-shaped cross sections, according to Hermann Meyer's classifications,[34] are characteristic of north Brazilian bows; he defines this style as "semicircular cross section, characterized by…a reddish brown, smooth, leguminous wood." In a more recent study of bows, Heath and Chiara[35] found this particular form (categorised as 1 f-g/2 f-g, "high stacked, oval/elliptical, flat/convex"), also appears in Amazonas, Xingu and Mato Grosso areas as well as the eastern region of Brazil, and cautioned that "no specific classification on a geographical basis can be fully supported."[36] This caution is particularly germane as no comparable detailed stylistic studies have been done for the immense regions of the Guianas, Venezuela and Colombia, where it is possible this style of bow was also in evidence. Indeed, Roth,[37] who dedicated but three paragraphs to bows in his *c.* 700 page magnum opus, *An introductory study of the arts, crafts, and customs of the Guiana Indians*, notes that bows with D-shaped cross-sections were in use in the region. Further, it is not uncommon to find different types of bows

within a tribe, and there is considerable regional overlap, suggesting that inter-tribal contacts gave rise to similarities across a wide region.[38]

The length of Brazilian bows ranged between 117–255 cm, with roughly one-third falling within the 140–170 cm range that most closely compares to the NMB bows sizes.[39] Further, Meyer[40] notes that on the whole, South American bows are very large and smaller forms tend to be used only in the Guianas and northwestern and some southern regions of Brazil.

In his overview of South American bows, Meyer[41] noted that bows were often neatly wrapped with liana bast or with cotton string, with the binding on older bows featuring beautiful, artistically arranged patterns. Feather ornaments are also frequently added. This should be kept in mind when considering the *San Pedro* bows: while the wood has survived, the evidence of the binding on at least one bow hints that other organics likely adorned the weapons—a layering of ornamentation that belies the simple forms seen today. This would also have been the case with the two clubs, the long arrows described by Tucker, and to a lesser degree the "darts."

Darts

The three "darts" in the NMB collections feature delicate, slender shafts, each currently measuring roughly 35 cm in length, with a diameter of 0.7 cm. Shrinkage post-recovery has twisted two out of alignment,

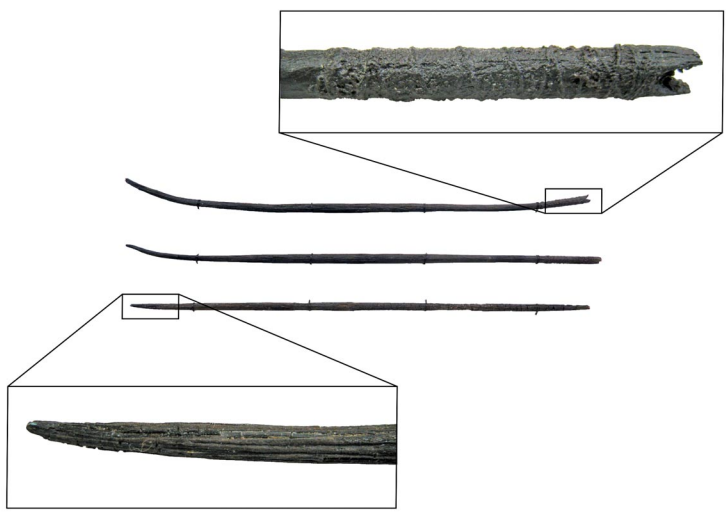


Fig. 9: Three darts, showing terminal details of two, each dart c. L: 35 cm; W/D: 0.7 cm (max). End bound with thin cordage for 3.8 cm; single strand of cordage c. *0.03 cm thick; note notched end; Palm (*Arecaceae*); calAD 1442–1620 (95.4 percent, of which the greatest probability is 1442–1515 [80.2 percent]). (NMB, 79:155.210; photo: Joanna Ostapkowicz)*

so that the tapered foreshafts angle sideways. Two feature cord binding and a notch, as well as a tapered tip, indicating this was their full length. Such a length is in keeping with blow darts among more recent South American groups (see below). Darts, however, would not need a notch; this feature is more a diagnostic of arrows. But generally South American arrows are of substantial size, ranging on average from 105–213 cm.[42] Even if, as noted by Kester,[43] most of the wooden artifacts (with the exception of the club and bows) shrunk while being dried, one would not expect an artifact to shrink by over half its size.[44] Such small arrows would be little more than a toy among South American Indigenous groups (arrows were scaled down for use by children). Another possibility, given the presence of a notch, is that they are wooden nocks: among some groups in Guyana, these were inserted into cane arrowshafts,[45] though the length of the *San Pedro* specimens, and the evidence of cotton binding, argues against this interpretation. In light of this, and for the time being, they will be called "darts" with the caveat that their function is not secure.

The lengths of the "darts" from the *San Pedro* are comparable to those of South American blowgun darts, which typically range from 23 to 40 cm.[46] Their diameter, however, is thicker—twice the typical diameter of a blowgun dart. These are often made out of a leaf of a species of palm tree called coucourite (kokerit) which is pointed and "sharp as a needle," or otherwise worked to sharp ends with animal teeth, such as those of the piranha (*Pygocentrus* sp.).[47] The tips are dipped into a poison (curare), while the terminal ends are burned to make them harder, with the last few centimetres bound with cotton held in place by silk grass.[48] It is clear at least two of the "darts" from the *San Pedro* received such treatment (*Fig. 9*), although the cotton, if originally present, has since disappeared.

Blow darts, and by association blowguns or pipes, were not used in the insular Caribbean;[49] they are South American weapons, used in hunting, never in warfare.[50] Nordenskiöld[51] and Yde[52] discuss the distribution of blowguns in South America, and report them from the coastal areas of eastern Venezuela and, in Colombia, from the region around the Sierra Nevada de Santa Marta.

Mace head

Star-shaped mace heads have a strong regional distribution in South America, and are not typical Caribbean artifacts. In stone or metal, they are, above all, one of the most common weapons of Incan armies, and have been found archaeologically in all parts of the Inca empire, from northern Chile and Argentina to the Ecuador-Colombia frontier area, and they are illustrated in colonial manuscripts.[53] The *San Pedro* example could have come from anywhere in that vast area, but probably not from the eastern region of South America (Venezuela, Guyana,

Fig. 10: Three views of eight-pronged mace head, Diam. 12 cm (max); D: 2.8 cm (max). (NMB 79:155.597; photo: Joanna Ostapkowicz)

Trinidad) where the clubs were almost certainly made. This is yet another example of the rather eclectic cargo of the *San Pedro*.

SCIENTIFIC ANALYSES: ^{14}C DATING AND WOOD IDENTIFICATION

Our study included a variety of methods to better understand the materials and histories of the selected implements, including wood anatomy and AMS radiocarbon dating (^{14}C) (*Table 1*). While contamination from historic conservation interventions has no affect on wood anatomy, it can raise problems for radiocarbon dating. Mendel Peterson, who specifically worked on the *San Pedro* collection, published details about his conservation methodology,[54] [55] recommending two potential treatments for preservation of "vegetable" material recovered from shipwrecks. One method involved saturating the sample in a solution of alum, water and glycerine before leaving it to dry, and subsequently wiping the surface with a mixture of linseed oil and turpentine. The other process—believed to have been applied in this instance—used polyethylene glycol (PEG), which is also known to have been applied as a surface treatment in 2012.[56] The "darts" were also cleaned more recently, with the use of acetone and a heat gun.[57]

Known contaminants can often be extracted prior to dating with specific pre-treatments, so it is extremely important to understand the conservation/intervention history for each artifact. Analysis was therefore undertaken before dating to investigate both the distribution and the identity of any residual conservation treatments on the objects.

