

UNIVERSITY OF CALIFORNIA, MERCED

**EXPANDING THE RITUAL LANDSCAPE:  
POLITICIZED USE OF THE SPACES OUTSIDE OF CAVES  
DURING THE LATE CLASSIC MAYA COLLAPSE**

Dissertation submitted in partial satisfaction of the requirements for the degree of

DOCTOR OF PHILOSOPHY

in

WORLD CULTURES

by

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## DEDICATION

*To my husband and family,  
who are constant sources of  
support, encouragement, motivation, and strength.*

## TABLE OF CONTENTS

List of Figures .....	x
List of Tables .....	xx
Acknowledgements .....	xxi
Curriculum Vita .....	xxii
Abstract.....	xxx
1. Introduction: Social Solidarity in Times of Crisis .....	1
1.1. Creating Boundaries, Creating Identities .....	1
1.2. Ritual, Solidarity, Hegemony, and Resistance .....	2
1.3. Crisis Intervention.....	4
1.4. Maintaining Social Solidarity among the Late Classic Maya .....	5
2. Politics and Ritual among the Ancient Maya .....	7
2.1. Ancient Maya Social, Political, and Ritual Development .....	9
2.1.1. The Preclassic Period (2000 B.C.E. – C.E. 250) .....	9
2.1.2. The Classic Period (C.E. 250-950) .....	10
2.1.3. The Late Classic and the Collapse (~C.E. 750-950).....	11
2.2. Maya Cave Use.....	12
2.2.1. The Interiors of Caves: Ancient Maya Cave Use in the Southern Lowlands .....	12
2.2.2. The Exteriors of Caves: Modern Maya .....	15
2.3.2. The Exteriors of Caves: Ancient Maya.....	17
3. Methods.....	19
3.1. Site Selection .....	19
3.1.1. Geographic Distribution and Proximity to Site Cores.....	19
3.1.2. Cave size.....	20
3.2. Archaeological Methods.....	20
3.2.1. Survey and Mapping.....	20
3.2.2. Shovel test pits .....	21
3.2.3. Excavation .....	21
3.3 Analysis .....	22
3.3.1. Artifacts.....	22
3.3.1.1. Ceramics: A Proxy for Temporal and Behavioral Determinations .....	22
3.3.1.2. Non-Ceramics.....	22

3.3.2. Shovel Test Pits: Artifact Density Maps .....	23
3.3.4. Patterns of Modification.....	23
4. Sites and Excavations .....	25
4.1. Northern Belize .....	25
4.1.1. Rice Mill 3.....	25
4.1.1.1. Interior Description.....	26
4.1.1.2. Exterior Description.....	27
4.1.1.3. Exterior Excavations .....	27
4.1.1.1.1. Shovel Test Pits.....	27
4.1.1.1.2. Excavation Units.....	28
4.1.1.4. Archaeological Summary .....	31
4.2. Sibun Drainage .....	32
4.2.1. Sak Tuch (White Belly) .....	32
4.2.1.1. Interior Description.....	32
4.2.1.2. Exterior Description.....	33
4.2.1.3. Exterior Excavations .....	33
4.2.1.4. Archaeological Summary .....	34
4.3. Roaring Creek Valley .....	34
4.3.1. Actun Tunichil Muknal.....	34
4.3.1.1. Interior Description.....	35
4.3.1.2. Exterior Description.....	35
4.3.1.3. Exterior Excavations .....	36
4.3.1.4. Archaeological Summary .....	41
4.4. Macal Drainage East/Mountain Pine Ridge.....	42
4.4.1. Nohoch Ka' Actun (Big Mano Cave) .....	43
4.4.1.1. Interior Description.....	43
4.4.1.2. Exterior Description.....	43
4.4.1.3. Exterior Excavations .....	44
4.4.1.4. Archaeological Summary .....	58
4.4.2. Ofrenda Cave .....	61
4.4.2.1. Interior Description.....	62
4.4.2.2. Exterior Description.....	62

4.4.2.3. Exterior Excavations .....	63
4.4.2.4. Archaeological Summary .....	66
4.5. Macal Drainage West/Vaca Plateau .....	67
4.5.1. Moth Cave (aka Opossum Cave) .....	68
4.5.1.1. Interior Description.....	68
4.5.1.2. Exterior Description.....	69
4.5.1.3. Exterior Excavations .....	69
4.5.1.4. Archaeological Summary .....	76
4.5.2. Actun Isabella.....	77
4.5.2.1. Interior Description.....	77
4.5.2.2. Exterior Description.....	78
4.5.2.3. Exterior Excavations .....	78
4.5.2.4. Archaeological Summary .....	79
4.5.3. Macal Chasm .....	80
4.5.3.1. Interior Description.....	80
4.5.3.2. Exterior Description.....	80
4.5.3.3. Exterior Excavations .....	81
4.5.3.4. Archaeological Summary .....	83
4.5.4. Actun Ho Ak.....	83
4.5.4.1. Interior Description.....	84
4.5.4.2. Exterior Description.....	84
4.5.4.3. Exterior Excavations .....	84
4.5.4.4. Archaeological Summary .....	86
4.6. Chiquibul National Park.....	86
4.6.1. Las Cuevas .....	87
4.6.1.1. Interior Description.....	87
4.6.1.2. Exterior Description.....	88
4.6.1.3. Exterior Excavations .....	89
4.6.1.4. Archaeological Summary .....	100
4.6.2. Actun K'in K'aba.....	102
4.6.2.1. Interior Description.....	103
4.6.2.2. Exterior Description.....	103

4.6.2.3. Exterior Excavations .....	103
4.6.2.4. Archaeological Summary .....	104
5. Discussion .....	105
5.1. Who Built These Spaces? .....	105
5.1.1. Patterns of Construction in the Late Classic .....	106
5.2. Artifacts.....	107
5.2.1. Residential vs. Ritual .....	107
5.2.2. Elite vs. Non-Elite.....	108
5.2.3. Ceramics.....	109
5.2.4. Non-ceramics .....	112
5.2.4.1. Stone .....	112
5.2.4.2. Speleothems.....	113
5.3. Patterns of Modification.....	114
5.3.1. Shovel test pits .....	115
5.3.2. Degree of Modification vs. Cave Entrance Size and Type.....	116
5.3.3. Degree of Modification vs. Cave Interior Size.....	117
5.3.4. Degree of Modification vs. Degree of Modification Inside the Cave .....	118
5.3.5. Degree of Modification vs. Duration of Cave Use.....	118
5.3.6. Degree of Modification vs. Distance and Time of Abandonment of Nearest Major Site .....	119
5.3.6.1. Direct connection .....	119
5.3.6.2. Close Association.....	119
5.3.6.3. Distant or the Nearest Site is Minor .....	121
5.4. Who Was Using These Spaces?.....	123
5.4.1. Elite Use of the Exteriors of Caves .....	125
5.4.2. Non-Elite Use of the Exteriors of Caves.....	127
6. Conclusions.....	130
6.1. Archaeological Approaches to Landscape.....	130
6.2. Expanding the Ritual Landscape Across the Maya Lowlands: Land Tenure and the Control of Resources .....	132
6.3. Public Spectacles: Ritual Performance as Discourse.....	134
6.4. Southern Lowland Strategy Networks: Trying to Save the Status Quo .....	135
Figures.....	139

Tables .....	233
References .....	251

## List of Figures

Figure 1. The Maya regions of Eastern Mesoamerica: Northern Lowlands, Southern Lowlands, and Highlands.....	139
Figure 2. The collapse of the Maya area occurred in three main phases based on the last monument dates at major sites, identified in this map after Gill et al. 2007:291.....	139
Figure 3. Map of the cave sites in my sample and the nearest major and secondary sites. ..	140
Figure 4. The terraced area surrounding the cave entrance. The cave extends south into the hills.....	141
Figure 5. Profile view of the terracing outside of the cave entrance. Terrace 2 is the location of the cave entrance. ....	141
Figure 6. Showing the terrace wall to the left (East) of the cave entrance. ....	142
Figure 7. Showing the construction in front of the cave entrance with the cobble/pebble floor visible in the front. ....	142
Figure 8. The pathway lined with small cobbles and pebbles into the cave between the terrace wall and the platform. ....	143
Figure 9. The pathway made accessible by means of a rough step up from the terrace floor. ....	143
Figure 10. Plan of the 2014 excavation of the path along the terrace and platform edges into the cave. ....	144
Figure 11. Profile of the 2014 excavation showing the construction of the construction of the side of the platform, the rise in the path, and the height of the cave ceiling above the construction. ....	144
Figure 12. The western entrance is midway up a hillside an appeared to be terraced. ....	145
Figure 13. A possible mound near the entrance to the cave.....	145
Figure 14. The mound appears to have been collapse from the dripline above - all stones were jumbled, mixed in sizes, and there was no cultural material recovered. ....	145
Figure 15. The area outside of the main entrance to ATM showing the locations of Structures 1-3, the shovel test pits, and the location of the modern pathway to the cave entrance which flows out into the river in the southwest of the map.....	146
Figure 16. The extent of the 1999 excavation of ATM-M1. After Song et al. 1999. ....	146
Figure 17. The southern half of the structure uncovered to reveal a step running the length of the structure. Also visible are the leaning partition walls in this half of the structure (with no noticeable break creating a corridor), the rough boulders forming the back of the structure in relation to the cut stone of the front of the structure, and how badly this half of the structure has sunk (likely due to the number of very large cieba trees in this area) over time.....	147

Figure 18. One of the slate pieces that was found on the platform in front of the structure. .... 148

Figure 19. Profile of the structure ATM-M1 running from west to east down to the camp area level. The platform in front of the structure is shown midway where the fill was removed down to bedrock with the piece of slate and cobble fill still visible towards the unit line. The slope down to the camp area not excavated this season..... 148

Figure 20. Plan of the Southern half of Structure ATM-M1. The back of the structure, visible along the left, are constructed almost entirely of rough boulders. The two lines of stones forming the partition wall do not run perfectly perpendicular to the front and back walls, however the rough construction of the side (southern) wall make it difficult to fully analyze their orientation in relation to this wall. There is no break in the partition wall that is visible. The platform in front of the structure is visible in the top right, along with the location of the slate pieces that were found. .... 149

Figure 21. The fill of the structure was made of dry core fill. The plaster of one of the floor was found to run under one of the walls of the partition, indicating its construction after the formal floor was laid. .... 150

Figure 22. Plan of the surface of structure ATM-M2 before excavation began. Numerous lithics and groundstone were visible on the surface, many of which were pointed out to us by tour guides who show them to their groups as they enter the cave. .... 150

Figure 23. ATM-M2 was found to be bounded by rough boulders and filled with cobbles and groundstone. A trench was dug into the center of it to confirm that this construction technique was used throughout. The stones to the west of the structure were hypothesized to be a platform extending off of the structure but the amount of bioturbation in this area makes this difficult to confirm. .... 151

Figure 24. Structure ATM-M2 with the preform that was found on top of it..... 152

Figure 25. Profile of the trench that was dug into the center of ATM-M2, confirming that the structure was built, or placed, in one phase directly on top of the clay and pebbles of the floodplain..... 152

Figure 26. The trench that was dug into ATM-M2. Note the construction directly on top of the clay, and the construction utilizing a very large proportion of groundstone visible in the profile. .... 153

Figure 27. The wall of STM-M3 with the small cobble and pebble fill of the interior of the structure. .... 153

Figure 28. Small pebble and cobbles were found a few centimeters below the surface on the interior of the structure. .... 153

Figure 29. The same sized pebbles that were found on the interior of the structure were also found at a level 30cm below the structure facing north towards the camp. .... 154

Figure 30. Profile of the structure showing (on the left) the difference in elevation of the structure fill and the pebble/cobble fill in front of the structure, as well as (on the right) the construction of the structure's wall being made of at least two courses..... 154

Figure 31. Running profile of the slope on which ATM-M1 is located down and across ATM-M2. The step seen in the profile of ATM-M1 is the southern side platform. No other steps or modifications were found in between these two structures that would indicate any. .... 155

Figure 32. The entrance to Nohoch Ka' Actun is located in a small cliff face and is not visible from the large terrace which has been constructed outside of it. .... 155

Figure 33. The exterior of Nohoch Ka' Actun is heavily modified with terracing, structures, and division of space..... 156

Figure 34. Structure 1 (in the left foreground) is relatively short in comparison with Structure 2 (in the right background). .... 157

Figure 35. Level 1 revealed the edges of the two mounds on either side of a raised channel, the north and south ends of which are set back from the edges of the mounds. .... 158

Figure 36. The second level cleared the collapse out of the channel and defined the ends. 158

Figure 37. Plan view of the raised channel in between the west and east mounds of Structure 1. .... 159

Figure 38. Unit 1A, Level 4 (left) revealed a degraded plaster floor which Level 5 (right) confirmed ran underneath the channel construction but abutted the base eastern mound wall. confirming that the two mounds were built separately at first and later joined by the channel..... 160

Figure 39. Level 6 revealed another plastered floor which ran under the mound walls..... 160

Figure 40. The base of Unit 1A off the northern end of Structure 1, showing the feature deposit of jute and ceramics. .... 160

Figure 41. Feature 1A-1: a cluster of jute in a broken ceramic vessel in the cobble fill of the terrace just above bedrock. The cluster of jute on top of the earlier floor is visible in the background (circled). .... 161

Figure 42. Profile of the eastern, southern, and western walls of Unit 1A off the northern end of the channel showing the different floor constructions running under the mound and channel constructions. .... 161

Figure 43. Level 2 had revealed some burnt clay, jumbled ceramics, and charcoal off the southern end of the unit. This matrix was removed as Level 3 in Unit 1A and also identified in the channel itself and collected as Level 3 in Unit 1C..... 162

Figure 44. Removal of the fire-hardened matrix showed the channel and mound construction directly on top of bedrock on the southern edge of the channel and mound construction. .... 162

Figure 45. Plan of the southeastern corner of the west mound along with the edge of the raised channel and the fire-hardened clay, ceramics, and charcoal that were found to have been placed over this end of the channel and structure. .... 163

Figure 46. Level 4 removed the fill from the southeastern corner of the western mound and revealed that the last construction phase of the mound wall on this side was built as an extension off of an earlier mound wall (visible behind the wall in the foreground). .... 163

Figure 47. The earlier wall was confirmed to be the corner of an earlier western mound construction in Level 5 when the corner of the structure became apparent – lining up with both a visible step on the southern side of the mound and with the stones forming the wall on this side of the channel. ....	164
Figure 48. The fire-hardened matrix (visible in the back right of the unit) in this area of the channel was removed as part of Level 5 to define the corner of the structure and the later channel wall, which incorporated a half of a rounded piece of granite.....	164
Figure 49. Middle of the channel showing the layer of fire-hardened clay, ceramics, and charcoal overlying an earlier deposit (Feature 1) of flat lying sherds and vases.....	164
Figure 50. Plan of the feature identified by flat lying sherds mounded in the center of the channel and abutting the channel walls on the southern half of the channel. ....	165
Figure 51. Mid-removal of the flat-lying sherds showing the sherds lying one directly on top of the other (facing south). ....	166
Figure 52. Feature 1C-1 shown abutting the eastern channel wall and sloping down to the north.....	166
Figure 53. Two vases were found underneath the flat lying sherds, apparently deposited whole and either broken upon deposit or over time due to the compression of the overlying material.....	166
Figure 54. Once the ceramic deposits were removed, the channel was shown to be a depth of ~70cm and filled in with cobbles.....	167
Figure 55. Level 2 of Unit 4 revealed a poorly preserved floor underneath the cobble fill of the mound. ....	167
Figure 56. Level 3 revealed a well preserved plaster floor which had a section cut into it with ceramic vessel fragments placed in it (visible in the top right of the unit). ....	167
Figure 57. Level 3 of Unit 4 revealed an intact plaster floor about 4cm thick with areas on it which were discolored (orange and grey) indicating possible areas of burning. The Southwest corner had a pit cut into it with ceramics placed in it. ....	168
Figure 58. Ceramics placed into a cut in the plaster floor.....	168
Figure 59. Level 4 went through the plaster floor down to bedrock and showed that the floor was ~4cm thick.....	169
Figure 60. Profile of the western mound showing the construction of the terrace on top of bedrock followed by the mound on top of it.....	169
Figure 61. Level 1 of Unit 5 in the middle of the eastern mound uncovered the construction fill. View facing the cave entrance. ....	169
Figure 62. Level 2 removed the construction fill down to the first degraded plaster floor. The western side of the unit appears to have a small stone wall but these stones are badly displaced and it is difficult to confirm.....	169
Figure 63. Level 3 removed the degraded floor down to a level of better preserved plaster floor which was at the same elevation as the plaster floor of the western mound.....	170

Figure 64. Level 2 of the east mound showing the plaster floor and small partition wall on the western side of this unit.....	170
Figure 65. Profile of the east mound which was terminated upon revealing a thicker plaster floor which correlates with the plaster floor in Unit 4. ....	171
Figure 66. Unit 2 was placed in a visible looters trench in order to provide quick access to assess the construction technique of this structure. ....	172
Figure 67. Level 1 of the looter's trench cleaned out the distinguishable debris from the looting activities down to a layer of cobbles and pebbles. ....	172
Figure 68. The front of this structure has visibly collapse outwards at the southwest corner. The northern edge of the unit shows better preservation with vertically stacked stones still visible in profile. ....	172
Figure 69. Unit 2 cleaned the looters trench and showed that the structure was built around a massive bedrock outcrop. ....	173
Figure 70. The structure was clearly built in one phase directly on top of bedrock. ....	173
Figure 71. The profile of Unit 2 facing north showed several alignments of limestone blocks and cut stones indicating a generally stepped and terraced shape to the western side of the structure. ....	173
Figure 72. Unit 3 was placed adjacent to Unit 2 on Structure 2 to determine the form of the structure. ....	174
Figure 73. Level 1 removed the overlying humic and collapse down to where some facing and cut stones were visible, the form indicating a series of steps down this side of the structure. ....	174
Figure 74. The location of steps were confirmed by large facing stones which did not appear to have moved and the deposit of a cluster of ceramics on top of and up against other stones indicating the corner where a step met a riser. ....	175
Figure 75. Plan of Unit 3 on the northern half of Structure 2. Several steps were decipherable based on the location of cut and facing stones, confirming that this western side of the structure was the front.....	175
Figure 76. Profile of Unit 3 along with hypothesized original placement of the steps on this side of the structure. ....	176
Figure 77. Map of Ofrenda Cave showing several entrances along the top left of the map where the title is located. The excavations outside of the entrances took place in this area.	177
Figure 78. Exterior of Ofrenda cave showing the U-shape created by the surrounding cliffs and the bounding of this U by a terrace running NW-SE across the eastern side of the area. ....	178
Figure 79. View up from the modern pathway from Terrace 3 up to Terrace 2, facing the direction of the cave. The tarp indicates the location of Unit 2. Exposed bedrock on the terrace wall is Unit 1. ....	179

Figure 80. Unit 1 excavations on the terrace wall east of the cave entrances showing the primarily natural boulders with large cobbles placed in between..... 179

Figure 81. Excavation of Level 1 revealed the tops of boulders in a curved alignment with cobbles mounded on top. .... 180

Figure 82. The pebble/cobble mixture in front of the boulders and running over the slope of the mound. .... 180

Figure 83. The pebble/cobble mixture was found to extend around the natural ridge along the base of the southern hillslope up to the bedrock outcrops there..... 181

Figure 84. Boulders in a curved alignment were found behind the pebble/cobble mixture in this area of the unit. They were all around the same size and were placed on bedrock at the same level..... 181

Figure 85. Trench excavation revealing the boulder construction behind the pebbles and steps..... 182

Figure 86. The limestone/rough chert biface that was found directly behind the bounding boulders of the mound. .... 182

Figure 87. Unit 3 on the northeastern edge of the mound, facing the southern hillslope. The boulders on the edge of this side of the mound formed an almost 90 degree angle with straight edges..... 182

Figure 88. The boulders along the north of the mound were resting on bedrock and lined up with a boulder midway across the mound (seen in weathered greenish grey just outside of the unit) and the boulders in Unit 2 (under the tarp). .... 183

Figure 89. The caves and major surface sites in my sample on the Vaca Plateau ..... 184

Figure 90. Map of the interior of Moth Cave, revised in 2015..... 185

Figure 91. Due to the angle of the entrance, Moth Cave remains unseen until visitors are on top of the constructed terrace. .... 186

Figure 92. The area outside of the cave entrance has a raised quadrangular mound with three structures on the North, West, and South sides. .... 186

Figure 93. The view to the cave entrance is unobstructed from the front of Structure 1.... 187

Figure 94. The unit was aligned with visible architecture..... 187

Figure 95. The purpose of the size of the unit was to uncover the collapse off the eastern side of the mound. .... 188

Figure 96. The structure has three tiers to it, ending on top with a small platform..... 188

Figure 97. The mound is shored up on the eastern side with a series of boulders, filled in with cobbles and other dry fill material..... 189

Figure 98. Some of the artifacts from this level included several granite fragments, lithics, and a stalactite fragment..... 190

Figure 99. Map of Unit 1 showing the tiered construction of both the mound and the structure. .... 191

Figure 100. The tumbled boulders from the first step were removed to reveal stacked stones indicating the true front of the structure. ....	192
Figure 101. Plan of the unit reduction indicating the first step. ....	192
Figure 102. The front step of the structure was left intact. Excavations took the fill behind this step down to bedrock and uncovered a plastered wall/surface in the back half of the unit. ....	193
Figure 103. Plaster was still evident on top of this substructure and on the step down to the north. ....	193
Figure 104. Plan of the close of Level 1 showing the two underlying plastered steps descending to the north. ....	193
Figure 105. The second plastered step was removed down to bedrock to collect construction fill that might help date this phase of construction. ....	194
Figure 106. Profile of Structure 1 showing the two phases of construction. ....	194
Figure 107. Structure 1 had a three-tiered construction overlying an earlier smaller structure which faced the opposite direction. ....	195
Figure 108. Unit 2 was placed at the corner of the terrace just before it turns north as this section was likely to have been the most heavily modified. ....	195
Figure 109. The terrace was constructed with two retaining walls made of large cobbles and small boulders. ....	196
Figure 110. The terrace joins up to the cave entrance and creates a level space in front of it. ....	196
Figure 111. Structure 3 faces away from the cave entrance. Unit 3 is oriented in line with the visible architecture running from the top of the structure to the patio floor. ....	197
Figure 112. Structure 3 is similar in form to Structure 1 with three tiers ending in a narrow platform at the top. ....	197
Figure 113. Plan of the three tiers of Structure 3, the top tier being better preserved than the top tier of Structure 1. ....	198
Figure 114 Profile of the unit, excavated to the fill underlying the stopes, which runs under the front step to the level of the patio floor. ....	198
Figure 115. Running profiles of the structures and mounds across the area outside of the cave entrance. ....	199
Figure 116. Area map outside of Moth Cave (in the top left of image) showing how Group A has been physically connected to the cave by a terrace. ....	200
Figure 117. The mouth of the cave would only be partially visible from the center of the patio if these stone foundations supported any type of perishable superstructure. ....	201
Figure 118. Plan and Profile of Actun Isabella drawn in 2010 showing the degree of modification in the interior of the cave. (Moyes and Awe 2010). ....	202
Figure 119. Map of the exterior of Actun Isabella. ....	203

Figure 120. The entrance to Actun Isabella in a large flat bowl surrounded by low hills. ...	204
Figure 121. The Western slope down to the cave entrance.....	204
Figure 122. Plan view of the cobble and boulder construction of the terrace.....	205
Figure 123. The top of the terrace had been leveled off with smaller cobbles and pebbles, larger boulders made up the edge of this terrace.....	205
Figure 124. Profile of Unit 1 showing the construction which raised and leveled the natural bedrock terrace. ....	206
Figure 125. Entrance to Macal Chasm.....	206
Figure 126. Terracing coming down one of the slopes of the sinkhole.....	206
Figure 127. Terrace 1 wall showing the stacked stone in between natural boulders.....	207
Figure 128. Figure 95. The construction of the terrace wall showing the fill on top of the terrace.....	207
Figure 129. Plan map of Level 2 showing the two-retaining wall style of construction with small pebble construction fill in between the boulders. ....	208
Figure 130. Profile of the terrace wall showing the retaining wall construction with smaller stacked cobbles on top of boulders and bedrock.....	208
Figure 131. Plan map of the area around the sinkhole and entrance to Macal Chasm, including the bounded flat area to the west of the sinkhole formed by the terrace and sakbe walls.....	209
Figure 132. The exterior of Actun Ho Ak, showing the terracing around the vertical drop entrance.....	210
Figure 133. Plan map and area profiles outside of Actun Ho Ak.....	211
Figure 134. The terrace wall next to the cave entrance where Unit 1 was placed. ....	212
Figure 135. Plan of level one, showing the construction fill behind the terrace wall.....	212
Figure 136. Profile of the terrace wall construction showing the stacked stone wall with pebble fill and natural sediments.....	212
Figure 137. Terrace wall furthest from the cave entrance.....	213
Figure 138. The base of the wall was found to be on top of bedrock, making the construction four courses high.....	213
Figure 139. The terrace wall construction consisted of larger stones in front, and smaller cobbles behind, filled in with pebbles. ....	213
Figure 140. Side view of the construction of the terrace wall. The fill consisted of limestone pebbles. ....	214
Figure 141. Profile of the terrace wall, seen resting on top of bedrock.....	214
Figure 142. Map of Las Cuevas showing the site organization and the location of the sinkhole and cave entrance in relation to the surface structures.....	215

Figure 143. The sinkhole was gridded off in 5 meter increments, creating 200 grid squares covering the entirety of the interior of the sinkhole, with the intention of covering 50% of the grids. ....	216
Figure 144. Shovel test pit density map of the sinkhole showing the high concentration in one area of the sinkhole only.....	217
Figure 145. The shovel test pit densities, excavation units, and surface exploration demonstrated that a single pathway ran from the gaps around Structure 11 down to the cave entrance.....	218
<i>Figure 146. Unit 22 Context shot facing North West with cave entrance in background.....</i>	<i>219</i>
<i>Figure 147. Unit 22 Plan Map showing denser concentrations of pebbles and ceramics at the base of the slope.....</i>	<i>219</i>
<i>Figure 148. Unit 22 Level 3 Closing photo showing midden fill at base of level.....</i>	<i>219</i>
Figure 149. Level 5 plan map showing the loose conglomeration of the boulders at the base of the unit. ....	220
Figure 150. Units 22A and 22B context shots. ....	220
Figure 151. Units 22A and 22B context shot facing north with the cave entrance in the background. Unit 22 is visible at the top of the slope that forms Unit 22B. ....	220
Figure 152. Level 2 Plan Map showing the midden fill in the East of the unit which coincides with the midden fill found in Unit 22. ....	221
Figure 153. Unit 22A Level 3 closing shot showing the proximity of bedrock in the majority of this level and the depth at which the base of the slope had been filled in with cultural material.....	221
Figure 154. Unit 22B surface context shot showing the slope of the unit with level areas at the top and bottom of the slope. ....	222
Figure 155. Unit 22B Level 3 showing level fill at the top of the slope, loose smaller boulders on the slope, and level fill at the base of the slope.....	222
Figure 156. Unit 22B Level 3 closing shot showing level midden fill at the base of the slope, loose smaller boulders on the slope, and the amount of debris that has collected on top of the boulders.....	222
Figure 157. Unit 22B Level 3 Plan Map showing the construction of the terrace with midden fill at the top of the slope, boulders placed on top of bedrock on the slope retaining that midden fill, and midden fill at the base again.....	223
Figure 158. Unit 22B Profile photo of southern unit wall showing boulders on top of bedrock with midden fill at the top and bottom of the slope. ....	223
Figure 159. Modern path and entrance to the cave, with Unit 31 to the left.....	224
Figure 160. Showing the location of Unit 31 in a clearing between palms at the base of Slope 1 and against the edge of the boulders fallen in from the top of the sinkhole at the cave entrance.....	224

Figure 161. Surface of Unit 31 showing its placement on a gentle slope at the base of Slope 1. ....	225
Figure 162. Unit 31 Level 2 showing a level of cobble-sized rocks underneath the silty clay. ....	225
Figure 163. Unit 31 Level 3 showing the boulders underneath the cobbles with the alignment of boulders in the south (back) of the unit.....	225
Figure 164. Plan Map of Unit 31 Level 3 showing the alignment of boulders in the Southern end of the unit. ....	225
Figure 165. Plan Map of Unit 31 Level 4 showing the courses of stones forming the wall in the south of the unit as well as the river cobble that was found at the base of this wall. ....	226
Figure 166. A shell pendent with two small holes in it which was collected as a special find from just above one of the stones of the wall. A river cobble in situ at the base of the wall in the Southwest corner of Unit 31. The river cobble likely came from the river near the site of Monkey Tail 4km to the east. ....	226
Figure 167. Photo showing the cut limestone block uncovered in the southwest of Extension 31A. ....	227
Figure 168. Photos showing the closing level of Extension 31A with the cut stones appearing as much lighter than the surrounding natural stones. The large cut limestone block in the southwest appears to have been cracked by the large root running underneath it. ...	227
Figure 169. Photos showing the outline of Extension 31C in relation to the other Unit 31 unit and extensions. The images show the placement of the unit on the lowest terrace of Slope 1 at the base of the bedrock outcrop on the Northern side of the sinkhole and to...	228
Figure 170. Photo showing Extension 31C surface level after clearing the overlaying brush with the one cut stone at the base of the bedrock protrusion in the south of this extension. ....	229
Figure 171. Photo showing the close of Extension 31C and the alignments of the cut stones (the lighter stones in the photo) running from the Northwest to the Southeast across half of the unit. ....	229
Figure 172. Photo showing the steps leading down the terrace from left to right. ....	230
Figure 173. Photo showing the steps leading down the terrace from left to right. ....	230
Figure 174. The locations of the Groups excavated in relation to the site core of Las Cuevas. Group 80 is located 20m west of Actun K'in K'aba.....	231
Figure 175. The terracing along the dripline of Entrance 1 – visible are the two main terraces or steps entering the cave.....	231
Figure 176. The sacbe running East-West from Group 80 towards Actun K'in K'aba.....	232

## List of Tables

Table 1. Settlement unit classification scheme established by the Xunantunich Archaeological Project (after Ashmore et al. 1994; Ehret et al. 1995). .....	233
Table 2. Settlement Type Classification for Exterior Cave Sites (continued on next page). 234	
Table 3. Rice Mill 3 Lot Numbers .....	236
Table 4. Rice Mill 3 Shovel Test Pits.....	236
Table 5. Actun Tunichil Muknal Lot Numbers .....	236
Table 6. Actun Tunichil Muknal Shovel Test Pits.....	237
Table 7. Nohoch Ka' Actun Lot Numbers .....	237
Table 8. Nohoch Ka' Actun Shovel Test Pits.....	238
Table 9. Ofrenda Cave Lot Numbers .....	239
Table 10. Ofrenda Cave Shovel Test Pits.....	240
Table 11. Moth Cave Lot Numbers .....	240
Table 12. Moth Cave Shovel Test Pits .....	241
Table 13. Actun Isabella Lot Numbers.....	242
Table 14. Actun Isabella Shovel Test Pits .....	242
Table 15. Macal Chasm Lot Numbers .....	243
Table 16. Macal Chasm Shovel Test Pits.....	243
Table 17. Actun Ho Ak Lot Numbers .....	245
Table 18. Las Cuevas Lot Numbers .....	245
Table 19. Las Cuevas Shovel Test Pits.....	246
Table 20. Actun K'in K'aba Lot Numbers.....	248
Table 21. Actun K'in K'aba Shovel Test Pits.....	249

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## PUBLICATIONS

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### Journal Articles (Peer Reviewed)

- 2016 Mostern, Ruth and Marieka Arksey. 2016. Don't Just Build It, They Probably Won't Come: Rethinking Data Sharing in the Historical Quantitative Social Sciences. *International Journal of Humanities and Arts Computing*, 10.2:205-224.

### Conference Proceedings

- 2015 Arksey, Marieka and Holley Moyes. Ancient Maya Ritual Pathways: Performing Power Outside the Cave at Las Cuevas, Belize. In *Breaking Barriers: Proceedings of the 47th Annual Chacmool Conference November 7-9, 2014*. Edited by Robyn Crook, Kim Edwards, and Colleen Hughes. Calgary: The Chacmool Archaeological Association of the University of Calgary. Pp.106-117.
- 2015 Moyes, Holley, Mark Robinson, Barbara Voorhies, Laura Kosakowsky, Marieka Arksey, Erin Ray, and Shayna Hernandez. Dreams at Las Cuevas: A Location of High Devotional Expression of the Late Classic Maya. In *Research Reports in Belizean Archaeology 12: Papers of the 2014 Belize Archaeology Symposium*, edited by John Morris, Melissa Badillo, Sylvia Batty, George Thompson, pp.239-250. Institute of Archaeology, National Institute of Culture and History, Belmopan, Belize.

### Book Chapters

- 2017 Arksey, Marieka. Distorting Natural Boundaries: How the 'Naturalness' of Ancient Maya Ritual Pathways Enforced Political Control. In *The Humanities in a World Upside-Down*, edited by Ignacio López-Calvo. Cambridge Scholars Publishing, Newcastle upon Tyne, UK. Pp.160-180.

### Reports

- 2016 Arksey, Marieka. A Late Classic Group Connected to Moth Cave (Aka Possum Cave) in the Vaca Plateau. In *Report of the 2015 Belize Cave Research Project*. Edited by Holley Moyes and Marieka Arksey. Submitted to the Institute of Archaeology, Belize. Pp. 44-75.
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- 2014 Arksey, Marieka. Excavations in the Sinkhole. In *The Light and Dark Side of Las Cuevas: Archaeological Investigations of the 2013 Season*, edited by Mark Robinson and Holley Moyes. Submitted to the Institute of Archaeology, Belize. Pp. 55-84.
- 2013 Arksey, Marieka and John Walden. 2013. Las Cuevas Cave Entrance Chamber Test Unit 4. 2013. In *2nd Report of the Las Cuevas Archaeological Reconnaissance Project: The 2012 Field Season*, edited by Holley Moyes and Mark Robinson. Submitted to the Institute of Archaeology, Belize. Pp. 102-111.
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Project design and management; grant-writing; developing educational curricula and research trajectories for undergraduate and graduate programs; establishing CollectionSpace interface with California Digital Library; organizing public education forums; training and supervision
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- 2014-16 Ethnographer, Cave Vodou in Haiti Project, Haiti  
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- 2017 Religion, Ritual, and Power: The Ancient Maya Collapse in Context. California State University, Fresno. February 6.
- 2014 The Data Hoover Project. Collaborative for Historical Information Analysis (CHIA) Annual Meeting, University of Pittsburgh, September 6.
- 2010 Library of Ashurbanipal: Revisions and Future Directions in Digitization Methods. Cuneiform Digital Library Initiative (CDLI) Annual Meeting, the British Museum, UK, September.
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- 2015 Preservation, Technology, and Development. Co-Chair. Symposium presented by the Natural and Cultural Resources Preservation Interdisciplinary Group, University of California, Merced, December 3.
- 2015 The Intersection of Next Generation Technology and Resource Preservation. Co-chair. Symposium presented by the Natural and Cultural Resources Preservation Interdisciplinary Group, University of California, Merced, October.
- 2015 “Sustaining Cultural Identity through Ritual: Responses to Conflict and Catastrophe”. Session Chair. 48<sup>th</sup> Annual Chacmool Archaeology Conference, University of Calgary, November.
- 2014 “Bodily and Spatial Inversions”. Session Co-Chair. The World Upside Down Conference, Center for the Humanities, University of California Merced, April.
- 2014 2<sup>nd</sup> Annual World Cultures Graduate Student Conference. Co-Chair. University of California Merced, April.
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- 2016 Sacred Space and Social Solidarity During the Classic Maya Collapse. Cave Research Symposium. University of California, Merced. November 9.

- 2016 Expanding the Ritual Landscape: Politicized Use of the Spaces outside of Caves during the Terminal Classic Maya Collapse, ILAS@40: 40<sup>th</sup> Annual Institute of Latin American Studies Conference, La Trobe University, Melbourne, Australia, December 2.
- 2016 Comparing Cave Size to Degree of Modification Outside their Entrances. 81st Society for American Archaeology Annual Meeting: New Developments in Mesoamerican Subterranean Archaeology, Orlando FL, April 10.
- 2015 Late Classic Maya Cave Use: Ritual Transformation as a Strategy to Maintain Order. 48<sup>th</sup> Annual Chacmool Archaeology Conference, University of Calgary, November 14.
- 2015 Are We Still Reinventing the Wheel? Towards Successful Data Repository Design for Social Science History. 40th Annual Meeting of the Social Science History Association, Baltimore, November 12-15. (with Ruth Mostern)
- 2015 Keeping it Natural: Ancient Maya Modifications of the Ritual Landscape Outside of Caves, 80<sup>th</sup> Annual Society for American Archaeology Annual Meeting, San Francisco CA, April. (with Holley Moyes)
- 2015 Ancient Maya Cave Access: Spatial Control as Political Strategy during the Collapse, California Geographic Information Association Geosummit 2015 "Shaping the Growth of GIS Innovation", March.
- 2014 Visualizing Ritual Pathways, 47<sup>th</sup> Annual Chacmool Archaeology Conference, University of Calgary, November. (with Holley Moyes, Mark Robinson, Lauren Philips)
- 2014 The Cave at Las Cuevas, 12<sup>th</sup> Annual Belize Archaeology & Anthropology Symposium, July. (with Holley Moyes, Barbara Voorhies, Laura Kosakowsky, Mark Robinson, Erin Ray, Shayna Hernandez)
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- 2013 Ancient Maya Performance and Cave Rituals: Defining a Space for Public Participation, University of California Merced's 1<sup>st</sup> Annual World Cultures Graduate Student Conference, April.
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## SERVICE

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- 2017 Collections Management for Small Museums, Workshop organized as part of Community Heritage Network public outreach activities. University of California Merced.
- 2016 “Coulterville in the Digital Age” Exhibit, Coulterville, California. Events facilitating engagement with the public and local museum professionals.
- 2015-16 Co-Facilitator, Natural and Cultural Resources Preservation Interdisciplinary Group, University of California Merced
- 2015-17 Collections management consulting, Central Valley small museums and history centers; the Historical Museum Alliance of California.
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## AWARDS

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## TEACHING EXPERIENCE

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Human Origins (Spring 2014)  
Race and Human Variation (Fall 2013)  
Archaeological Interpretation (Spring 2013)  
Biological Anthropology (Fall 2012; Fall 2013)  
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History of Technology (Fall 2011)

### Workshops, University of California, Merced

PastPerfect and CollectionSpace: Introductory (2017)  
Collections and Database Management (2016-2017)  
Photographing Artifacts for Data Analysis (2013-2017)  
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- 2016-17 “Sea Spirits of Haitian Vodou”, Co-Curator, Multicultural Arts Center, Merced
- 2015-16 “Coulterville in the Digital Age”, Student Curator, University of California Merced & Northern Mariposa County History Center
- 2015 “The Americas Underground”, Curator, University of California Merced Library
- 2013 “Black Power\*Flower Power: Photographs by Pirkle Jones and Ruth-Marion Baruch”, Student Curator, University of California Merced’s UCM Art Gallery, Curator: Dr. ShiPu Wang
- 2012 “Bobcat Student Art Show”, Student Curator: University of California Merced’s UCM Art Gallery, Curator: Dr. ShiPu Wang

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Agisoft PhotoScan (intermediate)  
ESRI GIS suite (basic)  
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## Abstract

# EXPANDING THE RITUAL LANDSCAPE: POLITICIZED USE OF THE SPACES OUTSIDE OF CAVES DURING THE LATE CLASSIC MAYA COLLAPSE

by  
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Doctor of Philosophy in World Cultures and History  
University of California, Merced  
2017

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The 7-10<sup>th</sup> centuries C.E. collapse of the social, economic, and political systems of the Classic Maya in the Southern Lowlands was prompted by a series of long-lasting droughts, overpopulation, and deforestation. Across the Lowlands, the ways in which the events of the “collapse” were handled varied by region. During this period of chaos and transition, major changes occurred in the way that rituals were conducted in the Southern Lowlands. Caves, believed to be the source of clouds and rain, the entrance to the underworld, and a symbol of creation and life, had been coopted as sacred spaces early in the development of Maya social complexity by the elite classes for ritual performances to legitimize their positions in society. As the prosperity of the Classic period was upended into a period of chaos and volatility, the growing dissatisfaction with the divinely-appointed elite classes caused the populace to begin to question their world order. The inefficacy of the rulers of the Southern Lowlands in maintaining the established order during the events of the collapse was evident. The dramatic increase in water-related rituals taking place in caves during the collapse and their subsequent and widespread termination in the Southern Lowlands after elite abandonment is indicative of the crisis of faith that accompanied the ritual failures of the rulers during the collapse.

To date, very few studies of Maya cave archaeology have included the exteriors of caves, and no single systematic evaluation of the patterns of such exterior modifications has ever been conducted. In this dissertation, I turn to these archaeologically neglected spaces and introduce data from eleven cave sites across Belize which demonstrate that it is during the collapse that caves across the Southern Lowlands had their exteriors modified for the first and only time. I propose that it was the crisis of the Late Classic collapse that drove various groups to formalize the areas outside of caves for first time in order to expand public participation in their efforts to maintain order and reinforce a sense of community identity and social solidarity that was in real danger of being lost.

# 1. Introduction: Social Solidarity in Times of Crisis

The means whereby groups distinguish themselves from “others” and contribute to the creation of a group’s identity are embodied in codes and rules of a group’s social practices (Schatzki et al. 2001). The practices involved in creating boundaries around a group, be they conceptual spatial boundaries to demarcate a group’s political area or physical boundaries to demarcate spaces for different activities, are central to the formation of this identity. A group’s social identity is defined by a sense of knowing how one belongs in one’s social world (Tajfel and Turner 1979) and is structured through these processes of place-making. A sense of social identity is also a prerequisite for social solidarity – the willingness to band together with one’s in-group over an identified “other”, or out-group (Tajfel and Turner 1979).

Within a state-level society, maintaining social solidarity is often the responsibility of the rulership, at which point it often becomes conflated with ideological hegemony. In a political system such as that of the Late Classic Maya in which the rulers claimed divine descentance, ideological hegemony was a group agreement enacted most strongly through public ritual performances. The practices by which ancient Maya social identity and social solidarity were created were thus inextricably intertwined in both the production of space (Lefebvre 1991 [1974]) and public religious performances (Durkheim 1995 [1912]). However, these same practices are often used by dissenting groups to challenge the ruling classes and subvert the accepted social rules and norms (Aldenderfer 2012:24; Kertzer 1988:174; Marx 1970). These practices became increasingly important in times of crisis when groups are inclined to question their rulers.

## 1.1. Creating Boundaries, Creating Identities

Tim Ingold maintains that “no feature of the landscape is, of itself, a boundary. It can only become a boundary or the indicator of a boundary, in relation to the activities and performances of the people for whom it is recognized or experienced as such” (Ingold 1993:156). His concept of “taskscape”, in which the temporal practices which transpire in the landscape of a society help create the identity of the people and bring together the inanimate and animate worlds, maintains the centrality of social practices in defining one’s landscape (Ingold 1993). Tilley echoes the concept of taskscape when he argues that “space” is a medium rather than a container, socially produced, filled with dynamic contextual layering of human agency (Tilley 1994:9). How geographic objects are defined and identified is thus largely dependent on the practices of different cultures. Archaeological perspectives on landscape and the production of spatial boundaries by necessity emphasize these cultural practices (Green 1995; Ingold 2000; Wylie 2007:115), particularly as they surround power relations which are linked to the embodiment of social structures, concepts of “otherness”, hegemony, and contestation (Bourdieu 1977; DeLue and Elkins 2008; Lefebvre 1991 [1974]; Mauss 2006 [1935]; Merleau-Ponty 1958).

