Results of the 2015 Valley of Peace Archaeology Project: Sediment Core Extraction from Pool 1, Cara Blanca, Belize

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The long-term goals of the Valley of Peace Archaeology (VOPA) project are to examine how settlement articulates with sacred landscape features in addition to examining climate and landscape transformation at Cara Blanca, Belize, an area with 25 lakes and cenotes (Figure 1) (e.g., Lucero and Kinkella 2015). For the 2015 season (May 7-9), the main goal was to extract sediment cores from Pool 1 (c. 100 x 70 m). A total of $ US (National Science Foundation grant) was spent on travel, transportation, supplies, lodging and food for PI, three divers, labor and social security for up four field assistants, IOA fees, insurance, and truck maintenance, and University of Illinois F&A fees (18.7% applied to all monies spent). The landowners of Cara Blanca, Yalbac Ranch, provided logistical support in the form of clearing Rock Cut road to Pool 1.

This year the diving team included five-year Cara Blanca veteran exploration diver Chip Petersen of Belize Diving Services (www.belizedivingservices.net) and first year participants oceanic engineer Anthony Tedeschi (http://www.narceddiving.com/) and dive instructor Peter Goebels (Figure 2). Our excellent field assistants included Cleofo Choc, Ernesto Vasquez, Stanley Choc, and Marcial Arteaga from the Valley of Peace Village.

Glad to report that there is no recent looting at Str. 1.
Divers used closed circuit rebreathers and trimix gases, a combination that allowed them to stay deep for relatively extensive amounts of time—a necessity because of the depth of Pool 1—over 60 m (Figure 3). The first day (May 7) they used 3” PVC pipes in 5 foot (1.52 m) increments; divers decided that 2” diameter PVC would be easier to insert, so we switched. They remained under water up to four hours. We glued on threaded fittings so they could add to the pipe if necessary. Based on previous years of diving, Chip thought the prime area to collect samples would be near the overhang on the north wall—ideally an area without massive amounts of slump.
The divers took with them pipes, a 12 pound sledge hammer, a Go Pro camera (Anthony), a piece of board they placed on top of the pipe to protect from the sledge hammer, pipe caps, buoys to mark from where sediments were extracted, and lift bags (e.g., up to 100 lbs used) for help to extract cores and to bring them to the surface (Figures 4-6).
Figure 4. Peter with empty PVC pipe. Photo by A. Tedeschi

Figure 5. Peter and Chip driving the core with sledge hammer and board. Photo by A. Tedeschi
On all pipes, the arrow points towards the bottom. They are labeled with the date extracted and a unique number. To prepare for export, divers removed the top cap and determined where to cut the pipe using a measuring tape to probe for the sediment. A hacksaw was used to cut the pipes immediately above the sediment, which also removed excess water (Figures 7 and 8). Socks and cut up t-shirts were used to pack the top, which was then capped. We did not seal the top with glue at this time because the samples need to be inspected at the Institute of Archaeology. The bottom (arrow pointing down) was sealed with duct tape.
May 7 (180 minute dive): No. 1, 3” diameter, length: 0.79 m (crack at bottom sealed with duct tape), core extracted from 60 m depth, center north wall, UTM: 16N, 300985.1 E 1927199 N

May 8 (217 minute dive): No. 2, 2” diameter, length: 0.57 m core extracted from 51.82 m depth, UTM, northeast near wall, UTM: 16N, 301007.5 E 1927190.4 N

May 9 (112 minute dive): No. 3, 2” diameter, length: 1.55 m core extracted from 50.29 m depth (bottom section lost because glued pipe section came undone during shipment to the U.S.; core thus represents upper more recent portion), UTM, northeast near wall, UTM: 16N, 301012.2 E 1927184.6 N
Figure 8. Three cores ready for export

After bringing the cores to shore, Chip would swim back to take GPS readings of the buoys (Figures 9 and 10).
Figure 9. May 7 buoy; taken from Str. 1 looking northeast.
Divers also found a spring with a small opening (c. 6 cm diameter) c. 6 m deep on the north/northwest side (Figure 11).
They also noted some tufa on the east wall c. 6.1 deep—that is, far from Str. 1 (Figure 12). I had thought that the Maya may have actually gotten the tufa from another pool since up to this season, it had only been noted immediately below Str. 1 (i.e., from collapse/looting). They still might have since the tufa was growing on the sidewall rather than consisting of the cobble and boulder sized tufa we found on the exterior and fills at Str. 1. The samples they brought up (Figure 13) differ from those in Pool 20 (see Lucero 2015), which were quite soft—and had some remaining organic debris on their interior (likely the remains of a branch). The samples from Pool 1 were quite solid.
Chip informed that since 2011 post-hurricane when there was poor visibility due to massive hydrogen sulfide clouds, that they have not needed lights at the cenote bottom—over 60 m. Also, the bleach bottle float used to demarcate the fossil bed from which the sloth tooth was extracted in 2014 is still in the same position.
Concluding Remarks

The short 2015 season was a complete success in that we were able to collect sediment cores from the bottom of Pool 1. Ideally the cores will hold information that will tell us about landscape transformation and climate change. That said, there is the possibility that the cores do not contain long-term information, but only relatively recent data.

On a final note, in driving to and from Cara Blanca each day, we could not help but notice the extensive clearing the Spanish Lookout Corporation (SPLC), a Mennonite community corporation, continue to do on what formerly part of Yalbac Ranch (see Benson 2015). The cost of this ‘progress’ is plowed mounds as far as the eye can see, literally (Figure 14).

![Figure 14. Photo from Overlook looking southeast. Pool 8 is visible on the upper left](image)

Acknowledgements

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References Cited

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