Even with these caveats in mind, dating wooden artifacts accurately depends on strategically locating the sample site in the outer edges of the original bole used for the carving—ideally the sapwood, and if this is not available, the outermost rings. Otherwise, there is the possibility the dates would be subject to "old wood" issues (e.g., if sampled close to the pith, then the date would reflect the age of the tree, not the time

it was felled to carve). In the case of the complete club, an examination of the end grain at the head (the widest part of the club) revealed a small series of fine-grained growth ring arcs, and the ^{14}C sampling was located in the outermost region of these. The incomplete club was not sampled for ^{14}C dating given its deteriorated state and visible heavy contamination with conservation treatments. Only a small (*c.* 6 x 3 mm) sample of wood along an already fissured surface—one that may have easily dislodged on its own—was extracted for material identification. All sampling was undertaken by NMB Conservator Zoe Brady in October 2016.

Radiocarbon samples from the "darts" were not anticipated, given the small and delicate nature of the artifacts. However, a small fragment from one of the "darts" dislodged when moved from display to the conservation studio for study, likely along an already present internal fracture. The fragment provided sufficient material for both wood ID and ^{14}C dating. The question of inbuilt age for palm-derived material is less well known than for wood. Palm stems in some species are known to persist for decades, but other plant parts are produced and shed on much shorter timescales.[58] For an object like the palm dart, its origin in the plant body could inform the degree to which it could represent significant inbuilt age by virtue of *in planta* longevity.

Wood identification

Specimens were prepared for wood identification as described in Ostapkowicz *et al.* 2017.[61] The wood used in the bow (81.239.002) was so degraded that only a few anatomical features could be confirmed. It was possible to observe thick-walled fibres (*Fig. 11 A–C*), and

TABLE 1

Artifact/acc no.	Material	Lab code	^{14}C BP	Calibrated date range (95.4%)	calAD modelled*	δ13C‰
Long Club 79:155.211	Consistent with some *Libidibia/ Stahlia/Caesalpinia*	OxA-X-2727-11	404±23	1440–1509 (84.2%) 1592–1619 (11.3%)	1441–1508 (94.9%) 1594–1596 (0.6%)	-25.3
Club fragment 79:155.212	Compares extremely well to some *Swartzia*, including *S. cubensis*	/	/	/	/	/
Dart 79:185.210	Palm (Arecaceae)	OxA-42386	398±23	1442–1515 (80.2%) 1590–1620 (15.2%)	1442–1512 (93.7%) 1515–1516 (0.2%) 1590–1596 (1.5%)	-27.3
Bow	Tropical hardwood	/	/	/	/	/

** Calibrated using IntCal 20,[59] modelled using the "Before" command in OxCal 4.4,[60] defined as the shipwreck date of 1596*

Fig. 11 (opposite): Light micrographs of anatomical features for botanical identification. A–C represent the bow (89.239.002), identified as a tropical hardwood. A: Tangential section showing non-storied multiseriate rays and thick-walled fibres. B: Higher magnification tangential section showing biseriate rays, thick-walled fibres and cross-grain fracturing indicating poor preservation. C: Radial section showing another view of thick-walled fibres and minimally interpretable ray structure.

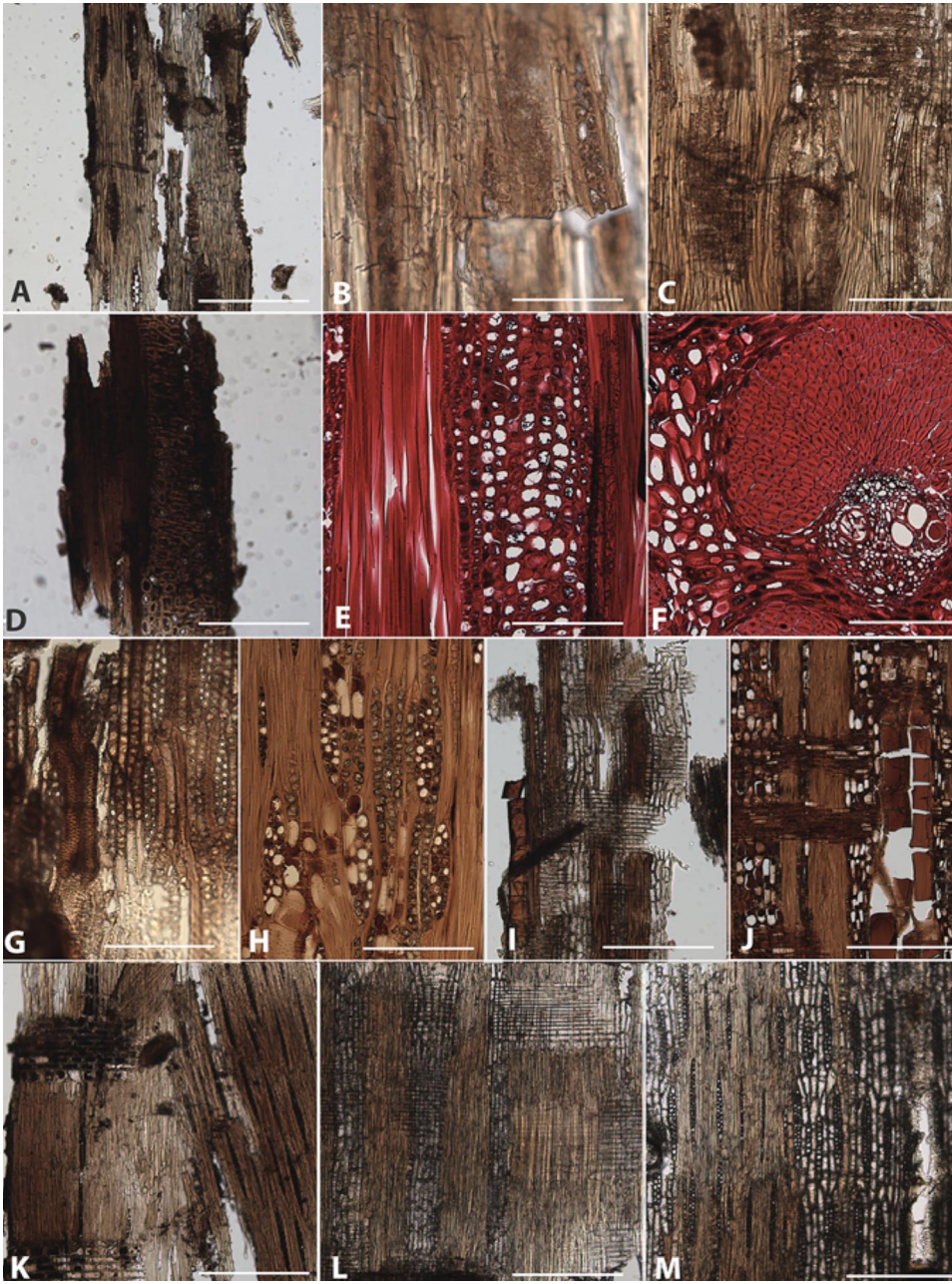
*D–F represent the dart (79.185.210) and comparative material (*Livistona*).*
D: Longitudinal section of the dart showing sclerotic isodiametric parenchyma cells and thick-walled longitudinal fibres. E. A longitudinal section of Livistona *showing comparable sclerotic parenchyma and longitudinal fibres. F. A transverse section of* Livistona *showing how the arrangement of sclerotic parenchyma and fibre bundles in a stem could produce the pattern seen in E, D.*

*G-J represent the club (79.155.211) and comparative material (*Stahlia/Libidibia*).*
G. Tangential section of the club showing biseriate storied rays, vessel elements with intervessel pits approximately 8 µm in diameter, and abundant crystals in chambered axial parenchyma. H. Tangential section of Stahlia/Libidibia *showing storied uni- to biseriate rays and crystals in chambered axial parenchyma cells. I. Radial section of the club, showing pigmented thick-walled fibres, homocellular rays, and bands of axial parenchyma. J. Radial section of* Stahlia/Libidibia *showing the same features shown in I.*

K-M represent the broken club (79.155.212) and comparative material of Swartzia cubensis.