The locations that groups choose to identify with, claim, and demarcate is often based not only on available tangible resources, but aspects of the landscape which fit within a world view particular to that group. Paul Taçon explores the emotional aspect associated with “place” in saying that “certain landscape features invoke common responses in human

beings – feelings of awe, power, majestic beauty, respect, enrichment among them” (Taçon 1999:37). In turn, a group’s world views draw on the more salient elements of the physical and social settings and the natural environment in which they live (Tuan 1974:79). The influence of cultural values on the perception of the landscape is most salient when the landscape is transformed to match and enhance the world view of a culture. “Physical manifestations of upper, lower, and middle worlds can be found in the architecture, highlighting aspects of belief systems founded on landscape qualities” (Taçon 1999:40). Thus, a pattern can be discerned, “human-made sacred places modeled on a core set of natural places but embellished with unique artistry to reflect the cultural distinctiveness of given groups of people” (Taçon 1999:40).

Commonly situated within these more emotive spaces in the landscape, public religious practices are one of the most effective means by which groups create boundaries between themselves and “others”, thereby simultaneously creating a social identity and forming the social bonds necessary for social solidarity. “Symbolic boundaries are necessary even for the private organizing of experience. But public rituals which perform this function are also necessary to the organizing of society” (Douglas 1982:50). Religion, as a means of controlling forces external to the group, be they physical or spiritual, has as one of its primary functions the creation of solidarity. Religious memory acts through very specific features which intentionally play upon dimensions of mnemonic coding, leading to a sense of group history and identity, created through public group religious practices (Connerton 1989). In his work *The Elementary forms of Religious Life*, Émile Durkheim (1995:45 [1912]), stated that a religion is “a unified system of beliefs and practices relative to sacred things, that is to say, things set apart and forbidden—beliefs and practices which unite into a single moral community called a Church, all those who adhere to them”. Durkheim further argued that the moral harmony that group members experience originates in a shared belief in external forces, as expressed through religious rituals (1995:213 [1912]). Durkheim was the key proponent of the functionalist perspective of religion and one of the first to stress the collective, shared and enacted nature of religion (Lambeck 2002).

## 1.2. Ritual, Solidarity, Hegemony, and Resistance

Rituals, as the “practice of religion” are powerful means of locating one’s place in the universe and for dealing with external forces deemed to be out of one’s control. Rituals may also be the most stable element of religion, since it they are largely based on material practices which are being constantly reproduced and are assured uniformity in time and in space by a priestly body (Halbwachs 1992:116). Ritual language is a performative language; it is formalized and repetitive with a restricted vocabulary (Connerton 1989; Whitehouse and Laidlaw 2007). “Because they are deliberately stylized, they are not subject to spontaneous variation...” (Connerton 1989:44). Thus, while the meaning of a ritual can change drastically over time, the acts through which these meanings are conveyed remain stable vestiges of the past.

Religious rituals are distinguished from other forms of scripted, ceremonial behavior in that they invoke and involve sacred forces, and effect social transformations rather than merely mark them (MacAloon 1984:250; Sahllins 1985). Ritual provides an emotionally-charged means by which people can express their social dependence, identity, solidarity,

acceptance of an ideology or norm, legitimize their position in society, argue for a different social goal, organize themselves, communicate common allegiances and common political goals, link themselves to their heritage, and define power relations (Kertzer 1988). Durkheim was one of the first scholars to emphasize how emotional ritual experience is essential for the creation of social solidarity and to reinforce social norms (Durkheim 1995 [1912]; see also Cole 2004; Frazer 1967 [1922]; Kertzer 1988; Schieffelin 1985; Sosis and Alcorta 2003; Whitehouse 2002).

Ritual forms are also used for organizational purposes, to communicate common allegiances, and common political goals (Kertzer 1988). In Durkheim's functionalist perspective, hegemony can be beneficial to all members of a society in creating the glue that binds them together through a shared emotive response stemming from public performances and ritual practices (Durkheim 1995:41 [1912]). Because space is physical, social, and psychological, it is the control of the space, who uses it and for what purpose, that is critical in enforcing hegemony (Ngugi wa Thiong'o 1997:13-14). By means of both verbal and bodily enactments, ties can be created which enter into the groups' subconscious and create both a sense of social identity and social solidarity (Connerton 1989:12). By invoking instances of physically embodied profound *communitas*, public ritual performances provide the ability to reinforce social norms and question social power (Madison 2012; Turner 1969). Those that join the group are provided with a sense of belonging to something greater than their communities, and those that do not end up feeling left behind (Walker 2013).

Rituals are a powerful means by which authority figures or high-status individuals can express and perform the links to sources of power by which they maintain their social positions in a group. Ceremonies, performed in public spaces are conspicuous reminders of that claim to legitimacy – claims to ancestry, power, land, history and truth, religious superiority, and to a special position above “others” (Connerton 1989:17). The acting out of performances in front of a group is one way of advertising membership in that group. Those that do not participate in these signs and norms call attention to themselves and may be met with censure by the group in order to reinforce the strength of their convictions and impose order (Durkheim 1995:209-210 [1912]).

While the experience can be positive for participants, public performances can often include the calculated goal of instilling terror and fear into those who participate (Kertzer 1988:159, 167). This can be a means of keeping members in line, forcing solidarity through shared guilt, and even further heightening the emotional experience of participation (Kertzer 1988:180). Each participant remembers who went through the rituals with them and consequently, this can give rise to “fixed and exclusive ritual groups in which there is no easy way of adding to, or subtracting from, the established membership” (Whitehouse 2002:307). Religious communities attract members that preserve their own identities and interests, and those that differ from these interests will have a great deal of difficulty fitting in with the group (Halbwachs 1992: 98). Even in these types of public ritual performances, the satisfaction that is gained by the masses as a result of participating in the collective is (usually) deemed greater than the pains of not belonging.

Because of the central role that ritual and symbolism play in culture and political performances, rituals are also often used a tool in political struggles, to challenge conformity, and subvert the accepted social rules and norms (Aldenderfer 2012:24; Kertzer 1988:174; Marx 1970). Just as with hegemonic ritual practices, subversive groups will incorporate

archaic/previous forms of rituals while transforming the content of current models in order for their audience to accept the ritual as being not only effective, but based in some sort of truth. In this manner, cooption of the ruling party's "symbol system" (their space, ritual forms, symbols, etc) and incorporating them into new ritual form can promote the dissenting group's message, legitimize their claims, and ease the transition to a new system (Aldenderfer 2010:81; Kertzer 1988; wa Thiong'o 1997). This cooption can also take the form of repurposed traditions, claims to ancestry, or the re-use of a sacred place (Connerton 1989; Bloch 1986; Jennings 2008). These methods reaffirm a 'master narrative' after a time of crisis, even if the people performing the rituals might not be the same, and lends a sense of continuity and legitimacy to the new performers (Cole 2004:96-97; Schieffelin 1985:709)

### 1.3. Crisis Intervention

Overcoming the synchronic view that Durkheim took of culture in relation to ritual practices, Victor Turner's (1969) and Dwight Conquergood's (1988) approaches to performance and culture were to think of culture instead as a continuing process. This focus on process emphasizes how culture is made and remade through structures, symbols and performances in historically, culturally and temporality varied contexts (Madison 2012:185). This is particularly relevant when dealing with situations of crisis when social groups question their previously held beliefs (Bloch 2007:75), such as during the ancient Maya collapse of the 7-10<sup>th</sup> centuries. Clifford Geertz (1973:100) outlines three points at which chaos threatens society:

1. At the limits of analytic capacities
2. At the limits of powers of endurance
3. At the limits of moral insight

These moments of crises all become challenges to the accepted social and ideological order.

Both Cole (2004) and Schieffelin (1985) highlight how public ritual performances can be used to heal both individual and social ills in times of crisis and chaos. Chaos is closely linked with social impurity and cleansing rituals can be used to heal both individuals and the community of social ills (Cole 2004:93). These performances require group participation and have wide repercussions for the community at large (Cole 2004:96; Schieffelin 1985). They are a means of transforming a current personal and social reality into a 'post-illness', ideal reality; a reaffirmation of the "master narrative" that the entire group has long been engaged in creating and confirming (Cole 2004:96-97; Schieffelin 1985:709). The ritual is most effective through its ability to emotionally link pain and bodily practices to the collective construction and reconstruction of social memories and identity as part of an ongoing group narrative (Cole 2004).

Comparing how rituals can maintain group cohesion in situations of order and chaos, Laidlaw (2007:4, italics my own) outlines two distinct kinds of group solidarity that can arise through the use of rituals:

1. Practitioners of a religion with routinized liturgical rites may come to know the central dogma of their religion implicitly, almost indeed unconsciously, so routinized does their participation become, but they may have absolutely no memory of when or with whom they learned them. This is the basis for

*widespread but impersonal* solidarity among those who share the same body of doctrine.

2. Those who have gone through a unique, traumatic experience together are likely to have in common the vivid, detailed, emotionally charged episodic memories of the event, including precise recall of others who were present at the time. This can be the basis of a different kind of solidarity, *intense and personal but limited to far fewer people*.

These two kinds of solidarity in turn give rise to different kinds of leaders, different social identities, and different levels of coherence (Whitehouse and Laidlaw 2007).

The latter form of solidarity, brought about after a moment of crisis, is frequently achieved through a return to the authority of archaic forms of religion and ceremonies (Connerton 1989: 58) into which new meaning can be vested, such as in certain revitalization movements.

“In preliterate as in literate societies sacred languages contain an archaic component, whether in the form of a totally different language or whether in the partial preservation of another idiom: and this archaic component remains so long as rites refer back to a period of revelation and insist on the authority of true tests properly transmitted either orally or in written form. ...It is of the essence of sacred utterances that they should have been submitted to a minimum of modifications since their origin. Their efficiency is in their uttered repetition” (Connerton 1989:67).

This can take the form of traditions, claims to ancestry, or the re-use of an existing sacred place. “People act in terms of what they know and what they know is the product of their historically constructed culture. They may transform and change this culture but they do not do it from a zero starting base” (Bloch 1986:10). Any new ritual forms must maintain some sense of consistency with the older forms - otherwise the transition will be too jarring and the public will reject it (Kertzer 1988:166, 169-172). New rituals or modifications to existing rituals are therefore based in part on previous, taken-for-granted beliefs and practices because those aspects of religions continue to structure world views (Jennings 2008:179).

#### **1.4. Maintaining Social Solidarity among the Late Classic Maya**

Identifying features of the landscape that were modified and used for religious purposes can inform interpretations of what these spaces afford people in terms of social functionality. Archaeological investigations of the ancient Maya use of caves for rituals and ceremonies have long focused on the interiors of these underground spaces as the sole venue for these practices. Over the past few years however, research in Belize has begun expanding to include the areas immediately outside of these often spatially, and potentially socially, restrictive natural features of the landscape. Nonetheless, to date, no single systematic evaluation of patterns of such exterior modifications has been conducted. Investigations of over 70 ritual cave sites across the country of Belize by the Las Cuevas Archaeological Reconnaissance Project directed by Holley Moyes (University of California, Merced) and the Belize Cave Research Project directed by Holley Moyes and Jaime Awe (University of Northern Arizona, Flagstaff) have yielded surprising findings: at least nine of the caves have modifications or construction directly outside of the entrances. These

modifications took place for the first and only time during the Late Classic (Arksey 2014; Arksey and Moyes 2015), a period characterized by droughts, overpopulation, the failure of Maya rulership, and a complete restructuring of the social hierarchy in the Maya Lowlands. Thus, these modifications – clearly associated with sacred features of the ritual landscape – are an ideal paradigm from which to question how ritual practices were used to reinforce, and potentially question, social rules and norms during a time of crisis and chaos.

I turn to these archaeologically neglected spaces and investigate 11 caves across the northern half of Belize to attempt to determine for the first time who was using these spaces and for what purposes. I propose that, during a time period associated with the rising political complexity and the subsequent failure of Maya rulership and social hierarchy in the Maya Lowlands, the crises of the Late Classic collapse drove many of the rulers, both of major sites and local, lower-level rulers across the Southern Lowlands to formalize the areas outside of caves for first the time to allow for a greater audience participation in cave-related rituals than ever before. This expanded the visibility of their efforts to maintain order and reinforced a sense of community and social solidarity that was in real danger of being lost. Interpretations of these exterior spaces will contribute novel interpretations to discussions of ritual, performance, and power with specific reference to the transformation of ritual in this period by the elite to allow for greater public participation in state-sponsored ritual practices may have been opposed by local communities employing the same methods to coopt these traditionally elite spaces as a means of resistance and to critique social rules and norms. My research will also help to address the ancient Maya conception of ritual space and expand the archaeologically-determined spatial boundaries of these spaces to more accurately reflect their use and incorporation in Maya ideology.

## 2. POLITICS AND RITUAL AMONG THE ANCIENT MAYA

Ancient Maya rulers have used caves as ritual performances spaces since the earliest social stratification (Brady & Ashmore 1999:128; García-Zambrano 1994; Heyden 1975:139; Lorenzen 1999; McAnany 1995; Moyes 2006a; Moyes and Prufer 2013; Moyes and Awe 2010; Moyes et al. 2009; Stone 1995; Taube 1985). The Maya believed caves and other underground features to be the source of clouds and rain, the entrance to the underworld, and a symbol of creation and life (Bassie-Sweet 1991, 1996; Brady 1997:603; Brady and Ashmore 1999:126-7, 133; Heyden 1975:134; Lorenzen 1999; McAnany 1995; Moyes et al. 2009; Moyes and Brady 2012; Taube 1985:175) and as such, the elite classes coopted many of these sacred spaces to legitimize their positions in society. This is most strongly evident in the numerous major temple structures that have been built directly over top of caves across Mesoamerica (Anderson 1956-57; Brady 1997; 1991; 1997:611; Brady and Ashmore 1999; Carlson 1981:179; Fox 1978; Heyden 1975; 1973:139; Ichon and Viel 1984; King et al. 2012; Lundell 1934:177; Moyes et al. 2011; Thompson and Thompson 1938).

Two thousand years of cultural development enabled these rulers to create a position for themselves in society known now as “divine kings” – charismatic priest-rulers of the ancient Maya city-states responsible for interacting with deities and for controlling the cosmos (Demarest and Rice 2005; Lorenzen 1999; McAnany 1995; Moyes et al. 2009; Schele and Miller 1992; Taube 1985). Because of caves’ strong symbolic attachment to life and water, dependence on them increased significantly during times of crisis, such as during the droughts of the Terminal Classic Maya collapse of ~C.E.750-950 (Arksey and Moyes 2015; Gill 2001:344; Moyes et al. 2009).

Climate change, exhaustion of soils, disease, earthquakes, war, peasant revolts, invasion, disruption of trade networks, and ideological breakdown are believed to have each contributed in varying degrees to the centuries-long Terminal Classic Maya collapse of the Southern Lowlands in Central America (Figure 1) (Chase and Chase 1992; Chase and Chase 2006; Demarest 2013; Demarest and Rice 2005; Kennett et al. 2012, Lucero 2006; Sharer 2006; Thompson 1966; Webster 2002). This resulted in a collapse of the social, economic, and political systems which led to dissatisfaction with the “divinely appointed” rulers who were forced to abandon their positions in major city centers, often migrating to more well-off parts of the Maya area, leaving the area in a turmoil from which it could not rebound (Figure 2) (Coe 1993; Demarest and Rice 2005; Gill 2001:344; Hamblin and Pitcher 1980; Henderson 1997; Lucero 2006; Moyes et al. 2009; Webster 2002).

During this period, major changes occurred in the way that rituals were conducted. The number of water-related rituals taking place in caves increased dramatically (Moyes et al. 2009:200), yet the desertion of the Lowlands by the elite resulted in the complete abandonment and occasional sealing off of caves that had been in use for two thousand years (Moyes et al. 2009:185, 200-1). Moyes and her colleagues have suggested that the increase in these activities and the reasons for their subsequent abrupt and widespread termination is related to the loss of faith that accompanied the ritual failures of the rulers to overcome these environmental changes (Lopiparo 2001; Lucero 2006:187; Moyes et al. 2009:201; Webster 2002).

The specific response strategies to the events of the collapse by rulers remains ambiguous because of the lack of correlation between site-specific data and broader archaeological sequences (Kennett et al. 2012). Further confounding this, evidence shows

that there was great disparity in the timing and regional patterns of the collapse (Peterson and Haug 2005). Because of these discrepancies, my methodology has included selecting sites across the country of Belize so as to consider proximity to sites of varying size. Based on the theory that cave entrance size may be related to status – larger more impressive caves belonging to the elite, rock shelters to the non-elite (Glassman and Villarejo 2005; Stone 2005) – a diversity of sizes of caves, sizes of cave entrances, and methods of access are included in my sample. To address how rituals may have differed over time and space both within and between sites, I mapped the site with attention paid to the natural as well as the built landscape, excavated shovel test pits and broader excavation units, and inventoried artifacts. I used a Geographic Information System (GIS) to map the constructed and natural features of the site, geo-reference artifacts, analyze artifact densities, and visualize spatial relations.

Because caves are purely ritualistic features of the Maya landscape, they enable a framework in which to address changes in the material aspects ritual practices, cross-cultural approaches to spatial perception, the dynamics of power during times of crisis, and the environmental effects on ritual and society. Following the interpretive perspective advocated by Shanks and Hodder (1995) which embraces the inclusion of multiple theoretical perspectives and methodologies to approach the human elements of the past, I employ a performance-based approach, focusing on the ways in which religion, the production of space, and symbolism are enacted by the state to reinforce hegemony. Based on the knowledge that these spaces were all being modified and used for the first time during this time of crisis and intense social upheaval, I use a theoretical framework which focuses on the potential of ritual and performance participation to reinforce a sense of social solidarity (Durkheim 1995 [1912]; Frazer 1967 [1922]; Schieffelin 1985; Turner 1969; Whitehouse 2002).

The abundance of recently discovered caves in Belize presents archaeologists with an excellent opportunity to expand cave research into areas never before explored. Unfortunately, the overwhelming majority of Maya cave studies have focused exclusively on the often small and constricting interior of the caves as the singular spaces associated with cave-related rituals and, until recently (Brady and Taleghani-Nia 2015; Halperin et al. 2001; Spenard 2014; Woodfill 2007), very few have even peripherally examined how these exterior spaces functioned for ancient people. This has been due in large part to the clear lack of visible architecture and material remains. However, ethnographies of modern Maya in Mexico, Guatemala and Belize show that the Maya also use the area outside the cave a sacred space for agricultural rituals and that there may be no clear features for delineating the “sacred boundary” surrounding the cave (Christenson 2008; Demarest and Woodfill 2009; Scott 2009; Woodfill 2010). Additionally, many caves have open areas outside of their entrances, have large entrance chambers in which hundreds could gather, or could be viewed from a substantial distance from the surrounding landscape. In this regard, performances associated with caves would have served not only the ruling elite in reaffirming certain individuals’ right to rule, but the entire community’s confidence in their rulers, and it is entirely plausible that these performances could have taken place in proximity to caves when their interiors were not suitable.

In an attempt to fill this gap in knowledge, and based on the hypothesis that the spaces outside caves might offer the possibility of wider public participation in what have been interpreted as restricted ceremonies, I conducted excavations with the Las Cuevas

Archaeological Reconnaissance Project (Holley Moyes, Principal Investigator) and the Belize Cave Research Project (Holley Moyes and Jaime J. Awe, Principal Investigators) into these previously uninvestigated areas. Excavations outside of 11 caves in Northern, Western and Central Belize have shown that not did the Maya use these spaces in relation to rituals taking place within caves, but the Maya did so for the first and only time during the collapse. These spaces are much more open than the extremely physically and socially restricted spaces inside of caves, and this shift could indicate a massive change in the ritual program of the ancient Maya as a response to the events of the collapse.

## **2.1. Ancient Maya Social, Political, and Ritual Development**

### **2.1.1. The Preclassic Period (2000 B.C.E. – C.E. 250)**

During the Early Preclassic (2000 B.C.E. – 1000 B.C.E.) improvements in farming techniques enabled a relatively rapid dispersal and appearance of Maya villages, though these developments were slower to arrive in the Southern Lowlands than in other areas of Mesoamerica (Coe 1993). During this period the Maya invented pottery and increased their population and class differences, including the creation of ranked societies with religious and political leadership, public constructions, and long-distance trade networks (Coe 1993; Demarest 2004).

In the Middle Preclassic (1000 B.C.E. – 300 B.C.E.) the social complexities that marked only some of the Maya areas quickly spread to the rest, including the Southern Lowlands for the first time with settlements the size and complexity of cities (Coe 1993; Demarest 2004). At Cival in the Petén region of Guatemala, a cruciform cache on the centerline of the eastern platform connects this deposit to a solar ritual associated with the Maya agricultural cycle and marks this eastern structure as part of a public ceremonial complex (Estrada-Belli et al. 2003). A Preclassic stela portrait from the same site with stylistic similarities to one at Cerros, Belize, along with the architectural context in which the cache and stela were found identify these features as some of the earliest examples of public rituals associated with ascension to power among the Preclassic Maya (Estrada-Belli et al. 2003).

It is during the Late Preclassic (300 B.C.E. – C.E. 250) that many of the traits which came to define the Classic Period Maya originate (Demarest 2004). Elaborate architectural embellishments, artistic styles including detailed iconography, and enormous temple complexes arranged around central plazas are all present in the Late Preclassic Maya Lowlands (Coe 1993). These physical traits of the Late Preclassic are indicators of the dramatic rise in social, political, and ideological complexity of the Maya by the end of the Preclassic Period. Aside from the peasant, farmer, and mercantile classes, the newly defined elite classes comprised the rulers, priests, scholars, and soldiers and their respective families who lived in the stone palaces found near the pyramid-temple complexes or in nearby compounds of thatched houses (Chase and Chase 2004; Hamblin and Pitcher 1980; Healy et al. 2007; Henderson 1997; Houston and Stuart 1998). In the Late Preclassic the creation of the concept of “divine kingship” rises out of the elite classes in which there existed a complete reliance on one *K’uhul Ajaw* (Holy Ruler) who maintained a tenuous hold on power

in the area (Demarest and Rice 2005; Freidel 2008; Freidel and Schele 1988; McAnany 1995; Schele and Miller 1992).

### 2.1.2. The Classic Period (C.E. 250-950)

Throughout the approximately 700 years of the Classic Period, the surviving Preclassic centers were supplemented and supported by newly emerging settlements. The Classic Period Maya of the lowlands are defined by the introduction and spread of writing. The Classic Maya had an elaborate calendar, writing, temple-pyramids and palaces of limestone masonry with vaulted rooms, architectural layouts emphasizing buildings arranged around plazas, polychrome pottery, and an art style utilizing bas-reliefs and wall paintings (Coe 1993:47; Demarest 2004).

Conflicts over control of resources and trade routes between Tikal, Caracol, Calakmul, and Naranjo began at the end of the Early Classic period and continued into the Late Classic (Martin and Grube 2000; Demarest 2013). These wars and conquests are known from archaeological as well as epigraphic texts. Initially, the ruler of Caracol who came to the throne in 553 C.E. was placed there under the sponsorship of the ruler at Tikal. However, after Tikal acted against Caracol just a few years later, the relationship deteriorated and Tikal was conquered by Calakmul and their new allies at Caracol, in 562 C.E (Martin and Grube 2000; Demarest 2013:30-31).

The economic system included tribute, paid from subordinate groups to dominant groups and local elites (Demarest 2004). In this system, the rulers, as both state and religious leaders, served as the primary mediator between these tributaries, their payments, and the cosmos. While their direct role in the economics of the state is uncertain, it is clear that they were centrally involved in ritual, religion, and warfare (Demarest 2004:173). In Classic Maya religion, ancestor worship continued to play an important role at both the non-elite and elite levels of society, evidenced in the architecture of household shrines and temple complexes (McAnany 1995). Moving the ceremonies associated with ancestor worship, along with other traditionally household or community-level ceremonies to the larger temple complexes in the Classic period facilitated, and perhaps necessitated, a more theatrical turn by the elites in their performance of these rituals for a growing populace (Demarest 2004; Inomata 2006; Inomata and Coben 2006).

Iconography of this time shows that the Classic Maya often placed the *K'uhul Ajaw* at the center of the world, visibly responsible for maintaining the order of the universe and acting as correspondent between the living world and the other worlds (Demarest 2004). As part of their tribute to the deities, rulers were often depicted engaged in bloodletting rituals and it is thought that by burning parchment soaked in the rulers' blood, messages could be taken up to the deities through the rising smoke (Demarest 2004:184-188; Schele and Miller 1986). With only one individual held responsible for the flow of the universe, when things were going well, they went really well – but when they went badly, the ruler could potentially be held solely responsible for the outcome (Demarest 2013).

### 2.1.3. The Late Classic and the Collapse (~C.E. 750-950)

By the end of the Classic period in the Southern Lowlands, royal elites had solidified their divine status, a status which required them to demonstrate their power through use of symbols and the performance of rituals designed to control the cosmos. The Maya groups continued to grow in complexity and size, reaching their peak by the Late Classic in not only political complexity and social diversification, but agricultural intensification, art, writing, mathematics, and the skilled specialists required to innovate, learn and transmit those skills to others (Martin and Grube 2000; Demarest 2004). These specialists emerged out of the Preclassic and created a middle class by the end of the Classic period, within which a certain degree of social mobility was possible (Demarest 2004:171).

However, during the Late Classic period, a combination of factors challenged the royalty's ability to perform and maintain their power. Climate change, exhaustion of soils, disease, earthquakes, war, peasant revolts, invasion, disruption of trade networks, and ideological breakdown are believed to have each contributed to the centuries-long Terminal Classic Maya collapse of the Southern Lowlands in Central America (Chase and Chase 1992; Chase and Chase 2006; Demarest and Rice 2005; Demarest 2013; Kennett et al. 2012, Lucero 2006; Moyes et al. 2009; Sharer 2006; Thompson 1966; Webster 2002). This resulted in a collapse of the Classic Period social, economic, and political systems which in turn affected the foundational concept of divine rulership.

In the southwestern Petén, the differences in social and political structure, site dispersal, and access to resources caused the sites there to deal with these issues differently than in the Southern Lowlands. Intensification of existing pre-collapse warfare between those rival centers as seen through the construction of walls, burning events, texts, art, and artifacts all point to a more destructive response in the southwestern Petén than in the Southern Lowlands (Demarest 2004; Demarest et al. 1997; O'Mansky and Dunning 2004). Hamblin and Pitcher (1980) have argued that these types of shifts in class structure may have been a precursor to the collapse events at sites such as Tikal and Piedras Negras, as evidenced by the destruction of elite faces in Classic monumental art while leaving 'peasant faces' intact, indicating dissatisfaction with the elite and potential uprisings. Indeed, it is along the major trade route along the Pasión-Usumacinta River, that the collapse is seen earliest in the Southern Lowlands (Demarest 2013).

Following Tikal's defeat in C.E. 562, the allied Caracol and Calakmul maintained a series of wars with Naranjo which lasted over a century until Naranjo defeated Caracol in 680 C.E (Chase and Chase 1989) and Calakmul was defeated by Tikal in 695 C.E. (Demarest 2013). Caracol began a hiatus after this defeat that lasted until almost C.E. 800. During this time, Naranjo became connected to Dos Pilas through marriage and was involved in a series of conflicts, including an attack by Tikal which lasted from 744-780 C.E., before aligning itself with sites along the Belize River Valley by 815 C.E. (Martin and Grube 2000). Based on the erection of monuments to commemorate calendric events, it is assumed that Naranjo was abandoned sometime between 810 and 830 C.E., though it does appear that there was a minor reoccupation at the end of the 9<sup>th</sup> century which did not last very long (Martin and Grube 2000:11). While there is evidence at Caracol that they continued their warlike activities into the Terminal Classic, the last text from this site indicates a date of 859 C.E. and it was abandoned approximately 100 years thereafter (Chase and Chase 2013).

In Belize, numerous sites saw a dramatic increase in construction phases and establishments of new secondary and minor centers early in the Late Classic. The rapid growth of the elite classes at the existing major centers, the need for greater resources to sustain a growing population, and the need for more trade goods to exchange and compete with the other growing polities of the Maya area led to the creation of numerous secondary and minor centers during the Late Classic. The placement of Late Classic centers at key areas of resource control, such as the Late Classic center of Lower Dover at the confluence of three rivers in the Belize River Valley, and Las Cuevas over the site of a large and unique cave, was a strategy to maintain a concentration of power in the hands of major and stemming the potential usurpation of power by rival groups. This process further blurred the lines between elite and non-elite, reinforcing an increasingly fluid social structure with numerous local rulers and ritual specialists with indeterminate connection to major centers.

When the events of the collapse began, these secondary centers were quickly abandoned when the larger and more established sites of the area were abandoned (Chase and Chase 1989; 2013; Demarest 2013; Martin and Grube 2000). Throughout the lowlands, this dramatic shift in the structure of economic power away from the divine rulers who controlled the old inland Classic polities led to the rise of a new mercantile elite. Further changes in class structure resulted from the social and economic vacuum created following the abandonment of centers by the elite during the collapse (Hamblin and Pitcher 1980). In the Southern Lowlands, especially in Belize, these re-focused mercantile elite groups reoccupied some old capitals and started expanding into the emerging states in the northern Yucatan, the highlands of Guatemala and Mexico, and newer mercantile centers along the Gulf and Caribbean coasts (Andrews et al. 1988; Freidel and Sabloff 1984; Guderjan and Garber 1995; Masson and Mock 2004; Sabloff and Rathje 1975).

When the world around the Maya groups living in the Southern Lowlands fell apart, the belief in the ruler as divine became harder to maintain and led to the higher elites being forced out of their positions and leaving the area, causing further social and economic disruption (Webster 2002; Lucero 2006; Moyes et al. 2009; Demarest and Rice 2005). Arthur Demarest (2013) argues that in contrast with the smaller C.E. 534 – 593 “Early Classic Hiatus” in the Southern Lowlands, the conditions leading up to, and during, the “Terminal Classic Collapse” were much more extreme. Power in the Maya political and religious system had become much more focused in a single person, the result being an event from which the Late Classic Maya were unable to rebound (Demarest 2013).

## **2.2. Maya Cave Use**

### **2.2.1. The Interiors of Caves: Ancient Maya Cave Use in the Southern Lowlands**

The earliest evidence of regular ritual cave use comes from the Early-Middle Preclassic period (~1000B.C.E.-C.E.250), in conjunction with the earliest settlements and the association of caves with water and agriculture (Awe 1992; Bonor 1989; Brady 1989, 1997; Garber et al. 2004; Moyes 2006a; Moyes et al. 2017). The use of a setting such as caves was likely among the first steps of rising elite classes in demonstrating their control over the forces of nature and validating their social climb.

Preclassic ceramics have been found in caves in the Yucatan, Mexico, Guatemala, and Honduras (McNatt 1996:84). In Belize, one probable Late Preclassic sherd was found in Eduardo Quiroz Cave (Pendergast and Savage 1971), and several sherds from the same period were recovered from Caves Branch Rock Shelter (Garza et al. 2001). The small number of Preclassic ceramics known from Belize caves is probably a result of the incomplete nature of archaeological investigations, rather than the lack of cave use during this period (McNatt 1996:84).

Previous archaeological research on the Vaca Plateau at Chechem Ha Cave has been important in understanding increases in population density and social complexity in the Macal Valley (Moyes 2006a; Moyes 2006b; Moyes et al 2006). Radiocarbon dates from this cave in the Early Preclassic period (1200–800 B.C.E.) establish it as the earliest ritual cave in the Maya Lowlands, contemporaneous with early settlers of the Belize River Valley (Moyes 2006a; 2006b; Moyes and Awe 2010:2). Its early use may indicate its function as a pilgrimage site for the Belize Valley settlers (Moyes and Awe 2010:2). Actun Isabella is located in close proximity to the Minanha site core in the Vaca Plateau and AMS dating shows that its use began shortly after that of Chechem Ha and carried through into Classic periods until as late as C.E. 860 (Moyes and Awe 2010). The early dates make this one of the oldest dated caves in the Maya Lowlands (Moyes and Awe 2010). That the two caves in the Maya Lowlands which show the earliest dates are located in the Vaca Plateau bears recognition. These early dates and the continued use of these caves until the Late Classic have significant import on their interpretation in relation to growing social and political complexity in the area.

As the Maya groups grew in number and increased in complexity, these cave settings demonstrate continued use by higher status individuals (Awe and Helmke 2005; Moyes and Prufer 2013). The use of a setting such as caves, which had been used for centuries before the rise of ritual specialists in the Late Preclassic, was likely among the first steps of the rising elite to demonstrating their control over the forces of nature and validating their social climb (Moyes 2006a:45-84; Moyes and Prufer 2013). With the creation of the concept of “divine kingship” in the Late Preclassic (Sharer 2006), these rulers relied on these underground settings and cave rituals performed by ritual specialists to legitimize their power. By appropriating caves into the repertoire of ritual settings, the rulers of communities explicitly demonstrated their power over those natural forces responsible for the survival of the populace (Moyes 2006a). This would have had the additional effect of reaffirming their ties to their ancestry (McAnany 1995).

Coinciding with the increase in monumental architecture, the larger temple structures of the Classic period would on occasion be constructed over caves. In the Maya area, El Duende at Dos Pilas is constructed over a massive and modified cave system (Brady 1997:605-606; Brady and Ashmore 1999) as is the Bat Palace which is placed over the Cueva de los Murcielagos, and (Brady 1997:607-8). At Las Pacayas, 12.5 kilometers east of Dos Pilas, the “main ceremonial complex was constructed over the Cueva de los Quetzales and incorporated a skylight entrance to the cave at the border of the two principal plazas, near one of the highest pyramids” (Brady 1997:608). At the site of Las Cuevas, the Eastern temple structure is constructed over the entrance of a large and heavily modified cave (Anderson 1956; Moyes 2012a; Moyes et al. 2011). James Brady (1991:5) has argued that the 100-meter long artificial cave beneath the plaza at the Q’eqchi’ site of Utatlan (first reported by Fox 1978:24) represented their cave of origin. Polol in the Peten region of Guatemala was reported by Lundell (1934:177) to have a cave underneath a large pyramid. In Northern

Belize, the site of Maax Na has a small cave system which runs from the base the East Building in the North Plaza to the base of the hill on which it is constructed (King et al. 2012). At the site of La Lagunita, a man-made cave excavated during the Late Preclassic ran from the foot of one of the principal pyramids to terminate in the center of the main plaza (Ichon and Viel 1984). At the Yucatan site of Chichen Itza, it has been suggested that in addition to the pyramid Osario having a cave beneath the pyramid's center (Brady 1997:611; Thompson 1938), the entire site core is arranged in such a way as to place main temple structures on axes formed by connecting Cenote Xtoloc and the Cenote of Sacrifice (Carlson 1981:179). Mayapan has several cenotes that run under structures, including the Cenote of Ch'en Mul in the main ceremonial group over top of which Brady (1997:611) argues several of the structures were intentionally placed. In Central Mexico, the Pyramid of the Sun at Teotihuacan is constructed over a snaking artificial cave with seven lobes at the end signifying a cave of origin (Heyden 1975). Doris Heyden (1973:139) also notes how in nearby Oztoticpac the Colonial chapel is built over a cave, likely replacing an older pre-conquest shrine in the same spot. Additionally, the entrances to the chambers at the top of these temple pyramids have been associated structurally to caves within mountains, both representing portals of communication with the underworld and the ancestors (Coe 1988 [1967]; Schele and Friedel 1990:71-73; Vogt 1981).

In the Late Classic, it is sometimes argued that rulers, elites, ritual specialists, and priests were likely the primary users of caves for ritual purposes (Lorenzen 1999; Awe et al. 2005). It is during this time period that there is also a dramatic increase in water-related ritual activity at cave sites in areas for which there is strong evidence for concurrent periods of significant drought as is evident by the inclusion of large *ollas* (water storage vessels) inside caves across the lowlands (Kennett et al. 2012; Moyes et al. 2009; Webster 2002). Chechem Ha Cave in Belize provides some of the most detailed information regarding the changes in ritual cave use over time (Moyes 2006a, Moyes et al. 2009). At Chechem Ha in Belize, the Late Classic period shows a dramatic increase in activity as well as a shift in the pattern of ritual activity in relation to the previous Middle and Early Classic periods (Moyes et al. 2009). This increase in activity corresponds strongly to a significant drought period occurring in the Late Classic (Moyes et al. 2009). In an area subject to binary seasonality defined by alternating dry and wet seasons, the ruling classes' demonstration of power would have naturally been performed through the control of water sources (Lucero 2006; Moyes 2006a).

Findings of previous cave research in Belize has shown that the ancient Maya of the Southern Lowlands discontinued the use of the dark zones of caves after the Late/Terminal Classic, coinciding with the abandonment of major site cores throughout the Southern Lowlands and with the fall of Maya rulership in this area (Moyes 2006a, 2011; Moyes and Awe 2010:4). This is most salient in the Macal Valley. At the medium-sized center of Minanha in the nearby Vaca Plateau, the structures of the royal court were buried sometime between C.E. 810 and C.E. 900 and a group of low-lying platforms with perishable structures was erected in their place, indicating that while the elite were the first to leave the area, a smaller population remained for some time (Iannone 2005). Chechem Ha is abandoned and sealed in the Late/Terminal Classic, as was Moth Cave and other caves in the area (Moyes 2006a; 2006b; Moyes and Awe 2010; Moyes et al. 2017). Yet, interestingly, there remains evidence of occupation at the nearby site of Tipu well into the Postclassic (Aimers 2004:67; Jones et al. 1986). These findings implicate that by the Late Classic and into the Terminal Classic, caves and the social permissions attached to them were under the

direct control of the elite classes of Maya society, be they the elite of Caracol or of secondary and other smaller subordinate centers (Moyes 2006a; 2011). Once the elite left the Southern Lowlands during the collapse in the Late Classic period, the ritual practices related to these spaces failed to transfer to the remaining high-status individuals and farmers.

### 2.2.2. The Exteriors of Caves: Modern Maya

Today modern Maya of the Lowland areas still conceive of caves as the entrance to the underworld through their association with the center of ancient quincuncial cosmogram models (García-Zambrano 1994:218; Kelly 1966:399; MacLeod and Puleston 1978; Moyes 2000; 2001; 2012; Vogt 1969:375-387, 547) and they remain strongly associated with ancestors, rain, water, and agricultural cycles (Adams and Brady 2005; Gossen 1974:21; Prufer 2005; Redfield and Villa Rojas 1934:116, 333; Toor 1947:473; Vogt 1976:16-17; Vogt and Stuart 2005). The modern Maya conception of earth as a “powerful force in the universe that represents the nexus of all creation and destruction” (Moyes and Prufer 2013:229) is also connected to ancient Maya concept of the sacred earth (Brady and Ashmore 1999; Brady and Prufer 2005; Moyes and Brady 2005; Stuart 1997; Vogt and Stuart 2005) and “Earth Lords” or *wit̕* monsters that inhabited caves, among other natural features (Brady and Prufer 1999, 2005:366-7; Gossen 1974:21; Healy 2007; Holland 1962:126-129; Moyes and Brady 2005:332-33; Scott 2009; Vogt 1976:16).

The distinctions between caves as entrances to the earth, as entrances to the underworld, and as representations of the underworld or earth itself are nuanced and raise the question of whether a distinction between the earth and the underworld exists (see Moyes 2012a:100-104 for discussion). Despite conceptual issues in attempting to categorize caves as underworld or earthly features, it is clear that caves have represented each of these aspects throughout their use in the Maya area and that the prevalent symbolism of the cave likely shifted depending on the more pressing concerns of specific groups in the historical context they inhabited. For example, during droughts, the earthly deities that inhabit caves which produce rain pushed the cave-as-earth symbolism to the forefront, while when establishing a new community, foundational rites would have likely focused on the cave-as-underworld to draw a connection to ancestors.

Important to this discussion, ethnographic studies of modern Maya in Mexico, Guatemala and Belize show that the area immediately outside the cave is occasionally used for more public ritual performances before the priests enter the cave proper (Christenson 2008; Demarest and Woodfill 2011; Scott 2009). Allen Christenson has demonstrated that not only are the areas outside of caves still of great importance to modern Maya and that they often yield material remains (ash, statuettes, perishable food stuffs), but that they can also have permanent alters located near the entrance for the purposes of rituals that are required to take place before the shamans feel that they can be allowed into the cave (Christenson 2008).

Anne Marie Scott (2009) has conducted extensive ethnoarchaeological research on Maya ceremonies in highland Guatemala. In this work, she describes several instances of modern Maya making use of spaces outside of caves either as part of the procession to a sacred cave, or simply because the space is in proximity to a cave.

“An altar is located on the outside of [*Nimjay Cave*] down to the northwest side looking out the entrance towards the lake. This altar is used for performing “black” or negative ceremonies such as throwing curses or getting rid of bad energy. A midden of ritual by-products has built up over the years out of the mouth down the steep slope into a *milpa* or cornfield” (Scott 2009:120).

Xe To’oy is a cave site located northwest of the center of San Andrés Semetabaj. During her initial visit to this site the local guide commented how it is meant to be difficult to find the cave and in some cases the cave will not appear.

“We arduously walked up a densely vegetated intermittent stream gully and could not find the cave. After some time of searching for the cave we decided to make a prayer offering with alcohol in the gully to petition the spirit owner to let us find the cave; we soon encountered the cave situated in the bank of the streambed and adjacent to an open field, which coincidentally had a path leading to the site. Our guide again commented that it was meant that we suffer and sacrifice a bit to find the site, and then the spirit owner acts favorably towards us, allows us to find the cave, and will then make our departure much easier” (Scott 2009:125).

Her experience at the Temple of Tojil and the associated caves in the area highlights the many rituals required in relation to the final ceremony before being allowed into the cave, as well as how these larger exterior spaces can function for practical reasons and larger crowds when the small caves are too physically restrictive:

“We had our ceremony at the Temple of Tojil to ask permission to explore the caves found down the ravine to the northwest. The space in front of Tojil was clean of debris, but had the almost ubiquitous stirring stick leaning at the side. In the ravine to the northwest of the site limits are the two caves. Cave 1 has at least three areas to burn offerings just outside of the cave entrance. One is found at the entrance and two more in the form of terraced earthen platforms lie just a few meters downslope. The area was clean, but I observed two dried plants tied together acting as brooms at the site. The ground was blackened from years of ceremonies. *My informant explained that the big ceremonies are performed out here because it would become too smoky in the cave; candles and smaller offerings are burned in the cave*” (Scott 2009:170-171, italics my own).

The structure of longer modern Maya rituals are often divided into discrete stages with differing degrees of participation, as in the archaeologically and epigraphically identified structure of rituals in Pre-Columbian times (Demarest and Woodfill 2009:124). Demarest and Woodfill further describe these stages of increasingly private participation:

“In terms of physical location, Q’eqchi’ rituals include first a public event in open community settings, including churches or plazas. Subsequently, or at the same time, there are events with more limited participation often held in a specific place associated with the reasons for the ritual. This second phase of ritual is carried out by male elders who are also community and as spiritual leaders. In many *wa’atesink* events this second less public, but not, completely private, stage is the last such activity. At

some events, however, there is a third event which is locus for events more private” (Demarest and Woodfill 2009:124).