K. Radial section (left) and tangential section (right) of the club showing rays with dark organic contents and a single row of square marginal cells, and a narrow parenchyma strand (radial) and uni- to biseriate, moderately tall irregularly storied rays (tangential), and thick-walled fibres (both). L. Radial section of Swartzia cubensis *showing rays with a single row of square marginal cells, narrow and wide parenchyma, and thick-walled fibres. M. Tangential section of* Swartzia cubensis *showing irregularly storied uni- to biseriate rays and thick walled fibres.*

Scale bars represent 75 µm for B, 150 µm for C, G, and H, and 300 µm for all others. Images: A.C. Wiedenhoeft


A
B
C
D
E
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M

multiseriate non-storied rays (*Fig. 11 B, C*). This permits us to exclude thousands of woods that lack these characters, while placing us no closer to a positive identification.

As already noted, the preservation of the palm dart (79:155.210) was also poor, making it difficult to produce high quality microscopic sections suitable for complete analysis. This was further compounded by the notorious difficulty of sectioning intact palms (though see Tomlinson *et al*. 2010 for particularly good results). The limited observable details are consistent with palm stem anatomy (*Fig. 11 E*), but also could be consistent with a spine—specifically there were thick-walled fibres in association with sclereids (*Fig. 11 D*). Such a combination could be a fibre bundle associated with a vascular bundle in a stem (*Fig. 11 F*), with the sclereids representing sclerified cortical parenchyma, or it could be peripheral fibres and sclerified parenchyma in a spine. Without an exact species against which to compare the unknowns, only general conclusions can be drawn. Rachises and spines known to be used for blowdarts in northern South America[62] often have only a comparatively thin layer of peripheral sclerotic tissue necessary to provide strength to the dart. Based on observation of palm rachises in the University of Wisconsin-Madison Botany Department greenhouses, the cortical parenchyma is thin-walled and collapses on drying.[63] This could be possibly consistent with a narrower dart, but not with the 0.7 cm diameter seen here. No palms with *c*. 30 cm spines were available for comparison at the University of Wisconsin-Madison Botany Department greenhouses. Macía[64] also reported carving darts from palm stems, and what we find here would be conservatively interpreted as consistent with that practice.

The specimen from the complete club (79.155.211) was well preserved and showed a number of wood anatomical characters, including storied uniseriate to biseriate homocellular rays, crystals in chambered and axial parenchyma cells, parenchyma in narrow confluent bands, thick-walled pigmented fibres, vestured intervessel pits approximately 8 μm in diameter, and vessel elements with dark organic contents (*Fig. 11 G, I*) which in addition to macroscopic observations present a pattern most consistent with some species of *Libidibia/Stahlia/Caesalpinia* (*Fig. 11 H, J*).

The specimen from the broken club (79.155.122) was likewise in good condition, permitting the observation of predominantly biseriate, irregularly storied rays with one row of square marginal cells and dark organic contents, parenchyma in narrow confluent bands, thick-walled vessels with small to medium intervessel pits, and thick walled fibres (*Fig. 11 K*). Taken together, these microscopic characters, along with macroscopic observation of the specimen as it was sectioned, compare extremely well to some *Swartzia*, including *S. cubensis* (*Fig. 11 L, M*).

SELECTED WOODS: CONTEXT, CHARACTERISTICS, USE

As discussed above, the wider ethnographic literature notes the use of palm leaf spines in the manufacture of darts, although these tended to be smaller in scale to the variety present on board the *San Pedro*. Needle-sharp varieties would be used with little alteration, apart perhaps from whittling sharp the tip of the stem. Rival[65] notes that Huaorani hunters could easily prepare 40 darts or more in a day.

Unfortunately, the tiny sample taken from a damaged and splintered area of the bow (81:239.002B) for wood ID yielded an inconclusive result, apart from confirming that it was tropical hardwood with multiseriate rays (so any woods with exclusively uniseriate rays—e.g., *Guaiacum* spp.—can be excluded). Turning to the literature, Heath and Chiara[66] note that in the production of bows, woods with the necessary qualities include those that provide flexibility, are hard enough to withstand harsh treatment and take on a high polish. They note the following are commonly used by Brazilian groups: Bignoniaceae (e.g., *Tecoma*, *Tabebuia* [*Handroanthus?*], *Jacaranda*); Leguminosae (*Piptadenia*, *Melanoxylon*, *Bauhinia*, *Peltogyne*, *Dalbergia*). Less common are Moraceae (*Brosimum guianense*), Anacardiaceae (*Astronium*; *Schinopsis*), Caryocaraceae (*Caryocar brasiliensis*), Lecythidaceae (*Lecythis*) and Arecaceae (e.g., *Cocus*, *Guilielma*, *Socratea*, *Jessenia*). Roth,[67] briefly discussing Guyanese bows, notes they are "made from at least half a dozen different timbers, only two of which…have been identified[:] purple heart [which he identifies as "*Copaifera pubiflora*," though this is not what is now known as purpleheart] and the letter-wood or snakewood ("*Brosimum aubletii* Poepp & Endl." [a botanical synonym for *B. guianense*])."[68] As would be expected, material choice for the manufacture of bows varies locally, but local woods are not always the material of choice: people would take long journeys to procure specific woods or would acquire desirable materials through trade.[69] For the southern Karajá, palm wood is considered the most desirable for bows, and is acquired from their Tapirapé neighbours in the north. The northern Brazilian Makuxi preferred to use *Brosimum guianense*, acquired from the Guyana region: indeed, Roth[70] notes that *B. guianense* "constituted no unimportant article of trade between the Guiana and Brazilian Indians. A large supply comes from the forests at the back of the [Kanuku] and Pakaraima Mountains [northern Brazil and eastern Venezuela]. There must also be a source of supply somewhere in the Taruma country, because these people sell it to the Wapishana, who in turn trade it to the [Makuxi]." Among the Waiwai of British Guiana and Brazil, the bow is called *karápa* and is typically made from *karapayépu* ("bow" tree, *Brosimum guianense*)[71]—note that linguistically the name for the bow is directly linked with that of the tree. The wood, worked down to roughed-out bow shape, is finished by smoothing the surface with scrapers and rubbing it with Brazil nut

oil, after which "the finished bow staff emerges with a shiny red surface which shows the beautiful character of the wood with its black markings at its best."[72]

The long club (79:155.211) was previously identified as "black palm" by staff at the National Museum of American History,[73] [74] but this is inconsistent with our identification to the genus *Libidibia/Stahlia/Caesalpinia*. *Libidibia* has a complicated taxonomy, with species formerly known in the genus also reported as *Stahlia* and now generally considered to be *Caesalpinia*.[75] Most references about wood properties reflect these older names. *Libidibia* in its historical circumscription has several species of medium to large sized trees, with a distribution that spans Mexico to Argentina; all have exceedingly hard, heavy and strong wood, typically used for durable building construction.[76] The heartwood typically ranges from dark red to chocolate brown to nearly black. The wood is difficult to work, but finishes very smoothly and is highly resistant to decay.[77] *Libidibia sclerocarpa* (Standl.), now *Caesalpinia sclerocarpa* (Standl.), for example, stands eight–15 metres high, with a diameter range of 30–60 cm; the timber is extremely hard and the coffee-coloured heartwood can take on a jet-black colour if treated with lime.[78] At the larger end of the spectrum, *Caesalpinia ferrea* Mart (known locally as iron wood) grows in small groups reaching a height of 30 metres with a bole roughly a metre or more in diameter. *Caesalpinia melanocarpa* Gris is known as the Argentine Guayacán, while *Caesalpinia coriaria* (known commonly as divi-divi), the most economically important species of the group, produces both a black and red dye from the fruits and timber, respectively.[79] The trunks and branches are typically very twisted, and so perhaps not appropriate for the manufacture of long, straight weapons.

The club fragment (79:155.212) compares extremely well to some *Swartzia*, including *S. cubensis*. The genus *Swartzia* includes more than 90 species of typically small to medium, and rarely large, trees; these grow abundantly in northern South America, particularly the Guianas and Amazon region, and span into the Caribbean and Central America.[80] The woods are very dense, difficult to work, and highly resistant to decay, with the heartwood dark brown to nearly black, in solid or variegated colour.

Though different woods were chosen for the clubs, they were still consistent in their clear preference for heavy, durable and dense woods. Selecting woods with these qualities ensured an artifact that had longevity, not only because the wood was decay resistant but because the artifact was well cared for. The fact that these woods are difficult to carve, even now with modern tools, makes their choice even more significant, given they were worked, prior to European contact, with stone and shell tools. When one considers the sheer variety of South American species potentially available for the manufacture of weapons,

it is remarkable to note a consistent, practical and quite refined approach to selection of materials. Certain species were preferred over others, undoubtedly due to desirable traits such as strength, flexibility, colour and lustre. *Libidibia* and *Swartzia*—much like the highly durable *Guaiacum* sp., used in the Greater Antilles to produce important ceremonial items[81]—were broadly similar trees, featuring dark, lustrous woods, light-coloured sapwoods and brilliantly-coloured flowers—but most importantly providing a material that lasted for generations.

RADIOCARBON DATING: METHODOLOGY

Two samples were pre-treated for radiocarbon dating, one each from the long club and the dart. When sampling the long club, the outer, contaminated surface material was separated from the inner wood, with the latter submitted for the dating. Potentially contaminated external surfaces were mechanically removed from the dart sample where possible. The dart sample (14.0 mg) was black in colour, and consisted of one large piece (which was subsampled with a scalpel) and several smaller fragments. The long club sample (18.4 mg) was poorly preserved, mostly consisting of dark brown powdered material.

Prior to dating, scanning electron microscopy with energy dispersive X-ray spectroscopy (SEM-EDX) and Fourier transform infrared spectroscopy (FTIR) were used to investigate the presence and identification of any residual conservation treatments on the samples, in particular carbon-containing compounds. Two fragments of the dart were analysed, one of which (presumed to be from the external surface) was heavily contaminated with a waxy substance, and was subsequently not submitted for radiocarbon dating. Despite records of the application of PEG to the surface of the club and the dart in 2012 (and the assumption of this treatment on recovery of the objects several decades previously), there is no evidence of its presence on either the dart or club. However, low levels may have been masked by the spectra of the wood, or been below the detection limit of the FTIR, and so its presence cannot be completely excluded. It is also possible that the PEG had not penetrated into the wood during the 2012 surface application, and that all affected material had been efficiently removed from the wood mechanically prior to analysis. No evidence was found on either the long club or the dart for Mendel Peterson's alum-glycerine protocol for preserving the samples on initial recovery from the shipwreck.

The standard radiocarbon pre-treatment protocol for dating wood samples was modified as a precaution to take into account the potential presence of wax and PEG. The samples initially underwent an extended organic solvent sequential wash consisting of acetone (45°C, 60 mins), methanol (45°C, four washes of 90–120 mins each), chloroform (room temperature, 150 mins) and ultrapure milliQ™ water (80°C, five