In archaeological studies of ancient ritual remains in caves, these last two types of rituals have been called “private rituals” but it may be that some of these events are best conceived of as “off-stage rituals” (Demarest and Woodfill 2009).

“These rites take place in private, sometimes very isolated, locations in caves. Yet though the public event is in progress at the same time or just before and the community at large does not witness these rituals, all know that the rite is taking place, and all have a fairly good idea, but not an exact one, of what is taking place in that sacred location nearby” (Demarest and Woodfill 2009:125).

Feasting, sometimes dancing, and other activities can continue during the private ritual with dramatic effect:

“At the end of this public gathering, however, the village elders conspicuously exit, at which point they go into a cave or other sacred space to make offerings and communicate with God and the Tzuultaq’a, or “owner of the land”, on the behalf of the community. While this is done without an audience, the entire village sees the elders leave under a cloud of billowing incense with alcohol, chocolate, and animals to be used in the ceremony. The villagers all know who is participating in the “private” ritual, where it is occurring, and what is being offered” (Woodfill 2010:268).

In the surface architecture of the ruins of Cancuen itself, as in the cave deposits, Demarest and Woodfill have found ancient settings of what they claim to be two or three stage “orchestration” of ceremonies supporting the ethnographic analogy (Demarest and Woodfill 2009:127). They further note that the level and intensity of the role of blood in modern rituals seems to be greater in its more private settings (Demarest and Woodfill 2009:127). “In contrast, judging from the Pre-Columbian artistic representations, inscriptions, and architecture, the emphasis on sacrificial events in the previous two millennia of the Maya tradition was as great or greater in the public stage, the great spectacles in the open plazas, temple stairways, or huge cavern openings” (Demarest and Woodfill 2009:127).

Despite the prevalence of the use of the exteriors of caves by modern Maya groups, to date, few have systematically investigated how these exterior spaces functioned for ancient people. It is only within the past few years, that research in Belize has begun expanding to include the areas immediately outside of these often spatially, and potentially socially, restrictive sacred features of the landscape.

### **2.3.2. The Exteriors of Caves: Ancient Maya**

In his dissertation on the caves around Pacbitun, Jon Spenard has found that the exterior of Actun Lak (aka Pottery Sherd Cave) contains an earth and rubble platform and that the slope down the hillside was modified with a cobble staircase leading to Rocky Crab Cave by the Late Classic period Pacbitun Maya, indicating the two were part of a ritual complex (Spenard 2014:160, 170-171). James Brady has recently described how Cave of the

Spiders, a small cave with two entrances – the lower having water flowing out of it – is attached to a range structure and has a carpet of ceramics located outside of the lower entrance (Brady and Taleghani-Nia 2015). At Chawak Bud O Ab, a cave located within a ballcourt complex, Brady argues that the ceramic carpet found on top of this cave is a ritual deposit (Brady and Taleghani-Nia 2015). Brent Woodfill's work around Candelaria Caves describes how some of the caves in the area appear to have been part of a public ritual spectacle which may have included the exteriors of caves in similar ways to modern Q'eqchi' rituals (Woodfill 2007:555-563).

In 2000, the sites of Cahal Uitz Na and the nearby cave of Actun Nak Beh were investigated as part of the Western Belize Regional Cave Project. The cave is located in the Roaring Creek valley and is connected to Cahal Uitz Na by a 240m long sacbe (Halperin et al. 2001). Cahal Uitz Na is a large site in close proximity to both Actun Tunichil Muknal and a group named the Slate Altar Group. Four excavation units were placed around the main entrance to the cave, with only one being outside of the dripline of the cave to determine the extent of activities noted in the units within the cave. No significant material was recovered from this unit. Another series of units were placed on the sacbe itself with one located at the end of the sacbe closest to the cave entrance. Ceramics recovered from the cave and sacbe indicate cave use in the Early Classic with exterior use and construction of the sacbe in the Late Classic.

As part of both the 2014 LCAR Project and the 2014 Belize Cave Research Project (BCRP), the question of how other cave sites may have had the areas outside their entrance incorporated into the ritual space of the cave included the investigation of 11 cave sites identified during these projects as having the highest potential for exterior use. These sites have provided valuable insight into the perception and construction of the sacred space surrounding and directly related to many cave sites by the ancient Maya. These investigations have shown that these spaces being used in relation to rituals taking place within caves, it is during the Late/Terminal Classic period of the Maya collapse that the areas outside of the cave entrances are being modified for the first time, and the act of modifying and formalizing the space outside of caves restricted movement through (and potentially access to) these sites (Arksey 2014; 2015; 2016; Arksey and Moyes 2015). These findings further emphasize that the exterior spaces cannot be ignored in cave research.

### **3. METHODS**

While cave studies have advanced in the last ten years, the majority have only conducted small-scale case and regional studies. This project takes advantage of the multiregional focus of the Belize Cave Regional Project by collecting data that compares and contrasts cave use on multiple scales and across a variety of social and political contexts. The methods outlined below enable a study of the similarities and differences of the physical characteristics of these sites across the northern half of Belize, how the spaces outside of caves may have functioned in relation to the ritual activities taking place inside the caves, and who were the most likely agents instituting construction and use of these spaces.

#### **3.1. Site Selection**

The Las Cuevas Archaeological Reconnaissance Project (LCAR) reported on the 2013 findings outside of the cave at Las Cuevas in the Chiquibul Reserve, demonstrating that there was a formalized ritual pathway leading from the ceremonial structures of the site core, down the slope of the 50m diameter sinkhole, and into the cave entrance where the entrance chamber alone contains 73 platforms (Arksey 2014; Arksey and Moyes 2015). As part of both the LCAR Project and the BCRP, the question of how other cave sites may have had the areas outside their entrance incorporated into the ritual space of the cave was expanded to include 10 other cave sites with identified high potential to reveal modifications to their exteriors. These indicators included visible architecture, terracing (natural with the potential to have been modified), or natural spaces which afford the possibility of mass public spectatorship such as sloping sinkholes.

##### **3.1.1. Geographic Distribution and Proximity to Site Cores**

The response to the events of the collapse by rulers through ritual performances remains ambiguous because of the lack of correlation between site-specific data and broader archaeological sequences (Kennett et al. 2012). Further confounding this, evidence shows that there was great disparity in the timing and regional patterns of the collapse (Peterson and Haug 2005). Because of these discrepancies, the methodology for my research included selecting sites across the northern half of the country of Belize (Figure 3).

In Northern Belize, the cave Rice Mill 3 is located 9.5km northwest of Blue Creek and 9.5km northeast of La Milpa. The nearest site is that of Bedrock some 2.5km directly West of it, but there is a smaller site, Sotohob, which is only 1.5km west of the cave. In Eastern Central Belize, Actun Sak Tuch is located on the edge of the Sibun-Manatee Karst in the Sibun Drainage 25km West of the coast of Belize. Actun Tunichil Muknal is in the Roaring Creek Valley only 700m from Cahal Uitz Na. Ofrenda Cave in Eljio Panti National Park is on the edge of the Mountain Pine Ridge near San Antonio village and is the most isolated from known major site cores - 9.5km Southwest of Pacbitun, 7.5km Southeast of the site of Guacamayo, and 7.5km North of the newly discovered medium-sized site core of Augustine. Also in Central Belize is Nohoch Ka' Actun in the Mountain Pine Ridge and only

750m East of Augustine, 8km East of Minanha across the Macal River, and 15km South of Pacbitun. In Western Belize on the Vaca Plateau, Moth Cave and Actun Isabella are both located near the site of Minanha, Moth Cave being 1km Southeast of the site core and Actun Isabella being only 750m East. Macal Chasm in the Vaca Plateau is located adjacent to the site core of Ixchel which lies 14km North of Caracol, while Actun Ho Ak is located another 1.5km Southwest of the site but has some small settlement groups located 0.5km to the North of it. Las Cuevas and Actun K'in K'aba are located in the Chiquibul Forest Reserve of Western Belize, the cave of Las Cuevas being located directly beneath the site core and K'in K'aba being located another 1.4km West of the site core of Las Cuevas, which itself lies 11km East of Caracol.

### **3.1.2. Cave size**

Based on theories that cave entrance size may be related to status – larger and deeper caves with dark zone belonging to the elite, shallower rock shelters to the non-elite (Glassman and Villarejo 2005; Stone 2005) – a variety of sizes of cave entrances and methods of access have been included in my research. While all the cases in my sample are classified as caves with true dark zones, the size of the cave itself, as well as the entrance of the cave, affords different sizes of audiences which in turn may affect the decision as to who and how many people were selected to participate in the ritual activities taking place within. The ability to physically restrict vision into the cave or sounds from coming out of the cave may have played a role in determining which caves were chosen from more extensive modifications to the exteriors if inclusion of greater numbers of audience members was a motivation for these modifications.

Large entrance caves which anyone can walk into upright and which are so large as to prevent any efforts to potentially restrict access or wall off include: Las Cuevas, Actun Isabella, Ofrenda, and Actun Sak Tuch. Medium sized entrances which are open enough to walk into but are capable of being restricted or sealed, or which are not visible from more than 10m away include: Rice Mill 3 and Actun K'in K'aba. Small cave entrances which require stooping, crawling or squeezing to gain entry, are invisible from just a few meters away, and are capable of easily being blocked off or restricted include: Moth Cave and Actun Nohoch Ka'. Two of the caves in the sample were vertical drop caves, Macal Chasm and Actun Ho Ak, both in the Vaca Plateau. Actun Tunichil Muknal differs from all the other caves in its entrance since, while it is relatively large, and there is a secondary entrance which can be used walking upright, there is a river exiting the cave entrance and thus the constructions outside of this cave are by necessity up on a bank to the side of the entrance.

## **3.2. Archaeological Methods**

### **3.2.1. Survey and Mapping**

Survey of the area surrounding the caves and their entrances was done at each site to determine the extent of any possible modifications and to identify the cave proximity to any

notable surface architecture. Sites were mapped using a combination of tape and compass, distometers, and baseline offset mapping. Some sites were further mapped using a Sokkia SET-650RX total station to tie in existing maps of the caves with the surrounding surface landscape. Maps incorporate any nearby structures, modifications to the landscape, viewsheds, slopes, and boundaries of the activity areas. In order to address how rituals may have differed over time and space both within and between sites, the sites were mapped with attention paid to the natural as well as the built landscape. Each map has been digitized in ESRI ArcGIS Geographic Information System to visualize spatial relations, as well as analyze spatial distributions and artifact density of select sites based on shovel test pits.

### **3.2.2. Shovel test pits**

Shovel test pits quickly and efficiently determine where any cultural material might be found. While excavations are able to identify larger structures, other patterns of use in the surrounding landscape have proven to be often too minimally modified or ephemeral to be conclusively identified. Shovel test pits allow for the calculation of a standardized density of artifact types across different sites and produce density maps to investigate potential activity areas outside of the cave entrances. If density analysis yields patterns indicative of activity, those patterns were further analyzed to attempt to determine the activity (pathway, platform, plaza, terrace, structure, etc.).

If working in a sinkhole where there was a higher potential for pathways to be constructed down to a cave entrance, focus for the shovel test pits was on any level area on the slopes that may have been modified. If the area was large, it was gridded off into 5m increments. If it was smaller, the area was gridded off in 1m or 2m increments. If there were any visible mounds, shovel test pits were placed on flat areas of the ground between structures to attempt to determine if there was any underlying formalized floor to give an idea of the size and extent of the subsurface architecture. All artifacts were collected regardless of size and each contributed to the total artifact count and density of the pits. If artifacts were found, the area was explored in more detail with shovel test pits until the boundary of the possible activity area was delimited.

### **3.2.3. Excavation**

Larger excavation units identify the activities that were taking place, when they were taking place, and the physical boundaries of the activity areas. The excavation units were placed in areas of interest as determined by shovel test pit densities, evident surface collection, and visible architecture. Where architecture was visible on the surface, the excavation units were oriented with the architecture and started broad in physical scope with smaller areas of reduction to identify temporal sequence. Data collected included detailed maps, photos (both for 2D and photogrammetric 3D representations), artifacts/ecofacts, carbon samples for radiocarbon dating, and plaster samples. Due to the distance into many of the sites and relative inaccessibility of the areas, all materials were hand sorted.

Organization of materials recovered was done using a combination level/lot system with the running lot numbers for surface excavations changing their initial 2-3 digits based on the calendar year. Features were given designations based on the unit number and level in which they were identified. Special finds were given a running numbering system for each site. Where excavations were taking place at a site at which excavations had already been done by an earlier project, those labelling systems were incorporated into the recording system for this project to maintain site consistency.

### **3.3 Analysis**

#### **3.3.1. Artifacts**

##### **3.3.1.1. Ceramics: A Proxy for Temporal and Behavioral Determinations**

Ceramics are the most abundant artifact type recovered from archaeological contexts in the Maya area. Ceramic analysis was done based on Gifford's (1976) type: variety-mode by Laura Kosakowsky, Erin Ray, Shayna Hernandez, and John Walden. Because the construction of these spaces is often very rough and tends to not include many construction phases, the archaeological record is poorly preserved and almost no reliable carbon samples have been able to be collected from these contexts. As such, ceramics provide one of the only reliable dating techniques for the sites in my research. Based on how the shape, style, and materials used in ceramics have changed over time, seriation dating can pin the date of manufacture of certain ceramics down to anywhere from a 50-year to a 250-year time range.

In addition to the temporal information provided by the ceramic assemblages, ceramic types can give an indication as to the trade networks and spheres of influence at a site (Kersey and Gray 2001; Kosakowsky 2014). The forms of the ceramic vessels can give further indication as to what activities were taking place at a site, for example, a high frequency of incensarios (incense burners) are often indicative of ritualistic activities (Chase and Chase 1994:60; Kersey and Gray 2000; Iannone 1999:109-112; Moyes 2006a:286-287; Rice 1999:38; Schwake 2000; Taschek and Ball 1999:229). Certain types of ceramics have also been argued to be related to the status of individuals (Ball 1993:250) and can contribute to interpretations of who was using the sites in my sample. These factors are evaluated on individual structure, site, and intra-site levels.

##### **3.3.1.2. Non-Ceramics**

Unlike ceramics, the non-ceramic artifacts do not provide much in the way of temporal information. However, different artifact types and relative densities of these types can provide valuable behavioral information. The use of river stones in construction fill can indicate a symbolic connection of the structure or site to water and fertility. Similarly, the use of high frequencies in jute in construction fill can create a tangible connection to fresh water. Dense layers of jute in the fill of plaza or structure floors found in civic center of the Belize River Valley from the Preclassic to the Classic periods have been interpreted as feasting events and dedication rituals for new construction phases which often coincide with a

change in leadership (Jamison 1992; LeCount 2010; Powis et al. 1999; Zeleznik 1993). Speleothems are often removed from caves to be included in dedicatory caches of surface ceremonial structures (and household ritual assemblages) creating a connection to caves as a source ancestral lineages, rain, and agricultural success (Andrews 1980; Brady et al. 1997; Brady et al. 2005; Coe 1959; Cottier 1982; Longyear 1952; MacLeod and Puleston 1978; Pendergast et al. 1990; Strómsvik 1942; Valdez et al. 2011:29). Differing frequencies of artifact types and materials can also give an indication of function of the site/structure, symbolic meaning of the site/structure, trade networks, and spheres of influence. These are evaluated on individual structure, site, and intra-site levels.

### **3.3.2. Shovel Test Pits**

Shovel test pits can not only indicate where cultural areas are, but can help to delimit the boundary of activity areas and provide useful artifactual data to interpret the spaces. I used a Geographic Information System (GIS) to analyze artifact spatial distributions from the shovel test pits and visualize these densities, thus giving an indication of patterns and distribution of activity areas. At most sites, the shovel test pits were used to simply confirm that an area had been modified (ie: a terrace was leveled, a mound was constructed and not natural). Maps were digitized in Esri's ArcGIS by Lauren Philips, Tamara Spann, Estrella Garcia, Justine Issavi, Shadab Tabatabaieian, and myself.

### **3.3.4. Patterns of Modification**

After being described in the next chapter, the sites in my sample have their degree of modification compared in Chapter 5 against the cave entrance size, cave entrance type, cave interior size, amount of modification to the interior of the caves, the duration of the cave use, distance to nearest major surface site, and the occupation length/time of abandonment of the nearest major surface sites. These comparisons will help determine who was controlling these spaces, who used them throughout their short lifespans, and what their function was. The degree of modification outside of the caves in my sample range from no visible construction or modification, to patio groups with multiple phases of construction and multiple ritual deposits. In order to draw comparisons between the sites and other factors such as distance from nearest surface site or duration of use of the cave, a rough classificatory scheme is necessary to rank the sites. This classification uses a modification of the settlement unit classification scheme established by the Xunantunich Archaeological Project (Table 1) (Ashmore et al. 1994; Ehret et al. 1995)]. Fields have been added to account for the extent of physical modification as indicated by phases of construction and type of construction. These fields are highlighted in Table 2. Additional fields are entered in Table 2 which account for the variables against which the degree of modification is compared. Following Moyes and Montgomery (2016:253), entrance sizes can be classified as large (> 5m in width and over 2m in height, accommodating 10 people or more), medium (1–5m in width and 1–2m in height, used by fewer than 10 people), small (< 1m in width and > 1m in height, accommodating one person), and fissures (< 1m in height, necessitating crawling).



## 4. SITES AND EXCAVATIONS

### 4.1. Northern Belize

The research area covered by the Maya Research Project in Northern Belize is bounded by the La Milpa research area to the south and the Mexican border and Río Hondo Valley to the north, which also likely provided a transportation route to the Caribbean (Guderjan and Krause 2011:219). The area includes the major site of Blue Creek, and the more moderately sized secondary sites of Nojol Nah, Ixno'ha. Guderjan argues that residential communities at Blue Creek were tethered to the ruling lineages of the core area through political economy and interaction among leaders (Guderjan 2007). This area is characterized by karst topography and perennial wetlands filled with rich soils and clays and an ever dynamic water table (Krause and Majewski 2011:204; Guderjan and Krause 2011:219). This environment permitted the use of wetland agriculture through extensive ditched fields in the Late Classic, tapering off in the Terminal Classic when there appears to have been a drying, and only limited use in the Postclassic before abandoning the system (Beach et al. 2012). While some areas show evidence for early occupation in the Preclassic, most of the main sites all began major architectural construction in the Early Classic and persisted until the Late Classic. By the Terminal Classic at the site of Blue Creek, the residents smashed large quantities of ceramic vessels and other materials on the fronts of several buildings in the plazas and residential groups (Guderjan 2004, 2007; Hanratty 2008). However, Terminal Classic deposits and construction modifications indicate that while central authority was diminishing, the remnant population was re-aligning itself with external sources of power, legitimacy and authority (Guderjan 2011:9-10).

#### 4.1.1. Rice Mill 3

Rice Mill 3 is one of four small caves in the Blue Creek area of northern Belize located in an area of jungle/forest surrounded by farmland and rice patties. It is located 9.5km northwest of Blue Creek and 9.5km northeast of La Milpa. The nearest site is that of Bedrock some 2.5km directly West of it, but there is a smaller site, Sotohob, which is only 1.5km west of the cave. These sites are all located on the periphery of the Dumbell Bajo, an area of arable soils and chert outcrops (Lohse 2003:4).

Bedrock is a small center, located approximately 12km from Blue Creek, and is a grouping of three elite residential plazas with the main plaza comprising eight structures (Greaves and Guderjan 2012:29; Mongelluzzo 2003:71). Excavations in 2001 revealed that while a chultun was dug and a burial interred within it in the Late Preclassic, construction of an overlying plaza and the residential structures began in the Early Classic and occupation lasted until the Terminal Classic (Greaves and Guderjan 2012:29; Mongelluzzo 2003). It is not clear whether the site represents an independent polity or whether it is part of a larger polity (Barrett 2005:101). Aak Witz is a large, elite residential group approximately 500 meters west of the Bedrock central precinct which consists of a courtyard sided by four structures and a large linear structure on top of a hill (Greaves and Guderjan 2012:29). A chultun in this courtyard did not reveal any diagnostic artifacts.

Approximately midway between Bedrock and Rice Mill 3, the smaller Late Classic courtyard site of Sotohob is at the northern margin of the Dumbbell Bajo. The Sotohob courtyard is an elaborate residential site (Barrett 2002, 2003) of comparable architectural complexity to that documented at Bedrock (Barrett 2005:103). Sotohob is approximately 1km north of the Bedrock lithic workshop identified by Lohse (2003). This workshop is on a peninsula of land that reaches south into the Dumbbell Bajo on which large tabular slabs of chalcedony were discovered (Barrett 2005:101) and where tool production and finishing occurred in substantial numbers (Lohse 2003:4). Three other smaller early stage lithic production sites lie 2-3km to the south of it, identified by surface scatters of medium and large flakes and tested cobbles, that suggest early stage cobble reduction took place (Lohse 2003:4; Barrett 2005).

#### 4.1.1.1. Interior Description

Rice Mill 3 is comprised of one large main chamber with three alcoves (Moyes and Awe 2015). The main chamber is approximately 20 meters E/W and 15 meters N/S. The mouth of the cave is approximately 8 meters E/W and has a height of 1.75 meters on average and opens up to the north. Most of the cave would be considered to be in the twilight zone. Only two of the three alcoves are in what would be considered the darkzone. The cave has an average height of about 2 meters and is comfortable to walk around in. The cave is also mostly dry, except for the area around a large active speleothem that has a 3m diameter footprint in the center of the cave. The ceiling of the cave has dozens of clusters of developing soda straws which are uniquely yellow and orange in color. The cave is in the side of a low hill, and is close to the surface. The ceiling of the cave has many large and small roots that have penetrated through from vegetation on the surface. There is a large constructed wall across the entrance. The wall is 1.6 meters high, 10 meters long, and is constructed from dry laid limestone boulders.

Of the 70 ceramic sherds were found inside the cave, three were Achote Black, 10 were Aguila Orange, four were Cabro/Society Hall, six were Dos Arroyos polychromes, 10 were Tinaja red, and nine were Encanto with one of those nine being a Candelario Applique incensario fragment, placing the majority of activity in the cave in the Late Classic. By comparison, 37 chert lithics were found inside the cave including bifaces, cores, flakes. One of the bifaces was broken but was identified as being made of Colha honey chert. The representation of lithics inside this cave at over half of the total artifacts gives this cave one of the highest proportion of lithics of any cave investigated by the BCRP or LCAR projects. By comparison, Rice Mill 1 had 29 lithic artifacts found on the surface and Rice Mill 2 had 49 lithics, which while still high, represent a much lower percentage of total artifacts found at these sites. The amount of lithics connect this cave and it's use to the nearby sites of Bedrock and Sotohob and their lithic production sites. Of those caves which are not directly connected to a site core, this is the clearest case for cave ownership of the sites in my sample.

#### 4.1.1.2. Exterior Description

The cave is located in the side of a bedrock hill facing north (Figure 4) (Arksey 2015). Another rock face, which is blocked with natural boulders and collapse, is located approximately 10m in front of it to the north of the cave entrance. The cave is immediately bounded by three clearly identifiable constructed terraces outside the cave entrance, the walls of which run North-South (Figure 5, Figure 6). There is another smaller terrace wall approximately 30m to the Northwest of Terrace 2 which runs East-West. One of these terraces, Terrace 2, forms a rectangular plaza-type surface in front of the cave entrance which is approximately 5x7m. The terrace walls are constructed of dry-laid limestone boulders and are much steeper in comparison to the cave entrance wall. The construction of the wall in the cave entrance leaves only a ~30cm opening along the dripline with a slightly deeper depression on the Eastern side which is used as the modern entry into the cave. It was likely erected to restrict access and construct a darker entrance chamber in this cave that otherwise would have naturally been fairly open and rather bright.

#### 4.1.1.3. Exterior Excavations

This cave was chosen out of the three Rice Mill caves because it has a constructed wall in the entrance and constructed terraces bounding the entrance and is ideal for exploring the topic of activity outside of cave entrances. The intention of working at this cave was to open an excavation unit in front of the cave to attempt to determine what activity, if any, was occurring outside of the cave entrance in relation to the construction of the wall in the entrance. Lot numbers and contexts are summarized in Table 3.

##### 4.1.1.1.1. Shovel Test Pits

Five shovel test pits were dug in the four corners and the center of Terrace 2's platform outside of the entrance. At approximately the same level across the terrace platform there was a concentration of pebbles with some ceramic sherds, indicating a potential floor or levelling off of this area. The highest concentration of finds was in the South-East corner of the platform where the cave wall meets the terrace wall (Table 4). (Excavation Unit 1 was later placed on this end of the terrace to confirm this and determine the sequence of construction in this area). The only identifiable ceramics to come from the shovel test pits came from the Terrace 2 STPs. STP one had an Achote Black from the fill on above the floor surface within Tepeu 2-3 which was the latest of the sherds from the STPs. The other ceramics recovered were all from within the floor fill of Terrace 2. STP 1 had one Cambio Unslipped and one Belize Red within Tepeu 1-3, STP 2 had an Aguila Orange sherd within the Tzakol complex, and STP 5 had a Tinaja Red within Tepeu 1-3. Based on these results, it appears that the floor was constructed during the Late-Terminal Classic but the fill may have contained some residual Early Classic forms.

In addition to the five placed on Terrace 2, we dug three other shovel test pits on the edges of the adjoining terraces. STP 6 was placed at the base of the terrace wall in the West on Terrace 1. A similar pebble matrix was found along with some sherds. Two shovel test

pits were placed at the top of the terrace wall in the East, on the Western corners of Terrace 3 and a similar matrix was found in these with nine ceramic sherds and one lithic flake found in STP 7. STP 8 in the Southwest corner of this terrace was the only STP to not have any artifacts found in it although this corner is higher than the Northwest corner and large boulders were reached much sooner than other STPs. These other shovel test pits further indicate that this area was intentionally leveled off through the construction of terracing. The topography of the area is rocky with many hills and narrow gullies – the function of these terraces does not appear to be agricultural may be related solely to the caves in this immediate area, all of which have some degree of modification or artifact deposition.

#### **4.1.1.1.2. Excavation Units**

##### Unit 1

Unit 1 is a 6.3x3.8m unit located in the Southeast corner of Terrace 2. It runs from the top of the terrace wall in the east, across the top of the wall in the cave entrance (encompassing STP1) and the surrounding floor area of Terrace 2. It is oriented 14 degrees West of North, in line with the cave entrance. Some portions of the southern unit edge run under the dripline of the cave entrance. The size of the unit was constrained by trees and topography. The aim of this unit is to uncover the boulders of the terraces and wall in the cave entrance down to the floor construction in the center of the terrace in order to confirm construction phases and date the construction of each of these features. The unit was dug in natural and cultural levels and all material was hand sorted. There is a large tree in the center of the terraces with roots extending throughout the construction of the terraces and the floor as well as numerous other trees which have caused many of the boulders of the terrace and wall to be shifted out of place. Elevations were taken from datum RM3-1 set into a tree in the south of the unit 98cm above the ground surface.

##### *Surface Level*

The construction of the terraces and cave entrance wall are visible on the surface with a light covering of humic layer on these. There is a slight depression between the terrace wall and the cave entrance wall running North-South which is being used as the modern entrance to the cave because it leads to the tallest clearance in the cave entrance. There are several trees growing in the cave entrance wall with visible roots throughout. No artifacts were visible or recovered from the surface. There were some primate bones (pelvis, long bones, and vertebrae) in a concentration on the surface which appear to be recently (and naturally) deposited.

##### *Level 1*

Level 1 consisted of the humic layer and the underlying silty clay (both Munsell# 10YR 2/1) covering the terrace wall, the cave entrance wall, and the floor surface in the Northwestern corner of the unit. It was taken down an average of 12cm. Several sherds were recovered from the fill on top of both walls and were given separate lot numbers for each wall: 131014 for the fill on the terrace wall, and 131015 for the fill on top of the cave entrance wall. This was done to isolate any possible active deposition outside of the cave entrance related to ritual activity within the cave from the steeper terrace wall which may

contain material washed down from the slope above or may be showing through from the collapse of this wall which is evident in this area of the terrace.

In keeping with this hypothesis, only five ceramic sherds were recovered from the terrace wall including one Aguila Orange from the Tzakol sphere and one Cambio Unslipped from the Tepeu 1-3 sphere. The fill on top of the cave entrance wall however had 40 sherds recovered, several lithics, and five speleothem fragments. The lithics included a range of chert items from decortication flakes to small cores, to a fragment of a biface, and one flake with a hole in it through which a small root was growing. The high number of lithics found on the surface of this feature is in keeping with the unusually high frequency of lithics recovered from inside all three Rice Mill caves. At least one of the speleothem fragments recovered exhibits the same yellow coloration of the speleothems from within Rice Mill 3 cave and their mixture with the other cultural material in this level lends to the hypothesis that these items were removed from the cave left on this construction outside of the cave during the same period, though it is possible that modern exploration of the cave could have resulted in their appearance in this area as well. The ceramic sherds from the cave entrance wall included an Aguila Orange from the Tzakol sphere, as well as a Tinaja Red from the Tepeu 2-3 sphere.

No cultural material was recovered from the clay fill on top of the floor at the base of the wall blocking off the cave entrance, nor were any artifacts found to be directly on top of the floor surface. The dating of the ceramics from the two wall constructions extends the range of Early Classic to Terminal Classic and may be a result of the use of older midden fill in these constructions. It may also be indicative of a more restricted period of use covering the Early Classic to Late Classic transition. The analysis of the ceramics in the fill on top of the walls matches with the time period estimated for the fill of the floor in the terrace determined from the shovel test pits which also extend across the Early to Terminal Classic periods.

The floor fill that was exposed consists of small limestone cobbles and pebbles, all of which are slightly rounded and appear water-worn (Figure 7). This is consistent with the matrix covering them which is fine silty clay consistent with water deposited soil. The floor fill undulates slightly, likely due to settling over time and water disturbances. There is no evidence of plaster. The exposure of the terrace wall and the cave entrance wall revealed a deeper depression between the two than visible on the surface, indicating a potential division between the two constructions. A depression also exists on the Western side of the cave entrance wall giving the impression of a possible staircase or platform in front of the cave as opposed to just a wall as previously thought. Level 2 will focus on the removal of the boulders in the fronts of both the cave entrance construction and the terrace construction with the aim of following the floor fill to attempt to find the true edge of each construction.

### *Level 2*

Level 2 consisted of the removal of the boulders and large stones in front of the terrace wall and the cave entrance construction in a reduced unit size of 1.5x1.5m. The matrix surrounding the boulders was compact dark brown silty clay (Munsell# 10YR 2/1) with few ceramic sherds mixed in. The level was closed at a depth of 53.2cm when the edge of the floor fill was reached abutting bedrock underneath the boulder construction. The terrace wall edge is largely disturbed due to several big roots extending underneath this section of the wall but the floor was able to be traced to a section of bedrock as well as the

edge of another boulder which occurs a similar distance as other, better preserved sections of this wall.

The area where the floor fill met the bedrock under the cave entrance construction is in line with several large boulders that had been identified as possibly being in an alignment creating a bounding to the construction of the platform/staircase. We removed any boulders that appeared to have collapsed from the top of this alignment and based on their size, if they had been on top of the bounding stones, they would have created an almost level surface extending the majority of the way to the cave entrance. Rather than this construction being a wall to block the cave entrance, or stairs to access it, it now appears as though there may have been one platform or two smaller terraces in front of the entrance of the cave with lower recesses on either side. The 10 ceramics recovered from the fill around these boulders and large stones included a Tinaja Red jar rim in the Tepeu 2-3 sphere. It appears that the terrace walls were built first, then leveled off with the same fill that is found in the floor, after which the cave entrance platform was constructed. Time did not allow for further exploration of this platform construction but may be revisited next year.

### *Level 3*

This level was a reduction to a 1x1m in the corner of the floor where the terrace wall meets the cave entrance platform with the intention of getting a clearer understanding of the floor fill construction than was possible with the shovel test pits. It was taken to a depth of 43cm in the Northwest of the 1x1m where bedrock did not impede excavation. The fill was found to be a mixture of rounded limestone pebbles and small cobbles for the first ~30cm after which it gradually shifted to smaller degraded limestone pebbles and limestone flecks before changing to dark brown silty clay (Munsell# 10YR 2/1) without any inclusions or artifacts. The unit was closed at this level. STP 1, which was partially encompassed in this 1x1m did not reveal any further cultural material past this point. 14 ceramic sherds were recovered from the upper portion of this level including one Cambio Unslipped from the Tepeu 1-3 sphere and one Paradero Fluted – Balanza Black sherd from the Tzakol sphere. This analysis is in keeping with the Late Classic finds throughout the excavation.

### *Level 4*

In 2014 we returned to the site to further explore the depression between the terrace wall and the platform in the cave entrance in order to determine the full extent of the construction of this platform as well as determine the depth of this depression and its potential as an entrance pathway into the cave. Level 4 was a 6x3m trench running North-South along the depression, from the floor of Terrace 2 into the cave. It was taken down in one level by removing large cobbles and boulders that appeared to have fallen in from the terrace and the adjoining platform. We removed these following an alignment of much larger underlying boulders that were visible from the surface and from the interior of the cave (Figure 8).

The boulders and large cobbles were removed until a level of smaller pebbles (similar in composition to the fill of the floor on the terrace) was visible at the same level, approximately 50cm below the top edges of the platform. It was apparent in looking at the profile that these pebbles did not continue on into the platform, but rather abutted and were bounded by the much larger boulders that make up the edge of the platform. Of the artifacts recovered in the 2014 excavations, 18 ceramic sherds came from the backfill and humic layer

outside of the cave dripline (Lot# 14000), six ceramics came from the humic layer just inside the cave dripline (Lot# 14001), and only five ceramics and four lithics came from the boulder removal before reaching the pebble construction of the pathway (Lot# 14002). All ceramics dated firmly in Tepeu 2 with Achote Black and Tinaja Red making up the most frequently identified types, with only a couple possible Early Classic jar sherds mixed in. This is in keeping with our findings of primarily Late Classic construction outside of caves as well as the high proportion of lithics to ceramics at this particular cave site.

This path into the cave rises in very rough steps from the floor of Terrace 2, and then descended into the cave from the point of the dripline by means of large boulders that could be used as steps (Figure 9Figure 8). The width of the path was no more than 75 cm, and the height from the base of this path to the dripline was approximately 150cm – a comfortable height to enter the cave without the need for much stooping (Figure 10, Figure 11).

### *Interpretations*

The construction of the terrace wall was revealed to be a steeply constructed wall made of natural limestone boulders and leveled with a mixture of pebbles, small cobbles, sherds, and the occasional lithic. This construction method was confirmed by shovel test pits to exist in all three of the terraces in the immediate area around the cave entrance. Rather than being agricultural terraces surrounding a site, these terraces were constructed by modifying the existing landscape to create a smaller, bounded space. The terraces all appear to have some sort of floor or leveling off on top of them which is likely related to the ritual use of the cave.

The construction in the cave entrance was revealed to be more of a raised rectangular platform than a wall or stairs as previously thought. While from the interior of the cave, the construction appears to be a steep wall, the exterior slopes very gently down to the terrace floor. With the boulders that were lifted from the collapsed front of this construction, the platform would have been relatively flat most of the way to the cave entrance. It is possible that there were either two steep steps leading up to the cave entrance, or one large platform. On either side of this construction, there is a depression in the slope which gives the impression of a raised central area in keeping with the platform hypothesis. The excavation of the deepest and most noticeably constructed depression on the East of the platform revealed a minimally formalized and leveled pathway into the cave along the base of the terrace and to the side of the platform. This pathway may not have required the participants to stoop to entire, but they would have certainly been required to enter single file.

#### **4.1.1.4. Archaeological Summary**

The entire area around the cave entrance, the constructed terraces with leveled floors, the platform outside of the entrance, and the cultural material found inside and outside of Rice Mill 3, all lend to the idea of this cave as a performance space similar to restricted plazas seen in ceremonial centers. Rice Mill 3 is a very small cave which would never have permitted many people to be able to enter at a single time. While the slightly restricted space of Terrace 2, with the rock face on one side and the two terrace wall on the other two sides creates an exterior space which is larger and more open than the interior, it is still relatively restricted, maintaining a certain level of permission and accessibility.

The ceramics predominantly date to Tepeu 2, placing the fill in the Late Classic, with only a few Early Classic sherds mixed in, likely from midden fill from the nearby site of Bedrock where an Early Classic midden was discovered in 2009 (Guderjan et al. 2010:10). The exterior of this cave has a similar artifact distribution to the interior, particularly in reference to the amount of lithics vs ceramics, demonstrating that this space may have been used for a similar ritual function as the interior though in a more public venue.

## **4.2. Sibun Drainage**

The Sibun-Manatee Karst is highly perforated karst terrain with many cave types in a region infested by mosquitos, dense tropical forest (Moyes 2016:11). The Sibun Valley is strategically located relative to the highly navigable Inner Channel of the Caribbean Sea and the valley is linked to the Petén via the Belize Valley, which is the proximate drainage immediately to the north (Harrison-Buck et al. 2007:74). The Inner Channel of the Caribbean Sea provides access via maritime transport to northern Yucatec. The area was the subject of an intensive archaeological survey and excavation program, the Xibun Archaeological Research Project (XARP), during which a series of caves and small surface sites were recorded (McAnany 1998; 2002). During the 2015 BCRP field season several new caves were added to the list of known caves.

It is interesting to note that there are no significant surface sites in the area. What construction exists in the Sibun drainage dates to Late and Terminal Classic times (AD 600–900) with sparse populations during Late Postclassic and Early Colonial times (Harrison-Buck et al. 2007:76). Excavations of more modest-sized sites in the middle and lower reaches of the Sibun Valley, such as the mid-valley site of Pakal Na, indicate that these settlements survived the Late Classic period of decline seen across Belize and thrived during the Terminal Classic period (AD 780–900) (Miller 1996:86). This late florescence was likely fueled by the growing hegemony of the north and the increased importance placed on coastal Caribbean trade networks (Andrews et al. 1988; Freidel and Sabloff 1984; Guderjan and Garber 1995; Masson and Mock 2004; Sabloff and Rathje 1975).

### **4.2.1. Sak Tuch (White Belly)**

Actun Sak Tuch is located on the edge of the Sibun-Manatee Karst in the Sibun Drainage 25km west of the coast of Belize. It is approximately 5km eastnortheast from the site of Pakal Na on the other side of the Sibun River. There are no surface sites visible in the area though XARP did note some small housemounds in the surrounding area.

#### **4.2.1.1. Interior Description**

The morphology of the cave is similar to that of a horizontal hourglass, with the east and west entrance chambers being the part of the hourglass that contains the sand (Moyes 2016:113-115). The linear tunnel that connects the two entrance chambers constricts to a narrow passage, much like the pinched center of an hourglass. There are two entrances to

the cave. The eastern entrance is at the base of a large sinkhole. Three constructed walls were discovered in the area previously described as the “pinched” center of the hourglass. Several ceramic scatters, mostly non-diagnostic sherds, were discovered on the floor of the western entrance and rockshelter. Several lithic flakes were also discovered in the same areas. It is worth noting that all visible examples of ancient Maya material culture were only found in the western half of Actun Sak Tuch. No evidence of material culture was discovered on the floor of the eastern entrance.

The western entrance has an extensive rock shelter component which has an alcove that was once blocked off by a low constructed wall. Several stone alignments were discovered along the floor of this alcove. The alignments make a capital “I” shape that is approximately 2 meters by 2 meters. A similar stone alignment was also discovered approximately 20m into the cave from the western entrance. A small mound was discovered also in the western entrance along with possible terracing.

#### **4.2.1.2. Exterior Description**

The eastern entrance to the cave is at the base of a large sinkhole, but showed no evidence of any modifications. The western entrance to Sak Tuch is half way up a steep hill side, approximately 150m east of a tributary of the Sibun River. The base of the hill quickly levels off and becomes a flat floodplain for the river. The entrances to the cave are relatively large and there is a large overhang ~20m high above the floor of the entrances, the edges of which are visibly falling down and tumbling down the hill in front of the cave. On either side of the cave entrance, this hill becomes a vertical cliff face, rising to the top of the hill that the cave is set in. It is possible that the steep slope coming down from the entrance was formed by the disintegration of this overhang and that the cave was formed in the side of what was once a cliff. The 35m long area under the overhang is relatively level and there are a couple areas where rock alignments suggest either a structure or terrace construction (Figure 12). One of these is a rectangular area raised one stone high in the southern end of the overhang, the other is a mound of stone which is ~1.5m tall in the northern end of the overhang (Figure 13). Both are directly under the dripline – half under, half outside of the dripline.

#### **4.2.1.3. Exterior Excavations**

The mound and stone alignments under the western dripline were suspicious enough to warrant investigation but the floor of this area has no soil deposition and so no shovel test pits were dug. Focus was paid to the mound under the northern end of the dripline with a 1x3m unit placed over the side facing the cave entrance, running from 30cm on the level overhang floor up to the top of the mound, 15 degrees east of north. It was dug in natural levels and all material was hand sorted.

The surface of this mound showed no clear alignments and no artifacts were found. Removal of the humic level cleared the stones lying underneath but, again, no clear alignments of stone were found which might indicate architecture. No cultural material was recovered from this level. The second level removed these stones, beginning with the smaller cobbles and loose stones on top of the mound to attempt to find any evidence that these

stones had been placed here as an intentional construction. From the top of this level to the base of the mound at the level of the cave floor under the overhang no evidence of any human modification to this mound of stones was found. All stones were loose and haphazardly arranged, large stones were sitting on top of small stones, and no cultural material was recovered from anywhere in this unit (Figure 14).

#### **4.2.1.4. Archaeological Summary**

It was determined that this mound was not a constructed mound at all, but rather a collection of stones that had been collapsing from the edge of the overhang directly above it. Further inspection of the other low potential construction showed that there is a similar pattern to the edge of the overhang above it, and that it is also likely natural, not man-made. It would have been interesting if this or other caves in the area had evidence for exterior modifications because of the Sibun drainage's resilience during the Late Classic and occupation into the Postclassic, stemming from its proximity to the coast and its ability to take advantage of shifting socio-political patterns which favored coastal trade networks with the Yucatan peninsula. The lack of evidence for exterior modifications to the caves in the Sibun might in and of itself be telling along these lines.

### **4.3. Roaring Creek Valley**

The Roaring Creek Valley occupation period extending from the Late Preclassic to Late Classic (300 BC - AD 850) is well-attested by the large quantity of temporally diagnostic artifacts documented in the cave sites and surface sites located in that valley (Awe and Helmke 2000:187). Although most sites in the Central Maya Lowlands were heavily depopulated by the Postclassic (AD 1000 - 1500), the discovery of a Postclassic Yaxteel Ahau Censer in the Roaring Creek Valley extended the length of occupation, albeit scarce, in this particular area considerably (Awe and Helmke 2000). There is a source of slate in the area, accounting for the high frequency of use of this material for monuments and stelae both at local surface sites and caves (Awe and Helmke 1998:211).

#### **4.3.1. Actun Tunichil Muknal**

Actun Tunichil Muknal (Cave of the Stone Sepulcher) was first reported by Miller in 1989 (Miller 1989; 1990). It is located near the village of Teakettle and forms the point of origin for a tributary of the Roaring Creek. Reconnaissance by the Western Belize Regional Cave Project in 1996 led to the discovery of a substantial surface site, Cahal Uitz Na (Awe and Helmke 1998), located only 500 meters from the eastern entrance of Actun Tunichil Muknal on the other side of the Roaring Creek. Another cave, Actun Nakbeh, is notable for being situated at one end of a 250-metre sacbe that leads directly to Cahal Uitz Na (Song et al. 2000:209).