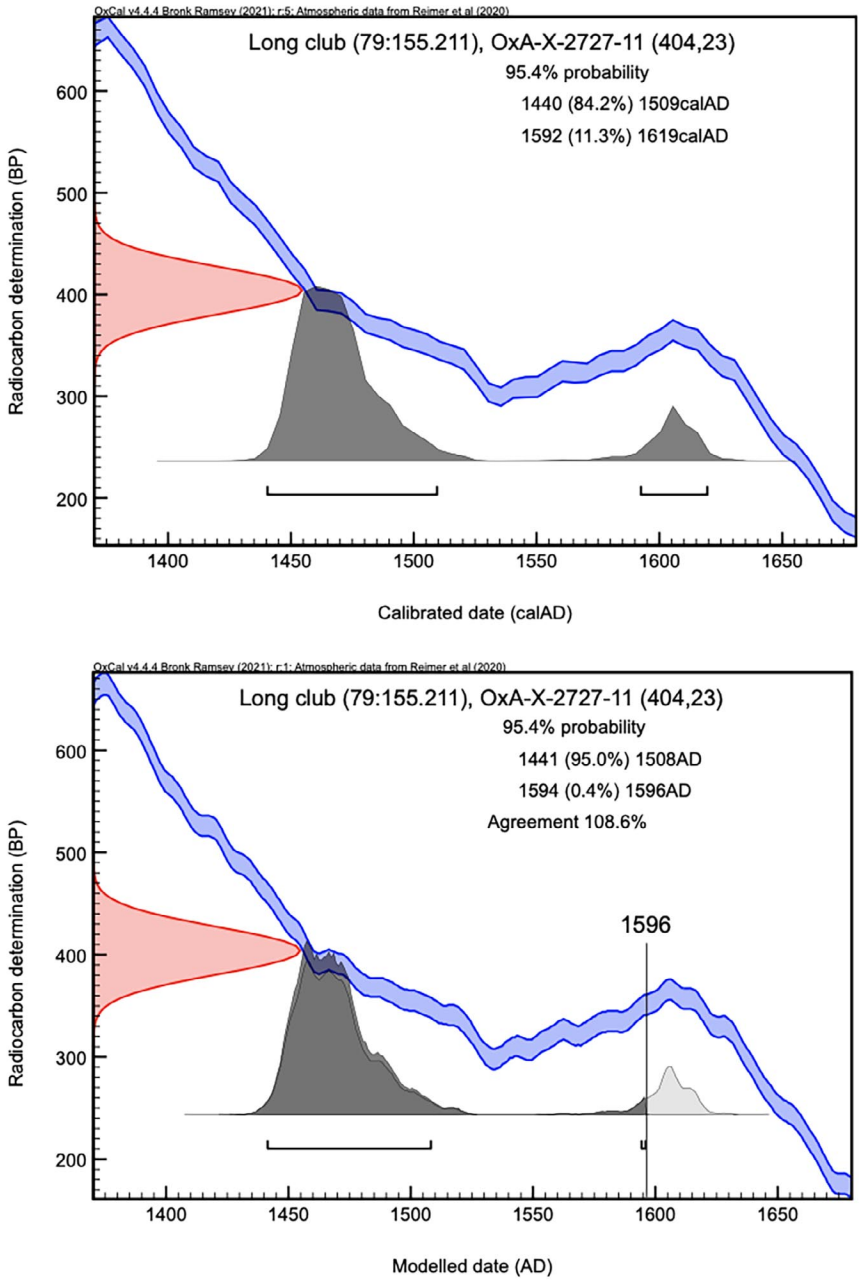
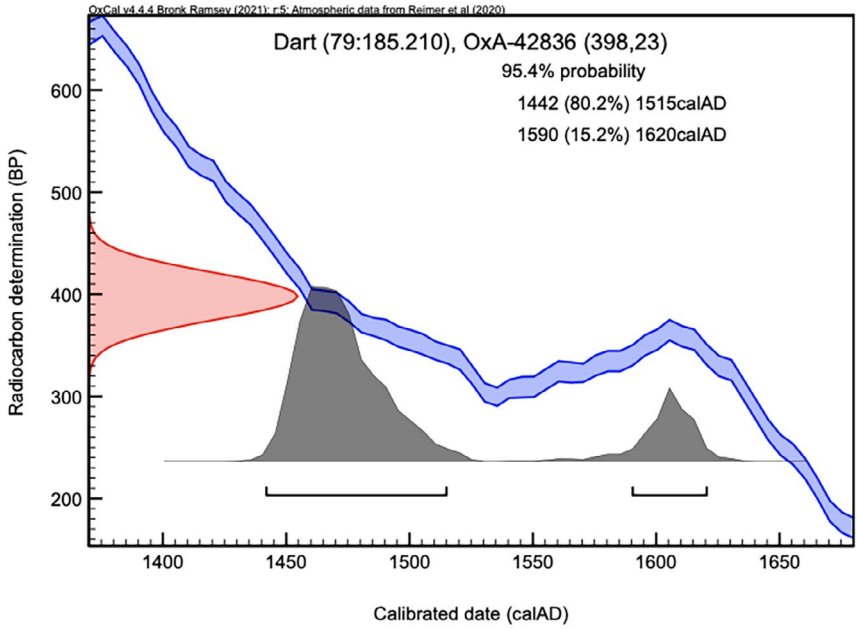
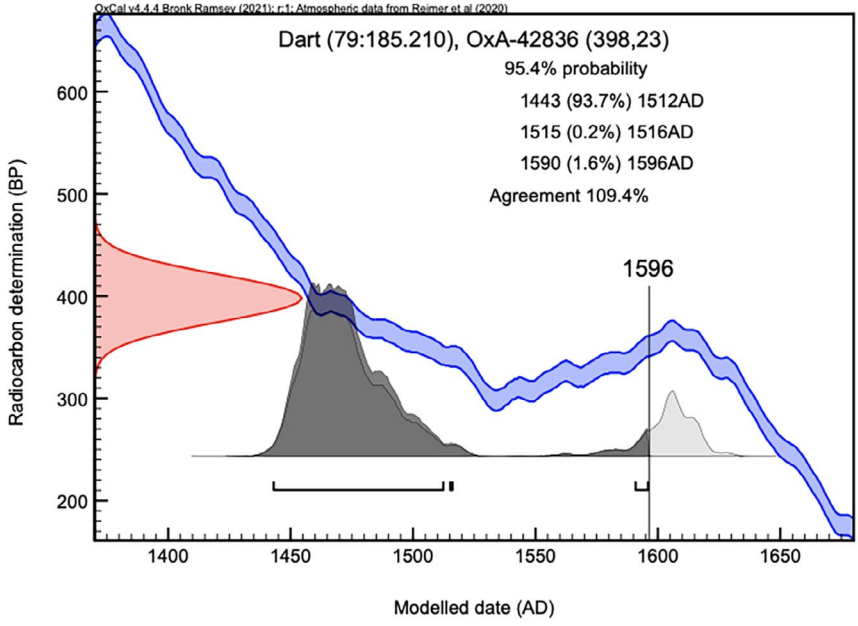


Fig. 12 (this page and next): Calibrated dates for the long club (upper left) and dart (upper right), and respective modelled dates (lower left and right) based on a cut-off date of 1596 for the shipwreck. The modelled range suggests that the artifacts date between ~calAD 1441–1512


OxCal v4.4.4 Bronk Ramsey (2021); r:5; Atmospheric data from Reimer et al (2020)
Dart (79:185.210), OxA-42836 (398,23)
95.4% probability
1442 (80.2%) 1515calAD
1590 (15.2%) 1620calAD
Radiocarbon determination (BP)
600
500
400
300
200
1400
1450
1500
1550
1600
1650
Calibrated date (calAD)


OxCal v4.4.4 Bronk Ramsey (2021); r:1; Atmospheric data from Reimer et al (2020)
Dart (79:185.210), OxA-42836 (398,23)
95.4% probability
1443 (93.7%) 1512AD
1515 (0.2%) 1516AD
1590 (1.6%) 1596AD
Agreement 109.4%
1596
Radiocarbon determination (BP)
600
500
400
300
200
1400
1450
1500
1550
1600
1650
Modelled date (AD)

hours) and a final ultrapure water wash (80°C, 60 mins). The dart sample then underwent routine ABA (acid-base-acid) pre-treatment (lab code VV* in Brock *et al*. 2010) as follows: hydrochloric acid (1M, 80°C, 20 mins), sodium hydroxide (0.2M, room temperature, 15 mins), hydrochloric acid (1M, 80°C, 90 mins), with thorough washing with ultrapure water after each step. The club sample underwent the same treatment but without the sodium hydroxide wash, as it was deemed too fragile and unlikely to survive that stage.

After pretreatment, both samples were freeze-dried, combusted, graphitised, and AMS ^{14}C dated as described by Brock *et al*.[82] The dates were calibrated using OxCal v.4.4[83] and the IntCal20 calibration dataset.[84]

AMS RADIOCARBON RESULTS

With these pre-treatment precautions in place, the samples were submitted for radiocarbon dating, and the calibrated radiocarbon dates for both artifacts are very similar (*Fig. 12*). The greatest probability for the club is calAD 1440–1509 (84.2 percent); the lower probability range of calAD 1592–1619, with the earlier part of this range just a few short years before the *San Pedro* went down in 1596. The earlier calibrated range precedes the 1596 date by a minimum of ~90 years, and complements the dates from the four Ashmolean clubs, three of which date earlier (*c*. calAD 1311–1441) and one later (AD 1458–1638).[85] Even if we account for the fact that the sample was not extracted from sapwood, and so several decades can be added to take into account the age of the wood, this still implies the club had some years of use prior to being brought aboard the *San Pedro*. On the whole, these clubs are heavy and well made, and from the results thus far achieved in the wider study, we have surmised that they were likely curated objects.[86] This is potentially the situation with the NMB long club.

The dart also has a much higher probability within the calAD 1442–1515 (80.2 percent) range, but the expectation with darts is that they are quickly made and as quickly used. A hunter could carry several dozen to several hundred (upwards of 600 in a custom-made quiver[87]) during hunting trips. In contrast to long clubs, which were arguably more status symbol than weapon and so prized and carefully treated, darts were a more expedient tool, meant for single use (specifically to pierce the skin of the animal and break off, leaving the tip embedded to more effectively deliver the poison). Further, the material used for these weapons—presumably slender palm stems—would have little in the way of inbuilt wood age, hence should reflect quite closely the year of manufacture. If this date range is indeed correct, it can be argued that the darts, together with the club and possibly the bows, were acquired for someone's personal collection, one that was transferred at

some point to Cartagena (the city was established in 1533, and rose to power from the 1540s from the export of Potosí silver to Spain), perhaps as a memento of trade or altercations with the region's Indigenous groups (who may themselves have acquired some of these items in trade). This assumes that for some decades they passed hands a number of times, or stayed within one family for several generations before being brought aboard the *San Pedro*. Alternatively, the second of the date ranges, while of lower probability, starts at calAD 1590, a few short years before the *San Pedro* went down—could these have been acquired shortly before the ship's departure in November 1596?

If we model the radiocarbon results with a cut-off date of 1596 for the shipwreck, the probability ranges refocus very strongly on the earlier part of the range (with over 93 percent of the likelihood falling between ~calAD 1441–1512); there is less than two percent probability of the artifacts dating to the later part of the 16th century. This once again suggests that the artifacts were used, collected and/or curated over some time.

INDIGENOUS WEAPONS: EUROPEAN FEAR AND IMAGININGS

Weapons, clubs particularly, fuelled European imaginings of the South American "other." Weapons were among the first tangible evidence of Indigenous Brazil to be brought back to Europe. Pedro Alvares Cabral, *en route* to India via Africa, accidentally struck the coast of Brazil in 1500; to prove his discovery he sent back to Portugal Tupinambá ornaments and weapons, along with the first descriptions of the Native inhabitants.[88] These proved a visual inspiration for a wide variety of imagery: in 1505 the first woodcuts depicting cannibalistic warriors armed with bows emerged—a popular trope that continued for centuries, likely first spurred by the accounts of Amerigo Vespucci in 1502, who noted: "They eat little flesh unless it be human flesh."[89] In stark contrast, a Tupinambá[90] carrying a feathered arrow appeared as one of the three magi in a Portuguese altarpiece,[91] showcasing a completely alternative "reading" of the Indigenous peoples of South America and their riches. Initial peaceful interactions with Indigenous groups, particularly spurred by an emerging lucrative trade in woods (such as Brazilwood, for which Native alliances were crucial), fuelled interest in other forms of trade and goods.[92] In 1530, for example, the Portuguese captured the French ship *La Pélérine* on her return voyage from Brazil; amidst the cargo were 3,000 jaguar skins and 600 parrots.[93] At times like these, weapons such as clubs and bows, alongside feather ornaments, were likely traded to the Europeans, exchanges that echoed the pre-existing widespread Indigenous exchange of these items. Indeed, in the first interactions between Columbus and the Bahamian Lucayans in 1492, the latter offered "javelins" in trade

alongside cotton and parrots.[94] It is clear that weapons would not have been traded if Europeans did not also place a value on them, and so offer a reasonable exchange in return. It is also possible that weapons, as well as other prestigious Indigenous artifacts, were presented as ceremonial gifts.

The initial excitement of first encounters had largely subsided by the mid-16th century, and peaceful interactions began to fail due to the insatiable territorial expansion and increasing demands of European colonists.[95] From skirmishes to outright wars, altercations between the Indigenous populations and Europeans during the 16th century became far from uncommon. European survivors of these battles (as well as those nowhere near the encounter) would recount acts of harrowing violence and slaughter at the hands of club- and bow-wielding "savages," not infrequently embellished to encourage retaliation for the purposes of pacifying and ultimately gaining control of the region. Indigenous "curios" embodied these fascinations and tensions for the European gaze. In particular, clubs and other forms of weapons held an exotic allure for imaginings of far off lands and peoples. It is perhaps not surprising that the most frequent South American artifacts listed in princely kunstkammern are clubs, bows and arrows.[96]

The earliest image of a club comparable to those recovered from the *San Pedro* appears in the *Histoire Naturelle des Indes* (*c.* 1586), with the subject matter attributed to northeastern South America and/or the Lesser Antilles (Pierpont Morgan Library 1996).[97] It is explicit in its portrayal of a warrior wielding a double-handed club over the body of his prone victim, with blood flowing from the victim's gaping head wound.[98] The caption reads: "Indians of Ihona. When the Indians have defeated their enemies, they make them lie down on the ground, then pound on them and, after that, give them a blow on the head with their sword. When the blood starts flowing, they hold it back promptly, think that by this means the body will make a better roast for a solemn feast, calling this a deed of prowess." The club is clearly depicted, suggesting that the artist had access to one for closer inspection; its size, flared head and two-dimensional designs are very reminiscent of the similarly styled clubs in early European collections[99] and, notably, the NMB clubs, loaded onto the *San Pedro* only a decade after the images in the *Histoire Naturelle* were completed. This style of club would become one of the most frequently depicted in the 17th century, particularly in the hands of insular Caribbean warriors (*Fig. 1*); it also features on a map from Robert Dudley's *Dell'arcano del Mare* (1646–47) showing the Guianas (Guyana south to Amapá, Brazil). Thus far, our study of the strontium isotopic signatures[100] of these weapons suggests that they originated from older, more radiogenic geological formations, consistent with the South American

mainland and Trinidad.[101] The Kalina controlled extensive trade networks of the eastern South American regions that may well have spread these clubs as far north as Kalinago territories in Guadeloupe. Intriguingly, a 16th century reference to clubs in use among the Indians inhabiting the region near present day Caracas, Venezuela, describes weapons that have some parallels to the clubs under discussion: "[They use macanas] in the manner of a sword, with two sharp edges at the tip which is as wide as the hand with a length that reaches the chin, and others [with a length] up to the waist, which they hold upright in two hands and the small one with one, they are carved and painted, and they always carry these macanas in their hands to serve as weapons."[102] The sharp edges mentioned by Latorre are consistent with the paddle-club form illustrated in a document from the 1520s briefly referencing the weapons of the Maracaibo basin, Venezuela.[103]

SHIPMENTS OF "EXOTIC CURIOSITIES"

European imaginings of the Americas created an interest in the collection of weapons, albeit gathered at a safe distance. That Indigenous artifacts were brought back to Europe as curios and exotica (objects which aroused curiosity for those who viewed them as exotic[104]) is well documented in early kunstkammern catalogues, though many have since lost this critical provenance, and frequently languish under generic (mis-)attributions.[105] This initial phase of collecting ethnographic artifacts from the Americas, spanning the 16th to 17th centuries, was mainly to show the reach (and hence power and influence) of the collectors, often with little regard for a more nuanced understanding of what was acquired; exoticness was the main criterion, with weapons having a certain cachet. It was not until the Age of Enlightment was well underway (*c.* 1750), that a more conscious effort was made to better understand what was being collected, spurred in part by the new taxonomic milestones achieved in the sciences.[106] A detailed review of this history, and how it pertains to the *San Pedro* collection, is beyond the remit of this article.[107] What is clear is that such collections were part of a growing interest in the wider world, driven in part by a desire for securing evidence of these distant places in a tactile, physical form.