Actun Nak Beh and the Cahal Uitz Na causeway were investigated by the Western Belize Regional Cave Project (WBRCP) during the 2000 field season (Halperin et al. 2001:1).

Cahal Uitz Na is a medium-sized center comparable in size to Pacbitun and Cahal Pech (Awe and Helmke 1998:218). There are three plazas, numerous slate monuments and stelae, and a ballcourt. One of the slate slabs has a carving resembling a face or skull which is similar in style to one found at the nearby cave Actun Uayazba Kab, suggesting that rituals conducted at the cave were connected to the residents of Cahal Uitz Na and that the erection of monuments in both locations may indicate markings of the same event (Awe and Helmke 1998:209). The site was occupied throughout the Classic period, likely serving as the primary administrative center for the upper Roaring Creek Valley during the Late Classic (Awe and Helmke 1998:206; 218). While it is assumed that Cahal Uitz Na was abandoned in the Terminal Classic, the finding of the Postclassic Yaxteel Ahau Censer indicates that some residents held on or returned to the area, if in limited numbers.

Excavations of the interior of Actun Nak Beh showed that its use was focused on the Early Classic and extended into the Late Classic while the sacbe connecting the cave to Cahal Uitz Na was determined to be a Late Classic construction (Halperin et al. 2001:13, 16). A single excavation unit was placed outside of the cave entrance between the sacbe and the cave but no temporally diagnostic artifacts were recovered – only a handful of very small ceramic sherds, three chert flakes, and some slate debitage (Halperin et al. 2001:7).

#### **4.3.1.1. Interior Description**

Actun Tunichil Muknal is approximately 5km long and has a perennially active stream which flows through the main passage and out the eastern entrance (Moyes 2000:22). The cave is generally divided into four main sections: The Upper Entrance Chamber, the Sinkhole Tunnels, the Stela Chamber, and the Main Chamber. The Main Chamber houses numerous artifacts including ceramics, obsidian blades, stone tools, and human burials (Awe 1998:7; Moyes 2000, 2005). Excavations and ceramic analysis in 1997 showed that the Upper Entrance Chamber was used from the Early Classic to the Terminal Classic, the Sinkhole Tunnels from the Early to the Late Classic, and the Main Chamber was used no earlier than the Late Classic, indicating a possible change in use over time related to changes in the perception of cave dark zones (Griffith 1998:55; Moyes and Awe 1998).

#### **4.3.1.2. Exterior Description**

While the interior of Actun Tunichil Muknal (ATM) has been excavated, mapped and analyzed in great detail (see Awe 1998; Gibbs 1998; Griffith 1998; Helmke et al. 1998; Moyes 2001; Moyes 2005; Moyes et al. 2009) the exterior has only been the subject of one notable investigation. In 1999 Western Belize Regional Cave Project participants Rhan-Ju Song, Peter A. Zubrzycki, and Christophe G. B. Helmke undertook the regional survey of the area outside and around the cave entrance up to the nearby site of Cahal Uitz Na only 500m away from the entrance of ATM (Song et al. 1999). Until recently, this was the only investigation of a space outside of a cave entrance. While several structures were recorded, only the largest, M1, was excavated (we have maintained that, as well as the other structure designations in our own excavations). We re-surveyed this area in 2014 (Figure 15). These structures are all located on top of a level area between branches of Roaring Creek, including

the one that exits the mouth of ATM. This area is covered in fine silty clay and layers of small river pebbles, indicating that this area floods at least occasionally. There is no pattern in placement or orientation noticeable between any of the structures.

#### **4.3.1.3. Exterior Excavations**

Shovel test pits were dug on either side of the cave entrance but broader excavation units were placed over three structures in the area immediately to the northeast of the cave entrance: structures ATM-M1, ATM-M2, and ATM-M3. All material was hand sorted and ceramic analysis was done by Laura Kosakowsky. Lot numbers and contexts are summarized in Table 5.

##### **4.3.1.3.1. Shovel Test Pits**

Several shovel test pits were placed throughout the area that is now the camp outside the cave entrance, as well as across the river in front of a small secondary entrance to the cave. The main area was not gridded, but rather the shovel test pits were placed on flat areas of the grounds between structures to attempt to determine if there was any underlying formalized floor to give us an idea of the size and extent of the structures. No floor fill was found, only layers of silty clay and small river pebbles. The test pits in the main camp area went as far as the digging equipment could extend, making it clear that there is no single floor underlying this area as one would expect if this were a plaza-type space. Across the river, in front of the secondary entrance, the test pits were placed in level areas to determine if this space was in use at all. Apart from some groundstone visible on the surface (out of context), the test pits in this area came up empty as well. Overall, artifact counts from the STPs were very low and did not reveal any information that could help us in the excavations of the structures (Table 6).

##### **4.3.1.3.2. Excavation Units**

###### Structure ATM-M1/Unit 1

This structure was partially excavated in 1999 by the WBRCP (Song et al. 1999) and is located 20m from the cave entrance, though it is around a large cliff face from the entrance and so is hidden from view from this feature. It is the largest of the structures, it stands approximately 2m tall though topography causes this to vary between 1-4m and it is aligned 10 degrees east of North. The large ceiba tree that was noted in 1999 has since grown much larger and has completely torn up the southeastern corner and front of the structure. Excavations included a 10m<sup>2</sup> section within the interior of the structure, but did not encompass any of the edges, making a clear determination of size and form impossible. From the 1999 excavations it appeared as though there was one central chamber with two side chambers (a gap in one of the partition walls led to the conclusion that the two sides contained chambers) though excavations did not clearly extend to the sides of the structure

to confirm this (Figure 16). Three floors were identified in the central area, with the terminal phase being dated to the Late/Terminal Classic (specifically later than C.E. 850) and the earliest dating to *circa* C.E. 600 or the Early Classic. On the terminal floor, a termination cache consisting of a dense concentration of ceramics, as well as remnants of red specular hematite were found on the plaster floor.

These findings, in addition to its proximity to the cave entrance led to the interpretation by WBRCP of this structure as having a special, ritual function. Throughout the construction fill of the structure, slate fragments and artifacts were recovered. However the ceramic assemblage from the fill of this structure did not mirror that found in the cave at ATM, leading the 1999 team to question the ability to directly associate a surface structure and a specific cave, but rather point to how the assemblage is nonetheless indicative of a ritual structure. They also pointed to how the M1 was likely erected at the very beginning of the Late Classic, in correlation to the increase in cave use seen inside ATM, and that both the structure and cave are abandoned at the same time. They suggest that this structure may have housed a caretaker for the cave, potentially a figure of the priestly classes who restricted access but also performed rituals.

The BCRP returned to this structure in 2014 to further delineate the size and form of the structure, as well as determine what the areas on the sides of the main chamber are. Unit 1 was placed over the Southern half of the structure and was 8x5.3m in order to fully encompass the edges and base of the structure. The datum was placed in a large boulder that rose above and was incorporated into the back wall of the structure on a nail that was left in it (presumably during the 1999 excavations). The unit was dug in natural and cultural levels and all material were hand sorted. The surface level contained some groundstone but due to the high traffic of this area it was all presumed to be well out of context.

#### *Level 1*

Level 1 was the removal of the backdirt of the 1999 excavation as well as the humic layer down to the level of tumbled cobbles and boulders of the structure. It was also assumed that the material of the humic layer was heavily disturbed due to heavy traffic, overlapping excavations, and bioturbation. The removal of this level revealed the edges of the main chamber of the structure as delineated by WBRCP as well as the tops of the walls of the side chamber. Most notably, this side of the structure did not contain the corridor between the main chamber and this area that was noted in 1999 on the northern side of the structure, lending the re-interpretation of this space as possible bench or platform rather than a side-chamber. The 14 identifiable ceramics from this combination of backdirt and fill only confirmed that the ceramics are primarily Late Classic, with Belize Red being the most commonly identified type.

#### *Level 2*

Level 2 consisted of the removal of the tumbled cobbles and boulders around the structure walls. Removing these in the front of the structure revealed one long step running the length of the structure (Figure 17) and a small platform ~3m wide by at least 1m deep (excavation unit ended prior to determining the forward extent) jutting out of the middle of the structure at the same level as this step (Figure 20). These findings confirmed that the eastern edge is the front of the structure. That it faces the modern camp is likely intentional and may indicate a function for this large flat space that the shovel test pits were unable to

indicate (Figure 19). On top of this platform, several large pieces of slate were found, one of them was roughly square (~35cm on each side) and had been broken (evidently recently due to the sharp clean breaks) (Figure 18).

Removing this loose tumble also revealed that exterior walls of the south and west of the structure are made of very large rough boulders, in some places simply incorporating the bedrock outcrops of the area (the stone with the datum for instance). The partition wall in the south of this structure was shown to also not be in line with the exterior wall, as seen in the 1999 excavations of the northern side of the structure. This partition wall is in actuality, a double line of stones which have since slumped over as this part of the structure as apparently sunk down over time. This double line of stones may have has some cobble fill in between but the degradation of this area made that hard to determine. The few loose stones that were in between the two alignments of stones were removed down to the base of these stones. Very few ceramics were found in these parts of the structure's construction, the majority of the fill being made of cobbles and boulders. The most commonly found artifact were groundstone fragments and slate throughout the structure.

### *Level 3*

Level 3 was the removal of the boulders that made up the dry core fill of the 50x50cm reduction abutting the exterior edge of the main chamber wall. It was so placed to determine whether the edge portions of the structure were an addition, a bench, or part of one large original structure. One of the plaster floors was found 29cm below the inside of the back wall (western wall) stones and abutting them (rising slightly at the edges against the stones). This floor however does not extend under the partition wall, indicating that this wall was constructed first. We had found remains of what we assumed was Floor 1 in the very southeast corner of the main chamber when we removed the backdirt and it abutted the stones of the partition wall there as well. In the northwest corner though, a portion of plaster was found to run under the stones – this plaster is assumed to be Floor 2, indicating that this partition wall/chamber wall was constructed after the formalization of this central space, as part of the construction phase that included Floor 1 (Figure 21). The level was terminated here, with the rest of the dry core fill to be removed in Level 4.

### *Level 4*

This level included the removal of as many of the dry core fill boulders as was safely possible. They were removed to a depth of 75cm below the surface of the dry core fill in the rest of the unit at which point the boulders became too large to be safely removed from the 50x50cm unit. The most interesting finding of this level was that we were able to remove boulders from under the partition wall of the interior of the central chamber and there was absolutely no difference or clear distinction between the edges and the center, confirming that there was initially one large structure. Also, the level of the floors that were found is above the dry core fill of the rest of the structure, confirming that the formalization of the central chamber took place after the construction of one large structure.

### *Unit Interpretations*

The two alignments making up this low partition wall were both sitting directly on top of the dry core fill that makes up the southernmost section of the structure. Because the 1999 excavations encompassed the entirety of the interior plaster floors, it was difficult to

correlate our excavation levels outside of this main chamber with the levels of the floors inside the chamber. Our best estimation is that the two plaster floors existed above the level of the dry core fill on the southern edge of the structure, indicating two possibilities:

1. That the structure was originally one large low structure and benches were added in to the sides, with an extension of these benches at a slightly later date. That the orientation differs slightly from the exterior walls could be indicative of this lapse in time between construction periods.
2. That the structure was originally one large structure onto which the central chamber with raised walls was added onto the middle – the walls of which were either constructed with a double line of stones for support of a super-structure, or which was enlarged on either side during a later construction phase.

Due to the much lower edges of the exterior wall of the south of the structure and the lack of back wall to support a bench in this area, the second hypothesis is more likely, though only further and more complete excavation of the northern side of the structure can confirm this. No plaster was found on the southern edge of the structure, contradicting the construction methods using plaster that were found preserved and could merely indicate a shift in focus to this area of the structure. The edges would not have been inaccessible with the construction of the walls for the main chamber because of the low step running the entire length of this structure. In order to confirm this sequence, a 50x50cm reduction was inserted into the edge of the main chamber wall, intersecting the second stone alignment of the partition wall and the back wall.

### Structure ATM-M2/Unit 2

Unit 2 was a 5x5m unit placed over top of Structure ATM-M2 and oriented with the architecture 30degrees off of North. The structure is located alongside the path currently used to access the cave and roughly due south of the larger Structure ATM-M1. Levels were natural and cultural and all material was hand sorted. Bushing and surface clearance of the unit revealed a sizeable quantity of groundstone including a preform and a broken mano (Figure 22).

#### *Level 1*

Level 1 was placed to define the southern edge of the structure, which revealed an alignment of rough large boulders placed in a linear alignment, more groundstone and fairly high densities of lithics. The alignment was placed upon a presumably natural layer of river pebbles which extend throughout the unit and the surrounding area (based on intensive test pitting). The ceramics from this level are in keeping with those of ATM-M1, being Late Classic with Vaca Falls Red and Belize Red as the most commonly identified types.

#### *Level 2*

Level 2 entailed a 50x100cm trench into the front of the structure to ascertain whether the rough stone alignment uncovered was in fact the structure and not just coincidental linear tumble (possibly having fallen against a subsequently decayed root or suchlike), the trench was also placed to investigate potential construction phases and construction techniques. Level 2 revealed that the rough stone alignment evident in Level 1 was in fact the front of the structure and no earlier construction phases were evident. Interestingly the proliferation of groundstone evident on the surface and in Level 1 seemed

to continue throughout the structure with dense deposits in both sections and the end of the trench. Level 2 seemed to show no formal superstructure.

#### *Level 3*

Level 3 subsequently entailed the definition of the structural front around the all four edges of the structure (Figure 23). Dense quantities of ceramics were found around the structure and a disproportionately high amount of lithics were also found with three bifaces. The northeast and northwest sides of the structure consisted of linear alignments of stone which clearly indicate a platform (Figure 24), on the southwest side extensive root action (visible on the surface) appeared to have blown out the entire structure wall.

#### *Level 4*

Level 4 was then opened which extended the Level 2 trench further into the centre structure to investigate potential of a centre cache, this however only revealed greater amounts of groundstone and some more sandstone (Figure 25). The unit was closed at this point.

#### *Unit Interpretations*

The only architectural form for ATM-M2 we can deduce from excavations is likely a low square platform with no obvious superstructure. Based on the form the structure, the rocks on top of the platform were likely only ever intended to be some form of pile as there is no obvious way a wall could have tumbled to create the rock mound we see today (Figure 26). This conclusion is evident in the trench cut into the structure.

#### Structure ATM-M3/Unit 3

Unit 3 was a 1x1m unit placed over top of the edge of ATM-M3, a low-lying structure approximately 3x3m located East of ATM-M1 and Northeast of the cave entrance. It was placed here to determine if the groundstone-heavy construction fill of ATM-M1 and ATM-M2 were specific to those structures or if it is a feature of all the structures outside the cave entrance. This structure is also the lowest of the structures in the area which might indicate a different function. It was dug in three natural and cultural levels and all materials were hand sorted.

#### *Surface*

The surface of this unit did not require any clearing as this structure is on a pathway from the roofed shelter area of the camp and is heavily trafficked. One ceramic sherd was found but is out of context.

#### *Level 1*

There was no humic level to remove so the first level consisted of the silty clay layer down to the cobble fill of the structure and some rough stones in front of the structure. This level revealed that the stones that were barely visible on the surface are actually upstanding roughly rectangular stones that bound the structure (Figure 27, Figure 28). There were some large ceramic sherds in front of the structure wall at their base. No lithics were found in this level, contrary to the findings of the other two structures in this area.

### *Level 2*

Level 2 removed the rough stones in front of the structure to reveal a level of cobbles similar to the construction fill of the structure (Figure 29). These are smaller limestone cobbles, not the small river pebbles, indicating either a platform off this side of the structure or a floor surface in this area of the camp area that was not detected by the shovel test pits. The depth of these cobbles is approximately 30cm below the top of the structure and some exploration of these cobbles revealed that they were placed on top of larger stones. The interior of the structure was also removed down to the level of the exterior cobbles to determine the sequence of construction of the structure in relation to the construction of the platform/floor surface (Figure 30). Some groundstone pieces were recovered from the fill of the structure, including a celt, similar in proportion to structure ATM-M1.

### *Unit Interpretations*

After excavations ATM-M3 were complete, two more shovel test pits (STPs 19 and 20) were placed in front of the structure because of the discovery of what looked like a cobble floor surface at its base. These two test pits were placed 1m and 2m out from the structure and confirmed that at least in this area of the camp, a cobble surface does extend out from the base of this low-lying structure 15-20cm below the surface.

#### **5.3.1.4. Archaeological Summary**

While we were still unable to confirm the function of the partition walls of ATM-M1, it seems most likely that the form of the final structure was that of a large structure with a central, enclosed chamber on top of which was a superstructure. The entire structure was made accessible by a long step running the length of the structure, with one large platform jutting out of the main chamber. We had hypothesized that there could be other steps off of the southern edge of the structure heading towards ATM-M2 and the cave entrance, but this does not seem likely (Figure 31). It is possible that there are steps coming down from this platform but time and resources did not allow for the full exploration of this possibility. Nothing we found contradicts the hypothesis that this structure was ritual in function. The construction of this large structure and the final phases likely took place during the Late Classic (as stated by the WBRCR report) in conjunction with the increase in ritual activity inside ATM during this time.

The proliferation of groundstone and lithics in ATM-M2 is no doubt important and possibly associated with the cave assemblage (ATM contains high quantities of groundstone in comparison to other cave sites in the region). The majority of artifacts likely possessed some form of agricultural usage (manos, metate fragments, the preform, handstones, slate, and other granite fragments) and the structure may have acted as some form of depositional shrine for these items.

Structure ATM-M3, while the smallest structure excavated, is the one that leaves the most unknown. Its construction fill utilizing groundstone is similar to both the other structures excavated, but the overwhelmingly large proportion seen in ATM-M2 set it apart from ATM-M1 and ATM-M3. It is low lying and almost square in shape, but no items that could be indicative of household refuse were found. Its function and relation to the cave

remain unclear. Further test pits or ground penetrating radar analysis of this area could prove fruitful in determining the extent of the potential platform and if there are any others that were missed due to the time and man-power constraints.

The same could be said of the entire area – the deep level of silty clay and river pebbles throughout the camp area could be covering up any number of small structures or platforms in the area that shovel test pits are not going to be able to catch. While it is fairly clear that structures ATM-M1 and ATM-M2 are placed in proximity to the cave because they serve a special function related to the cave, the likelihood of a special function for the other structures in the area will diminish the further from the cave entrance they are. Further excavation of these other structures would be useful in testing this hypothesis.

#### **4.4. Macal Drainage East/Mountain Pine Ridge**

The hills and mountains to the east of the Macal River in Central Belize are characterized by a brief area of lowland broad-leaved forest on top of a limestone karst geology, which quickly ascends to lowland pine forest and up to the Mountain Pine Ridge which is characterized as sub montane pine forest atop a primarily granite geology (Meerman and Sabido 2001). Ofrenda and Nohoch Ka' Actun are both located on the edge of the Mountain Pine Ridge but are firmly in the limestone broad leaf forest which extends outwards from the ridge towards the Macal River. Ofrenda is located 1.5km to the east of the Macal River, and Nohoch Ka' Actun is 2.5km from the river. The vegetation surrounding both of these sites is jungle cover and the caves are limestone caves surrounded by outcrops of limestone boulders and bedrock. The nearest major sites to both caves are the large site of Pacbitun, and the medium-sized site of Guacamayo (Moyes and Awe 2015; Spenard 2011). Though Minanha is the same distance away from Nohoch Ka' Actun as Pacbitun, it is located on the other side of the Macal River and likely had less influence in that area than the much more easily accessible Pacbitun.

Pacbitun is located in the foothills of the Mountain Pine Ridge in the Cayo District, about 3 miles from San Antonio Village. The site is situated at the confluence of two ecozones: lowland tropical rainforest and the Mountain Pine Ridge (Weber 2011:5). The area's earliest evidence for settlement dates to the Preclassic at about 800 BC (Healy et al. 2007). Pacbitun peaked during the Late Classic Period during which time the site likely controlled an area of about nine square kilometers (Weber 2011:5). Abandonment of the site took place during the Terminal Classic at the beginning of the 10<sup>th</sup> century (Healy et al. 2007). Over 20 caves have been documented in the area surrounding Pacbitun with activity extending no further than the Late/Terminal Classic.

The Guacamayo site was identified by the Pacbitun as a plazuela group consisting of at least five structures arranged around a cardinally-aligned plaza (Spenard 2011:41). It remains a large, uninvestigated primary center located on the eastern bank of the Macal River (Neff et al. 1995; Spenard 2011:41). San Antonio Viejo is a secondary site located 4.5km west-southwest of Pacbitun and the epicenter consists of three discontinuous groups of structures and four plazas (Spenard 2011:41; Spenard 2014:90). The tallest structure is an eastern pyramidal structure measuring between five to six meters high and approximately ten meters at its base (Spenard 2014:41). It was likely a border settlement directly between Pacbitun and Guacamayo, which lies 9km from Pacbitun (Spenard 2014:41, 91-92).

#### 4.4.1. Nohoch Ka' Actun (Big Mano Cave)

Nohoch Ka' Actun is located on the edge of the Mountain Pine Ridge 2km southwest of the Belize Defense Force camp at Augustine Village (Moyes 2016:121). It is located on the same karstic ridge as Actun Am Actun, 8km East of Minanha across the Macal River, and 15km South of Pacbitun. Nohoch Ka' Actun is set into the west side of the hill which is covered in limestone and bedrock boulders. This cave is also located only 750m East of Augustine, a medium-sized site identified in 2016 as part of the BCRP project with two plazas.

##### 4.4.1.1. Interior Description

Nohoch Ka' Actun is a rockshelter or shallow cave (12.5m on its NW/SE axis and 19.2m on the NE/SW axis) which does not have a true dark zone (Moyes 2016:120-122). The cave entrance is about 5m in width and 1m tall and set in a crevice behind a large bedrock outcrop which makes it invisible until you are 3m away from it (Figure 32). From the entrance, the floor slopes downwards at a steep 40° to the dimly lit back of the cave where the only level areas in this cave exist. A mano fragment was located beneath some rocks in the center of the cave near the back wall and an additional fragment was located on the west side of the cave, giving the cave its name. Also found within the cave were nine jute shells, two imported river cobbles, and a chert flake. This cave appears to have been heavily looted, as were the structures immediately outside of this cave.

##### 4.4.1.2. Exterior Description

The site has been heavily looted, though some artifacts, especially ceramic sherds remained. Outside of the entrance (Figure 33), the hillside has been leveled off with one large terrace, approximately 30x35m and 2.7m high, with a series of two smaller terraces continuing downhill from it to the west. To the north is another level area at the base of the main terrace, but this area appears unmodified and natural. Jutting into the main terrace from approximately the center of the western edge of the terrace is Structure 1 (Figure 34). Structure 2 is on the northeast corner of the main terrace and is a tall rectangular structure that has been built abutting the natural boulders of the hillside and incorporating a sizable bedrock outcrop into its foundation. This bedrock boulder is visible in a large looters pit that has been dug into the southwest corner of the structure. On the northwest corner of this main terrace, is an empty corner framed in by the edges of Structures 1 and 2. There is a second looters pit in this corner of the terrace. This empty corner is slightly higher than the main area to the south of Structure 1. There may have been a step leading down from this area to the lower area between the northeast corner of Structure 1 and the southwest corner of Structure 2 but the backfill from the first looters trench was thrown there masking any surface evidence of this.

Based on the placement of Structure 1, facing a large level area on top of a constructed terrace directly outside of the cave, it is hypothesized that this area has been modified with a specifically public performative function in mind, similar to that hypothesized to have been constructed outside of another cave with an almost invisible entrance, Moth Cave in the Vaca Plateau (Arksey 2016). The degree of modification is greater than that seen at most other caves in my sample – comparable only to Moth Cave and Actun Tunichil Muknal – both of which are caves for which the entrances are not visible from the open plaza/platform spaces that have been constructed near them. The space outside of Nohoch Ka' will provide valuable information on the nature of the modifications outside of this type of cave.

#### **4.4.1.3. Exterior Excavations**

Test pits were placed in a grid over the main terrace and down the lower terraces to determine the extent of modifications over the area. Structure 1 is a large low-lying structure approximately 1m high and 7x16m oriented East-West along its longest axis. It has two platforms on top of the structure, on the eastern and western ends, with a channel approximately 1m wide running between them along a North-South axis. One large 2x8m unit was placed over this channel encompassing the bounding stones of both the East and West platform edges which were partially visible in a North-South alignment on the surface in order to determine the form of the structure, its construction methods, and its temporal sequence. This unit was dug down to reveal the underlying architecture at which point the unit was shrunk to two 1x2m units on the northeast and the southwest corners (Units 1A and 1B, respectively) to be excavated to bedrock in order to determine temporal sequence and construction methods.

Upon excavating the southwest unit however, it was discovered that the materials in the channel between the two platforms were not typical of construction fill but resembled a densely packed ceramic ritual deposit. A third subunit (Unit 1C) was placed over the channel fill to investigate further but was not taken down below the terminal construction. Two 1x1m test pits were placed in the centers of the West and East platforms (Units 4 and 5, respectively) in order to determine if the fill of the two platforms differed in any way which might indicate their function and to gain detailed temporal sequences.

All units were excavated in natural and cultural levels and all material was hand sorted. Numerous trees are growing in the area but the unit was placed over a section that appears relatively intact. All materials were hand sorted and ceramic analysis was done by Laura Kosakowsky. Lot numbers and context descriptions can be found in Table 7.

##### **4.4.1.3.1. Shovel Test Pits**

Shovel test pits were placed along a 5m grid outside of the cave entrance. The only ones that were not dug were those that were located on top of architecture because the structures were being more intensively investigated through larger excavations. A total of 30 shovel test pits were dug, with 24 containing cultural material (Table 8) which was mixed in with pebbles and cobbles. Of the six that came up empty, STPs 1, 2, and 4 were among the

closest to the cave entrance and on areas that were likely at the elevation that the rest of the areas was made level with and thus did not require any modification. STPs 9, 15, and 20 are on the southern end of the main terrace and among the furthest from the structures on this terrace.

Those STPs with the highest density were located closest to the structures and are probably related to the leveling off of these areas for the construction of the structures. Of all cultural material recovered, 261 ceramic sherds were found, one jute, and one chert flake. 33 sherds were identifiable and either fell into the Cayo/Cambio Unslipped, Vaca Falls Red, or Dolphin Head Red – placing all sherds and their placement in the construction materials of this terrace in Tepeu 2-3 and the Late Classic. The densities of the shovel test pits do not indicate any activity other than the construction and leveling of the terrace. None of the test pits had any material or unusually high densities that warranted any further excavation other than those already planned for the structures.

#### **4.4.1.3.2. Excavation Units**

##### Structure 1

The edge of the eastern platform is badly displaced due to tree roots and a large cohoun tree hole that has pushed them over and out into the channel. The northern and southern edges of the channel are formed by stacked boulders which do not appear to be too far displaced from their original position based on the stones that are still located on top of them. These ends of the channel appear to be inset from the edges of the east and west sides of the structure.

##### Units 1, 1A, 1B, 1C

###### *Level 1*

The humic and the underlying sandy clay (Munsell# 10YR 3/2) was removed 13 cm down to the top of the collapsed architecture forming the north and south edges of the structure, and the bounding stones of the east and west platforms (Figure 35). Granite fragments are visible on the edges of the western mound, including an overturned metate fragment on the southeast corner of the upper west platform. These were left in situ. Among the cultural material recovered in this level (Lot#16006) was a slate fragment, four chert flakes, two quartz fragments, and half of a river cobble. Of the 485 ceramic sherds, there were three Belize Red, 11 Cayo/Cambio Unslipped, three Garbutt Creek Red, and three Vaca Falls Red. While this context is highly disturbed, it would indicate that the last phase of construction was in the Late Classic.

###### *Level 2*

Level 2 saw the removal of the collapse down to intact architecture and construction fill (Figure 36). Off of the northern and southern ends of the structure was a darker brown silty clay (Munsell# 10YR 3/3) but on top of the structure was a mixture of cobbles, pebbles, and ceramics in greyish brown sandy clay (Munsell# 10YR 3/2). The matrix in the channel was removed around the stones that had been displaced from the edges of the eastern platform until the distinction between channel fill and eastern platform collapsed fill

was clear. The collapsed stones from this eastern platform were then removed revealing the underlying stones which was better preserved and still in alignment with the corners of the eastern mound visible in the northeast and southeast of the unit (Figure 37). The depth of the removal of the channel was determined when the sherds began appearing flat-lying as opposed to at a variety of angles. The fill of the channel is higher in the center than at the northern or southern ends, indicating that there may be steps rising to this center point. This will be investigated in Unit 1C, Levels 3 and 4.

Within the collapse on top of the intact architecture (Lot#16008), one chert flake, one obsidian blade fragment, one river cobble, one speleothem, and three fragments of a slate pendant were recovered. 313 ceramic sherds were found, among them three Belize Red and 15 Cayo/Cambio Unslipped, placing the collapse and the last phase of construction in Tepeu 2-3 and in the Late Classic, which is also typical of external cave constructions.

Off of the north end of the channel, the remains of a floor are visible in the preservation of a level of densely packed small pebbles. These pebbles abut and possibly run under the channel's facing stones on this side of the structure. Subunit 1A will explore this further. Off of the south side of the channel, some pebbles and ceramics lying at different angles in fire-hardened clay (orange burnt clay nodules with charcoal fragments and pebbles) was found running over the tops of the channel's facing stones and extending south out of the unit boundary. It is possible that the same floor found on the north side exists on the south side, but if it does it would be at a lower elevation than on the north and under the fire-hardened clay. This will be further explored in subunit 1B.

### Unit 1A

Unit 1A is a 1x2m reduction in the northeast corner of Unit 1 in order to further explore the floor found in this area off of the structure which appears to run under the channel construction. This subunit was dug to bedrock in order to determine the construction sequence of the structure and how the channel construction relates to the rest of the structure as well as the eastern and western sides of this structure. It is possible that the structure began as two separate mounds that were connected at a later juncture in time.

#### *Level 3*

Because the pebbles of the floor off the northern side of the structure appear to run underneath the channel, this level removed the construction fill of the channel ~25cm down to the level of this external floor. The fill consisted of cobbles and sherds in loose sandy clay (Munsell# 10YR 4/2). The bounding stones of the channel were indeed on top of the floor fill, but removing them revealed a second set of bounding stones placed further back (south) underneath the channel. The pebble floor abuts these earlier bounding stones. The artifacts found in the fill of the channel on this side of the structure (Lot#16009) included three granite fragment, two chert flakes, two quartz fragments, two river cobble fragments, and a speleothem fragment. Of the 151 ceramic sherds recovered, four were Belize Red, four were Cayo/Cambio Unslipped, one was a Dolphin Head Red Red, and one was a Silver Creek Impressed dish body sherd placing it in Tepeu 2-3 and the Late Classic.

#### *Level 4*

Level 4 involved the removal of the floor abutting the underlying earlier channel construction. This floor consisted of ~4cm of a layer of densely packed pebbles on top of

a layer of cobbles in sand clay (Munsell# 10YR 4/2). Under the cobbles was another layer of densely packed pebbles located at the same elevation – an earlier floor (Figure 38). This floor appears to run under the earlier channel construction. The artifacts found in this floor fill (Lot#16010) included a metate fragment, 10 chert flakes, two retouched chert flakes, seven quartz fragments, and two speleothems – one stalactite and one stalagmite fragment. There were also four jute from the southeast corner of the unit which appear to be from a jute deposit visible in the unit edge which was placed in a depression in this second level of the channel floor. Of the 16 ceramic sherds recovered from the floor fill, only two identifiable ceramic sherds, both of them Cayo/Cambio Unslipped were found, placing this fill in Tepeu 2-3.

#### *Level 5*

This level consisted of the removal of the underlying earlier channel construction, including the bounding stones and the construction fill (Munsell# 10YR 3/3), down ~15cm. In doing so it was discovered that the second floor runs underneath this construction phase, thus separating the two sides of the structure into east and west. The foundation stones of the eastern mound are visible on the eastern side of this unit and appear to be sitting on top of the terrace floor (Figure 38). This indicates that not only that the eastern and western mounds were indeed two separate mounds at one point, but that the later phases of construction of the two mounds was built on top of the terrace that had been leveled across the channel in between them. A cluster of jute were found on top of this floor in the southeastern corner of the unit up against the bounding stones of the eastern mound. Only a few of these jute were recovered in Unit 1A, the remainder were left in place and are visible in the profile. The level was ended upon clearing the construction on top of the floor. In the construction fill of this earlier channel construction (Lot#16012) was a granite fragment, one obsidian blade fragment, one quartz fragment, and 39 jute. Just as the floor fill that was removed in Level 4, very few identifiable ceramics were found in this phase of the channel construction. Of the 28 sherds, the material recovered included one Vaca Falls Red, two Mt. Maloney Black, and three Cayo/Cambio Unslipped placing it at some point in the Late Classic.

#### *Level 6*

The pebbles and underlying cobbles (Munsell# 10YR 4/3) of Terrace Floor 2 were removed 20cm down to the next terrace floor, which was indicated by the presence of some plaster in the southwest corner of the unit which was likely preserved by the overlying later channel construction (Figure 39). This level was cleared to the elevation of this plaster. Included in the artifacts recovered in Lot# 16013 were a granite fragment, two jute, and 17 ceramic sherds. Of these, five were Cayo-Cambio Unslipped, one was Dolphin Head Red, and one was Vaca Falls Red – limiting this construction phase again to Tepeu 2-3.

#### *Level 7*

The pebbles and underlying cobbles and boulders (Munsell# 10YR 4/3) of Terrace Floor 3 were removed 26cm down to bedrock (Figure 40). In a gap in the cobbles on top of bedrock a cluster of jute nested in a basin of ceramic sherds were found and designated Feature 1-1. No carbon was found on bedrock. Lot# 16016 included one chert nodule fragment and one quartz fragment found on bedrock, 11 jute, one small round river pebble,

and only four ceramic sherds – one of which was a Vaca Falls Red and two of which were Cayo/Cambio Unslipped, placing this earliest floor still within Tepeu 2-3 and in the Late Classic.

#### *Feature 1A-1*

Feature 1-1 was a small deposit (Lot#16017) consisting of 21 jute, one chert biface, and two chert flakes within a small basin of 14 ceramic sherds from the same jar which had a rim diameter of 15cm. It was placed in a hole/gap in the boulders and cobbles forming the foundation of N. Terrace Floor 3. It ranged from 125-132cmBD and CS#003 was pulled out of the center of this collection of jute and ceramic sherds at a depth of 129cmBD. The foundation cobbles continue under the feature down to bedrock. This feature of jute lies 80cm directly north of another cluster of jute resting on top of Terrace Floor 1, visible in the profile of Unit 1A (Figure 41, Figure 42).

#### Unit 1B

Unit 1B is a 1x2m reduction in the southwest corner of Unit 1 in order to further explore the burnt clay and ceramic sherd matrix in this area off of the structure. This subunit was dug to bedrock in order to determine the construction sequence of the structure and how the western mound articulates with the channel construction. It appears from the stones visible on the surface that this side of the eastern and western mounds are similarly ascended by three steps topped off with one small platform. This unit encompasses the southeast corner of the western mound and will confirm this form.

#### *Level 3*

The fire-hardened clay (orange burnt clay nodules with charcoal fragments, 7.5YR 4/4) that was found in Level 2 (Figure 43) to be running over the tops of the channel's facing stones was removed ~40cm down to a level of cobbles on top of bedrock off of this side of the structure (Figure 44). These cobbles are sitting on bedrock but do not extend beyond 30cm from the front of the western mound and 60cm beyond the channel and are aligned east-west. The clay/ceramics/charcoal covered the southern side of the channel and extended around the edges of the eastern and western mounds confirming that this event was the last activity to take place in this area of the structure. It also extends halfway into the channel but is not apparent beyond the midpoint of the channel indicating that this burning event may have been a deposit placed on this side of the structure. The ceramics at various angles in this deposit confirms that the sherds were dumped as a collection of material and not placed individually on an open surface.

Two charcoal samples were collected: CS#002 was a scatter of charcoal collected just off of the edge of the structure at 128cmBD, approximately 45cm below the top of the matrix; CS#001 was collected at 133cmBD and was a larger sample which could provide species ID (Figure 45). The artifacts collected from this matrix (Lot#16011) included two slate fragments, two jute, 18 lithic fragments (two of which were retouched flakes), seven quartz fragments, two river pebbles, and two speleothems (1 stalactite fragment and one stalagmite fragment). 284 ceramic sherds were recovered including five Garbutt Creek Red, one Mountain Pine Red, and two Mount Maloney Black, placing this construction phase in Tepeu 2-3.

*Level 4*

The collapse and fill of the western mound (Munsell# 10YR 3/2) was removed, leaving the larger bounding stones and boulders in place, in order to confirm the form of the structure. The eastern edge of the western mound which bounds the channel is a series of stacked small boulders placed on top of the channel. The pebbles, small cobbles and ceramics were removed from behind the southern bounding stones of the mound and revealed a retaining wall consisting of a series of small boulders stacked 4-5 stones high and angling back towards the north. The top of this wall formed the top step of the mound, with the middle and lowest step having been added on to the south of this wall. It also appears that this retaining wall continues eastward behind the large boulders facing the channel. The fill from the western mound (Lot#16019) included one jute and 86 ceramic sherds, three of which were Cayo/Cambio Unslipped.

*Level 5*

The large boulders forming the southern edge of the channel were removed and the fill (7.5YR 4/4) from behind them was taken back to an earlier channel wall which is 50cm behind the last phase of the channel's construction and does not align with the western mound retaining wall revealed in Level 4 (Figure 46). It instead appears to have been built off of the eastern edge of the western mound. The small boulders that make up this retaining wall included ~1/2 of a granite sphere. The boulders and fill were removed to bedrock off the southern end of this structure (Figure 47, Figure 48) but the earlier phase of the channel construction was not excavated since this was done in Unit 1A. The artifacts recovered in the fill (Lot#16034) included one rounded river pebble and 370 ceramic sherds including six Cayo/Cambio Unslipped, three Dolphin Head Red, and one Vaca Falls Red which place this construction phase in Tepeu 2-3.

Unit 1C

Unit 1C was a 1x2.5m subunit placed within the center of Unit 1 over the center of the channel in order to see if there were any significant offerings placed at center of the structures which might help to determine the specific function of these structures and the activities taking place on them. This subunit extends to the northern edge of Unit 1B since the fire-hardened clay/ceramics/charcoal matrix is seen to extend this far in the unit's edge. This unit will also test if the floor found in Unit 1A extends the entire length of the channel or if there are steps descending down to the south.

*Level 3*

This level was begun in the north of the unit where the channel fill was tallest and where it was hypothesized that there may be steps leading up to a central platform. In the very north of the unit there were some cobbles and small boulders loosely within the fill, possibly from where a tree roots system had disturbed the construction. The bounding stones of the channel were traced down to a depth of ~92cmBD when the mixture of boulders and sherds ended on a flat surface of cobbles. This is in keeping with the slope of Northern Terrace Floor 2 which Unit 1A showed runs under the entire channel. The artifacts recovered from the fill of the channel in the northern end of the unit (Lot#16020) included one mano fragment, 11 jute, two chert flakes, one quartz fragment, and one river-worn quartz pebble. The ceramics included 701 sherds which included several Cayo/Cambio

Unslipped and place this fill in Tepeu 2-3.

The ceramics in this area were jumbled in with the pebbles, cobbles, and small boulders, resembling construction fill more than a deposit, though the poor preservation in this area makes this difficult to determine. There were some flat lying sherds located ~70cm from the northern end of the unit which differed from the jumble of sherds in fire-hardened clay and pebbles visible in the southern end coming up from Unit 1B. These flat lying sherds appear to be very closely stacked on each other and are located directly on top of the Northern Terrace Floor 2 which was found in the northern end of the unit (Figure 49, Figure 52). This deposit was given the designation Feature 1C-1 (Lot#16036) and is associated with Level 3, the level in which was identified. In the southern 1.5m of the unit, the fire-hardened clay/jumbled ceramics/charcoal which was found in Unit 1B (Lot#16011) is present on top of the flat-lying sherds making up Feature 1C-1. This matrix will be removed before continuing with Level 3, Feature 1-1, but will be removed as Level 4 reflecting the temporal sequence in which it was identified in the excavation process (Lot#16039).

#### *Feature 1C-1*

The flat-lying sherds of Lot#16036 were pried off each other down to the level of cobbles forming the foundation of the Terrace Floor 2. In the center of the channel, midway between the northern and southern ends, two vases were found which appeared to have been placed intact at the base of this feature/deposit (Figure 53). These vessels were poorly degraded but their intactness was still visible during excavation. They were given the designations Special Find #1 and #2. At the base of this deposit of sherds, several large blackened sherds from a Cayo Unslipped Jar were found placed along the edges of the channel, the majority of which refit. The artifacts recovered from the flat-lying sherd matrix included one lake snail ("apple snail"), three rounded river pebbles and cobbles, one rough chert biface, five jute, one granite metate fragment, and 1823 ceramic sherds. Among the ceramics recovered was Special Find #1 - a Puhui Zibal Composite cylinder vase from Tepeu 2-3, and Special Find #2 - an Achote Black cylinder vase from Tepeu 2-3. Additionally, there were five other Achote Black vessel fragments, four Belize Red, 34 Cayo/Cambio Unslipped, six Dolphin Head Red Red, five Roaring Creek Red, two Rubber Camp Brown, four Vaca Falls Red Red, two Pedregal Modeled incensario fragments, and 13 Chiquibul Scored Incised incensario fragments.

#### *Level 4*

This level included the remainder of the fire-hardened clay with charcoal, pebbles, and jumbled ceramics lying overtop of the densely packed layer of flat-lying sherds. The difference between these two layers was fairly distinguishable since the flat-lying sherds were literally one on top of the other while the sherds in the fire hardened clay were at varying angles mixed in with pebbles and clay. This matrix was removed as Lot#16039 but is the same context as Lot#16011. Removing this level of clay and sherds from the channel revealed that the flat-lying sherds were primarily deposited in a heap at the center of channel and extend along the edges of the bounding stones to the south (Figure 50). Level 4 was removed down to a depth of 86-95cmBD (Figure 54) in the center of the southern end of the channel (in keeping with the slope of Northern Terrace Floor 3 again), indicating that the northwestern corner of Terrace 1 was originally another raised terrace or platform

~60cm above the floor of the main open area of the terrace to the south of Structure 1, as evidenced by the layer of cobbles on bedrock at 152cmBD found in Unit 1B, Level 3.

Artifacts recovered from this matrix included one river stone, four quartz fragments, two obsidian blade fragments, nine lithics (one chopper, two possible cores, five flakes, one retouched flake), seven jute, and 1645 ceramic sherds. The ceramics included 42 Cayo/Cambio Unslipped sherds, seven Cubeta Incised, four Dolphin Head Red, two Duck Run Incised, one Kaway Impressed, nine Pedregal Modeled incensario fragments, and nine Chiquibul Sored Incised incensario fragments – all of which are placed in Tepeu 2-3 except for the Duck Run Incised which is solely in Tepeu 3, and is the only identified vessel which is solely in this later phase of the Tepeu range. This makes sense considering that this placement of jumbled sherds and pebbles appears to have been the final activity taking place in this area outside of the cave.