While many artifacts successfully made the Atlantic crossing during these early colonial years, the *San Pedro* group is among the few examples of an interrupted transfer of Indigenous "souvenirs" (as Tucker[108] called them) to Europe. Other early shipwrecks have also yielded Indigenous artifacts, part of surprisingly international cargos. For example, on September 1622, the 117-ton Portuguese-built navio *Buen Jesús y Nuestra Señora del Rosario*, sailing with the Tierra Firme fleet from Venezuela's Pearl Coast back to Seville, went down in a hurricane south of the Tortuga Islands in the Straits of Florida.[109] The Spanish-operated merchant vessel was laden with pearls and gold, but

also yielded a remarkably international assortment of goods: from an agate bead of (East) Indian provenance and an ivory-inlaid Nuremburg sundial to three Indigenous "greenstone" artifacts, of South or Middle American provenance.[110] Two of these were interpreted as "greenstone slate" celts being reused by the Spanish as whetstones; the third is a highly polished plagioclase feldspar labret.[111] [112] Further, two wooden drop spindles along with Indigenous beads were recovered.[113] Stemm *et al*.[114] posit that these could either have belonged to a Native American on board, or, alternatively, that the greenstones could have been procured by the Spanish for their curative properties or to be shipped back to Spain as curiosities. The latter they discount as being less likely, though it does fit the pattern of other examples, such as the San Pedro as well as the Margarita shipwreck, which contained a "large greenstone paperweight" and a greenstone celt and amulet (Stemm *et al*. 2013:51; see Tedesco, 2010:198-29).[115] The recovery of artifacts from the 16th century Canton-Malpas wreck, salvaged from Bermuda's Western Ledge Reef in the 1960s, included what has been interpreted as a Mesoamerican jade amulet.[116]

As in the case of the *Buen Jesús*, we cannot discount the outside possibility that there were actual *indios* aboard the *San Pedro*. That Natives were brought to Europe as guests, emissaries, prisoners or slaves is documented from the earliest writings (e.g., in 1492, within days of his arrival in The Bahamas, Columbus forcibly took seven Lucayans aboard his flagship the *Santa Maria* as "intepreters"; some made it to Spain in early 1493, and one—Diego Colón—was later adopted by Columbus.[117] Spanish cedulas, for example, document that in 1501 Venezuelan indians made the arduous voyage to Spain, and were sold as slaves in Cadiz, Cordoba, Xerez and Sevilla—before the king ordered them sent back home.[118] In 1518, a Venzuelan *cacica* (chieftess) and her 16 retainers were kidnapped and sent to Hispaniola but then ordered back. In 1519, 20 Lucayans from The Bahamas were transferred to the pearl fisheries of the eastern coast of Venezuela.[119] These are but a handful of examples of the distances Indigenous people themselves travelled aboard Spanish ships and as questionable as this appears today, it was far from uncommon in the past. Whether presented at court, or forced into slavery as "exotic" chattel, Native people were viewed as curiosities as much as their weapons, particularly in the early years of the encounter.

THE SOCIAL WEAPON

It is important to view these objects as having life histories prior to the *San Pedro*, and one unifying theme that brings them together in both an Indigenous and European context is their use as commodities. As Heath and Chiara[120] point out, bows and arrows play an important role in inter-tribal bartering—a more social, rather than economic,

role. For example, a man would make his own arrows from cane grown locally, but these would be habitually exchanged, so that a hunter or warrior might have arrows from several sources.[121] In some regions a tacit agreement is established between neighbouring tribes involving the sole rights to produce certain objects, such as shell ornaments by one group, bows by another, ceramics by yet another. This establishes a regulation of values, whereby a string of beads is, for example, exchanged for a bow and "thus emerges a situation involving the principles of specialisation, the control of values, and in essence, the creation of a monopolistic consortium of crafts, not unlike that which is associated with the craft guilds of medieval Europe."[122] It should be kept in mind that such an exhange is not a dependency: desirable materials or artifacts acquired through trade can be substituted for locally-produced goods in times of conflict between trade partners, but their circulation is often reestablished as soon as peaceful interaction once again resumes. In this sense exchange of artifacts such as weapons (in our case, clubs, bows and arrows/darts) is seen not simply as an economic transaction, but rather a socio-political one. It is possible the weapons on board the *San Pedro* were a result of inter-tribal exchanges that eventually entered into circulation among Europeans who collected them as curios. The exchange(s) that brought these weapons into European hands may well have been socio-economic, binding both traders in social interactions. By the point they were brought onboard the *San Pedro*, they could have changed hands countless times across a potentially huge expanse of territory, thus obscuring their original provenance. In this sense it might not be useful to think of the group of weapons aboard the ship as coming from one specific area, but rather as individual objects that could have separate, perhaps even quite distant, sources.

It is also instructive to think of these weapons in the context of use: there may be specific reasons why certain weapons were chosen for conflict—the choice of a club involves direct contact between warriors, an act that may leave them susceptible to spiritual dangers.[123] If used as a weapon, a bow, by contrast, is used at a distance, protecting the warrior from any direct contact with these dangers. For example, among the Tupinambá, captured warriors were ritually executed by being clubbed to death, while a transgressor of social norms would be killed with arrows. Among certain groups, such as the Yanomama and Xavánte, weapons used to kill people were considered polluted and were discarded.[124] Bows and arrows were often initially used in ambush raids at night, when incendiary arrows were shot at the communal house, and clubs and spears were used as the victims tried to escape.[125] Poisoned darts, in contrast, were not used as weapons against people; such use was seen as polluting among some groups, rendering the blowpipe and darts ineffective against animals.[126] For

fighting men who "prefer to inflict large wounds and shed as much blood as possible"[127] the small piercings of a dart would not have the desired physical or psychological impact. Thus, even within this small corpus of *San Pedro* weapons, we have a variety of functions and approaches represented; and various ways of thinking about them.

Among many groups, both the bow and arrow and the club are symbols of masculinity, associated with distinctive but complementary aggressive attitudes in both hunting and war.[128] A Xavanté ceremony involving young warriors involves painting the clubs in a way that evokes phallic imagery with red *urucu*, a pigment that is symbolic of culture, war and sexual force ("generative power"[129]). Arrows, in contrast, are painted black and are associated with older men, death and aggression against nature through hunting ("destructive power").

Such nuances of meaning and use likely have a deep history among South American groups. Among the 16th century Tupinambá, for example, a club used to dispatch sacrificial victims was given the honorary name *Ibira-pema*[130] and was lavishly decorated with green eggshells, cotton tassels and feathers; it was passed around the participating men to inspire future potency in war. These examples, and many others, suggest that weapons attained a symbolic significance in South America, indeed as they do in most societies. To European contemporaries, unaware of their nuanced meanings, these objects had an altogether different signficiance: impressive curios that symbolised contact with "wild," "cannibal" tribes—masculine trophies of war and colonial power. The ways in which clubs as well as bows and arrows were used against Europeans early in the colonial enterprise were not lost on collectors. Weapons were among the most desirable of curiosities, requested specifically for princely collections: in 1625, the Duke of Buckingham was actively acquiring weapons and instruments and "Any thing that Is strang," while Ferdinand II de Medici's inventories of 1631 list South American clubs.[131] The princely collections strove to encompass the emerging New World, and South America with its riches and dangers was one of the most desirable sources for curiosities.