#### Unit 4

Unit 4 is a 1x1m unit in the center of the top of the western mound of Structure 1 and has the same orientation as Unit 1. It is located 1m west of Unit 1 and uses the same datum as Unit 1. The location of the cave entrance is visible from this unit though the actual cave itself is not due to the angle of the entrance. It has been placed here to confirm the sequence of construction seen in Unit 1A. It will be dug to bedrock to determine if the two mounds were ever separate mounds in an earlier time period before being connected by the central channel. It is also possible that the fill or finds of the western and eastern mound might differ, giving some indication as to their function. This mound appears to be fairly well preserved as the stone alignments making up the different steps/terraces are still visible and mostly in place. There is one escoba tree in the corner of the unit, the thorns of which may impede excavation initially but shouldn't cause too much trouble in the lower levels.

#### *Level 1*

Level 1 removed the humic layer 10cm down to a layer of pebbles and cobbles which indicate the construction fill of the last phase of construction. The tree in the northwest corner has shifted a lot of these underlying stones and created a pit of loose soil in this area. The pebbles overlying the cobbles of this construction fill are best preserved on the eastern side of the structure. The only artifacts recovered were ceramics (Lot#16031) – 50 sherds including Silver Creek Impressed, Belize Red, and Mount Maloney Black placing this level in Tepeu 2-3.

#### *Level 2*

This level removed the construction fill (Munsell# 10YR 4/2) of the structure down to a level of light sandy clay on top of a layer of pebbles (Figure 55). This change in matrix is typical of a disintegrated floor and the unit was leveled off at this sandy clay and the level closed at this point. The floor found at base of this level is between 79-84cm below datum, the same elevation as the southern elevations of Terrace Floor 2 found in Unit 1A which was directly under the channel floor, and is likely the terrace floor underlying the mounds. Found in the fill of this level (Lot#16033) included ceramics, four jute, two chert flakes, and a rounded river cobble. Of the 170 ceramics recovered, nine were Cayo/Cambio Unslipped, six were Garbutt Creek Red Red, one was Mount Maloney Black, and one was Rubber Camp Brown, placing this level in Tepeu 2-3.

### *Level 3*

The dry fill and sandy clay (Munsell# 10YR 4/3) of Floor 2 were removed 25cm to a well-preserved plaster floor, West Mound Floor 3, at 106-108cmBD, a similar elevation to Terrace Floor 3 (100-110cmBD) found in Unit 1A on top of which some plaster was also still preserved (Figure 56). A cluster of ceramic sherds with some jute was found in the southwestern corner of the unit and appear to continue into a cut hole in the plaster floor in this corner (Figure 57). This was designated Feature 4-1 and collected separately. The artifacts from this fill (Lot#16038) included a granite fragment, 17 jute, three chert flakes, a rounded river pebble, and half of a fresh water bivalve shell. 68 ceramic sherds were recovered including 58 Cayo/Cambio Unslipped (3 of which showed evidence of burning), one Mountain Pine Red from Tepeu 1, and one Vaca Falls Red Red, placing the fill in Tepeu 2-3.

### *Feature 4-1*

The cut in the plaster floor visible in Level 3 was cleared of the jumble of ceramic sherds and jute that lay within and shown to be a much larger rounded hole, of which only a quarter is visible in the unit (Figure 58). The feature ranges from 106-110cmBD and the edges of the plaster floor around the hole appear to have been burnt (orange and grey in comparison to the still white plaster in the rest of the unit). The feature ends on top of the cobbles that lie under the plaster floor. The ceramics do not appear to refit. There were some faunal bones recovered but appear to be a rodent that may have burrowed into this spot. In the artifacts to come out of these feature (Lot#16040) were some faunal remains (vertebrae and other small bones, likely rodent bones), six jute, one chert flake, and one obsidian blade fragment. The 267 ceramic sherds included three Cayo/Cambio Unslipped, two Mount Maloney Black, and one Vaca Falls Red Red, placing this assemblage in Tepeu 2-3.

### *Level 4*

The plaster floor and underlying dry fill in sandy clay (7.5YR 6/6) were removed 70cm down to another layer of small pebbles on top of cobbles, indicating a possible floor or surface (being called West Mound Floor 4) (Figure 59). There are some ceramics and jute on top of and embedded in this floor surface. Due to the disintegrating nature of this floor, these artifacts will be collected in Level 5 as fill of this floor. The plaster of West Mound Floor 3 was 8-10cm thick and a sample was collected. The fill of Floor 3 (Lot#16041) contained eight ceramic sherds (Tinaja Red and Cayo/Cambio Unslipped) and a granite fragment.

### *Level 5*

This level removed the layer of pebbles (Munsell# 10YR 7/2) of Floor 4 down 25cm to some disintegrating limestone and harder bedrock (Figure 60). Four ceramic sherds (all Cayo/Cambio Unslipped) and two jute were recovered in the top few centimeters of this floor fill (Lot#16042) but no artifacts were present in the remaining 20cm down to bedrock. This level, and the earliest construction of this terrace area date to Tepeu 2-3 and the Late Classic, despite the occasional inclusion of Tepeu 1 sherds in this earliest construction fill.

### Unit 5

Unit 5 is a 1x1m unit in the center of the top of the eastern mound of Structure 1 and has the same orientation as Unit 1. It is located 1m east of Unit 1 and uses the same datum as Unit 1. The location of the cave entrance is visible from this unit though the actual cave itself is not due to the angle of the entrance. It has been placed here to confirm the sequence of construction seen in Unit 1A. It is being dug simultaneously with Unit 4 to determine if the mounds share a construction sequence. It is also possible that the fill or finds of the western and eastern mound might differ, giving some indication as to their function. This unit is heavily disturbed by a large tree system which grew into the mound and then fell over, the same tree system which also disturbed the eastern edge of the central channel.

#### *Level 1*

Level 1 removed the humic layer (Munsell# 10YR 3/2) of the unit down 8cm to a layer of pebbles and cobbles indicating the surface of the last phase of construction of this eastern mound (Figure 61). The top of this mound is about 15cm taller than that of the western mound but this is likely due to the heavy amount of disturbance in this mound which has left is much more jumbled than the western mound. Ceramics from this level (Lot#16032) included five sherds, one of which was identifiable as Pine Ridge Carbonate ware from Tepeu 2-3.

#### *Level 2*

The pebbles and cobbles of the last construction phase (Munsell# 10YR 3/3) were removed 20cm down to a level of poorly preserved plaster at 32-36cmBD (Figure 62). This floor (East Mound Floor 2) does not appear to correspond to any other floor in Structure 1. Interestingly, in the west of the unit is a series of stacked stones, including some cut/facing limestone blocks which line up in a north-south direction. This mini-wall appears to be sitting on top of Floor 2 and is 2-3 courses high, extending from 13-36cmBD (Figure 64). This stone alignment does not appear on the surface, nor does it appear to exist beyond this straight north-south alignment (which might have indicated a room on top of the mound). Its function is not clear – time constraints did not permit further exploration of this feature. No similar wall was visible on the western mound. The excavation of this unit continued in the eastern three quarters of the unit, leaving this wall in place. Only ceramics were recovered from this fill (Lot#16035) and of the six sherds, four were Cayo/Cambio Unslipped, one was Mount Maloney Black, placing this fill in Tepeu 2-3.

#### *Level 3*

The fill underlying Floor 2 (Munsell# 10YR 4/2) was removed another 75cm down to another poorly preserved plaster floor, East Mound Floor 3 (Figure 63). This plaster is relatively thin (<2cm) and crumbling through the underlying pebbles. It is located at 103-106cmBD, a similar elevation to the plaster floors of North Terrace Floor 3 and West Mound Floor 3, further confirming the mounds were built on top of this terrace floor which extended across the entirety of the northwestern side of the larger terrace outside of the cave at this point in time. Due to the finding that the mounds were constructed on top of this floor, the already completed sequence of Unit 4 which went to bedrock, and the poor condition of this mound which had led to boulders in the unit edges shifting during

excavation, Unit 5 was terminated at this level (Figure 65). The fill of Floor 2 (Lot#16037) included a granite fragment, seven jute, one chert flake, one quartz fragment, and 48 ceramic sherds. The ceramics included 1 Saxche Orange Polychrome whose form places it in Tepeu 1/Tiger Run, 22 Cayo/Cambio Unslipped, two Dolphin Head Red Red, and three Vaca Falls Red Red, placing this fill in Tepeu 2-3.

### Structure 1: Interpretations

Despite the four phases of construction visible through Unit 4 in the west mound of the structure, each construction phase and artifact assemblage from Structure 1 dates to the Late Classic. There are some Tepeu 1 ceramic sherds that noted in the fill of the earlier construction phases, and one Tepeu 3 ceramic sherd in one of the latest artifact assemblages, consistent with the ongoing use of midden fill in the construction fill of Structure 1 and the underlying terrace. The terrace in this area outside of the cave appears to have initially been level to the edge of the terrace wall in the northwest corner, after which the northwest corner of the terrace was raised to the level of Floor 3 in Unit 4 and extended from the corner of the terrace to what would later become the southern edge of Structure 1. Following this raising of the northwest corner of the terrace, a mound was placed in the location of the eastern mound and the Terrace Floor 2 was raised to surround this structure, as evident by the floors found at corresponding elevations in Units 1A and 4 and running under the channel construction. Another phase of construction raised the eastern mound, which was capped off with a plaster surface now poorly preserved. Not much later, a second mound was raised to the West of the eastern mound on top of the terrace floor, the eastern mound was raised again to make it level with this western mound, and the raised channel was constructed in between the two, connecting them and creating a barrier between the lower terrace in front of the cave and the raised terrace in the northwest corner. The terrace floor in the northwest was raised one last time (Terrace Floor 1) to surround this entire structure, around which time a second raising of the channel fill took place, keeping the elevation difference between the top of the channel and the terrace floor about 25cm tall.

A series of two deposits were placed in the channel after construction. The earlier deposit of jumbled ceramics, jute, which was later burned as is evident by the extremely fire-hardened clay nodules and proliferation of charcoal in this matrix was evident in abundance off the southern edge of Structure 1 (presumed to be the front of this structure) and tapered off at the approximate midpoint of the channel (it was not evident at all in unit 1A off the north end of the channel). The fill was collected in Lot#16011 (unit 1B level 3) and Lot#16039 (unit 1C level 4) and the jumbled nature of the ceramics indicates that this was possibly midden fill or a similar collection of items (possibly incorporating flammable organic material) that was brought in a tossed into the channel and over the front of the structure and then burnt. Combining the artifact counts from the two lots, there were two slate fragments, nine jute shells, 27 lithic fragments (including one chopper, two cores, five flakes, three retouched flakes), 11 quartz fragments, three river stones, two obsidian blade fragments, and two speleothem fragments (one stalactite and one stalagmite). A total of 1929 ceramic sherds were recovered, all of which dated to Tepeu 2-3 except for one Duck Run Incised from Tepeu 3, placing this deposit in the later end of the Late Classic. Interestingly, included in the ceramics were nine Pedregal Modeled incensario fragments and nine Chiquibul Sored Incised incensario fragments, indicating that this was not only likely part of a termination ritual but that there may be some sphere of influence coming in from the West

or North resulting in an equal representation of both Pedregal Modeled and Chiquibul Scored Incised incensario types.

The second and last deposit (Feature 1C-1, Lot#16036) in this channel consisted primarily of ceramic sherds which were flat lying and predominantly found stacked one directly on top of the other, indicating that they were possibly thrown into the channel individually or that they broke in place. Since there weren't many refits, the former is likely – they were tossed in one or a few at a time during the same deposit event and were thus able to land flat and on top of each other without any deposit of sediment in between. This deposit did not run over the edges of the channel but rather abutted the earlier deposit in the south of the channel and tapered off at the edge of the northern end of the channel construction. At the base of this deposit were two cylinder vases at the midpoint of the channel which appear to have been placed there intact and were only broken/flattened over time due to overlying artifact/sediment accumulation. The sherds, and a few other artifacts including a metate fragment, five jute, a rough chert biface, three river stones, and a lake snail (apple snail) shell, were then tossed over these cylinder vases and left in place. Again, a high density of sherds was recovered from this feature – 1823 in total, all from Tepeu 2-3 confirming that activities in this area did not extend beyond the Late Classic. Just as with the earlier deposit, a high frequency of incensario fragments were recovered including two Pedregal Modeled incensario fragments and 13 Chiquibul Scored Incised incensario fragments, again relating to the deposition of this assemblage as a terminal ritual for the site. No Postclassic artifacts were recovered from the site and it is likely that this deposit was the last activity to take place in the area around the cave.

### Structure 2

Structure 2 is much taller than Structure 1, being ~3m tall and leveling off at the same elevation as the cave entrance. It is in the same N-S orientation as Structure 1 and its southwest corner is ~1m from the northeast corner of Structure 1. This southwest corner has a large looters pit dug into it which was dug almost to the level of the terrace, the stone fill of the structure having been tossed in a pile directly to the west of it. The northern edge of Structure 2 lines up with the northern terrace edge. The southern side of this structure, which faces the cave entrance, is steep and has numerous large boulders jutting out of it. The western side, which faces the raised terrace in the northwest of the large terrace outside the cave entrance, has a much gentler slope with some cut or facing stones visible on the surface therefore indicating that this was likely the front of the structure.

### Unit 2

Unit 2 is a 2x3.5m unit placed over the southwestern corner of a modified bedrock outcrop to the north of the cave entrance which has been named Structure 2 (Figure 66). This unit will clean up the looters trench to determine the construction sequence of this structure and to determine how the fill compares to that of Structure 1. The unit doesn't line up with the structure, but rather lines up with the looters trench which was clearly placed at an angle to avoid the large trees growing into the structure. A datum was placed in a large tree 10cm East of the unit edge at the top of the mound, 25cm above the surface of the mound. No surface level finds were collected and all subsequent material was hand sorted.

### *Level 1*

Level 1 removed the loose construction fill from the looters activities (Lot#16007) to clean out the unit to the point that intact architecture was visible and accessible (Figure 67, Figure 68). In this matrix of cobbles, boulders and sandy humic (Munsell# 10YR 3/3) were found three slate fragments, one slate fragment, one gneiss fragment, one tooth, 15 jute, five lithics (one chert flake, three retouched chert flakes, and one quartz retouched flake). One obsidian blade fragment, two quartz fragments, two river stones, five speleothem fragments, and one worked shell pendant fragment. 808 ceramic sherds were collected and included four Belize Red Red, 46 Cayo/Cambio Unslipped, one Cubetta incised, two Dolphin Head Red, seven Garbutt Creek Red Red, five Kaway Impressed, one Mountain Pine Red, 14 Mount Maloney Black, seven Rubber Camp Brown, one Benque Viejo Polychrome, and two Saxche Orange Polychrome placing these finds in Tepeu 2-3. Due to the clearly contaminated nature of this assemblage, the finds were collected but not overly processed.

### *Level 2*

Level 2 removed the remaining intact fill of Structure 2 (sandy clay with cobbles; Munsell# 10YR 4/3) down to bedrock (Figure 69). This left the corners of the unit largely intact while following the large bedrock boulder in the east of the unit down into the center of the unit which went down another 50cm. There is no visibly preserved floor in this unit, though cleaning up the walls of the unit and the looters trench shows some small rectangular limestone blocks at 205cmBD which appear to be resting on a layer of pebbles, possibly indicating that the terrace floor extended to the bedrock boulders before this structure was constructed. The profile of the unit shows where the possible original edge of the structure existed before being blown out by the large trees now growing through these rectangular limestone blocks (Figure 71). It also shows that this structure was built in one construction phase (Figure 70). The only artifacts recovered in this fill on top of bedrock (Lot#16014) were 183 ceramic sherds which included 14 Cayo/Cambio Unslipped, one Dolphin Head Red Red, and two Vaca Falls Red Red, placing the construction in Tepeu 2-3, as with Structure 1.

### Unit 3

Unit 3 is a 1x7m unit placed over the most intact part of Structure 2, going up what is presumed by its slope to be the front of the structure. The goal of this unit is to determine the form of this structure and thus help to determine its function in relation to Structure 1 (Figure 72). The datum was placed in a tree 35cm to the north of this unit.

### *Surface*

While this area of the structure is much better preserved than other areas, there are numerous large trees and roots visible in the architecture, in addition to the looters having clearly moved some stones from the looters trench to this area of the structure. There are no artifacts visible on the surface but clearing the brush and the looters debris off the underlying intact architecture shows that there are possibly two series of steps rising to the top of the structure, marked half way up by a longer step/platform.

### *Level 1*

Level 1 removed the humic and collapse (Munsell# 10YR 3/2) from the structure, down to any intact architecture. Despite the structure being badly degraded, the underlying intact architecture was able to be distinguished through alignments of cut or facing stones, larger blocks which line up with the architecture in the profiles of Unit 2, and through deposits of artifacts at the base of steps (Figure 73, Figure 74). One such deposit was quite prominent and appeared to include at least one vessel which had been broken over the edge of the step (designated Feature 3-1). The structure was in a bad state and was quickly collapsing under us as we excavated, as such a section in the middle of the structure was left in place to prevent the upper steps from falling down (Figure 75). This material left in place consisted of small cobbles and pebbles and likely had collapsed down from above or was part of the debris tossed out of the looters trench beside the unit. It is hypothesized based on the placement of the surrounding steps that this area was originally a much deeper step/platform midway up the structure (Figure 76). Artifacts recovered from this level (Lot#16015) included three granite fragments, three obsidian blade fragments, two quartz fragments, one river pebble, and one speleothem. The 401 ceramic sherds included 31 Cayo/Cambio Unslipped and numerous badly eroded sherds whose form nonetheless conformed to a Tepeu 2-3 classification for this level. The unit was closed at this level, having confirmed that this was indeed the front of the structure and its placement in the Late Classic.

#### *Feature 3-1*

Feature 3-1 was identified as a pile of ceramic sherds at the base of a step half way up Structure 2, 130cmBD. The sherds are not all from the same vessel, though there appears to have been at least two vessels which were broken in place on this step. The possibility of them having been placed here from the looters trench was discussed but decided to be unlikely due to the amount of deposition on top of them in comparison to other piles of sherds left around the looters trench. 111 ceramic sherds were recovered from this pile of ceramics including 74 Cayo/Cambio Unslipped which are probably from the same vessel, and some sherds which formed 90% of another Cayo/Cambio Unslipped rim. A third collection of Cayo/Cambio Unslipped sherds likely form a third vessel. In addition to these three vessels, the remaining 33 sherds were all unknown Pine Ridge Carbonate ware. Within these sherds, a chert flake and a bivalve shell fragment were also found.

#### *Structure 2 Interpretations*

Structure 2 appears to have been built at the same time as Structure 1 and was placed to take advantage of a natural outcrop of larger boulders on this side of the terrace. It was constructed in no more than two phases, both taking place in the Late Classic. The front of the structure, rather than facing the larger open space, or plaza, in front of the cave, faced west towards the smaller northwest corner of the terrace which was bounded in the south by Structure 1. The looters trench and trees growing into the center of the structure make it impossible to tell the exact form of this western side of the structure but the excavation of Unit 3 shows that the front of Structure 2 rose up from the terrace floor by a series of 3-4 steps, to a larger step or platform midway up the structure, and then continued another 3-4 steps to the top of the structure. Coinciding with the termination of Structure 1, several vessels were broken over one of the steps and left there upon departure of the site.

#### 4.4.1.4. Archaeological Summary

The incorporation of speleothems and river cobbles into the fill of both structures and the terrace floor construction make a clear connection to the cave and sources of water, reaffirming the connection of this exterior space to the water-focused rituals taking place inside the cave (Arksey 2014; Arksey 2015; Arksey 2016). The clusters of jute found in feature deposits in Structure 1 also create a connection to fresh water but also the idea of feasting and celebrations. While none of the caches have the numbers which elsewhere are indicative of a large feast, the ideological connection remains a possibility. The use of broken granite artifacts and fragments is relatively high at this site in comparison to other sites but is likely related to this site's proximity to the Mountain Pine Ridge which sits atop the most expansive source of granite in Belize and the ease of access to this source material by any Maya living in the area. The deposition of high concentrations of groundstone at Structure 2 of the exterior of Actun Tunichil Muknal was interpreted at this site to connect the structure to food production and hence agriculture and rain. The haphazard dispersal of groundstone in the fill of Structure 1 at Nohoch Ka' Actun differs from its use as a main component of the fill of Structure 2 at ATM and so while the connection to food production may have been part of its strategy for inclusion at Nohoch Ka', this cannot be confirmed.

The sequence of construction at this site indicates that the terrace outside of the cave was leveled off first, followed by the raising of the northwest corner on the southern edge on which two small mounds were constructed. These mounds and the surrounding northwestern terrace corner were added to over the course of the Late Classic until they were connected by the raised channel, which also would have effectively restricted access to the northwest corner of the terrace. Around this time, Structure 2 was constructed on top of the last terrace floor, thus creating a small plaza in the northwest corner of the terrace outside of the cave with only the channel between the two mounds of Structure 1 and the 1m wide passageway between the southwest corner of Structure 2 and the northeast corner of Structure 1 providing access from this small plaza to the more open terrace in front of the cave.

While Structure 1 at Nohoch Ka' follows the pan-Mesoamerican theme of duality, the question is whether it can be interpreted as a "twin pyramid-complex" (two separate structures built on opposite sides of a plaza, normally on the East and West) or a "twin temple" (two temples built side-by-side, normally along a North-South axis). The term "twin-pyramid complex" was first used in 1956 by Edwin M. Shook when he recognized five groups at Tikal which conformed to a layout which consists of identical pyramids with radial staircases on the east and west sides of a small plaza, with a walled enclosure to the north and a range building to the south (Jones 1969; Shook 1957; 1958). In total, there are 10 such complexes at Tikal, with the majority dating to the Early and Late Classic (Coe 1988). Following this configuration is the North Plaza at Ixlu which dates to the Classic period (Aguilar 2001:259; Sánchez Polo et al. 1995:593), Plaza A at Yaxha which dates to the Late Classic, and Groups A and B at Zacpeten which, while dated to the Terminal Classic, that of Group A were built upon an earlier basal platform dating back to the Middle Preclassic, with later Postclassic modifications (Pugh and Rice 2009:97-98; Rice 2009:82). While there doesn't appear to have been much symbolism attached to the choice to use the east and west sides of plazas for these twin pyramids beyond being the directions of sunrises and sunsets,

this layout had a functional aspect which likely coincided with the rise of populations and socio-political complexities in the Classic period. Twin pyramid complexes had the capacity to accommodate a substantial number of people and their layouts show easy access from outside, implying an emphasis on the inclusion of a large number of participants (Inomata 2006:812-817).

While twin-pyramid complexes appear to have been a southern Maya invention, they do not appear to persist beyond the Late Classic. Instead, we see the introduction of twin temple construction as we move forward in time and further north. Twin temples are two temples built side-by-side, normally along a North-South axis, on top of a platform which can vary in size and height. The Yucatec site of Ek Balam in the municipality of Temozón, Yucatán dates back to 100B.C.E., the site reached its peak between 700-1000C.E. before declining in 1200C.E. (Bey et al. 1997). Located on the western side of a secondary plaza, Las Gemelas (The Twin Temples) were constructed side by side on a platform but maintain an empty channel between the two of them, just as that from Mixco Viejo. The date for this construction borders on the transition from the Late Classic to the Postclassic, and is earlier than those Postclassic discussed below in Highland Guatemala and Central Mexico. There are several other Postclassic platforms with twin temples in the Central Highlands of Guatemala, including Temples XVIII and XVIIIa at Palenque and Pyramid B3 at Mixco Viejo (Marken 2007).

Twin temples exist at Jilotepeque Viejo (Mixco Viejo), a Postclassic site situated at the northeastern extreme of the department of Chimaltenango in Guatemala and was the capital of the Chajoma Maya. The site was built at the beginning of the 12th century and lasted until the arrival of the Spanish in the 16<sup>th</sup> century. The site was apparently known to the Chajoma by a variety of names, including Chuapec Kekacajol Nima Abaj, meaning "Great stone in front of the Cave of the Children of Night", referring to a cave which is located to the South of the site and a large rock on the north side of it that could be referred to as the great stone (Van Akkeren and Taracena 2007:132; Hill 1998). Three small caves are located in the ridge at the edge of the site, two of which show evidence of modification by the pre-Columbian Maya and one of which runs under Group A (Brady 1993). Of note is Pyramid B3, two structures built on a single platform, one of which is on the north side, the other on the south side. This configuration is suggested to indicate the influence of the Valley of Mexico in this area (Arroyo 2001:42; Lehmann 1968:41), however the continued renovations of the two pyramids as separate entities rather than as two small temples on top of a single structure marks a departure in style from those of Central Mexico.

Perhaps the most famous twin temple is the that of the Postclassic Templo Mayor in Tenochtitlan, where the north side was dedicated to Tlaloc, the god of rain, and the south side was dedicated to Huitzilopochtli, the god of war. This temple structure and configuration is commonly interpreted as a representation of a mountain, specifically Tonacatepetl, Tlaloc's "Mountain of Sustenance" (Carrasco 1987; Luján 2005). In keeping with the Mesoamerican theme of duality, this structure also represents the sacred "Serpent Mountain" Coatepetl where Huitzilopochtli banished other gods (Carrasco 1987; Luján 2005:48). According to Alvarado Tezozomoc (*Cronica Mexicayotl* 1975:63), the Templo Mayor was built over the point where the Mexica discovered the eagle sitting on a cactus and holding a serpent. The cactus in turn was located on the top of two caves from which water issued (Brady 1997:612). Other Postclassic twin temples in Mexico are the pyramids of Santa Cecilia Acatitlan, Tenayuca, and Tlatelolco in the Basin of Mexico and Building 1 at

Teopanzalco in the Valley of Morelos which has a large base with two staircases leading to smaller twin temples at the top (Luján 2005). Each of these Postclassic Mexican pyramid complexes shares several features including: being oriented west, being built in several stages, having two staircases separated by a central balustrade, having the principal temple as the southern one, and having the southern temple dedicated to a solar deity while the northern one was dedicated to agricultural deities (Luján 2005:47-48).

Firmly dating to the later end of the Late Classic, Structure 1 at Nohoch Ka' combines the properties of both of these categories. The East and West mound construction is similar to that of the twin-pyramid complex construction – the mounds appear to have the same number of steps rising up from each side to the top platform, and while not “radial”, they do loosely conform to this concept. However, while still oriented along an East-West axis, the space in between them would in no way constitute a plaza in the way that other Classic period twin-pyramid complexes functioned. Instead, during one of the remodeling phases, a raised channel was added to the area in between these structures, creating the illusion that these two structures were built upon a platform in the way that later twin temples were constructed. At this point their placement on the east and west sides of this side of the terrace was incorporated into a twin temple construct which rather than following the North-South orientation of later such structure, appears to have combined the ideas of public performance in twin-pyramid complexes like those of Tikal with an early iteration of a twin temple. This style is in keeping with pan-Mesoamerican ideals of duality and so while the symbolism of northern and southern temples in twin temple constructions has been exhausted, these structures may instead have focused on the symbolism of the East and West and the division of space into a smaller more restricted area to the North, and a larger more open space to the South.

In the Classic period, the east as the “exit” of the sun was associated with red, the color of the sun, as well as birth, fertility, the origin of the Quiche lineages (Drew 1999:294), and the paramount importance of east as the direction associated with strength and potency (Ashmore 1991:200). The west was associated with black and setting of the dying sun in the underworld (Drew 1999:294). The Popul Vuh tells of the creation of the Quiche nation and their journey to Tulan. Prior to arriving at Tulan, “[t]hey fasted and cried out in prayer. They fixed their eyes firmly on their dawn, looking there to the East. They watched closely for the Morning Star, the Great Star that gives its light at the birth of the sun. They looked to the womb of the sky and the womb of the earth, to the pathways of framed and shaped people” (Christenson 2008:196). This passage reaffirms caves as the place from which the sun emerges, the womb of the sun being contiguous with the womb of the earth (likely in reference to a cave), but also identifies rituals associated with a focus on the East as rituals which inspire hope and religious fervor.

Structure 1 mirrors the path of the sun through the creation of a twin temple structure, its creators making salient the duality of the east-west cardinal directions. The sun rises out of the direction of the cave in the east, and sets over the clearly defined western side of the main terrace and the western mound. Choosing to modify a site at which the cave would be located on the east of any construction places clear emphasis on the cave not at the entrance the underworld and associations of death, but on the cave and the East as places of origins, fertility, and hope.

It is also worth noting that any participants standing in the main terrace would be south of the twin temple structure and would be facing the ritual performers located in the

north. The north is associated with the concept of “up”, or the direction of the heavens, the color white, and the direction from whence came the annual rains (Drew 1999:294). The elite or ritual practitioners at this site therefore placed themselves in direct association with the symbols of their position as divine rulers as well as the very real potential outcomes of the rituals they were there to perform to their constituents. This is in keeping with the site layout of the main twin-pyramid complex at Tikal in which the north is occupied by the acropolis where the elites would have resided. While not an architectural cosmogram in the sense that other authors have argued (Smith 2005), the site layout and architectural styles makes a strong case for the intentional association of symbolic and functional attributes stemming from the beliefs about the cardinal directions.

It is also interesting to note that early interpretations of Structure 1 placed emphasis on the channel itself as a location of ritual activity, drawing connections between this channel and ballcourts. Ashmore (1991:201) has noted that in cosmogram-oriented site layouts in the Classic Maya, there are many cases of a ball court as transition between north and south, as the channel does between the terraces on the northern and southern sides of Structure 1. While this interpretation is an interesting one, particularly in reference to ballcourts as symbolic entrances to the underworld (Freidel et al. 1993:139, 350–355), the channel between the east and west mounds of Structure 1 was more likely functional in creating a connection between the east and west mounds and creating means of restricting access to the northwestern corner of the terrace where the ritual practitioners may have been located.

The placement of the two termination offerings on this more accessible southern side of Structure 1 provides its own insight into the social separation of space at this ritual site. The Maya believed (and to an extent continue to believe) that all objects and natural features of the landscape are imbued with a spirit. When a structure is to be remodeled by a superimposed phase of construction, or when that structure or site has to be abandoned, that structure has to be properly terminated. This practice took the form of the placement of caches of objects, sealing rooms, burning events, and burying (Trachman 2010:107). Termination deposits and ritual burning upon abandonment is common in the Late and Terminal Classic but appear to have been more frequent at public structures such as temples than domestic structures (Freidel et al. 1998). Provided that the northwest corner of the terrace had been set aside as the “elite” corner of this sacred space, any non-elites and local, lower-level elites, and subsistence farmers who remained for a time after the elites left and who wanted to make offerings at these sacred sites would have likely stuck to the pathways that were familiar to them. Before leaving the area, this site was terminated, and it was on this southern side of Structure 1 that the deposition and burning of artifacts took place, indicating the possibility that it was this remaining populace that terminated the space before abandoning it.

#### **4.4.2. Ofrenda Cave**

Ofrenda Cave (aka Cueva de Ofrenda, Offering Cave, or Ka’am) is on the edge of the Mountain Pine Ridge near San Antonio village in Eljio Panti National Park (Moyes 2014:43). The park covers an area of 13,006 acres and borders the Vaca Plateau Nature Reserve on the southeastern plateau of the upper Macal River Valley. Located near the

junction of the Macal River and Privación Creek, Ofrenda is the most isolated from known major site cores of all caves in my sample - 9.5km southwest of Pacbitun, 7.5km southeast of the site of Guacamayo, and 7.5km north of the newly discovered medium-sized site core of Augustine (Moyes and Awe 2015). The cave sits on top of a karst ridge has at least five entrances surrounding a sinkhole, the central of which (Entrance 1) is the largest.

#### 4.4.2.1. Interior Description

The cave is well-known and used on occasional tours and visited by the people of San Antonio. It has sustained heavy looting but caches of medium to large Late Classic Spanish Lookout-style vessels have been found in the deeper chambers along natural ridges. Holley Moyes and Cameron Griffith visited this cave during the Belize Speleothem Project in 2006 (Moyes et al. 2006). The cave is known for the “Ledge of Offerings” along the back eastern wall of the cave containing large Late Classic jars, obsidian blades, human remains, and other artifacts (Moyes 2013:11) (Figure 77).

Entrance 1 and 2 are separated by breakdown with large stalagmitic columns. The larger tunnel system is entered on this side and has an extensive dark zone that is littered with cultural materials including ceramic vessels and sherds, obsidian blades and fragments, chert flakes, a complete bifacial tool, animal bone and human remains. In terms of architecture, there is little formal construction. There are at least two and possibly three terraces in the entrance area that aid in the descent to Chamber 1, as well as a nicely constructed retaining wall (Retaining Wall 1) that marks a constriction in the passage leading to that chamber. In 2012 a test unit was placed at the top of this Retaining Wall 1. Eleven ‘use surfaces’ (level areas that had charcoal and ceramics found across one level) and two plaster floors were found in less than 1m of excavation before hitting bedrock. All ceramics dated to the Late Classic apart from one sherd that was placed in the Tzakol sphere.

#### 4.4.2.2. Exterior Description

In 2013, as part of ongoing investigations into the nature of construction and modifications outside of cave entrances the area immediately outside of the cave entrance was surveyed and mapped. This area is a series of three terraces running down slope to the East from the cave’s main entrances. It is bounded on the south, west, and north sides by the hill into which the cave extends, creating a constrained U-shaped space outside the entrance (Figure 78). Of the three identified terraces, Terrace 1 is a natural terrace directly outside of the cave entrances. Terrace 2 appears to be a large (~25x25m) terrace which has been modified at its eastern boundary to create a more level space than was naturally there (Figure 79).

There is a large outcropping of bedrock and boulders which extends out of the southern hillside and is parallel with the constructed terrace wall which separates Terraces 2 and 3. The eastern side of this outcrop is a straight line with stacked stones creating what appears to be a wall, while the western side is a curving, sloped line. Terrace 3 is a natural terrace at the base of this constructed terrace wall. The modern pathway up to the cave follows the base of the northern hillslope, up the terraces to the Terrace 1, and then across

the top of the hill on this terrace to the entrances. This is the easiest pathway to the cave because the base of the southern hillslope has several boulder outcrops and sheer natural terrace edges. 20 shovel test pits were dug on all three terraces, and three excavation units were placed overtop of clearly identified construction on Terrace 2.

#### **4.4.2.3. Exterior Excavations**

A series of shovel test pits were placed in the flat area on Terrace 2 in between the structure and the terrace leading up to the cave entrance. In addition to these test pits, three larger excavation units were placed on the visible construction in the area – one on Terrace 3 to confirm its modification and to date this construction, and two on Structure 1 to trace the edge of this irregularly shaped mound, to date its construction, and attempt to determine its function. Lot numbers and contexts can be found in Table 9.

##### **4.4.2.3.1. Shovel Test Pits**

Of the 20 shovel test pits, three were placed on the natural terrace and boulder slope extending down from the main entrances, but no ceramics or identifiable cultural material was found (Table 10). Three shovel test pits were also placed at the base of the wall of Terrace 2, on what is identified at Terrace 3. Only the central STP had any cultural material recovered – one ceramic sherd and one quartz fragment. This is likely due to its placement directly downhill from the clearest construction of this terrace wall which is showing indications of degradation. The 14 other STPs were placed throughout Terrace 2 at various stages during the excavation. Initial STPs indicated a level of pebbles and small cobbles along the eastern edge of the boulder outcrop which extended along the curved line of this outcrop and over its southern ridge, indicating a potentially constructed floor surface in this area. The pits in the center of the open space on the Terrace did not reveal any pebbles or cobbles however. Only eight of the 20 STPs had any ceramics found in them, and only two of these sherds were identifiable as Cayo/Cambio Unslipped.

##### **4.4.2.3.2. Excavation Units**

###### Unit 1

This unit was a 2.5x2.5m unit placed over the clearest construction of the terrace wall bounding Terraces 2 and 3. It was dug to confirm that it was constructed and to date this construction. Many of the boulders of the terrace wall appear to be shifted out of place. The unit was dug in natural and cultural levels and all material was hand sorted. The first level removed the humic layer down to a more compacted soil with cobbles and larger rocks. The second level removed this compacted soil and any loose cobbles down to the larger boulders of the terrace edge (Figure 80). While there is no obvious construction, it is apparent that the stones in between the larger boulders are not naturally placed and that this terrace is at minimum modified in a way which cleans up the lines of the terrace and which created a more level edge to Terrace 2. In addition to a handful of unidentifiable ceramic

sherds, one slate fragment was found in the fill on top of the terrace wall. The unit was closed at this level, confirmation of its modification having been obtained.

### Units 2, 2A, 2B, 2C

A larger 4x4m unit was placed over the northwest corner of the bedrock/boulder outcrop that juts into the center of Terrace 2 from the southern hillslope. Because the edges of this outcrop are curved, the unit was simply oriented North-South. While the eastern edge of this outcrop shows signs of modification, the curve of this western side makes the shape difficult to determine. The unit is being placed here to confirm whether this side of outcrop is modified in any way, to determine if the pebbles found in the shovel test pits are indicative of any floor construction in this area, and to attempt to find the shape of this modification. The unit was dug in natural and cultural levels and all material was hand sorted. The surface of the outcrop shows the tops of several boulders in a rough curved alignment. Several large trees are growing on top of and around this outcrop. The surface and terrace was bushed and any organic debris swept off the outcrop, no cultural material was found on the surface of any of the units.

### *Level 1*

The compacted soil under the loose organic matter was removed on top of the boulder outcrop down 6cm to where a layer of cobbles were revealed (Figure 81). The edges of the boulders that were apparent on the edge of the mound were cleared down to a depth of 10cm when the matrix changed to densely packed pebbles and small cobbles similar to those found in the shovel test pits (3-10cm diameter) (Figure 82). While higher in elevation than in the STPs, this was a possible floor surface and the level was closed here. Very few ceramics were recovered from this level and none were identifiable.

### *Level 2*

The area in front of the boulders was cleared of the compacted soil down to the densely packed pebbles and cobbles which formed a slope down from the boulders to the terrace floor. This slope of pebbles and cobbles extends down 80cm from the top of the alignment of boulders that was visible on the surface and almost 2m out (to the west) from where they are visible (Figure 83). They end on top of a layer of fine clay which extends across the entire terrace and which does not appear to have been formalized in any way. Visibly mixed in with the pebbles were some rough quartz fragments and ceramics, indicating that this is a human modification, whether it is washed down or collapsed from the top of this outcrop or intentionally placed as such is unknown. They extended beyond the boundaries of the unit to the west and south and so unit extensions 2A, B, and C were placed to trace the edges of this phenomenon (this formed Level 1 for these extension units, which were not dug beyond Level 1).

This deposit of pebbles and small cobbles was found to follow the natural ridge in the bedrock extending out from the southern hillslope but did not extend up on top of this ridge – the pebbles/cobbles were only found to be abutting the ridge and sloped down to the clay layer of the terrace. After uncovering these extensions to the same layer, it became apparent that this was unlikely to be washing down or collapsing from any construction on this ridge, the more southern extensions showing no possible modification to the top of the ridge whatsoever – only the deposition of these pebbles. While it is possible that they were

naturally deposited over time, the mixture of quartz and ceramics visible within makes this unlikely. Artifacts found mixed in with the compact soil on top of these pebbles/cobbles included 88 ceramics, three lithic flakes, two slate fragments, and one quartz fragment. Of those ceramics 49 were Cayo/Cambio Unslipped and 11 were Belize Red, all dating to the Spanish Lookout/Tepu 2-3 complexes in the Late Classic. The remaining levels were dug solely in Units 2 and 2A due to time and resource constraints.

### *Level 3*

This level removed the pebbles and cobbles around the edges of the mound back to the boulders which all appear to be approximately the same size (~60cm) and sitting on top of bedrock (Figure 84). In the corner, one of the boulders was found to be sitting on top of another boulder. They appear to form a 45degree angle with the eastern (back?) edge of the mound. It does not appear that many of them are out of place, most of them being at approximately the same level on top of bedrock, and with only one being set ~30cm from the boulder alignment, possibly having fallen from on top of a gap in the boulders. There are six visible boulders running northeast-southwest along this end of the mound, but in the southern end of the unit they run into a taller mound of pebbles/cobbles which is taller than the tops of the boulders. If this is a structure, the possibility exists that there are a series of steps in the front of it and since it is unclear if the boulders continue underneath this level of pebbles/cobbles, the level was ended at this point. 29 ceramic sherds were found including nine Cayo/Cambio Unslipped and four Belize Red.

### *Level 4*

For the remaining levels Units 2 and 2A were combined and reduced to a single 1x5m trench running east-west to further investigate the construction of this mound and the historical sequence of any discernable construction levels. We removed the rest of the pebble/cobble mixture in the south of the unit to reveal larger stones (~25cm diameter) underneath (Figure 85). They are smaller than the boulders that form the rest of the alignment and form what appear to be either two steps or retaining walls with rounded corners which run back into the large boulders. They were noticeable because of their size – much smaller than the edge boulders, but much larger than any of the pebble/cobbles. Inside the larger stones are more of the same pebbles/cobbles, appearing to be fill for these ‘steps’. 57 ceramics were found including 16 Cayo/Cambio Unslipped and six Belize Red. In addition to the ceramics, one slate fragment, one quartz fragment, and one spire-lopped jute shell were found in the pebble/cobble mixture.

### *Level 5*

This level removed the large stones/steps and the smaller pebble fill in between them back to the depth of the large boulders. Once these steps were removed, more of the boulders were uncovered in a curved line with the large boulders from the rest of the boundary of the mound. These boulders are the same size and also appear to be sitting on bedrock, creating a curved front to this mound, in relation to the straight back to it on the east side of the mound. Only one lithic flake and seven sherds were found, three of which were Cayo/Cambio Unslipped.

### *Level 6*

This final level of the excavation of this trench removed the boulders and fill in behind down to bedrock. This only went down another 10cm because bedrock was found to slope steeply upwards from the terrace floor. There were no discernable construction levels, the entirety of the main mound appearing to have been bounded and filled in one phase. It is clear that the boulders were all placed on the edges of an outcrop of bedrock, and then filled in on top with cobbles. Of the artifacts recovered, there was one slate fragment, one chert biface fragment, one rough limestone/poor chert biface (Figure 86), and 18 ceramic sherds. 17 of those sherds were Cayo/Cambio Unslipped, the other one was a Vaca Falls Red fragment, continuing to place these modifications solely in the Late Classic.

### Unit 3

This unit was a 4x4m unit placed over the northeast, or back corner, of this mound in order to determine the shape of these modifications and to determine if the construction methods are the same on this side of the mound. It was dug in one level, like Units 2A, B, and C simply to answer these questions and all material was hand sorted. The surface shows the tops of several boulders in alignment with those uncovered in Units 2, as well as several smaller stacked boulders in a straight line running north-south into the southern hill side. Several large trees are growing on top of and around this outcrop. The surface and terrace was bushed and any organic debris swept off the outcrop, no cultural material was found on the surface of any of the units.

The compacted soil was removed to reveal cobbles on top of the mound and boulders along its edges. No pebble/cobble mixture was found off the side of these boulders as was found on the western side. Also unlike the western side, the modifications in this corner of the mound appear to form a 90 degree corner, although this does appear to also be the shape of the underlying bedrock in this area (Figure 87). The edge running east-west lines up with the boulders uncovered in Unit 2 as well as a couple of other boulders that are visible on the surface (Figure 88). 13 ceramic sherds were found in this unit, only one of which was identifiable as Vaca Falls Red.

#### **4.4.2.4. Archaeological Summary**

The modification to the terrace wall bounding Terraces 2 and 3 takes advantage of a natural terrace and incorporates large portions of bedrock in order to extend the terrace edge along the entirety of the opening to the U-shaped valley at the end of which are the main cave entrances. The second terrace wall, between Terraces 1 and 2 is largely natural, with no evidence of modification. It is primarily composed of large sheer boulders almost 2m high, except for a small portion in the north along the base of the hill side which is made of smaller boulder outcrops. One shovel test pit was placed here and four sherds were found, possibly indicating that this was a trafficked area or that there may have been some modification or formalization of this as a pathway to the cave. None of these sherds were identifiable. Terrace 2 forms a large flat area directly outside of the cave entrance with no apparent natural restriction for anyone going up the 25m wide terrace wall from Terrace 3 towards the cave. There does not appear to be any formal floor in this plaza-type space like that seen at Rice Mill 3, the pebbles being related to some other activity.