CONCLUSIONS: INDIGENOUS WEAPONS AND POWER RELATIONS

A weapon, like any tool, prolongs the body in its effort to know the world by relating to it.[132]

First and foremost, what is remarkable about these Indigenous weapons is, quite simply, their survival in Bermudian waters for the last three centuries. That they are now safely conserved, and on display at the National Museum of Bermuda, enables us to begin building an

understanding of their context and history, and their meaning to the custodians—both Indigenous and European—who safeguarded them before their placement in the hold of the *San Pedro*.

With specific reference to the clubs, their materials, dates and iconography amplify our knowledge of this unique weapon style. This is the most complete collection of weapons in circulation at a very specific moment in time, and the only one from a maritime context assumed to date to approximately the moment of collection. The other known examples have been found in Europe, where they mainly derive from cabinets of curiosities put together in the 16th and 17th centuries but have incomplete histories.

The original provenance of the weapons, like the international cargo on board the *San Pedro* (Chinese porcelain, Italian glass, French pewter), likely extended over an immense area: encompassing the territories of the Inca empire (e.g., Peru/Bolivia; mace head) to northern (particularly northeastern) South America, across the Guianas, Venezuela and Colombia north of the Amazon river (clubs, bows, darts). As one of the key ports of Spain's early colonial empire, Cartagena's connections to secure American luxuries (and curiosities) covered a vast region: it grew to power in the 1540s by exporting silver from the mines of Potosi, Bolivia, some 3,000 miles distant and reached through an arduous coastal journey (over the Andes to Lima or Arica, then aboard cargo ships up to Panama and overland on mules to the Caribbean sea—a journey that could easily take months).[133] Given this Peruvian/Bolivian link, it should not be surprising to find the mace head among the weapons aboard ship. Relatively closer were the early Spanish settlements along the Venezuelan coast, which were themselves entrêpots for a wide variety of goods (e.g., Caracas, est. 1567). The movement of objects from distant sources into these ports, and their redistribution and eventual shipment to Spain, often via Cuba (which itself received a wide variety of materials via Panama, Veracruz and the Antilles) made for a constant flow of goods. As we have no knowledge of the *San Pedro*'s earlier ports of call prior to arrival in Cartagena, we cannot say whether the *nao* stopped to pick up cargo along the Venezuelan coast, but it is a possibility, given the presence of the wooden weapons on board; certainly clubs are consistent with material from the northeastern (rather than north or southwestern) region of South America.

While the weapons aboard the *San Pedro* give us direct insight into European consumption of Indigenous material culture as commodities during this early period of the colonial enterprise, they more importantly provide a window onto rare 16th century artifacts that reference Indigenous power relations, hinting at their their value in peace, but also their potency in war. These were highly practical implements used for hunting (bows/darts) or combat (clubs); but they could also be

symbolically laden. In the hands of a warrior, clubs were the force that took human life, while bows, arrows and darts brought down game, providing life for the community. There was power through and in their use, extending the force of the user. Clubs later came to symbolise the challenges of the early colonial period, becoming trophies in a European context and the means of resistence in Indigenous ones.

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ENDNOTES

1 We know nothing about the ship's routes prior to its departure from Cartagena, or where it may have loaded its cargo.

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wooden clubs: ^{14}C dating, material identification and stronium isotope studies," *Antiquaries Journal* 98 (2018), 187–218.

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7 The highlands of the Eastern Cordillera of Colombia are a long way from the Caribbean coast and from the Guianas and insular Caribbean where all known clubs comparable to the *San Pedro* examples are concentrated. Although wooden items have been found in Muisca burials, these do not include clubs. Colonial descriptions, compiled by Pérez de Barradas (1951:284–45), describe heavy two-handed clubs made of palm wood, and one of these accounts, ascribed to Pedro de Aguado, refers to a weapon "the width of a hand, more or less, and with thin, sharp edges with which they used to cut and chop up an Indian." These sharp edges do not match the squared sides of the *San Pedro* clubs. Further, ethnographic examples from the Chimila of northern Colombia (who settled between the lower Rio Magdalena and the Rio Cesar) show sharp-edged weapons quite different to the *San Pedro* clubs (Reichel-Dolmatoff 1946: Fig 9). At Antioquia, Colombia, William Bollaert, writing *c.* 1850s, describes the accidental discovery of a blade-like club: "[I]t was through granitic debris, and at [*c.* 7m] in depth, a thick bed of well preserved trees was met with…under this bed of trees, buried by inundations, was discovered an ancient weapon, the macana, of palm wood, [1.8m] long, one end like a lance, with the other a narrow blade like sword, with curious carvings: this was given to a Dr. Jervics, who sent it to England." If these are typical of the clubs used at contact among the littoral —and, of course, they may not be—we can eliminate Caribbean Colombia as a source for the *San Pedro* specimens.

8 Watts, *Shipwrecked*, 57; "Richest Treasure Trove," *Life* 9 (1956), 39.

9 *Life*, 39.

10 Hoyt, *BJAMH*, 27.

11 Kester, J, "Fabulous Treasure is Discovered Off Colony," Bermuda *Mid-Ocean News and Colonial Government Gazette*, January 5, 1956, 5.

12 *Ibid*., 3.

13 Hoyt, *BJAMH*, 55; Watts, *Shipwrecked*, 58.

14 Hoyt, *BJAMH*, 27; Watts, *Shipwrecked*.

15 Elena Strong, personal communication, 2016.

16 Kester, Bermuda *Mid-Ocean News and Colonial Government Gazette*, 3.

17 *Ibid*.

18 Tucker, *Treasure!*, 68, emphasis added.

19 These metal "arrowheads" are a mystery, and the originals are no longer available for study. No unambiguous stone arrowheads are recorded archaeologically from the Caribbean South America, and metal arrowheads were not used among South American or Caribbean indigeous groups, even in the regions where metalworking was well developed (Nordenskiöld 1999:37;43; Harbismeir 2008:114). The first mention of metal being used by Indigenous groups was by Hans Staden, who in 1552, noted that the Tupinambá used

"…iron wedges, which the Christians provide them with in several places" as axes, "they bore a hole, in which they stick the wedge, and this is their hatch[et] with which they hew" (in Whithead and Harbsmeier 2008:114). Ethnohistorical sources and archaeological finds attest to trade between Spaniards and Natives in wine, clothing, glass beads and iron axes, knives and agricultural tools (e.g., Bray 1978:106) but not, apparently, in arrowheads. The usual arrow tips and dart points throughout Caribbean Colombia and Venezuela were made of palm wood, often fire-hardend and provided with barbs, and this form persisted until recent times alongside occasional examples made from fragments of recycled machetes or other metal (Reichel-Dolmatoff 1945:38-42; 1946: Fig. 8).

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24 Hoyt, *BJAMH*, 49.

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35 *Ibid.*, 169, Fig. 32.

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37 Roth, "An Introductory study of the arts, crafts and customs of the Guiana Indians," 153–54.
38 Heath and Chiara, *Brazilian Archery*, 33.
39 *Ibid*., Table 2.
40 Meyer, "Bows and arrows in Central Brazil," 554.
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42 Heath and Chiara, *Brazilian Archery*, Table 1; Meyer, "Bows and arrows in Central Brazil"; Reichel-Dolmatoff, Geraldo, "Los Indios Motilones (Etnografía y Linguistica), Revista del Instituto Ethnológico Nacional, II:1 (1945), 40.
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72 *Ibid*.
73 Hoyt, *BJAMH*, 53.
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