The bedrock outcrop across the southern half of the terrace edge was likely only about 1m high in the center, but the modifications to it make it a possible means of limiting the pathway for those traveling to the cave from the east. It doesn't restrict the view in any way, but it does mean that the only easy access across the terraces is up along the northern side of the terrace wall. What is interesting about the construction is that it follows no set geometric shape whatsoever, but rather strictly follows the natural bedrock outcrop that was present and apparent at the time of construction. The bounding stones are all roughly the same size and placed along the same elevation on the bedrock. They were then filled in with cobbles and smaller pebbles. It also appears that there may have been some steps up the front of what can best be described as a structure.

The mounding of pebbles and small cobbles in front of and on top of these steps prohibits the use of these steps and blocks access to the front of the structure. While their deposit appears to have been the final activity to take place at this structure, they do not appear to be similar to other termination deposits which usually include ceramics or burning. The lack of similarities does not preclude their function as a termination event, but it is equally possible that they were deposited on this structure as part of a ritual associated with the cave. These stones do not appear to have come from the cave, however they could have been collected from the entrance chambers where small cobbles and pebbles do exist. Modern shamans collect seeing stones from caves (Brady and Prufer 1999) and while these stones typically have some unusual feature to them, it is possible that the ancient Maya did not worry as much about the appearance of the stones but the origin of the stones. This deposit is similar to those noticed by Michael Mirro at Barton Creek Cave where over 60 stone features and concentrations of stones were documented, including triangular arrangements, small linear features, tight clusters associated with ash, charcoal or sherds, and stone piles (Mirro 2007:40). The function of the stone piles was never fully understood at this cave either.

#### **4.5. Macal Drainage West/Vaca Plateau**

All caves in this area are located in the limestone karstic geology of western Belize, and are found in lowland broad-leaved forest (Meerman and Sabido 2001). Reeder and his colleagues noted that out of the 150 caves discovered in the Northern Vaca Plateau by 1998, 80% were entered by vertical drops (Reeder et al. 1998). In these cases, it is not unusual to find piles of artifacts that have been tossed into the cave piled up at the base of the cave (See Reeder et al. 1998 for discussion). The caves in this area are in proximity to one of two major sites (Figure 89) – Moth Cave and Actun Isabella near the site core of Minanha, and Macal Chasm and Actun Ho Ak near the site of Ixchel, 10km south of Minanha.

Minanha is set on top of a hill in the Vaca Plateau, surrounded by numerous cave sites. Minanha was one of the largest, if not the largest Late Classic period community in the north Vaca Plateau during its time of florescence from the 8<sup>th</sup> to the 10<sup>th</sup> centuries (Iannone 2010:359). The area around Minanha does not exhibit much evidence for occupations earlier than the Middle Preclassic period (600B.C.E.-400 B.C.E.) (Iannone 2010:359; Moyes and Awe 2010:2) but in the 8<sup>th</sup> century the construction of a large court complex on the most prominent hill in the area points to significant population growth, socio-political reorganization, and establishment of the Minanha royal court (Iannone et al. 2007:153l;

Iannone 2010:359). The use of the site did not extend much beyond this Late Classic growth, after which the royal court abandons the site core of Minanha (Iannone et al. 2007:156-7).

Ix Chel is a medium-sized center located 14 km north of Caracol and 10 km southwest of Minanha in the North Vaca Plateau (Iannone 2005:28; Iannone et al. 2012:10; Reeder et al.1996). Ixchel was first occupied during the Late Preclassic period (400 BC-AD 100), and saw significant civic-ceremonial construction between the Terminal Preclassic and Middle Classic periods (AD 100-675) with the final buildings of the shrine complex being constructed during the early facet of the Late Classic (AD 650-750) (Iannone et al. 2012:15-16). An agricultural terrace system surrounds the epicenter (Iannone et al. 2011:30-32). Three causeways radiate out from the epicenter towards the north, east and southeast, and connect the epicenter with surrounding architectural groups (Moodie 2014:4). Macal Chasm is at the base of a sinkhole located within the site core of Ix Chel positioned at the western base of the hilltop belonging to Group C as identified by Colas et al. (2006). One of these sakbeob is 5km long and runs along the hillside of Group C. There is a small structure built into the hill approximately 75m from the cave (Moyes et al. 2013). This is the nearest structure to the cave.

#### **4.5.1. Moth Cave (aka Opossum Cave)**

Moth cave is ~1km south east of the site core of Minanha, between Minanha and the Contreras permit area. It is a small cave located at the base of a hill side on the edge of a valley with some natural springs which have been walled off in ancient times and are referred to by Belizeans as “Maya springs”. The cave was originally mapped by Moyes and Awe during the Minanha Cave Project in 2010 (Moyes and Awe 2010).

##### **4.5.1.1. Interior Description**

Moth Cave is a relatively small cave, measuring 22.3m in length and 19.3m at its widest point with variable ceiling heights, the highest being 4.7m (Figure 90) (Moyes and Awe 2010:150). The entrance is a small (1.7m wide, 0.5m tall) west-facing entrance that was blocked in antiquity with medium to large boulders but which have since been moved into the cave by looters (Moyes and Awe 2010:150). Due to the angle of the entrance, it remains unseen until visitors are on top of the constructed terrace running parallel to the cave entrance, within 10m of the opening (Figure 91). The only other visible marker of this cave entrance is the limestone bedrock outcrop located in the hill side, at the base of which the opening is located – unfortunately this is only one bedrock outcrop among many in this area.

During the 2010 Minanha Cave Project the cave was partially excavated with both ceramics and radio carbon dates pointing to earliest use during the Early Preclassic period with construction of terraces and platforms in the entrance chamber, and extending into the Late Classic with the deposit of surface sherds, when the cave was likely sealed off and abandoned (Moyes and Awe 2010:151, 156-7). It was observed by one of the Belizeans working with the project that there were several small structures or mounds off to the side

of the entrance to this cave. This was noted but time and the dense jungle vegetation did not permit further investigation.

#### **4.5.1.2. Exterior Description**

In 2015 the Belize Cave Research Project re-found the cave using GPS points collected in 2010 and discovered that the entire area had been cleared by for cattle raising by the private land owner. Upon receiving permission from the landowner, the area outside of the cave entrance was bushed, revealing that there is a raised quadrangular mound roughly aligned with the cardinal directions (Figure 92). On this mound are three structures on the North, West, and South sides – characteristics similar to so-called patio groups (Ashmore and Willey 1981; Christie 2003:20; Guderjan et al. 2003). While the categories of “patio groups, plazuelas, courtyards, and range buildings” are typically used in reference to residential groups, the form of Group A outside of Moth Cave is most easily described as conforming to that of a patio group, albeit on a much smaller scale, in that it is “open and accessible, with external space bounded by structures on two or three sides” (Guderjan et al. 2003:20 [following Ashmore and Willey 1981]). The mound is built into the hillside, with the eastern (or downslope) side being raised 1.5 meters and the western (or upslope) side leveling off into the hillside which continues to rise above and behind it. There is a constructed terrace which connects this patio group to the cave entrance and creates a level area in front of the cave which is set into the hillside.

#### **4.5.1.3. Exterior Excavations**

In order to attempt to determine if there is a correlation between the sizes of caves with the degree of modification outside their entrances the site of Moth Cave in the Vaca Plateau was extensively mapped and excavated. The interior of Moth Cave was revisited and included making amendments to the 2010 map, additional photography, and on-site ceramic analysis of the surface collection within the cave by Erin Ray and Margaret Reith. The entire area surrounding the cave entrance was mapped using a tape and compass method and digitized in ArcGIS. The area was gridded off in 5m increments and shovel test pits were placed at every 5m mark to efficiently determine the extent of cultural modifications to the area. The northern structure, southern structure and a section of the terrace wall were excavated, to determine the historic sequence of construction and the form of the structures. Lot numbers and contexts can be found in Table 11.

##### **4.5.1.3.1. Shovel Test Pits**

Shovel test pits allow for the calculation of a standardized density of artifact types across different sites and produce density maps to investigate potential activity areas outside of the cave entrances. The area outside of the cave and extending to the mound area was gridded off in 5m increments and 23 STPs were dug at 30cm diameters, a size in keeping

with the STPs dug at the other six cave sites investigated thus far. All artifacts were collected regardless of size and each contributed to the total artifact count of the pits.

Out of the 23 STPs, only six had artifacts recovered from them (Table 12). Despite finding a diversity of artifact classes in the shovel test pits from each of the other cave sites, only ceramics were recovered from the pits at Moth Cave (see table in Appendix A). STPs 8, 19, 20, 21, 22, 23 had only between one and nine ceramic sherds in them, and these are the shovel test pits that lie directly off of the edges of the mound and the terrace. There was no pattern in these findings that may indicate that they represent any type of activity other than the decomposition of these constructions over the past thousand years. The only exception is STP 8 which is directly on top of the terrace beside the south east corner of Unit 3. The sherds found in this shovel test pit were found at a similar depth to those found in Unit 3 and which were part of the construction fill of this portion of the terrace. Any sherds that were able to be typed were either British Honduras Volcanic Ash ware or Pine Ridge Carbonate ware, placing them into the Spanish Lookout Complex and in the Late Classic.

There was no increase in artifact density (in fact, no artifacts at all) as proximity to the cave entrance increased. This is likely related to the slope of the terrain leading from the cave entrance down to the valley floor. The terrace was constructed such that the top of it was made level with the area outside the cave, thus it is only when the terrace is further away from the cave entrance, such as at STP 8, that more construction fill was needed to build it up to that height. This being the case, it is not all that surprising that no artifacts were recovered in this area. There was no indication in any of the test pits in the area outside of the cave or in the depression bounded by the terrace and mound group that there had ever been any attempt at a formal floor construction in this area – cobbles were found scattered throughout and boulders/bedrock was reached at varying depths.

#### **4.5.1.3.2. Excavation Units**

Group A is located at the end of the constructed terrace leading from the cave, approximately 45m northwest of the cave entrance which is visible from the top of the structure (Figure 93). Structure 1 is the northernmost structure and is the largest of the three structures on this mound. Structure 3 is the southernmost structure of Group A and is the closest to the cave at approximately 40m from the entrance. It is the second largest structure and mirrors that of Structure 1. It is not as tall as Structure 1 but also appears to be in better condition, being set back from the eastern mound edge a bit further than Structure 1 and therefore not having collapsed off the edge of it the way Structure 1 has.

Terrace 1 runs northwest from the eastern side of the cave entrance for approximately 30m before turning north towards Group A to meet up with a natural terrace on the north side of Group A. Unit 2 was placed at the corner of this terrace just before it turns north as this section was likely to have been the most heavily modified, being the most unnatural in appearance.

#### Unit 1

Unit 1 is a 5x8m unit located across the southeastern half of Structure 1. This end was chosen because it was the best preserved area of the structure. It is oriented 23 degrees West of North, in line with the architecture visible on the surface (Figure 94). The aim of

this unit is to uncover the form of the structure and determine the extent of the collapse off of the eastern side of the structure and mound (Figure 95). Structure 1 was chosen for this level of excavation because it appears to be the largest of the three structures, despite appearing to be similar in form. While the area has been cleared of jungle cover for cattle raising and there is a rough road (now grown over) immediately to the north of the structure, there does not appear to have been anything other than tree growth that has disturbed the mound group, the structures of which all appear fairly intact. There is a large tree in the center of the top of Structure 1 which has uprooted some cut stone blocks in this area. The unit was dug in natural and cultural levels and all material was hand sorted. Elevations were taken from Datum M-1 set into a tree in the south of the unit 149cm above the ground surface. The unit was dug in four levels and all material was hand sorted.

### *Surface*

The surface of the unit was cleared of vegetation. The limestone blocks on top of the mound appear to be largely in place though the eastern side (the side on the edge of the mound) appears to have collapsed and tumbled, the degree of this degradation to be determined. 162 ceramic sherds were recovered from the surface as well as a fragment of slate, primarily from the eastern collapsing side of the structure. The ceramics included six Mt. Maloney Black, three Vaca Falls Red, five Belize Red, one Achote Black, one Benque Viejo Polychrome, and 41 other untypable British Honduras Volcanic Ash ware, placing the surface collection (and likely the collapse of the structure causing these sherds to appear) in the Spanish Lookout complex and the Late Classic.

### *Level 1*

Level 1 (Lot# 201563) consisted of the humic layer (Munsell# 7.5YR 2.5/2) and tumbled stones within down to where the underlying architecture remained intact. It was taken down an average of 15cm across the entire unit, though it was shallower on the top of the structure where the outline of the architecture was already showing above the surface. This level revealed that the structure has three tiers to it as indicated by alignments of stones running East-West in the front of the structure (Figure 96), with a small platform at the top which was bounded by cut stones approximately 20x15x10cm. This series of steps were revealed to still be largely intact, with only the upper narrow platform being disturbed by the tree that was growing into that area. The eastern side of the unit revealed a series of three alignments of large boulders running North-South leading up to the three tiers of the structure on top of the mound (Figure 97). The degree of collapse in this side of the unit is much higher than on top of the mound and shows that there is no boundary between the construction of the mound and the construction of Structure 1 – the latter's construction appearing to have been incorporated into the construction of the entire mound. Over 500 ceramic sherds were recovered from this level but have yet to be analyzed. In addition to this, a stalactite fragment was found in the fill, as were four slate fragments, 12 granite fragments (three mano fragments (refit); three mano fragments; six metate fragments; two unknown granite fragments), a river pebble, and 11 chert fragments (one core; nine flakes; one biface fragment) (Figure 98). This level was ended upon reaching the underlying architecture (Figure 99) and the unit was reduced to a 1x5m trench over the top of the structure in order to focus on the architecture and construction sequence of the structure on top of the mound.

### *Level 2*

This level was restricted to a 1x5m reduction running from 1.5-2.5m in from the western edge of the original 5x8m unit, cutting through the center of the structure where the cut stones are visible on the surface. Level 2 (Lot# 201566) consisted of removing the remaining collapsed construction fill from in front of the structure to the mound floor, to a depth of ~22cm in this front section (mound floor being 113cm BD). This included the remaining humic (Munsell# 7.5YR 2.5/2) and the underlying collapsed construction fill (Munsell# 10YR 3/4). The staggered boulders that were visible in front of the structure in Level 1 were removed to reveal the true front of the structure in behind as indicated by stacked stones which were in a much clearer alignment (Figure 100). The large boulders that were removed appear to have fallen down from the top of this row of boulders which would be in keeping with the elevation of this step as seen in other areas of the structure. This level was closed after discovering that the front boulders were still collapse and not intact architecture (Figure 101). The upper two steps were left intact during this level in order to remove all intact architecture as one context. Some ceramic sherds were recovered from this collapsed area but have yet to be analyzed, as well as a chert flake and another stalactite fragment.

### *Level 3*

Level 3 (Lot# 201567) consisted of the removal of the construction fill and architecture of the interior of Structure 1 in order to determine construction technique and any temporal sequences. The large boulders that form the exterior/first step were left in place as they were not an impediment to the excavation of the structure and the sequence of the construction of the structure in relation to the mound was visible through collapse. The top step with the cut stones, the second step, and the construction fill (dry fill cobbles and boulders with sandy matrix, Munsell# 10YR 3/4) between the edges of Step 1 and Step 2 were removed. The area behind the large front boulders was taken down to bedrock (~1m below the top of these boulders) and revealed a wall of stacked cobbles four courses high (approximately 80cm tall) (Figure 102).

In this northern area of the unit, below the top steps of the overlying structure, remains of a plastered surface (Munsell# 2.5YR 6/4) were found on top of this wall (~85cm BD), and on a lower step which descends to the North (~112cm BD) (Figure 103) – an apparent change in direction from the later structure which appeared to face the South towards the center of the mound group. This substructure was built on top of bedrock starting 1.75m from the northern edge of the unit and continuing to the North. There was a possible line of stone across the top of this wall which was removed during excavation, not appearing to be a formal alignment. The finding of the back wall directly underneath and in the same alignment as the stones that were removed might indicate a back wall to this platform but further excavation of the surrounding sides would be needed to confirm this. In some areas, this plaster is a darker grey (Munsell# 2.5YR 4/2) which could indicate a burnt area, though this close to the surface it could be related to past forest fires. The level was closed upon finding this substructure (Figure 104) and plaster samples were taken from both the untouched and darker grey areas (Lot# # 201567). Ceramics recovered from the fill have yet to be analyzed. Five lithic flakes were also found in the fill above the substructure, along with another river pebble, a granite mano fragment, and another stalactite fragment.

#### *Level 4*

Level 4 (Lot# 201573) was restricted to the northern most step of Structure 1-substructure in the northern end of the unit in order to collect ceramics from the fill to determine the temporal sequence of this substructure in relation to the overlying structure. This small section of the unit was chosen rather than the entire substructure because of time constraints and because it was determined that the temporal sequence could be adequately addressed through this sample. The top step/bench/platform of the substructure with the plastered surface was left intact should future field seasons return to this site. The part of the step that was visible in the unit was removed another ~55cm down to bedrock and showed that it was made of the same construction fill (dry fill cobbles and boulders with sandy matrix, Munsell# 10YR 3/4) (Figure 105). A chert flake and some unidentified faunal fragments were recovered along with 83 ceramic sherds. The sherds included seven Belize Red, two Benque Viejo Polychrome, six Cayo unslipped, one Dolphin Head Red, six Mt. Maloney Black, and three Silver Creek Impressed placing this earlier construction in Late Classic I/II. The unit was closed at this level and the entire structure was backfilled with tarps laid down at the base of the 1x5m reduction.

#### *Unit Interpretations*

In the earlier part of the Late Classic, a small structure was constructed on top of a natural bedrock outcrop which jutted out of a natural terrace approximately 45m from the entrance of the cave. This small structure could not have been more than 1m tall but appeared to have been stepped in the front (facing north, away from the cave) and had a steep, 1m tall back to it. This structure had a narrow, 1m deep bench or platform on top of it which was plastered. No evidence of postholes was found in the plaster on top of this upper tier that would indicate a perishable superstructure. The plastered surfaces would seem to indicate that it was a structure of some level of importance or that it was constructed by someone with a higher-than-average access to resources. The extent of this small structure is unknown and only future excavations can determine its size, form, and whether there is any dedicatory cache underneath that might give a clearer indication of its function.

Later in the Late Classic, the overlying Structure 1 was constructed at the same time as the larger mound on top of which all three structure of Group A were constructed (Figure 106, Figure 107). It was placed directly over top of the earlier structure and had three tiers, the first (lower) step constructed of large cobbles and small boulders set on top of Group A's platform surface. Construction techniques in the front of the structure (the southern side in this case, facing the center of Group A) become more refined as the steps rise: large rough boulders form the riser for Step 1, smaller stacked cobbles form the riser for Step 2, and cut stones face the uppermost tier (Figure 4.19). This upper platform measures approximately 2.5x1m and is too shallow to have been the interior of a structure – it is more in keeping with the form of a bench that would have had a perishable structure surrounding it set into the second step. While no evidence of post holes or daub were found, the proximity of this structure to the surface means that preservation is not prime.

#### Unit 2

This unit was a 1x3m unit oriented 8 degrees west of north, running from the top of the terrace to the base (Figure 108). It was placed here to confirm that this is a constructed terrace and to determine its placement in the temporal sequence of the site. STP 16 is located at the northern edge of the unit, and STP 8 is located at the southern corner of the unit, providing guidance for expected depths of materials. There are no large trees in this area and the bounding stones are visible on the surface. The unit was dug in a single cultural level down to bedrock and all material was hand sorted. Elevations were taken from Datum 2 set into a small tree stump in the north of the unit at the base of the terrace 81cm above the ground surface.

#### *Surface*

The unit has been subject to recent slash and burn farming, clearing, and planting for cattle grazing but the bounding stones on the top of the terrace appear to be fairly intact with minimal collapse. Only small trees have roots growing into the unit. No artifacts were recovered from the surface but there are some small sherds visible in the area surrounding the unit.

#### *Level 1*

Level 1 (Lot# 201564) removed the humic layer (Munsell# 7.5YR 2.5/2) and the cobbles of the terrace to quickly reveal that this is a constructed terrace with two retaining walls made of alignments of larger cobbles and small boulders. The fill of the terrace (80% cobbles in compact clay, Munsell# 7.5YR 3/3) was removed around these retaining walls down to bedrock. The area behind the upper retaining wall (Lot# 201565) was excavated down to some larger cobbles and boulders but the space of this area was too small to continue any further. The stones in this back area began much deeper than those in front of the back retaining wall and were overlain with the same clay that had filled in the area around the construction fill (Figure 109). This section of the terrace is located at the base of the steep hill into which the cave entrance is found and this clay matrix is likely runoff from the hills that surround this section of the terrace. Ceramic sherds recovered from the fill of this unit included nine Belize Red, three Benque Viejo Polychrome, four Cayo Unslipped, five Mt. Maloney Black, a Platon Punctated Incised, and a Uaxactun Unslipped incensario prong, placing the construction of the terrace to the same time period as Structure 1 in the Late Classic. A granite fragment was recovered from this unit.

#### *Unit Interpretations*

This terrace appears to have been constructed in the Late Classic in order to create a level area outside of the cave entrance (Figure 110). It has been raised to be the same level as the cave entrance and the natural terracing on the other side of Group A. The mound of Group A has been raised on top of a natural bedrock outcrop to be at the same level as this terrace system and both were likely constructed at the same time – the terrace effectively connecting this mound group to the cave.

#### Unit 3

Unit 3 is a 1x3m unit located across the center of Structure 3, from the center of the top tier to the mound floor, and is oriented 12 degrees West of North in line with the architecture visible on the surface (Figure 111). The aim of this unit is to uncover the form

of the structure and compare its construction technique, construction fill, and temporal sequence to that of Structure 1 – any difference potentially indicating a difference in function to that of Structure 1. It was dug to the plaza floor in order to accomplish this. There is a large tree in the center of the top of Structure 3 but the structure does not appear to be too badly displaced in spite of this. Elevations were taken from Datum M-3 set into a tree in the south of the unit 23cm above the ground surface. The unit was dug in two natural and cultural levels and all material was hand sorted.

### *Surface*

The surface shows three lines of stones, creating the same tiered form as Structures 1 and 2 with two steps and a bench at the top. The stones at the base of the structure appear to be the most displaced, similar to those of the first step of Structure 1. No material was recovered from the surface of the unit.

### *Level 1*

Level 1 consisted of the humic (Munsell# 7.5YR 2.5/2) and collapse overlying the intact architecture to an average depth of ~8cm. The bottom boulders which appeared to be shifted out of place were removed as part of this collapse to reveal the true base of the structure in behind, made of similarly sized small boulders in a clear alignment. Had these small boulders been in place on top of this step, it would have raised it 30cm as indicated by the visible construction fill of this step which rises steeply to the base of the second riser (Figure 112). The other step and top bench appear to be fairly intact and are each made of two courses of cobbles (Figure 113). There are no cut stones visible at the top of this structure, differentiating it slightly from that of Structure 1. Ceramics recovered have yet to be analyzed. In addition to this, a slate fragment, a chert core, and a chert flake were found in this collapse.

### *Level 2*

This level removed the construction of Structure 3 down to the level of the mound floor in front of the structure. It consisted of the remaining humic matrix surrounding the construction (Munsell# 2.5YR 2.5/2) and the construction fill of the structure itself (dry fill of 80% cobbles in light brown sandy loam, Munsell# 10YR 3/4) at an average of 12cm across the unit. As in Structure 1, the boulders of the first step were left in place and the fill was excavated from behind these stones to the back of the unit (Figure 114). Only a few ceramic sherds, a chert flake (roughly retouched), and a slate fragment were found in the construction fill. No evidence of any possible underlying structure was found and the unit was closed at the level of the mound floor ~90cm BD.

### *Unit Interpretations*

This structure appears to be slightly smaller than Structure 1 but the fill and overall form of the two are similar, placing them both in the Late Classic and constructed when the terrace and mound were constructed. The back of Structure 3 is rougher in construction than the front which faces the mound group and is composed of larger, and rougher boulders than the front. It is not clear if the same tiered appearance of this structure carries to the back side of it due to the rough appearance and collapse of this side. The STPs off of the back of this structure were some of the few to have sherds found in them and are

indicative of the collapse of this structure. The top tier of this structure is also very shallow (~70cm deep), indicating a bench or platform rather than an interior room.

#### 4.5.1.4. Archaeological Summary

The excavations of the structures showed that they all followed the same form: rectangular in shape, rising to less than 1m height through a series of three short steps, ending on top with a narrow platform approximately 0.75 x 2m (Figure 115). All ceramic material recovered during the excavation dated to the Late Classic/Terminal Classic Period and it appears that all but one was built in a single construction phase. The size of the top platforms of each of the structures are too small to be the base or foundation for a pole-and-thatch structure; however, they could be benches – making either the first or the second step the foundation for a potential perishable superstructure. These benches found on top of Structures 1, 2, and 3 outside of Moth Cave are similar in size and form to others found in the Minanha area (Longstaffe 2009:54; McCane et al 2009:19-20; Seibert 2007:30). The later construction phase of Group A, with its combination of large rough boulders at the base, smaller stacked cobbles in the middle, and cut stones at the top, often incorporating interior benches is typical of other Late/Terminal Classic construction trends seen in the Minanha area and is suggested to be indicative of a decline in quality over time (Iannone et al 2007:155, 157; Longstaffe 2009:59). Ceramics from both structures confirm their construction within the Late Classic period, indicating that there was no more than a 200-year gap between the first structure and the subsequent mound group.

The excavation of the terrace also showed that it was constructed during the Late Classic period, though its elevation would seem to place it during the construction phase that included the mound construction rather than that of the original structure. The form of the terrace, with two retaining wall filled with construction fill and shored up on the downslope side with loose cobbles is typical of terrace construction in the area (Killpack 1998:107). The shovel test pits revealed that the areas in front of the terrace and mound were unmodified, and confirmed that the terrace was a constructed and not merely natural. This constructed terrace is the only one in the hillside, lending to the interpretation that its function was specifically related activities connecting the mound to the cave, rather than agricultural as is so common throughout the Maya area.

The size and arrangement of the structures of Group A – three small structures on a raised mound focused inwards on a central space – conform to that of other patio groups that exist in the Southern lowlands (Ashmore and Willey 1981:48-49; Christie 2003; Guderjan et al. 2003; Prince 1998:33) and specifically adhere to the arrangement of Type III settlements as categorized by Trent University's Social Archaeology Research Program following reconnaissance in the Minanha and Contreras surveys (Iannone 2007:3 [following the settlement unit classification scheme established by the Xunantunich Archaeological Project – Ashmore et al. 1994; Ehret et al. 1995]). Where these structures are set apart from other typically residential structures is in the lack of adequate floor space, lack of potentially roofed space, lack of hearths, the lack general lack of utilitarian tools such as cooking and serving pottery, axes/adzes, spindle whorls, and the absence of midden deposits (Peuremaki-Brown 2002:97).

Despite the absence of these items, the presence of others utilitarian such as the numerous groundstone fragments does not make this a clear-cut case for these structures being non-residential. Therefore, we must look to the more unusual features of these structures such as the presence of speleothems in the construction fill and the proximity and direct connection to the cave. These features, in addition to the typically residential features that this group lacks point to a strictly ritualistic function for this group, although the specific function of these structures remains unclear.

The earliest structure in this area, the substructure under Structure 1, had a 1m tall wall on the southern edge and plastered steps leading down the northern edge, indicating a shift in the orientation of this structure from having the front facing north when it was first constructed, to facing the south to the patio after the second phase of construction. The top 'step' of this substructure could have also been a bench and would have been similarly small in size as the later benches of Group A. The change in orientation and restructuring of movement and space through this space that the heavy modifications to the Group and Terraces underwent in the later part of the Late Classic was significant (Figure 116) and while both phases of construction were likely overseen by individuals of low-level elite status, could indicate the increasing influence of the Minanha site core in this peripheral ritual space. It is important to note that with the hypothetical construction of a perishable superstructure on top of these later structures, the mouth of the cave would no longer be visible from the central area of the mound (Figure 117).

#### **4.5.2. Actun Isabella**

Actun Isabella is located 700m east of the site core of Minanha and was named in honor of archaeologist and long-time Principal Investigator of the site of Minanha, Dr. Gyles Iannone's grandmother (Moyes and Awe 2010). It was reported by Jennifer Birch and Simone Philpot (2002). In 2010 the Minanha Cave Project, Holley Moyes and Jaime Awe Principal Investigators, further described and investigated this cave (Moyes and Awe 2010). It sits at the base of a hill and is easily accessible and has a large north-facing entrance that spans 50m.

##### **4.5.2.1. Interior Description**

The cave is a "dry" cave that is heavily modified with architectural features including retaining walls for terraces, a platform, stone blockages, walls, partitions, and stone circles (Moyes and Awe 2010). The interior space measures 53m on its N/S axis, 72m at its widest point E/W, and is partitioned on its N/S axis by a linear configuration of stalagmitic columns and breakdown splitting the cave into distinct east and west areas (Figure 118) (Moyes and Awe 2010:6). The partition was further refined by the placement of rocks in crevices and holes in the existing breakdown but these were not stacked very high and would not have prevented access. This partition may instead have functioned to block sight lines between the two areas (Moyes and Awe 2010:6). Five test units were placed throughout the cave to establish the site's chronology and AMS dates indicate that cave use dates possibly as

early as 1401 B.C.E. and use persisted through the Classic periods until as late as C.E. 860 (Moyes and Awe 2010).

#### **4.5.2.2. Exterior Description**

Similar to the cave at Las Cuevas, the cave sits at the base of a hill and the entrance is surrounded by ridges that form a low bowl or plaza-like area in front of the cave (Figure 119, Figure 120). There is a small structure perched on the ridge west of the cave entrance (Moyes and Awe 2010). In 2014 the area outside of the cave entrance was surveyed to determine if any possible modifications might exist.

#### **4.5.2.3. Exterior Excavations**

On the ridge of the Western slope of the bowl (Figure 121) a low and poorly defined construction was located, though nothing of the scale of the “ticket booth” that was alluded to in previous reports. Regardless, it proved a promising place to start excavations and a unit was set up over what appeared to be a low terrace/structure wall at the same time that shovel test pitting was done over the rest of the area to determine if there were any other areas of modification. Lot numbers and contexts can be found in Table 13.

##### **4.5.2.3.1. Shovel Test Pits**

The area of interest was gridded off and test pits begun along three main transects (one perpendicular to, and two parallel to the cave entrance) across the bowl and up the Western slope at 5m increments. If artifacts were found, the area was explored in more detail with shovel test pits until the boundary of the possible activity area was delimited. In total, 44 shovel test pits were dug, with only nine containing artifacts (Table 14).

The nine STPs which contained artifacts were located on the western slope on top of which is the possible structure and this area was test pitted in higher density to determine the boundary of this modification. Of those nine however, there was a clear spike in density with one containing 66 ceramic sherds, and others containing slate fragments and speleothems. In one of the test pits, it appeared that there was a very large cave formation fragment (~30x20cm) but due to the size constraint of the STP, this fragment was left in place.

This fill is very similar to that seen on the slope of the sinkhole outside the cave at Las Cuevas which contains a pathway leading from the main plaza, through a restricted opening in some linear structures at the top edge of the sinkhole, and then down the slope to the cave entrance. Just as at Las Cuevas, only this very limited area of the bowl at Isabella shows modification and it appears to be limited to the leveling off of a steep slope down to the cave entrance.

#### 4.5.2.3.2. Excavation Units

The western slope is bounded by the bowl outside the cave to the east, a slope up the hill in which the cave is located to the south, a steep slope down to the west, and a slight hill to the north. Only one unit was placed in this area at the top of the slope. It covered the top, edge, and base of a low terrace or structure that runs between the two hills to the north and south of this area and is oriented east-west, similar to the alignment of the cave entrance. The entrance to the cave is visible from the unit.

##### Unit 1

Unit 1 was a 1x3m unit placed on the top of the Western slope of the bowl outside of the cave, approximately 20m west of the nearest entrance, and was placed here to determine if the flat area and alignment of stones seen on the surface is natural or construction. There are very few trees in the area which the unit was placed, but several large trees nearby have fallen recently indicating that this area is continuously disturbed. The unit was dug in natural and cultural levels and all material was hand sorted. Elevations were taken from a datum in a nearby tree to the north of the unit 40cm above the ground surface.

The unit was dug in four levels with no lot number designating Level 1 (the removal of the humic layer) because no artifacts or soil samples were collected. This humic level was removed to a depth of 4cm and ended when the matrix changed to a mixture of silty clay and cobbles. The second level removed 5cm of clay and loose cobbles on top of the terrace (in the east of the unit) to a level of more densely packed and smaller cobbles at the same level as the top of the stones forming the edge of the terrace (Figure 122). This layer of smaller and denser cobbles runs horizontally to the east where it runs into a low-lying bedrock outcrop. Shovel test pit 44 is directly east of this unit also shows the compact small cobbles at the same level, indicating that this leveling extends across the terrace. Level 3 removed the silty clay in front of the terrace in the west of the unit and extended to a depth of 10cm when more densely packed and smaller cobbles were reached (Figure 123). The final level was a reduction in the unit to the eastern most 1m of the unit on top of the terrace in order to determine any potential temporal sequence. It was dug to a depth of only 4cm because the bedrock that was reached in Level 2 was found to completely extend under this area (Figure 124). The ceramics found in the shovel test pits and Unit 1 were determined by S. Hernandez to belong overwhelmingly to the Late Classic.

#### 4.5.2.4. Archaeological Summary

The excavation of Unit 1 shows that the natural bedrock in this area has been used as the base for creating a terrace at the top of this slope. The shovel test pits indicate that the slope leading down from this terrace was modified, potentially to create a stairway/pathway from this area down to the cave. This is the only area around the entire bowl that modified in any noticeable way. It is possible that this is because this was direction of the approach to the cave from the site core.

The choice to formalize this side of the bowl, which is also the tallest and steepest slope down into the flat area of the bowl outside the entrance must have been a deliberate choice – there is a very shallow (<1m tall), easy entry into the bowl directly across from the

cave entrance which would have provided a much easier, though potentially much less dramatic, entry point to this sacred space. Creating an entrance which forces the participants to first climb a difficult hill and then deliberately descend into the bowl and subsequent cave is in keeping both with notions of pilgrimages or ritual circuits requiring some amount of physical difficulty as well as incorporating the descent down the slope into ancient Maya conceptions of caves being any hole or depression in the ground. Entering from the relatively flat area to the north of the entrance would contradict both of these concepts.

### **4.5.3. Macal Chasm**

Reeder and his colleagues noted that out of the 150 caves discovered in the Northern Yaca Plateau by 1998, 80% were entered by vertical drops (Reeder et al. 1998). In these cases, it is not unusual to find piles of artifacts that have been tossed into the cave piled up at the base of the cave (See Reeder et al. 1998 for discussion). This has led to the suggestion that the ancient Maya had limited technical caving abilities, however, caves like Ch'en P'ix and Macal Chasm that have difficult entrances and long drops belie this model (Moyes et al. 2013). Macal Chasm's stacked speleothems suggest that ancients entered this site, though it cannot be ruled out that some modern caver placed them in their current position. Ch'en P'ix contained well-placed jars, human remains, and architectural modifications that demonstrate the abilities of the ancients to not only enter, but modify these types of sites. In 2016, Macal Chasm and a recently discovered smaller vertical drop cave name Actun Ho Ak (Turtle Head Cave) were selected by the BCRP as ideal sites to test for activities taking place around the exteriors.

#### **4.5.3.1. Interior Description**

Macal Chasm is a vertical drop cave (Figure 125) reported by the (NVPGAP) and a stalagmite recovered from its entrance chamber has been the subject of paleoclimate analysis (Akers et al. 2016; Webster et al. 2007). The cave is entered via a 53m vertical drop (Moyes et al. 2013) to a large well-decorated muddy chamber with a pile of debris below the entrance drop (Moyes et al. 2013). Within this pile of debris are disarticulated human remains and artifacts including ceramic sherds, a fragment of a jade axehead (celt), and a stack of broken speleothems near the cave wall that were clearly placed by humans. Analysis determined that the ceramics date solely to the solely in the Late Classic period (600-900C.E.) (Moyes et al. 2013).

#### **4.5.3.2. Exterior Description**

A 2013 report on this cave by the Minanha Cave Project noted a set of terraces descending from the sacbe (Figure 126), down the sinkhole, to the cave entrance, suggesting that this cave could have been used for large public ceremonies and pilgrimages (Moyes et al. 2013). For this reason, as well as providing a means to add a smaller, vertical drop cave to the sample of cave exteriors in my research, the exterior of this cave was chosen in 2016 by

the BCRP as a site for further investigation. Small sites are often ignored and archaeological attention is most often paid to the biggest caves with the largest assemblages and the most features (Moyes et al. 2013). Additionally, small sites are often heavily looted. However, the Minanha Cave Project demonstrated that these small spaces were architecturally modified in their interiors to a similar extent of those larger caves (Moyes et al. 2013).

#### **4.5.3.3. Exterior Excavations**

As the chasm is at the base of a sinkhole, it was hypothesized that there might be a possible formal pathway down into the base of the sinkhole from the edge – a feature that has been found at two other caves surrounded by hills or in the base of a sinkhole (Arksey 2014; Arksey 2015). Test pits were placed in a grid surrounding the chasm entrance, and on level areas further from the entrance to test for materials left as part of ritual dropping of artifacts down the chasm and potential formalized pathways and terracing leading down the sinkhole edges to the base where the chasm is located. If any of the test pits were to reveal a concentration of artifacts, a broader excavation would be placed over this area to further investigate the area.

The nearby sakbe was not excavated since it was investigated in previous years. There is a series of three terraces which run uphill to the northwest away from the sinkhole. The lower terrace is approximately 40m northwest of the sinkhole and runs SW-NE for approximately 20m. It does not connect with the sakbe, but runs into natural bedrock outcrops on either side of it, creating a bounded area with the edge of the sinkhole. This terrace wall was investigated to determine if it was contemporaneous with the sakbe and the chasm deposits. In all shovel test pits and excavation units, the materials were hand sorted and ceramic analysis was done by Laura Kosakowsky. Lot numbers and contexts can be found in Table 15.

#### **4.5.3.2.1. Shovel Test Pits**

Shovel test pits were placed along four of the slopes which enable access to the base of the sinkhole: one on either side of the chasm, and two at the end opposite to the chasm. These pits were placed on level areas of terracing where infilling would be most likely and in junctions of potential pathways. This site differs from these other two in that the entrance is a vertical drop and cannot be accessed without equipment. As such, the majority of ritual activities would have likely taken place at the top of this drop, in full view of anyone in or around the sinkhole edge. A series of shovel test pits were spaced closely together across the front of the chasm to attempt to find any remains of these activities. While it is possible that items could have been thrown into the chasm from the upper edge, inspection of this area revealed only large bedrock outcrops and no surface from which to stand close enough to the edge. No shovel test pits were placed in this area.

A total of 49 shovel test pits were dug in the sinkhole, with only eight showing any cultural material (Table 16). These pits were either on Slopes 3 or 4 and had no more than three small sherds. All of them were found mixed in silty clay deposits in the sinkhole, not in any construction fill and likely washed down from other activities or were accidental

depositions. None of the ceramics were diagnostic enough to give any information. No evidence of any construction fill was found anywhere in the sinkhole.

#### 4.5.3.2.2. Excavation Units

Terrace 1 is part of a series of three modified terraces leading up and away to the northwest from the sinkhole (Figure 127). Terrace 1 is the lowest terrace and, along with the sakbe to the southeast and a natural terrace to the northeast, creates bounded space northwest of the sinkhole, directly opposite the chasm.

##### Unit 1

To see if this terrace was created with the intention of bounding the space in relation to the cave or whether it was simply an agricultural terrace a 2x0.5m unit was placed over the edge of the terrace. This will show if the construction methods and the fill resemble other agricultural terraces or show a difference that might indicate a connection to ritual activities in the chasm. It will also hopefully date the construction of this terrace in order to connect it to the timing of the activities in the cave. The unit was excavated in natural and cultural levels and all material was hand sorted. The surface of the unit shows the stones of the wall as well as a boulder off of the base and one on top of the terrace. Numerous trees are growing in the area but the unit was placed over a section that appears relatively intact.

##### *Level 1*

Level 1 consisted of the removal of the humic layer (Munsell# 10YR 3/2) and the underlying sandy clay 20cm down to a level of visible cobbles and pebbles resembling construction fill on the top of the terrace and down to the bottom course of stones of the terrace wall in front of the terrace (Figure 128). This level showed that the construction fill did not reach the top level of the front stones of the wall, but left approximately 15cm of room to be filled in. In front of the wall, the humic and underlying soil was removed down to the base of the bottom course of stones of this wall. No artifacts were recovered in this level.

##### *Level 2*

This level removed the stones forming the front wall of the terrace and the cobbles/construction fill of the terrace wall down to bedrock. A large boulder is about 40cm behind the wall, the top of which is level with the earlier construction fill and was likely incorporated into the design of the terrace construction (Figure 129). The boulder that was visible at the base of the wall in front of the terrace has leveled construction fill between it and the base of the large boulder further back, creating a stepped construction down to the level of the flat area in front of the terrace. The fill that was removed to expose this form was primarily sandy clay (Munsell# 10YR 3/2) with some limestone cobbles and pebbles. Only 19 ceramic sherds were found in this fill (Lot#16000), 12 of which were identified as Cayo/Cambio Unslipped and four of which were Belize Red. Both types place this construction phase in the Tepeu 2-3 range. No other types of artifacts were recovered from this fill.

### *Level 3*

This level removed the fill of the stepped terrace construction down to bedrock. The two boulders were too large to remove but the fill, sandy clay (Munsell# 10YR 3/2) with 70% pebbles, was excavated from around them. Removing this fill showed the terrace construction to be typical of other terrace construction with two retaining walls for structural integrity which were filled in with cobbles and pebbles for drainage and later naturally filled in with silty clays (Figure 130). In this level only ceramics were found in the fill. Nine sherds were found, of which six were Cayo/Cambio Unslipped and one was a Mt. Maloney Black. Both types again place this construction in the Tepeu 2-3 range.

### *Unit Interpretations*

Following the excavation of the terrace edge, it appears that this 10m stretch of the terrace was modified to create a dual retaining wall (stepped form) terrace descending from the top of the terrace to the open space at the base. Later, this stepped form was further modified by the addition of vertical facing stones to create a taller formal wall to the terrace. This form is typical of other agricultural terraces as well as that found outside of Moth Cave in the Vaca Plateau (Arksey 2016) which while typical of agricultural forms, was likely used as a walkway connecting a small mound group to the cave. The form of this terrace does not distinguish it from any other terrace nor does it indicate any function other than agricultural. Likewise, the fill does not distinguish it from other utilitarian constructions or indicate any connection to the cave.

#### **4.5.3.4. Archaeological Summary**

The absence of any modifications to the sinkhole does not indicate an absence of activities in this area, as the presence of material at the base of the chasm demonstrates (Figure 131). The terraces that naturally occur in the sinkhole may have provided adequate means of entry to this space and were left natural, as was the hillside on which Group C is built on, in order to achieve a certain aesthetic (Colas et al. 2006:5) or due to lack of resources during the time of use. The activity in the interior of Macal Chasm which demonstrates that the Maya had access to and descended into the chasm, would have been well out of sight and audio range to anyone remaining on the surface but the activity of dropping artifacts into the chasm would have been visible from almost anywhere surrounding the chasm entrance, including from the sakbe to the south. If these activities were meant to be viewed by any public audience, it was not deemed necessary to formalize the area in order to achieve this.

#### **4.5.4. Actun Ho Ak**

Actun Ho Ak (Turtle Head Cave) is a vertical drop cave approximately 1.5km southwest of Ixchel. It is 100m east of Chen Pix and was first noted by BCRP in 2015, though it was not named at the time. The cave is on the eastern side of a shallow depression (not quite a sinkhole) and is surrounded by limestone boulders and bedrock outcrops (Figure 132). There are hills about 2km to the north which have small settlements, plazuela groups,

housemounds, and a purported ball courts, but these were not able to be investigated in the time available.

#### **4.5.4.1. Interior Description**

Actun Ho Ak is entered via a 9m vertical drop to a small chamber filled with organic debris which has been washing in. The chamber itself is hardly even a chamber – there are only some very small alcoves and crevices off to the sides of it. While Ch'en P'ix contained large well-placed jars, small chambers with human remains, and architectural modifications, Actun Ho Ak had only one or two pieces of undiagnostic ceramic sherds or small chert flakes and fragments placed within them.

#### **4.5.4.2. Exterior Description**

Surrounding this drop are a natural boulder cliff face to the east, boulder outcrops to the south, and a series of four terraces (three constructed retaining walls and one leveled off natural terrace) running up to the west and north (Figure 133). The closest to the drop fortifies the southern edge of the vertical drop creating an edge level with the western side. Despite this, the access to this retaining wall is relatively steep and inaccessible. The next two run in a ring around the western and northern sides of the drop, and the last is a shorter but taller terrace wall to the north. There was no evidence of any structure other than these retaining walls and no artifacts were visible on the ground surface.

#### **4.5.4.3. Exterior Excavations**

The second terrace wall from the drop entrance creates the most level space closest to the drop entrance and so a small excavation unit, Unit 1, was placed over it to determine temporal sequence and potential function. The terrace wall the furthest from the drop entrance is the best preserved and so a second unit (Unit 2) was placed over this wall to determine temporal sequence and potential function, and attempt to determine if their sequences match and if either of them date to the period of activities in nearby Chen Pix. All materials were hand sorted and ceramic analysis was done by Laura Kosakowsky. Lot numbers and contexts can be found in Table 17.

##### **4.5.4.3.1. Excavation Units**

###### Unit 1

Unit 1 is a 50x50cm unit placed on top of the second terrace wall, which ranges from 1-3m away from the drop (Figure 134). This will show if the construction methods and the fill resemble other agricultural terraces or show a difference that might indicate a connection to any activities in the drop. It will also hopefully date the construction of this terrace in order to connect it any activities in the drop and in Chen Pix. The unit was excavated in

natural and cultural levels and all material was hand sorted. The surface of the unit shows the stones of the wall but no cultural material beyond this.

#### *Level 1*

The thin layer of humic and underlying sandy clay was removed down to a layer of limestone cobbles. Some ceramic sherds are visible within these cobbles and indicate that this is potentially construction fill (Figure 135). This level showed that the construction fill did not reach the top level of the front stones of the wall, but left approximately 20 cm of room to be filled in through either cultural or natural means. No cultural material was recovered from this first level.

#### *Level 2*

The limestone cobbles and larger boulders were removed down as far as was safely possible, another 35cm. The stones making up the wall were placed successively further in from the edge and the further the unit went, the more this wall became destabilized (Figure 136). The only cultural material (Lot#16003) recovered from this construction fill were two unknown Pine Ridge Carbonate ware sherds and these were found at the top of the fill, placing its and construction likely sometime in the Late Classic.

#### *Unit Interpretations*

The construction of this terrace wall does not appear different from any other terrace wall. The lack of cultural material recovered does not provide enough information to date its construction or give an indication of its function beyond that of a retaining wall.

#### Unit 2

Unit 2 is a 1x1.5m unit placed over the top of the fourth terrace wall, 10m northwest of the drop. This terrace wall is the tallest and most formally constructed, being four courses high (Figure 137). This will show if the construction methods and the fill resemble other terrace wall construction and will hopefully date the construction of this terrace in order to connect it any activities in the drop and in Chen Pix. The unit was excavated in natural and cultural levels and all material was hand sorted. The surface of the unit shows the stones of the wall but no cultural material beyond this.

#### *Level 1*

The humic and underlying layer of sandy clay (Munsell# 10YR 3/2) with pebbles and chert fragments was removed ~10cm on top of the terrace behind the wall as well as in front of the terrace down to a level of cobbles and pebbles. Bedrock appears to be directly under the base of the lowest visible stone of the terrace wall (Figure 138). The area in front of the wall (Lot#16004) was given a different lot number than the area behind the wall (Lot#16002) in case of any depositions along the base of the wall. Numerous chert fragments came out of this level but no ceramics. Behind the wall, seven chert flakes were found along with six chert fragments. In front of the wall, three chert flakes were found.

#### *Level 2*

The northern area of the unit, and the area on top of the wall with the lowest concentration of visible pebbles was removed revealing that the wall construction ends 10cm

from the northern unit wall (Figure 139). This silty clay was removed to the base of the back side of the terrace wall 50cm below the top of the construction fill. No cultural material was recovered. The wall is built of two lines of cobbles and boulders filled in with pebbles. The south side is made of large cobbles and boulders, some of which have been cut on one side to face the wall. The northern side is made of cobbles with small rough boulders at the base. The fill appears to consist of small cobbles and pebbles with some chert pieces mixed in. No cultural material was recovered.

### *Level 3*

The construction fill (sandy clay with 80% cobbles and pebbles, (Munsell# 10YR 3/2) and back retaining wall of the terrace were removed to the larger boulders at base of wall (Figure 140). Only three chert fragments, one chert flake, and only one ceramic sherd with fingernail punctations, which does not provide any temporal information, were found in the fill.

### *Unit Interpretations*

Despite the effort put into the construction of this wall in comparison to that of the second terrace, just like the second terrace the construction of this terrace wall does not appear different from any other terrace wall (Figure 141). The lack of cultural material recovered does not provide enough information to date its construction or give an indication of its function beyond that of a retaining wall.

#### **4.5.4.4. Archaeological Summary**

The proliferation of chert fragments and chert-like limestone that came out of these units makes it likely that there is a chert source nearby and that the presence of these fragments may not hold significance. The flakes are minimal and rough, but possibly simple debitage from a nearby surface site that was working this source. There were only four chert pieces found in the cave, but however minimal, they outnumbered the number ceramic sherds found. The inclusion of chert in the fill of these terraces reflects the availability of the material in the area and cannot be conclusively tied to any ritualistic activity taking place in the caves of the area. However, the placement of these terraces, ringing the cave entrance, makes their connection to the cave inescapable. The low edge of the drop would have meant that debris would be constantly washing into the cave – constructing the terraces around the entrance could have served a dual purpose: preventing too much organic debris from entering the cave and providing anyone wishing to drop a deposit into the cave with a place to stand. The amount of debris at the base of the drop is extensive and only a concerted and time-consuming effort to excavate it would reveal whether or not it was used as a site for ritual deposition.

#### **4.6. Chiquibul National Park**

Chiquibul National Park is Belize's largest national park and is located in the Cayo District, bordered on the west by the Guatemala-Belize border and on the east by the Maya

Mountains. It contains the large Maya site of Caracol and the Chiquibul Cave System, the longest known cave system in Central America (Day 1996; Kueny and Day 2002). The area is primarily limestone and is classified as lowland tropical broad-leafed rain forest. The Maya Forest boasts 375 plant species found nowhere else on earth (Nations 2006; Riley and Riley 2005) but this biodiversity makes it a common area for study but also suffers from frequent poaching and illegal logging and farming.

#### **4.6.1. Las Cuevas**

Located at the Las Cuevas Research Station in the Chiquibul Reserve in western Belize, Las Cuevas is a medium-sized ceremonial center, dating to the Late Classic period, consisting of two plazas, a number of buildings including temples, range structures, a ballcourt, and long linear structures surrounding the sinkhole at the base of which is the cave entrance (Figure 142) (Arksey 2014, 2015; Arksey and Moyes 2015; Digby 1958; Moyes 2013; Moyes et al. 2011, 2012, 2015; Robinson 2015). While located 14km from the site core of Caracol, Las Cuevas is only 4km from the eastern terminus of a Caracol causeway (Moyes et al. 2012). Las Cuevas was first investigated in 1958 by British archaeologist Adrian Digby (Digby 1958) and then Commissioner of the Belize Department of Archaeology A. H. Anderson, but received no further attention until the Las Cuevas Archaeological Research project in 2011. Investigations from 2011 to 2014 show that the site and the cave both date to the latter part of the Late Classic and that both were abandoned by the 9<sup>th</sup> or 10<sup>th</sup> century. The nearest river to the site is a branch of the Macal beside the medium-sized site of Monkey Tail (~4km to the east). LiDAR in the area in 2015 revealed numerous other large and medium sized settlements in the surrounding hills, along with housemounds and causeway systems, though none that directly connect with Caracol (Moyes 2013; Moyes et al. 2015; Robinson 2015).

##### **4.6.1.1. Interior Description**

Las Cuevas is one of the most salient examples of the strong tie between the monumental plazas and ritual cave sites during the Late Classic (Moyes 2015). The site's main plaza and Eastern structure lie directly above a large cave set at the base of a considerable sinkhole which has natural terracing ringing the inside. The large cave located underneath the monumental center of Las Cuevas is unique in its size, natural layout, and level of modification. The large entrance chamber is illuminated by daylight during part of each day, and has 81 plastered platforms surrounding a cenote with water flowing at the base. The cave at Las Cuevas loops around under the monumental center to re-emerge as a window at the top of a cliff in the entrance chamber. This window overlooks the cenote and faces the platforms ringing the entrance chamber, providing a natural amphitheater for the performance of ceremonies by rulers and priests. This cave site is the most concrete evidence that cave rituals were meant to be viewed by large numbers of people.

#### 4.6.1.2. Exterior Description

The sinkhole is approximately 80m diameter and 10m deep (Arksey 2014; Arksey and Moyes 2015). Around the top of the sinkhole on the Southern and Western sides are linear structures, with gaps on either side of Structure 10 providing possible access to the sinkhole and the cave entrance in the Western side of the sinkhole. The main plazas of the site are also all concentrated to the West and South of the sinkhole. There are no linear structures or other monumental structures on the Northern and Eastern edges of the sinkhole. The current access point to the cave is on a slope that is likely to have been modified in recent decades, possibly by the British military during a stay at the station, as evidenced by the large trench to the side of the path where a bulldozer appears to have removed material for construction.

There are three main slopes in the sinkhole, with a level area at the base of the sinkhole. Slope 1 is the Southwestern slope leading from the linear structures to the cave entrance. There is a slight draw in the middle of it leading from Structure 10 to the base of the slope, as well as several rock outcrops and natural terraces which could have been used as either platforms, terraces, or a walkway down to the cave entrance. Excavations of Units 22, 22A, and 22B part way down this slope were a combined 1x5m and demonstrated a high concentration of cultural material most closely resembling midden fill mixed with pebbles which appears to have been placed in a natural terrace for the purpose of leveling it off in relation to the gaps in the linear structures at the top of the sinkhole in this area. Slope 2 is the northern slope which has a steeper entry to the sinkhole at the top of the slope than Slope 1 but quickly becomes gentler at the base, to the same degree as Slope 1. While it is steep at the top, it is not outside of the bounds of possibility to be modified, particularly when considered against examples of the ancient Maya modifying cliff faces and other sheer cave entrances with hand holds. Slope 3 is the Southeastern slope and is similar in many respects to Slope 1. There is a gap between Linear Structures 8 and 9 at the top, it has a draw in the middle of it and it has several rock outcrops and natural terraces which could have been modified in the same way as Slope 1.

The cave entrance is in the Western side of the sinkhole and is approximately 25m wide although there is only a narrow space (approximately 1m) that is cleared of boulders and is on the same level as the base of the sinkhole from which the cave is easily accessed. On either of this narrow gap the entrance is partitioned off by what appear to be naturally deposited boulders which rise in slopes to the North and South. These boulders appear to have fallen in from the edge of the sinkhole above the entrance through a process of bioturbation as evidenced from the presently growing trees directly on the edge of the sinkhole which have large root systems cracking the rock above.

These boulders presumably covered the entirety of the entrance and the gap in the middle was likely created in antiquity and potentially re-cleared in recent decades in relation to re-use of the site by the British Military, amongst others. There is a set of limestone steps going into the cave from this gap which are similar in form to other steps in the cave descending down to the water at the base of the cenote inside the cave which have been determined to be ancient Maya due to the remnants of plaster found on some.

#### 4.6.1.3. Exterior Excavations

Slope 1 is the southern slope in the sinkhole to the left of the cave entrance and runs from a gap between two of the linear structures down to the base of the sinkhole. The rough form of the boulders in the slope and in the sinkhole in general would indicate that this basin was not formed by water but by a physical collapse of a sinkhole underneath, possibly related to the cenote in the cave. This collapse has formed some natural terracing along this slope with large holes and gaps between the boulders.

In 2011, at the top of this slope, Mark Robinson excavated a 7x1m unit across the Western end of Structure 11 and discovered a concentration of ceramic sherds that appeared to be discard off the back of the structure to explore the possibilities of this slope being either a possible entry way to the sinkhole from the linear structures or that it may contain further discard off the back of the linear structures that has worked its way downhill over time. If the first is true, we would have expected to find ceramics and other cultural remains the length of the slope, if the second is true, we would have expected to find more material closer to the linear structures that has settled in dips and ravines.

Shovel test pits were placed throughout the sinkhole to quickly and efficiently determine where any cultural material might be found. Focus for the shovel test pits was paid to any level area on the slopes that may have been modified. Once density analysis of the shovel test pits showed that all activity and modifications took place on Slope 1, several larger excavation units (Units 22, 22A, 22B) were placed along this slope to establish what kind of activity occurred outside of the cave entrance in the sinkhole.

Following excavations of Units 22, 22A, and 22B and the shovel test pits, it was hypothesized that the main route into and out of the cave follows the middle of Slope 1 down to the base at which point it hugs the base of the slope along a natural terrace curving to the Northwest which terminates at the cave entrance. As a result of the shovel test pits throughout the sinkhole, the area directly in front of the entrance and the area to the south of the cave entrance leading to the base of Slope 1 were determined to be places of high potential for modification due to their high frequencies of ceramic sherds. Units 31, 31A, 31B, and 31C were placed in the area immediately outside of the cave entrance up to this natural terrace in hopes of confirming this and exploring any other activities that may be taking place outside the cave entrance.

All material was hand-sorted and ceramics were analyzed by Laura Kosakowsky. Lot numbers and contexts can be found in Table 18.

##### 4.6.1.3.1. Shovel Test Pits

The sinkhole was gridded off in 5 meter increments, creating 200 grid squares covering the entirety of the interior of the sinkhole, with the intention of covering 50% of the grids (Figure 143). The pits were dug in 30cm diameters and counts of the artifacts (regardless of size) were taken in 10cm arbitrary levels in order to potentially tie density of artifacts to possible activity levels across the sinkhole. The density was calculated using total number of sherds over the volume of the pit in cm<sup>3</sup>.

Overall, 100 shovel test pits were completed in the sinkhole. The majority were dispersed throughout the sinkhole unless artifacts were found, in which case the surrounding

area was dug in a higher concentration. The most frequent artifact found was ceramic sherds, the only identifiable fragments belonging to the Late Classics, and the highest concentrations of these were found along on Slope 1 (Table 19). Slope 2 and 3 had next to no artifacts within the shovel test pits. The density increased slightly on the Western side of Slope 3 but this is likely in relation to the linear structures at the top of the sinkhole in this area and the collapse of these structures over time.

The shovel test pits on Slope 1 (off the backs of linear structures 11 and 12), where Units 22, 22A and 22B uncovered modification to the natural terracing, had a sharp increase in sherd density in comparison to the rest of the sinkhole with several pits having more than 120 sherds in less than 50cm (Figure 144). These tended to be on small areas of flat ground running from the gap between linear structures 10 and 11, down to a terrace at the base of the slope to the North of Unit 23 which runs along the contour of the slope, ending in a slope down to the cave entrance (Figure 145).

#### 4.6.1.3.2. Excavation Units

##### Unit 22

Unit 22 is located on a natural terrace on the southern slope (Slope 1) in the sinkhole about one third of the way down to the bottom (Figure 146). It is oriented 16 degrees West of North in line with the natural terracing of the slope. Off of the southwest corner of the unit there is a cluster of boulders which have a hole approximately 20cm diameter leading underneath the slope giving an indication of the loose arrangement of the boulders along this slope. This unit was put in place to determine whether there is any cultural modification to the natural terracing and if it was used as a surface. The unit was dug in natural levels at first, and switched to cultural levels when higher concentrations of ceramic sherds and other artifacts were found. The material was all hand sorted. Due to the amount of roots running throughout the unit, much of the material is likely to be disturbed. Elevations were taken from Datum #22-1 to the South of the unit.

##### *Surface Level*

The surface had a natural depression running the length of the center of the unit from north to south, parallel to the natural terrace. There are lots of large roots around and through the terrace making it likely that there is a lot of disturbance. No material was recovered.

##### *Level 1*

Level 1 consisted of the humic layer which had lots of roots and organic debris along with some ceramic sherds mixed in. It is likely that these sherds washed onto the terrace from up above. The level was closed 5.6cm below the surface when the matrix changed to a more compact dark brown soil and ceramic sherds started to increase in frequency. This same matrix change occurred in Unit 23 as well. Some ceramics were recovered.

##### *Level 2*

Level 2 (Figure 147) consisted of compact dark brown soil (Munsell# 10YR 2/2) with ceramic sherds and some lithic flakes mixed in which resembles possible wash-down from

the slope above. The level was closed at a depth of 9.0cm when a denser concentration of pebbles and ceramics, along with some cobbles approximately 10-15 cm in diameter was found. This is most noticeable in the western side of the unit (at the base of a slope). Some ceramics and a few lithics were recovered from this level.

### *Level 3*

This level was begun with the assumption that the concentration of cobbles and ceramics extended across the unit and was just more visible in the western side of the unit due to preservation. Excavation was started in the western side of the unit where the pebbles were denser but we soon realized that this is a different matrix than that of the rest of the unit which more resembles the possible wash-down from level 2. Because of this, we designated the pebble/sherd matrix as Lot #11351 (Munsell# 10YR 3/2) and the clay/sherd matrix in the rest of the unit as Lot #11352 (Munsell# 10YR 2/2), the same matrix as Level 2 (*Figure 148*). This level was ended 6.4cm below where we uncovered the rest of the possible midden fill across the entirety of the unit. Some ceramics were recovered from both lots and a shell tinkler (designated special find) was recovered as part of the possible wash-down of Lot #11352.

### *Level 4*

This level consisted of the pebble/sherd matrix (Munsell# 10YR 3/2) found at the base of the slope in Level 3. Since we weren't sure if the deposition was a result of construction fill or of runoff from up the slope from the linear structures, which may have resulted in reverse stratigraphy, we decided to do arbitrary 10 cm levels to try to catch any possible change in the artifacts that might help determine this. This level was ended after 11.2 cm with ceramics, lithic flakes, an obsidian blade fragment, and jute recovered lending to the possibility of this matrix being midden fill. At the base of this level, a hole approximately 15cm in diameter going into the boulders of the slope was found which was not covered by a rock and which showed that in that area of the unit, the pebble/sherd matrix goes down another 20cm.

### *Level 5*

Upon starting the second arbitrary level, we found that the boulders forming the slope were only about 10cm below so we decided to just clear off down to the boulders instead of stopping at another arbitrary level. At the boulders, we found lots of holes between boulders going into the slope (*Figure 149*). None of the holes that we found had ceramics or any other possible fill in them. The artifacts that we found in these levels were a mixture of ceramics, jute (mostly unclipped), lithic flakes, and an obsidian flake. It is possible that because of the mixture of discard throughout the matrix, the way they did not fall into the holes in the boulders, and the small size of the ceramics, that this matrix is likely midden fill and not a natural deposition due to runoff from the back of degrading linear structures above or sweeping off of the linear structures. We will have to wait until Laura gets back to the US for the article she wrote comparing the ceramics from middens and from toss zones off of structures to further determine what this pebble/sherd matrix is. In the meantime, we were referring to it as "possible midden fill".

### *Unit Interpretations*

The excavation of this unit did not fully confirm or refute either of the hypotheses that were being considered at the beginning of the excavation. The fill of the natural terrace may still be considered to be natural wash-down from degrading linear structures above, wash-down from sweeping off of the linear structures above, possible midden fill that was placed intentionally to level the natural terracing of the slope, or midden fill that was tossed off the edge of the sinkhole with no intention of using the slope as anything other than a midden dump.

In order to explore the possibility of the construction of terraces on the slope, the original unit was extended by 2m on both the West side (up the slope) and on the East side (catching the edge of the terrace and the slope down to the next natural terrace in the hopes of finding some modification to the natural slope. Units 22A and 22B were excavated simultaneously level by level to expose any similarities at once and have them in the same photos. They were also opened in the hopes of being able to trench through the boulders in Units 22 and 22B to see if they form part of the construction or if they are naturally in place (Figure 150).

#### Extension 22A

Extension Unit 22A was a 2x1m extension to the West of Unit 22. It was opened to attempt to determine whether there is any evidence of modification to the natural slope after the finding of Unit 22 showing that there is a dense concentration of cultural material forming part of the leveling of what was originally thought to be purely natural terraces. This unit is almost entirely on a slope leading up from Unit 22 to the gap between linear structures 11 and 12 (Figure 151). There are a lot of roots throughout the unit and bedrock is visible at the surface. Elevations were taken from Datum #22-2 to the West of the unit (40cm above the ground surface) and the unit was excavated to a total depth of 140.8cm.

#### *Surface Level*

The surface of the unit shows a large amount of roots running through the entirety of the unit, including a tree directly outside of the unit to the West of the unit and a large root running North-South across the Eastern side of the unit. Some large boulders and portions of bedrock are visible on the surface as well. No artifacts were recovered from the surface of this unit.

#### *Level 1*

Level 1 consisted of the humic layer which had lots of roots and organic debris along with some ceramic sherds, some lithic flakes and jute mixed in. It is likely that these artifacts washed onto the slope from above and are in the midst of washing down the rest of the slope. The level was closed 4.0cm below the surface when the matrix changed to a more compact dark brown soil and ceramic sherds started to increase in frequency.

#### *Level 2*

Level 2 consisted of compact dark brown soil (Munsell# 10YR 2/2) with ceramic sherds and jute, and some lithic flakes, which resembles possible wash-down from the slope above. The level was closed at a depth of 4.6cm when a denser concentration of pebbles and ceramics at the base of the slope in the East of the unit and at the same level as Level 3 in Unit 22 was found (Figure 152).

### *Level 3*

Level 3 consisted of the same pebble/sherd matrix (Munsell# 10YR 3/2) that was recovered in Unit 22. Many of the larger roots were removed to facilitate the excavation of this level which resulted in one of the boulders in the South-Western corner of Unit 22 falling in. Bedrock was followed down in the East of the unit to a depth of ~55cm at which point the cultural material stopped and a culturally sterile soil (Munsell# 10YR 3/3) was reached (Figure 153). Some ceramics, jute and one slate fragment were recovered from this level.

### *Unit Interpretations*

Unit 22A doesn't appear to have any modifications visible. The deposition of this unit would seem to indicate natural wash-down since even though we are seeing some of the same holes that go into the boulders beneath there are no cultural materials found within. These holes are at such an angle that wash-down would not naturally enter them. This holds for the majority of the unit which is on a natural bedrock slope, and may also account for the deposition of artifacts at the base of the slope where there may be a natural leveling of the slope in Unit 22. Unit 22B which extends across the edge of the level area of Unit 22, a slope, and the edge of a second level area beneath may be more revealing.

### Extension 22B

Extension Unit 22B was a 2x1m extension to the East of Unit 22 (Figure 154). It was opened to attempt to determine whether there is any evidence of modification to the natural slope after the finding of Unit 22 showing that there is a dense concentration of cultural material forming part of the leveling of what was originally thought to be purely natural terraces. The Western 40cm of the unit is on the same level as Unit 22, and slopes down 140cm to a second level area which occupies the Eastern 20cm of the unit. Elevations were taken from Datum #22-1 to the South-West of the unit (17cm above ground surface) and was excavated to a total depth of 116.2cm.

### *Surface Level*

The surface of the unit showed some large boulders in the Eastern side of the unit forming what appeared to be a natural terrace on the slope. There were many roots visible throughout. No materials were recovered from the surface.

### *Level 1*

Level 1 consisted of the humic layer (Munsell# 10YR 2/1) which had lots of roots and organic debris along with some ceramic sherds and jute dispersed throughout. The level was closed 2.8cm below the surface when the matrix changed to a more compact dark brown soil and ceramic sherds started to increase in frequency. A slate fragment was recovered from the South-East corner of the unit at the base of the slope and was designated a special find though this could be revised after having found other slate fragments in the other units. It is likely that these artifacts washed onto the slope from above and are in the midst of washing down the rest of the slope.

### *Level 2*

Level 2 consisted of compact dark brown soil (Munsell# 10YR 2/2) with ceramic sherds and jute and some lithic flakes which resembles possible wash-down from the slope above. The level was closed at a depth of 7.2cm when a denser concentration of pebbles and ceramics was reached across the unit. The excavation of Level 2 began with early evidence of the possible midden fill in the top half of the unit and sloping gently down the rest of the unit. It was unknown exactly where Level 2 ended on the eastern side where it slopes down. We were looking for a potential terrace wall/modification and what we may have had is some slump overtop of whatever remains. In addition to the ceramics, lithics and jute recovered was a stalactite fragment (special find) found in the North-East corner of the unit amongst the boulders.

### *Level 3*

Level 3 consisted of the pebble/sherd matrix in front of the natural terrace (Figure 155). This level was excavated starting in the East at the base of the slope towards the West where the upper terrace of Unit 22 is. We are hoping to remove any possible slump and find evidence of some sort of boulder wall construction that might indicate a modification of the natural terrace of the slope for the purpose of creating a terrace or stair down the slope. As the excavation moved west, the boulders were left in place as they were uncovered in case they formed some sort of alignment or construction. The possible midden fill sloped down to the East where bedrock was reached 20cm from the Eastern edge of the unit. The bedrock drops down slightly to a possible second terrace 75cm below the first terrace with a level surface of pebble/sherd matrix again (Figure 156). The matrix was left in place in the upper/Western part of the unit where it may form part of the original terrace. This will be excavated along with the boulders as Level 4. The pebble/sherd matrix at the base of the slope in the East will be excavated as Level 5.

This level was excavated with picks due to the extremely compact matrix with a high density of pebbles and resulted in us going through a possible second layer of wash-down underneath the possible midden fill we suspected had washed down from the upper terrace. This only occurred in the Eastern section of the unit and was much thicker against the boulder faces than on top of the possible second level area (Figure 157).

No alignment of the boulders was uncovered in this level but this is very similar in construction to the platform on which the ballcourt is constructed. The depth of the level varied due to the boulders beneath but averaged 1.4cm with the deepest portion being in near the center of the unit at 10cm. Matrix samples of the pebble/sherd matrix were taken as well as a section of Level 3 where there was a concentration of a different matrix (light, loose, 'ashy' soil with no inclusions – possible disintegrated root). In addition to the matrix, some ceramics, jute, lithic flakes, and a granite fragment were found.

### *Level 4*

Level 4 consisted of the pebble/sherd matrix in the Western half of the unit within the boulders that were uncovered in Level 3, as well as the boulders themselves. The boulders and fill were removed as one level under the assumption that if it is a constructed terrace, they would form part of the same phase of construction. If the boulders are natural, they have still formed a barrier which has caught a large amount of cultural material. This level aimed to see if there is any placement of the boulders that might indicate intentional placement vs. natural tumble. The level was removed down to bedrock at a depth of 22.2cm

and was only removed in the Western  $\frac{3}{4}$  of the unit. Numerous ceramic sherds, some jute, a slate fragment, a lithic flake, a river stone/manuport and a matrix sample were recovered from this level. The removal of the boulders did not reveal any obvious alignment. Though possible second layer of wash-down found in Level 3 did not continue past the boulders, this could still be a natural occurrence.

#### *Level 5*

Level 5 consisted of the pebble/sherd matrix at the base of the bedrock in the eastern 20cm of the unit under the wash-down found in Level 3 which may be a second level surface, either natural or constructed. It was taken down to the base of the bedrock which sloped down to the unit edge at a depth of approximately 10cm. Some ceramic sherds, jute, lithic flakes, and a slate fragment were recovered from this level.

#### *Unit Interpretations*

More than Units 22 and 22A, this unit lends to the interpretation of the level areas on this slope as being modifications of the natural slope for the purpose of creating level terraces (Figure 158). The variety of artifacts recovered, and their condition would seem to indicate midden fill was used here and the different wash-down and degradation levels visible in the profile of this unit in front of the boulders of the terrace facilitate this interpretation. The level surfaces that this fill has created also seem to indicate that this was not just rubbish dumped on the natural terracing but intentionally leveled off (Figure 4.15).

#### Unit 31

Unit 31 was placed to the south of the entrance on a gentle slope at the base of a bedrock outcrop on Slope 1 (Figure 159). It is also at the base of the edge of the sinkhole above which has roots growing through it and appears to be slowly breaking apart. It is a 1.4x3m unit which was placed in between some protected bamboo palms which cannot be cut down due to the ecological preserve (Figure 160). It is oriented 13 degrees east of North to fit in between the palms but it is also closely aligned with the cave entrance approximately 3m to the West. There are two shovel test pits on either side of the unit to the West and the East. STP 65 to the East is up a slope on top of the rocks blocking off the entrance to the cave and had 19 sherds recovered from 24-38cm below the surface. STP 68 to the West also had a couple sherds recovered from this depth. It is hoped that this unit will expose a possible passage from the base of Slope 1 to the cave entrance itself as well as potentially uncovering evidence of activity outside of the cave entrance (Figure 161). The material recovered was all hand sorted and dug in natural levels until the fill was found at the base of Level 2. Elevations for Unit 31 were taken from Datum 31-1, 40cm above the ground.

#### *Surface Level*

The surface slopes gently down to the north towards the modern path to the cave entrance. There are several roots and some boulders loose on the surface which may have rolled down from the slope above or come down from the edge of the sinkhole. No material was recovered.

#### *Level 1*

Level 1 consisted of the humic layer (Munsell# 10YR 2/1) which had lots of roots and organic debris and was closed 6.6cm below the surface when the matrix changed to more compact clay with pebbles. Three ceramic sherds were recovered but were too small to collect.

#### *Level 2*

Level 2 consisted of compact silty clay (Munsell# 10YR 3/2) which was removed to a depth of 8.6cm to a level of boulders and cobbles with pebbles (Figure 162). Very few artifacts were recovered but included some sherds and jute. A fragment of a modern glass bottle was also recovered indicating the level of disturbance in this level and likely indicates that the material from this level was likely washed down from above the slope or heavily bioturbated.

#### *Level 3*

Level 3 consisted of clay (Munsell# 10YR 3/2) with boulders, cobbles, and pebbles and went to a depth of 11.8cm. It was removed in front of the boulders that are visibly in alignment in the south of the unit (Figure 163) down to a denser concentration of sherds, jute and limestone pebbles in a lighter, sandier clay which is similar to the construction fill found in Unit 22. This fill is also visible on the top of the boulder alignment in the south of the unit, further indicating that this may be part of a constructed terrace, platform, or steps. The removal of the boulders and cobbles was done in an attempt to determine if there are any other alignments of stones in the unit. This removal showed that there is another course of boulders underneath the alignment of stones in the south of the unit, indicating a wall type of construction rather than stairs (Figure 164). While there are two large boulders on either side of the unit at a slight angle to the wall, it is uncertain whether the stones in between them, which are much smaller than those of the other wall, are part of a construction or collapsed down from elsewhere. The materials collected were some ceramic sherds, chert flakes and jute.

#### *Level 4*

Level 4 saw the removal of the construction fill (sandy clay (Munsell# 10YR 3/3), pebbles, and sherds) to a depth of 11.8cm. The cobbles removed were not in any visible alignment and were mixed in with the pebble/sherd fill unlike the wall in the south, indicating that these cobbles were not part of any construction but were likely tumbled down from either the bedrock slope or the sinkhole edge above (Figure 165). These cobbles and fill were removed to a layer of silty brown clay without inclusions or cultural material. Among the materials collected for this level were a matrix sample, ceramic sherds, jute, a slate fragment, a mano fragment, chert flakes, and a stalactite fragment. A shell pendent (olivella fragment?) with two small holes in it which was collected as a special find from just on top of one of the stones of the wall at a depth of 49cmBD.

#### *Level 5*

This level was reduced to the southern 1.3m of the unit to focus on the exposure of any further architecture adjacent to the wall. It was taken to a depth of 4.6cm before large boulders and possible bedrock prevented any further excavation. No finds were recovered from this level and the matrix remained silty brown clay (Munsell# 10YR 3/3) throughout.

Through the excavation of this level, it became apparent that the wall was built upon natural boulders/bedrock and the matrix may have been a natural deposition on top of these boulders before modification of this slope. At the base of the wall in the Western corner a large river cobble approximately 25x15cm was found (Figure 166). The nearest river source to the site is the one beside the site of Monkey Tail (~4km to the East) and it is likely that this stone was brought from this there as part of the construction of this area outside the cave.

The unit was closed at this level but due to the finds in the extreme southern end of this unit, two extensions were opened: 31A to the South to further explore the construction indicated by the wall, and 31B to follow the extent of the wall to the East where a boulder on the surface appears to be in alignment with the wall.

### *Unit Interpretations*

Excavations revealed a retaining wall/terrace in the southern end of the unit constructed of at least three courses of small unmodified limestone boulders. Extensions A and B are being placed to the South and East to further confirm this and to test the extent of this wall. There may have been some steps coming down from this wall but apart from two large boulders which are at an angle to the wall, none of the stones remaining appeared to be in place and this was difficult to confirm. The stones that were removed from the gap between these stones were much smaller than those in the wall and had fill underneath them, suggesting that they were not in situ. The speleothem fragment and shell pendant found in the fill of Level 4 are similar to the speleothem and tinkler found in the fill of Unit 22 and are unusual for midden fill, indicating that these items may have either been intentionally placed within the fill of these areas because of their association with the cave (the speleothems in particular), or may have been discarded on the surface and mixed in with the tumble over time. The construction fill that was found in this unit slopes down from the wall in the south to the northern edge of the unit indicating an amount of degradation of the construction in this area of the sinkhole.

### Extension 31A

Extension 31 is a 1.4x1m extension to the south of Unit 31 with the goal of further exploring the wall that was found in the southern edge of Unit 31. This wall may be part of terracing, a platform, stairs or a retaining wall along the path found through the STPs leading from the linear structures, down Slope 1, and to the cave entrance. This extension was dug in two levels down to the large cobbles and cut stones on top of the construction fill found on top of the wall in Unit 31 to expose any further architectural modification to the slope. It was dug in natural levels and all material was hand sorted. Elevations were taken from a second datum (Datum 31-2) set in the same tree as the first but at 65cm above the ground.

### *Surface Level*

The surface slopes gently down to the north and there is a large root running along the Western side of the extension and one boulder in the Northwest of the unit. No material was recovered.

### *Level 1*

Level 1 consisted of the humic layer (Munsell# 10YR 2/1) which had lots of roots and organic debris and was closed 6.0cm below the surface when the matrix changed to more compact clay with pebbles. One large limestone block was uncovered in the Southwest of the extension which appears to be a cut rectangular stone that has been broken by a root running under it (Figure 167).

#### *Level 2*

Level 2 consisted of compact silty clay (Munsell# 10YR 3/2) with pebbles and some sherds which was removed to a depth of 16.0cm around some smaller cut stones (likely facing stones) some of which had to be pedestalled, and down to the level of construction fill found in Units 22 and 31 (Figure 168). Some ceramics and jute were recovered from this level but if the corresponding level in Unit 31 is any indication, the material from this level was likely washed down from above the slope or heavily bioturbated. The extension was closed at this level.

#### *Unit Interpretations*

Four small (15x15cm) cut stones were found dispersed throughout this extension, one of which has a corner extending into Unit 31 that was not recognized as cut due to the small portion that was visible in that unit. One of these small stones is slightly underneath the large (30x30cm) stone in the Southwest corner. One larger (25x15cm) cut stone was found in the middle of the extension. These stones all appear to be dispersed from their original location but indicate that there may be other construction or modification further upslope. A large extension (31C will explore this further).

#### Extension 31B

Extension 31B is a 1.5x1.3m extension to the east of Unit 31 with the goal of exploring the extent of the wall that was found in the southern edge of Unit 31. This extension was dug in two levels down to the large cobbles on top of the same construction fill found on top of the wall in Unit 31 to expose any further architectural modification to the slope. It was dug in natural levels and all material was hand sorted. Elevations were taken from Datum 31-1, 40cm above the ground.

#### *Surface Level*

The surface slopes gently down to the north towards the modern path to the cave entrance. There one large root running along the Western edge of the extension and one boulder loose on the surface which is in line with the wall found in Unit 31. No material was recovered.

#### *Level 1*

Level 1 consisted of the humic layer (Munsell# 10YR 2/1) which had lots of roots and organic debris and was closed 10.8cm below the surface when the matrix changed to more compact clay with pebbles. A few ceramic sherds were recovered from this level.

#### *Level 2*

Level 2 consisted of compact silty clay (Munsell# 10YR 3/2) with pebbles and some sherds. This level was removed to a depth of 11.6cm down to the level of construction fill

found in Units 22 and 31. Only one stone was found at the same level and in the same alignment as the wall in Unit 31. Some ceramics and jute were recovered from this level but, again, the material from this level was likely washed down from above the slope or heavily bioturbated. The unit was closed at this level.

#### *Unit Interpretations*

The wall found in Unit 31 does not appear to go beyond the stone that was visible on the surface of Extension 31B indicating its extent didn't go beyond the large boulder to the south of the extension (upslope) which is likely naturally in place. This would be in keeping with the apparent construction on the entirety of Slope 1 which appears to have been left largely natural with advantageous use of the natural features of the landscape to create modified terraces. While the large boulders and bedrock outcroppings could have been broken and moved as at other sites, they have instead been left in place and terraces created around them, leaving the naturalness of the site features intact.

#### Extension 31C

Extension 31C is an L-shaped extension to the south and west of extension 31A and is 12.5m<sup>2</sup> (Figure 169). The goal of this extension is to explore the extent of the modification to this area of the slope following the discovery of facing stones in Unit 31A. This unit was dug in one level (humic and clay combined) down to the large cobbles, boulders and other cut stones on top of the same construction fill found in Units 22 and 31. It was dug in a natural level and all material was hand sorted. Elevations were taken from Datum 31-3 in the South end of the extension on the bedrock outcropping there, 77cm above the ground.

#### *Surface Level*

The surface slopes gently down to the north towards the modern path to the cave entrance. There are several roots running downslope through the extension and a section of the bedrock outcropping to the south is within the southern portion of the unit. There is one cut stone visible on the surface in the Southwestern corner of the extension at the base of this bedrock outcropping (Figure 170). There are stones and boulders visible throughout but not alignments are visible on the surface. No material was recovered

#### *Level 1*

Level 1 consisted of the humic layer (Munsell# 10YR 2/1) and underlying compact silty clay (Munsell# 10YR 3/2) with pebbles and some sherds. The two matrices were removed as one due to the material from this level having been likely washed down from above the slope or heavily bioturbated as in Units 31, 31A, and 31B. It was removed 16.2cm down to the level of construction fill found in Units 22 and 31. No stones larger than a cobble were removed in an attempt to find any alignments of stones in this area that may remain in situ. The excavation revealed a higher concentration of cut stones in the western slope closest to the cave entrance but all appear to be shifted to some extent. On the eastern side of the extension there are rows of boulders similar to the wall construction in the South of Unit 31 which creates stairs leading to the first natural terrace at the base of Slope 1. Some cut stones were found in this area as well and appear to line up with others in the West of the extension (Figure 171). Some ceramics and jute were recovered from this level. The extension was closed at this level.

### *Unit Interpretations*

Based on the alignments of boulders in the east of the extension, there appears to be steps leading to the first natural terrace at the base of Slope 1 (Figure 172). This is likely part of the pathway that extends from the linear terraces down to the cave entrance. It is also possible that these steps had some facing stones placed on top of the boulders as the edge of the step, with natural boulders left as the risers, though the small number of cut stones in this area of the slope might indicate that they were reserved for formalizing the corners of the steps or any other boundary markers for the pathway (Figure 173).

The western portion of the extension, to the west of the bedrock outcrop and on the slope leading up to the boulders closing off the cave entrance, has a higher proportion of cut stones than the eastern side. Some of these stones form loose alignments, some of which appear to line up with the steps in the Eastern side of the extension. This side of the extension leads to an almost vertical rise in the bedrock outcropping forming a barrier which is very unlikely to have been part of a pathway, especially considering the availability of a constructed pathway to the east. The cut stones closest to this portion of the bedrock outcropping are then likely to be part of a decorative formalizing of this area directly outside the cave entrance. The rest of the alignments which carry across the extension may be functional steps leading to the cave entrance, but the numerous palm trees in this area prevented further exploration of this area.

#### **4.6.1.4. Archaeological Summary**

The initial pattern of shovel test pit densities revealed a zig-zag formation down the slope from the gap between linear structure 11 and 12 to the base of the slope. This pattern was further investigated with more test pits which revealed the boundaries of this intensification of artifacts to be on the southern edge of the slope where it slopes down steeply to the southeast, and on the northern edge where the slope meets up with the western sinkhole edge in an outcrop of bedrock creating a jumble of large boulders with steep drops. Considering that the excavations of Units 22, 22A and 22B indicate that this area of the slope was intentionally modified, this pattern indicates two possibilities:

1. an area of modification similar to that seen in Units 22, 22A and 22B for the formation of terraces or a pathway down the slope to the cave or,
2. areas of discard along a minimally modified slope which was used as a pathway down to the cave.

While the southeastern edge is navigable by foot, if precariously, the western edge has vertical drops of 1-3m which make it unlikely that this area of the slope was used as a passage. A couple shovel test pits were dug on the western edge between the boulders and the sinkhole edge on a narrow space with some flat areas, these test pits revealed no artifacts. The bedrock outcrop on this western edge of the slope marks a boundary for the pathway down the slope which forces the path to the east until it reaches the last natural terrace before the base of the sinkhole which runs around the base of this bedrock outcrop. The densities of sherds in the shovel test pits in this area reveal that this last terrace was used heavily, along with the sinkhole floor directly adjacent to the edge of this terrace, but the densities drop off 2m away from the edge of the terrace indicating that the boundary of this

activity closely followed the terracing of the slope down to the cave entrance and did not enter into the modern path which follows a straight line along the center of the sinkhole.

These findings counter previous hypotheses that the ancient Maya at Las Cuevas may have used the same modern path in order to create an imposing procession route that placed the cave entrance in the center of the field of view as the grand finale to this route. It also counters ideas that the sinkhole may have been used for large-scale and publicly accessible performances outside of the cave entrance prior to the more socially and physically restricted space of the interior of the cave. While there is clear evidence for activity outside of the cave entrance, it is limited to a narrow area along one side of the sinkhole yet dispersed in a way that does not lend itself to a single performance platform or space.

Despite the inclination towards the pebble/sherd matrix being midden fill for the purpose of creating level terraces, there are still other possibilities which are equally plausible based on the evidence thus far:

1. Rubbish dump from the surface site
2. Sweeping off of the linear structures related to ceremonial activities
3. Natural wash-down from surface architecture/off of backs of linear structures
4. The use of midden fill to create terracing to create either viewing platforms, a procession route, or simply general entry to the sinkhole

These possibilities can only be explored by further excavating in various areas around the sinkhole and off of the backs of the linear structures. Subsequently, Unit 24 was placed off the back of Linear Structure 10, Unit 25 was placed off the back of Linear Structures 10 and 11 catching the gap between them, Unit 26 was placed at the base of a cliff off of the back of Linear Structure 9 to see if there was any sweeping taking place off of the linear structures, and Unit 27 was placed at the top of the same cliff face off the back of Linear Structure 9 for the same purpose as well as to determine if objects were being deposited off the back of these structures. None of the units yielded the same density of artifacts. Most notably, Units 26 and 27 had next to none indicating that the artifact deposition in Units 22, 22A, and 22B is not related to activities on the linear structures but was placed there intentionally.

Considering the wall in Unit 31 is three courses high with no evidence of steps coming down from it, there must be a path leading around it to either the East or the West. If the corner of the wall was found in Extension 31B, and considering the path hugs the base of Slope 1 so closely up until this point, it is likely that the wall in Unit 31 is a platform or terrace edge and that there are further steps forming the pathway running along the Western side of Unit 31 down to the cave entrance. It is also possible that there were actually two pathways, one running along the top of this terrace and one along the base of it. Shovel test pits in both areas revealed a similar density of sherds so further excavations are needed to confirm this.

Even though the boulders in Unit 31 did not appear to form any further steps in the Northern 2m of this unit, the amount of fill recovered from this area would indicate that there may have been some construction in front of this wall. However, the courses of stone forming this wall with the river cobble at the base lend to the interpretation of this construction as a wall and not as part of fill for a stair case. Further excavation to the West of this unit would be the only way to confirm whether there are any further alignments lending to a stair case rather than a platform wall.

Regardless of the interpretation of the wall in Unit 31, there are visible stairs leading from the base of Slope 1 to the cave entrance. This area, along with several of the terraces

leading down to the cave have a high density of ceramics sherds leveling them off, and the fill of Unit 31 contains many broken items indicating potential midden fill was being used for this purpose. However, the river cobble, number of unclipped jute, and the speleothems found in the units along this slope would indicate a strong connection to water and the cave itself. These items tie the cave to modified areas in the sinkhole and give all of them a tie to the water-related rituals performed within the cave. Platform 61, within the entrance chamber of the cave was primarily filled with jute and river pebbles and these two items were found concentrated in various areas of the excavations of Unit 3 in the cave. Bringing speleothems outside of the cave to be placed in the same context as jute and the river cobble in Unit 31 may have been a formal means of bringing the sacred space of the cave outside to the sinkhole. If this is the case, then it is likely that the restricted entrance to the sinkhole between the linear structures at the top of the sinkhole acted as the entrance to the cave in ancient times, more so than what is considered the entrance in modern times.

The evidence also questions if the linear structures may have been used as bleachers for the viewing of performances taking place within the sinkhole or the cave. It appears more that linear structures were used as a barrier to the entrance of the sinkhole with the only gap between them being found at the top of this pathway leading down to the cave entrance. With the majority of the structures of the surface site being concentrated on the Western and Southern edges of the sinkhole, the linear structures may have provided a restricted access point to the cave from these activity areas. At this point it is important to note that the Maya didn't have clear distinctions between the various underground features that non-Maya use to classify them. For the ancient Maya natural caves, rock shelters, sink holes, cenotes as well as artificial cavities dug into the ground or created in the base of temple structures (artificial mountains) all served equally well as representations of the various meanings expounded above for caves (Vogt and Stuart 2005:156).

In this respect, the gap between linear structures 11 and 12 may have acted as one of the first entrances into the underground, with a progression taking participants from light underground spaces to progressively darker spaces as one moves through the daylight-accessible sinkhole, to the light entrance chamber, and through the progressively darker and darker interior chambers of the cave. This may be in keeping with the different levels of the underworld as conceived of in Maya cosmology (Brady 1991; Brady and Veni 1992; Freidel et al. 1993; MacLeod and Puleston 1978; Moyes 2013; Stone 1995) with the exterior sinkhole being just one of nine total levels, the others consisting of the various chambers in the cave itself.

#### **4.6.2. Actun K'in K'aba**

K'in K'aba "Birthday Cave," was discovered during the ground-truthing of a recent LiDAR scan of the area for the Las Cuevas Archaeological Reconnaissance Project in 2014. It was discovered while targeting a ridge, although no cave opening was evident from the LiDAR. It is approximately 1.4 kilometers west of the site core of Las Cuevas and is in close proximity (~20m west) of Group 80 (Figure 174).

#### 4.6.2.1. Interior Description

K'in K'aba is a medium sized cave set into a hillside with two entrances, a main entrance which is at ground level and a secondary entrance which is up the hill about 3m. The entrance chamber of the cave has at least three plastered platforms and the main entrance was completely leveled off by a terrace which extends the length of the entrance and down two steps into the cave (Figure 175).

#### 4.6.2.2. Exterior Description

The area outside of the cave entrance is a relatively level area with the sides of the hill on either side of the entrance tapering off to ground level quite quickly. While this cave does not have the bowl or constructed entrance that other caves in this chapter and other previous investigations do, it provided the opportunity to explore the possibility of minor modifications. Additionally, Group 80, a small group with a sacbe extending towards the cave, was deemed to be in close enough proximity to warrant inspection in relation to the cave (Figure 176). Four shovel test pits were placed in front of the cave entrances, and two small test units were placed on the end of the sacbe closest to the cave. Due to time constraints on this project, it may be necessary to revisit the site in upcoming seasons to confirm any findings and expand excavations.

#### 4.6.2.3. Exterior Excavations

##### 4.6.2.3.1. Shovel Test Pits

Four shovel test pits were placed in front of the two entrances to K'in K'aba – STP 1 was placed in front of the 3m wide Entrance 2, and STPs 2-4 were spaced evenly along the front of the 15.5m wide Entrance 1. The STP in front of Entrance 2 came up with only three sherds, while STPs 2-4 in front of Entrance 1 came up with zero, 27 and four artifacts, respectively (Table 21). STP 3 in the middle of the main entrance had a granite fragment (possible mano fragment) included in the mix of ceramics which may primarily reflect its position in the center of the extension of the terracing in under the dripline into the area directly in front of the cave. Due to the amount of time available for this site, and the presence of a large patch of tai-tai vines covering the area in front of the cave, the rest of this area was not investigated this year though it may be promising to return to it at a later date to trace the extent of the modifications. Out of all the ceramics recovered from shovel test pits, only four were identifiable as either Vaca Falls Red or Belize Red, placing the construction fill of the terrace in the cave entrance tentatively in the Late Classic.

#### 4.6.2.3.2. Excavation Units

##### Unit 1

Unit 1 was a 50x50cm test unit placed at the base of the end of the sacbe of Group 80, 20m west of the cave in order to determine whether the construction of the sacbe was placed on a bedrock outcrop similar to the construction techniques seen outside other cave sites, and to see if there were any artifacts deposited/swept off the sacbe. This unit was dug in natural levels and all materials were hand sorted. It was dug to 50cm when the unit hit flat bedrock. No artifacts were recovered.

##### Unit 2

Unit 2 was a 50x50cm placed on top of the sacbe at the area where the sacbe was most elevated off the natural topography – four courses of stones high in this area (Figure 36). It was placed here to determine the construction of the sacbe and to try to find any datable artifacts since the shovel test pits and Unit 1 had come up empty in this regard. The surface of the sacbe was already relatively cleared of debris and all materials were hand sorted. Lot numbers and contexts can be found in Table 20.

Unit 2 was dug in two levels – the humic layer which consisted of sweeping the rest of the decomposing organic matter off of the sacbe, and Level 2 which consisted of the construction fill. Only Level 2 resulted in any artifacts (Lot# 11493). These included 115 ceramics sherds, one slate fragment, two jute, and three lithic fragments. The ceramics primarily included Cayo/Cambio Unslipped, Belize Red, and Chiquibul Scored Incised from the Spanish Lookout/Tepeu 2 complexes, but also included three Mountain Pine Red from the Tiger Run complex and one basal flange from the Tzakol complex - showing that while the ceramics primarily date the construction of the sacbe to the Late/Terminal Late Classic, the materials that were being included as construction fill also belong to the Early Classic and Early Late Classic. Only further excavation of the structures of Group 80 would be able to refine this chronology.

#### 4.6.2.4. Archaeological Summary

The excavations outside Actun K'in K'aba were done over only two days during the 2014 LCAR project. The preliminary findings indicate that, at minimum, the terracing across Entrance 1 were likely constructed during the Late Classic and that this modification included a leveling off of the area that extends at least 2m beyond the dripline into the flat area outside the cave entrance. Other groups, Group 69 located 150m southwest of Actun K'in K'aba, Group 3 located 150m west of Actun K'in K'aba, and Group 2 located 200m southeast of Actun K'in K'aba also share this Late Classic construction (Robinson 2015). At this point it is unclear if or how the small Group 80 and the sacbe which points in the direction of the cave are actually related to the cave, but the temporal placement of the site in the Late Classic is consistent with settlement in the area as well as construction outside of other cave entrances across Belize.

## 5. DISCUSSION

### 5.1. Who Built These Spaces?

My investigations found that the modifications to the exteriors many cave sites have several features in common:

1. They were all modified for the first and only time in the Late-Terminal Classic
2. Construction techniques tend to favor a rougher style of construction with minimal use of cut or facing stones which often blends into the natural landscape
3. Artifacts used in the construction fill of more labor-intensive structures include speleothems
4. Structure sizes and artifacts indicate that they were not residential
5. There is a striking variety in the types of modifications seen outside of these caves across Belize, ranging from pathways to formal plazuelas
6. Regardless of the type of modification, these efforts nonetheless restrict access to and movement through these exterior spaces

These commonalities however, while providing some insight as to how the spaces were being used, raise the question of who was using them.

Based on the knowledge that they were all being modified and used for the first time during a time crisis and intense social upheaval, the potential in creating an exterior space for ritual performances which could reinforce a sense of social solidarity cannot be ignored (Whitehouse 2002; Durkheim 1995 [1912]; Frazer 1967 [1922]; Turner 1969; Schieffelin 1985). Following this, I propose two hypotheses regarding who was using them:

1. During this time of conflict, when the rulership of the elite was being called into question, the elite instituted a new phase in their cave rituals which allowed for a greater participation of non-elite than before, thus re-creating a sense of community and social solidarity that was in real danger of being lost. Based on the degree of modification seen outside of the cave entrances, it is likely that these spaces were continuing to be used by the ruling parties who were able to rally workforces together for large-scale modifications, similar to the increased monumental construction programs of this time (Sharer 2006).
2. The evidence outside of the cave entrances is not of elites using a space which was already theirs, but could be evidence of the cooption of this space by non-elites or lower-level, local elites and ritual specialists at secondary centers or smaller communities in the hinterlands. This could have occurred either while the elites were losing control of the socio-political system and other groups decided to conduct their own rites to regain control over the changing climate, or after the elites abandoned the nearby centers and the remaining groups attempted to maintain a sense of continuity through the re-use of ritual forms, albeit without entering what was once a socially restricted, (and now taboo) sacred space – the interior of the caves themselves.

Turning to the known patterns of construction taking place during the Late and Terminal Classic can offer some insights into which scenario is most likely at these cave sites. However, it should be noted that as is the case for archaeology world-wide, there is an unfortunately disproportionate amount of archaeological evidence for elite activities in relation to non-elites activities.

### 5.1.1. Patterns of Construction in the Late Classic

Baring the discrepancy in the archaeological records in favor of elite cultural material in mind, it is nonetheless fruitful to briefly outline some patterns of elite construction techniques during the centuries of the collapse in order to form a basis for comparison. In the southern lowlands, the elite classes and rulers responded to the challenges of the collapse through the construction of monumental and public architecture as well as other elaborate building programs (Sharer 2006; Demarest and Rice 2005:108). The growth of the elite class and corresponding increase in number of dynastic seats in the Late Classic resulted in the proliferation of smaller centers together with the growth of older major cities requiring more architecture, art, tombs, and expensive supporting courts – the latter in turn requiring even more materials that had to be imported and crafted (Demarest 2013:25). Some of these strategies are seen in the Belize River Valley at Xunantunich and the recently discovered site of Lower Dover. Both centers exhibit a dramatic increase in monumental construction specific to the Late Classic – Xunantunich being modeled after the center of Naranjo (Sharer 2006: 516), and Lower Dover is modeled after the nearby site of Cahal Pech.

These efforts to maintain the symbols of their power took into account an increase in status rivalry within and between centers by means of expensive constructions and ritual ceremonies (Demarest 2013:34-35). Main plaza construction in the Classic was a deliberate attempt to create open spaces with substantial capacities, their layouts showing easy access from outside, implying an emphasis on the inclusion of a large number of participants (Inomata 2006:813). At the same time, the elite often constructed smaller plazas within larger sites. Theatrical events in these more restricted spaces would have retained a certain level of inclusiveness (Inomata 2006:814). Beginning in the Late Classic and persisting into the Terminal Classic, construction episodes in existing monumental centers often included the restriction of access to what were once open public plazas through the construction of walls or structures which either inhibit the openness of the spaces or restrict visibility. At Tikal, the erection of structures 5D-1-2<sup>nd</sup> and 5D-2-2<sup>nd</sup> disrupted connections with the East and West Plazas. These structures were further elaborated upon in the Late Classic with even larger structures with further reduced access and visibility between the Great Plaza and other adjacent spaces, creating a “more exclusive theatrical space” (Inomata 2006:816). In the Late Classic, Xunantunich underwent complex reconfiguration which included the bisecting of one of the large open plazas to restrict access to a smaller portion and the construction of restricted plazas and courtyards to the south of the site core (Leventhal and Ashmore 2004; Wyatt 2008:90). In the Chiquibul Reserve, the ceremonial center of Las Cuevas was constructed entirely in the Late Classic and appears to have been placed at this site to control access to the cave directly beneath it, which was also modified to restrict access and was used exclusively in the Late Classic.

In keeping with these Late Classic trends towards greater restriction of access and division of spectatorship in plazas, it has been suggested (Awe 1998; Brady 1989) that the ritual performances in dark zones of caves were also being increasingly restricted to elite use through the construction of walls and doorways (Moyes 2012a). As mentioned earlier, by the Late and Terminal Classic, cave use in the Southern Lowlands had increased dramatically. This included architectural modifications and a shifted focus to much more water-related rituals (including the deposition of large ollas) (Moyes et al. 2009). Moyes and Awe (2010: 145) recently expanded upon this proposal by arguing that architectural modifications to

caves, particularly when they involved labor-intensive activities such as earth-moving and terracing, suggest that these spaces were overseen by community leaders and employed by this group for both public and private rituals (Moyes and Awe 2010:145).

Jaime Awe has proposed that “during the Classic period (C.E. 300-900) some (if not most) caves may have been exclusively reserved for elite rituals, or for ceremonies that were conducted by the elite on behalf of their community” and that any public participation in these rituals would have taken place at the cave entrances (Awe 1998:9). This proposal is based on ethnohistoric and ethnographic evidence demonstrating that cave rituals and performances following the Spanish conquest were often performed by the heads of villages, a practice which persists to this day in Guatemala (Demarest and Woodfill 2009:124; Scott 2009; Thompson 1959; 1975). While the arguments for the elite oversight of intensive construction inside caves (and by extension, outside of caves) is plausible, it is nonetheless possible that the construction of these spaces was initiated by some of the lower-level local rulers, by subversive groups attempting to control the cosmos on their own following the long-term failure of the elites, or that the practitioners at these exterior sites changed during the Late Classic from an elite group to a non-elite group. A closer look at the artifacts and site patterns at these exterior sites will help to distinguish who was using these spaces and for what purpose.

## **5.2. Artifacts**

Turning to some of the more salient artifactual evidence from the excavations outside of the caves in my research may prove valuable in determining who was using these spaces, which in turn will help to understand their motives. Ceramics provide one of the only reliable dating techniques for the sites in my sample and can also give an indication as to what activities were taking place at a site, the trade networks and spheres of influence at a site, and the status of individuals. Non-ceramic artifacts such as speleothems, river stones, and the frequency of certain stone tools can give indications as to function of the sites and structures.

### **5.2.1. Residential vs. Ritual**

Residential structures typically have similar artifact assemblages and formal characteristics which identify them apart from other potentially bureaucratic or ritual spaces. These identifiers include adequate floor space for household activities (sleeping, cooking, quotidian activities), potentially roofed space, hearths, utilitarian tools such as coarse paste cooking vessels and serving pottery, axes/adzes, spindle whorls, manos and metates, and midden deposits (Peuremaki-Brown 2002:97; Kamp et al. 2006:418; Lucero 2001; Moyes et al. 2016:149). By contrast, non-residential structures tend to have either a complete absence or overabundance of many of these artifact types (in the case of ritual deposits). While many of these artifact types may appear in the construction fill of ritual structures, their absence as part of the on-floor or surface assemblages is a strong indicator that a structure was not residential.

Other artifact types which are known to be typically ritualistic objects as well as distinct disposal practices can help to solidify the interpretation of a space as ritual (Aldenderfer 2012:28; Osborne 2004). For example, Late Classic incensario fragments in Western Belize are most often associated with the burning of organic materials in ritual contexts, particularly funerary and termination rituals (Aimers 2004; Ball 1980; Chase and Chase 1994:60; Iannone 1999:109-112; Kersey and Gray 2000; LeCount 1996; Lowe and Mason 1965; MacKie 1985; Moyes 2006a:286-287; Rice 1999:38; Schwake 2000; Taschek and Ball 1999:229; Yaeger 2000). Speleothems are often removed from caves to be included in dedicatory caches of surface ceremonial structures (and household ritual assemblages) creating a connection to caves as a source ancestral lineages, rain, and agricultural success (Andrews 1980; Brady et al. 1997; Brady et al. 2005; Coe 1959; Cottier 1982; Longyear 1952; MacLeod and Puleston 1978; Pendergast et al. 1990; Strómsvik 1942; Valdez et al. 2011:29). Comparing the artifacts recovered from the sites in my sample to expected residential or ritual assemblages, and looking to the more unusual features of these structures such as the presence of speleothems in the construction fill and the proximity and occasional direct connection to the cave will help to determine the function of the sites in my study.

### 5.2.2. Elite vs. Non-Elite

Certain artifact types have been traditionally associated with elites and these can be used to determine who was using both the inside and outside of the cave. However, one has to bear in mind two important points: 1. Ritual deposits, particularly those in caves, tend to include specifically broken objects since all objects in the Maya world were considered to have a spirit that must be released before discarding the item and because the deities of the underworld had been deemed unworthy of complete and beautiful objects (Lucero 2006; Moyes 2006a; 2012b:8; Tedlock 1996:138); and 2. Even the most mundane household object can become a ritual deposit given the deities being supplicated to or the request being made. As Lucero (2006:59) points out:

“while the quality and quantity of goods may have changed from commoner house to elite compound to palace and temple (e.g., from one or two plain vessels to numerous labor-intensive polychrome vessels), their context (under or on top of surfaces) and ritual significance (e.g., dedication cache or termination deposit) are the same. This behavior resulted in functionally and structurally similar ritual deposits in houses, palaces, and temples”.

It is through this subtle difference in quality and quantity that many interpretations of spaces as being elite vs. non-elite are made. In some caves, the finding of objects such as polychrome pottery, carved pottery, jade, elaborate artwork, tombs, and monumental architecture have all been interpreted as indicating that at least some of these spaces may have been used more by the elite classes than the non-elite (Awe 1998:9; Brady and Stone 1986). By contrast, evidence for non-elite use of caves comes in the form artwork that is “crudely rendered and does not resemble the art found in the administrative/ceremonial centers of Maya civilization” (Brady and Stone 1986:21), and a general lack of “elite” trappings. As with the distinction between residential and non-residential artifacts, it is rather the absence of these social status markers than the presence of other typically non-

elite artifact types which can help to determine who was using the spaces. However, the lack of many of the typically elite goods in many of the caves, or the relative abundance of objects which do not fit those specific quality conditions, does not preclude the possibility that many caves or the spaces outside of them were being used by non-elite.

### 5.2.3. Ceramics

The ceramics were analyzed for each site in the previous chapter and indicate that even when a site had been modified several times, the ceramics in the fill of the structures or modifications indicated that they were all constructed during the Late or Terminal Classic periods. While some Early Classic sherds were found in the fill of some structures, it is not uncommon to find earlier artifacts mixed in with later artifacts. Only K'in K'aba and Rice Mill 3 had Early Classic sherds identified in the excavation units. The presence of these earlier sherds indicates instead that either the discarded material which made up the fill of these structures was coming from a midden or deposition site which had been in use since the Early Classic, or that someone had been holding on to an earlier artifact, curating it because of sentimentality, economic prospects, or its value as a status indicator. At K'in K'aba one Petén Gloss basal flange bowl from the Tzakol sphere was found in the fill of the sacbe, mixed in with other Late Classic sherds. Rice Mill 3 had three sherds which were identified as being in the Tzakol spheres (two Aguila Orange and one Paradero Fluted Balanza Black) but again these were mixed in with other Late and Terminal Classic sherds. At Rice Mill 3, these Early Classic sherds were likely from midden fill from the nearby site of Bedrock where a possible Early Classic midden was discovered in 2009 (Guderjan et al. 2010:10).

Shifting to what ceramics can tell us about the function or activities taking place at sites, incensario fragments are particularly useful. Late Classic incensario fragments in Western Belize are most often associated with the burning of organic materials in ritual contexts, particularly funerary and termination rituals (Aimers 2004; Ball 1980; Chase and Chase 1994:60; Iannone 1999:109-112; Kersey and Gray 2000; LeCount 1996; Lowe and Mason 1965; MacKie 1985; Moyes 2006a:286-287; Rice 1999:38; Schwake 2000; Taschek and Ball 1999:229; Yaeger 2000). Fragments of the Pedregal Modeled, Miseria Applique, and Chiquibul Scored Incised types were found in inside the cave at Las Cuevas associated with the deposition and burning activities taking place in the entrance chamber as well as in termination deposits at the Eastern Structure which sits above the cave entrance (Arksey 2015:67-69; Kosakowsky 2013:140; Moyes et al. 2011:8-10, 51-59). As Kosakowsky noted in her ceramic report of the 2013 Las Cuevas field season, the “majority of incensarios at Las Cuevas are of the Chiquibul Scored Incised type, a common regional censer . . . Of the 157 censer fragments found in the 2013 excavations, only 12 are Pedregal Modeled [the remaining are all Chiquibul Scored Incised]” (2014:112-113). In this report, Kosakowsky interprets the low frequency of Pedregal Modeled incensario fragments as representing imports from either the Petén region in Guatemala or from sites to the north in the Belize River Valley where Pedregal Modeled is more common (Kosakowsky 2014).

Lisa LeCount notes in the 1992 report on the ceramics of Xunantunich in the Belize River Valley that Miseria Applique incensarios replace the Pedregal Modeled incensarios in the Terminal Classic (LeCount 1993:135). The trend between the Late and Terminal Classic

of replacing the symbolic representations (such as painting and tooling) with more literal representations (such as modeling) are argued to be a result of changes to how Terminal Classic Maya society sought to express themselves (LeCount 1993:136). This change in symbolic expression is seen in both public and privately used pottery styles and is further argued to be representative of a change in power and ideational structures within Xunantunich elite. During the Terminal Classic, the elite chose to display their power through more public ceremonies than through privately accessible decorated pottery, a hypothesis supported by the elaborated stelae erected at Xunantunich during this time (LeCount 1993:136).

By comparison, the much plainer Cayo Unslipped censers or braziers have been recently argued to not represent a ritual object or incensario at all, but rather merely a small portable stove used for quotidian activities (Ball and Taschek 2007). These braziers are recognized from complete and nearly complete examples from Las Ruinas (Arenal), Cahal Pech, Buenavista del Cayo, Nohoch Ek, and Guerra de Buenavista, Belize (Ball and Taschek 2007) and date to Tepeu 2-3 (the 8<sup>th</sup>-9<sup>th</sup> centuries) in the Belize Valley. This cook-stove hypothesis is supported by investigations at Caracol where the overall distributions and depositional contexts of braziers there indicate a utilitarian domestic function (Chase and Chase 2004). Looking at the contexts in which such vessels are found at other sites, in addition to where they are not found, Ball and Taschek note that “composite three-prong braziers do not occur on or in association with obviously sacral or otherwise overtly ritual public or private structures”, but rather tend to be found in association with feasting and other cooking contexts (2007:458). This is in strict comparison to other braziers which are more ornate, such as those with modeled-applique or other decorations, and which are quite frequently found in clear ritual contexts (Ball and Taschek 2007:458). While this argument is sound, the authors are careful to point out that the primary function of Cayo Unslipped braziers as cooking tools does not preclude their occasional use as incensarios and that any interpretations regarding the final function of these items must be made based on careful consideration of the context in which it is found (Ball and Taschek 2007).

Incensario fragments were found at four of the caves in my sample: K'in Kaba, Las Cuevas, Moth Cave, and Nohoch Ka' Actun. At K'in K'aba, two Chiquibul Scored Incised incensario fragments were recovered from the unit in the sacbe, forming 1.7% of the total artifacts from this unit. Las Cuevas had a total of 26 Chiquibul Scored Incised incensario fragments and prongs found across all of the units. Units 22, 22A, and 22B midway down the slope on an area which had been levelled off with terracing had a total of 15 of these incensario fragments found across all levels out of a total 1984 ceramic sherds recovered (0.7%). Unit 31, the large unit at the base of the slope near the cave entrance had only six incensario fragments by comparison out of a total 1000 ceramic sherds (0.6%) recovered from these units. Moth Cave had 42 incensario fragments and prongs recovered from Structure 1, Levels 1-3, out of a total 2856 ceramic sherds recovered (1.5%). Only 36 were able to be identified and all of these were Chiquibul Scored Incised.

Nohoch Ka' Actun is the only site on the eastern side of the Macal River to have incensario fragments found in the fill and in the termination deposits on top of the structure. A total of 93 incensario fragments were recovered across all units, with 88 coming from Structure 1. Structure 2 had four fragments come out of the cleaning of the Looter's trench and one prong came from Unit 3 on the north end of Structure 2. None of these were able to be identified to the type but they were identified as Tepeu 2-3 in the Late Classic. At

Structure 1, nine fragments came from the initial humic layers over top of the channel, one which was able to be identified as Chiquibul Scored Incised and another which had unusual punctations and applique on it. The construction fill from North Terrace Floors 2 and 3 both had 1 incensario fragment in the fill, identified to Tepeu 2-3, the one from the fill of Floor 3 being found in multiple pieces of rim and body sherds with incisions and applique buttons. In Unit 4, which was placed in the center of the West Mound of Structure 1, 39 Cayo-Cambio Incensario fragments were found in the fill of Floor 2 out of a total 68 ceramic sherds (57.4%). Floor 2 is assumed to be the same floor as North Terrace Floor 2 (based on elevation measurements) and the last terrace levelling event before the construction of the east and west mounds that would become Structure 1. All incensario fragments in this fill were identified as Cayo/Cambio Unslipped.

Following the above discussion of Cayo Unslipped braziers, it is important to note that while the brazier fragments in this terrace floor context have been identified as Cayo Unslipped, six of these 39 sherds were decorated with punctated double lines, and another two were decorated with punctated double lines and applique, pushing them outside of the standard plain cooking stove to an object which may have been more appropriately used for more special occasions. Paying close attention to the context in which they were found – a construction directly outside of a cave, the fill of which also contained speleothems – it is a safe assumption that this context is a ritual context. And so even if the brazier fragments may have begun as a special-use cooking stove, their last function was as fill for a ritually-oriented construction.

The units in Structure 1 which extended over the channel in between the east and west mounds contained two termination depositions, the entireties of which were able to be collected: the penultimate deposit of fire-hardened clay with ceramics and charcoal (Lot# 16039), and the final deposit of flat-lying sherds in a loose matrix (Lot# 16036). Lot# 16039 contained 19 incensario fragments out of a total 1645 ceramic sherds (1.2%), nine of which were Chiquibul Scored Incised, and nine of which were Pedregal Modeled. By comparison, the later deposition of Lot # 16036 had 15 incensario fragments out of a total of 1823 ceramic sherds (0.8%), 13 of which were Chiquibul Scored Incised, and only two of which were Pedregal Modelled. This shift in style of incensario fragments in an early context which were entirely Cayo Unslipped, to a ritual deposit of which 47% of the incensario fragments were Chiquibul Scored Incised and 47% Pedregal Modeled, to the last deposit which consisted of incensario fragments 87% of which were Chiquibul Scored Incised and only 13% Pedregal Modeled, may be indicative of changing spheres of influence between these three events, the distance ritual participants were willing to travel to attend this site, or a change in the status of the individual participants. While the Cayo Unslipped censer fragments form only a small part of the construction fill of the earlier terrace construction, this type does form 100% of the incensario fragments found. This type is associated with the Belize River Valley and speaks to the connection between this area and the eastern Macal Drainage, possibly through trade along the Macal River.

In the latter two contexts, being not construction fill but ritual depositions, the complete absence of lower grade Cayo Unslipped incensario fragments may indicate either a disconnect from this area or a change in status of the individuals making deposits. Being further north than Las Cuevas, it is not surprising to see an equal number of Chiquibul Scored Incised and Pedregal Modeled incensario fragments in the earlier of the two depositions. Nohoch Ka'a Actun is midway between Las Cuevas and the Belize River Valley,

being 25km from each. The Chiquibul Scored Incised type being a regional type from the area around Las Cuevas, further upriver along a branch of the Macal, this type would have been easily accessible to the residents in the areas along the Macal. However, Nohoch Ka' Actun's location also places it within the sphere of influence of Caracol near the Guatemalan border. In fact, the presence of numerous Pedregal Modeled incensario fragments in Late Classic contexts at Minanha in the Vaca Plateau is cited as evidence for the influence of Caracol and its connections to the West (Kersey and Gray 2001). The representation of the Pedregal Modeled at 50% in this early deposit appears to indicate that this western influence extended across the Macal River. The high proportion of Pedregal Modeled is also in keeping with LeCount's (1993) argument for the change at Xunantunich in the Terminal Classic towards elite displays of power through increasingly more public ceremonies rather than private events. The last deposit sees a significant drop in the proportion of Pedregal Modeled in relation to the Chiquibul Scored Incised. While the total number of incensario sherds recovered from this context is relatively small at 15, this drop may nonetheless indicate a waning influence from those sites to the west. It may also indicate a change in the status of ritual participants to a level of society that had less access to the more highly decorated and imported Pedregal Modeled incensarios.

#### **5.2.4. Non-ceramics**

##### **5.2.4.1. Stone**

At Actun Tunichil Muknal, the proliferation of groundstone in ATM-M2 is no doubt important and possibly associated with the cave assemblage. During excavation, only those artifacts recovered from the units were collected, but numerous granite chunks, fragments, rounded granite handstones, and chert cores were visible in the walls of the unit. Of those artifacts recovered, there were 242 ceramic sherds, one ceramic whistle fragment, 31 stone artifacts (four mano fragments, two metate fragments, three obsidian fragments, five slate fragments, 17 chert flakes and cores). This structure or platform was constructed nearest to the cave entrance by placing unshaped stones in a rough square constructed directly on top of the riverbed sediment. In keeping with the higher than average proportion of groundstone inside the cave, the majority of the stone artifacts at this structure likely possessed some form of agricultural usage (manos, metate fragments, hand stones, slate, and other granite fragments) and the structure may have acted as a deposition space for these items. The Late Classic date for this mound, in combination with the apparent single phase construction of the platform lends credence to the interpretation that the structure (much like the cave) could have represented an area for ritual deposition possibly by those suffering subsistence issues during the troubled times of the Late Classic period.

The most telling information gained from chert at the sites in my sample comes from the site of Rice Mill 3 in Northern Belize. While the lithics themselves did not reveal much insight into the specific rituals being performed at this cave, it is clear from the abundance of lithics at all Rice Mill caves that these sites were being frequented by those residents local to the lithic production sites of Bedrock, Sotohob, and Ak Witz. In keeping with Guderjan et al's (2010) statements that by the Terminal Classic the Blue Creek central authority was diminishing, the exterior of Rice Mill 3 was modified to accommodate a larger audience than

the interior affords. The selection of Rice Mill 3 over the other Rice Mill caves is potentially due to its already having a naturally enclosed space outside of the cave which required minimal effort in order to create a bounded plaza-like space. This space allowed for greater participation while still maintaining the spatial restrictions associated with class distinctions of the time. As with other sites in my sample, the surrounding major sites were abandoned in the Terminal Classic (Guderjan 2004, 2007; Hanratty 2008) and activity at this site ceased.

#### 5.2.4.2. Speleothems

Speleothems, “any secondary mineral deposit resulting from the chemical precipitation of groundwater that has entered a cave” (Peterson et al. 2005) such as stalactites or stalagmites, are occasionally found in surface contexts and are usually interpreted as having been brought to those sites to act as a symbolic connection to caves and the associations of water, agricultural success, and ancestral lineages that these spaces represent (Brady et al. 1997). Harvested speleothems were occasionally also used as stela or in architectural constructions, carved as idols, or deposited in burials and caches (Brady et al. 1997). It has been suggested (Bassie-Sweet 1991) that the erection of stelae may actually be an homage to the upstanding stalagmites in caves, an idea which has gained recent support through the finding of speleothems which have been moved and placed upright in caves in semblance of stelae (McNatt 1996) though this idea is still contested. At Yaxchilan, a stalagmite was removed from a cave, carved, and erected in a plaza as a stela (MacLeod and Puleston 1978:74) though this is the only example of this to date.

The placement of speleothems in surface contexts has been suggested to symbolize fertility as well as a representation of living gods on altars at temple sites (Brady et al. 2005). Excavations at Pacbitun revealed a large stalactite broken at both ends below Stela 3 (Valdez et al. 2011:29). Speleothems were also found beneath stelae in caches at Copan (Longyear 1952:51-53; Strómsvik 1942) and in dedicatory caches at Dzibilchultun (Andrews 1980; Cottier 1982:103) and Caracol (Brady et al. 1997:736). Speleothems are also frequently found in burials. Several burials in structures at Nojol Nah had speleothems overlying the burials, immediately below the plaster surface (Brown and Strohmeier 2011:49). In other burials at Nojol Nah, speleothems were found not only on the floor above the burials, but also physically within the burials themselves, creating the link between caves, the underworld, and ancestor veneration (Barrett and Brown 2009; Brown and Barrett 2009; Brown and Strohmeier 2011:59). Speleothems have also been found in burials at Altun Ha (Pendergast and Loten 1990:150), Copan (Longyear 1952:43), and Piedras Negras (Coe 1959). Fragments of speleothems have come from a variety of other contexts, such as middens, the carving of idols, and other constructions dating from the Early Preclassic to the Late Postclassic, and their use continues with modern Maya today (Brady et al. 1997). The Xibun Archaeological Research Project in Belize identified thousands of speleothem fragments incorporated into public architecture (Peterson et al. 2005). While other uses for speleothems abound, their use in public architecture appears to account for the largest quantity of formations used (Brady 2006:482). At Caracol, artifacts were incorporated into the foundations of architecture as a means of ritual consecration (Chase and Chase 2010:4)

At four of the sites in my sample, Las Cuevas, Actun Isabella, Moth Cave, and Nohoch Ka' Actun, speleothems were also found incorporated into the surface

modifications. At Las Cuevas, three speleothems were found incorporated into the fill of the pathway and terracing leading down the slope from the site core to the cave entrance. At Actun Isabella, another three speleothem fragments, including one so large that it filled the base of a shovel test pit, were found in the pathways down the slope to the cave entrance. At both of these sites, even though they weren't in a structure, the intentionality of their placement on the slopes leading to the caves is clear due to their having been surrounded by visible architectural modification and other artifacts in the construction fill such as ceramics, worked stone, and shell. Moth cave had three stalactite fragments come out of levels 1-3 of Structure 1, indicating that their incorporation into the structures was a practice that was kept up over multiple construction phases. The same is true at Nohoch Ka' where six speleothems were found in the fill of Structure 2 and another four out of the fill of three levels of Structure 1. The location of these sites in close proximity to the caves themselves make it likely that these speleothems were incorporated into the construction of these areas for the explicit purpose of connecting them to the caves themselves and consecrating these modifications as an extension of the sacred space of the caves.

### 5.3. Patterns of Modification

Analyzing the patterns of modification can contribute to understandings of who was using these spaces and why these caves were chosen over others whose exteriors remained unmodified. Despite the sample size being relatively small with 11 sites in the study, only nine of which have evidence for modification, this comparison should provide some initial patterns of modification from which to base future studies into the political and religious responses of the ancient Maya to the events of the collapse.

I will first discuss the shovel test pits in relation to the types of activities that may have been taking place and the extent of the modifications to these spaces. Having determined a ranking of degree of modification (Table 2) based on the modified site type classification scheme established by the Xunantunich Archaeological Project (Ashmore et al. 1994; Ehret et al. 1995]), I will then compare the degree of modification to certain variables: cave entrance size, cave entrance type, cave interior size, amount of modification to the interior of the caves, the duration of the cave use, distance to nearest major surface site, and the occupation length/time of abandonment of the nearest major surface sites. The sites are discussed in order of increasing distance from a known site core and the duration of occupation at these sites. This is based on the supposition that those sites closest to monumental ceremonial centers would have been under the control of the elites who controlled the activities and construction efforts of the centers themselves. Thus, there is a potential increase in non-elites and local, lower-level elites use and control over these exterior spaces which coincides with an increase in distance from the site core.

Looking at the site type in relation to the number of construction phases confirms that those sites which were laid out more formally or that had more structures than the others were those that also received the most improvements as indicated through number of phases of construction. However, earlier phases of construction at these sites indicate the possibility that these sites were just as informally laid out and roughly constructed as the others in my sample prior to their having more detailed and intensive architecture constructed around them. At Moth Cave for example, the earliest phase of construction

under Structure 1 indicates that it may have been the sole structure outside of this cave before the addition of the platform and other two structures which created the patio group that remains visible today. Why these sites warranted further elaboration while others were left as is will be discussed below.

The amount of modification, while extensive at some sites, is still relatively minimal in comparison to major monumental centers. Moyes et al. (2016:145) theorize that those sites that were intended to be used only temporarily would have been constructed faster and with less labor input than those intended for repeated use. Additional experiments on energetics by Moyes et al. at the Southern Belizean Kayuko Mound Group near the cave site Kayuko Naj Tunich demonstrated that the mound group (a much more intensive construction than any of the nine constructed sites in my sample) could “easily have been constructed in 30 days with 50 people working 5-hour days, or, if we consider 200–300 people, it could have been completed between 5 and 8 days” (2016:154). Therefore, I cannot preclude the possibility that the sites were constructed by small labor forces and did not necessarily require much higher-level organization – the lower-level elites in the hinterlands of major centers could certainly have accomplished these tasks within their communities.

### 5.3.1. Shovel test pits

I dug shovel test pits (STPs) outside of Rice Mill 3, Actun Tunichil Muknal, Nohoch Ka’ Actun, Ofrenda, Moth Cave, Actun Isabella, Macal Chasm, Las Cuevas, and K’in K’aba. The smaller spaces outside of Sak Tuch and Actun Ho Ak did not necessitate STPs, nor did time permit extraneous investigations through shovel test pits at these sites. Of the nine sites where shovel test pitting did occur, seven of the sites had artifact densities which corresponded to their proximity to known structures and construction. Only two of the sites in my sample, Las Cuevas and Actun Isabella, were able to make use of STP artifact densities to provide information about the activities and modifications taking place outside of the caves which would have otherwise remained unknown. Both of these sites are caves with large entrances, located at the base of a sinkhole or surrounded by slopes and ridges which form a rounded flat area outside of the cave entrance. At both of these sites, the shovel test pits were initially laid out on a 5m grid, with additional STPs placed on areas of interest when higher densities of artifacts were found.

Actun Isabella is located on the south side of such a bowl, with the tallest and steepest slope down to the entrance being the western slope. Minanha’s site core is also located to the west of the site, only 700m away. Shovel test pits across the entirety of the flat area outside of the cave entrance came up negative, as did those on the eastern and northern slopes and ridges. It was only on the western slope leading away from the cave that any of the STPs contain any artifacts. Of the total 44 STPs outside of Actun Isabella, the nine STPs on the western slope showed a clear spike in density with one containing 66 ceramic sherds, and others containing slate fragments and speleothems. At the top of this slope is the rough terrace and as one descends from this terrace to the cave entrance, there are some noticeable step-like areas but these appear to be largely natural in formation. It wasn’t until the slightly level area behind the boulders that can be used as steps were investigated with STPs that they were revealed to contain artifacts and material typical of construction fill.

At Las Cuevas, the large cave entrance is located in the west of a sinkhole which is approximately 80m in diameter and 10m deep. Around the top of the sinkhole, linear structure and the main plazas of the site are all concentrated to the West and South. Inside the sinkhole there are three main slopes with a level area at the base. While no formal architecture or cultural material was visible on the surface during survey of the sinkhole, it was hypothesized that the natural terraces in the sinkhole could provide a possible amphitheater-like viewing space for large numbers of people. In order to test the possibility of the sinkhole being a public viewing space, shovel test pits were placed throughout the sinkhole. Just as at Actun Isabella, almost no artifacts were found anywhere outside of the cave apart from one slope entering the cave – the southern slope – which saw an unmistakable spike in artifact densities with one STP having 188 ceramic sherds in a pit 43cm deep. The pattern of artifact densities connected a gap in the linear structures around the southern end of the sinkhole to the cave entrance, indicating a pathway connecting these two ceremonial spaces. This was confirmed by the larger excavations at the top, mid-way down, and at the base of the pathway on this slope which showed the construction of terraces, retaining wall, and steps leading down this slope.

This fill and the pattern of STP artifact density at both sites demonstrates a choice to restrict or formalize movement through these spaces in the Late and Terminal Classic. At Isabella, the choice to formalize the tallest and steepest slope down into the flat area of the bowl outside the entrance instead of the very shallow (<1m tall) potential point of entry into the bowl directly across from the cave entrance speaks to a clearly performative approach to this space. The shallower entrance point would have provided a much easier, though potentially much less dramatic, entry point to this sacred space. Creating an entrance which, would one be approaching from the direction of Minanha, forced the participants to ascend a hill which would have kept the entrance of the cave out of view until reaching the summit, and then descend into the bowl and subsequent cave is in keeping both with notions of pilgrimages or ritual circuits requiring some amount of physical difficulty. At Las Cuevas, the choice of slope is more understandable considering the location of plazas and ballcourt on this southern side of the sinkhole. The construction of the linear structures around the southern edge of the sinkhole served to restrict access to the sinkhole from any part of the site core other than along the prescribed pathway. This restriction of access at both sites reveals the deliberate strategy to control ritual resources through the appropriation of sacred space.

Having determined that the shovel test pit density analysis at Las Cuevas and Actun Isabella confirms that these sites had pathways constructed outside of them, it is now possible to compare the degree of modification at the sites in my sample against other factors in order to address the questions of who was using these sites, why certain caves were chosen over others, and why there is such a variation in the types of construction.

### **5.3.2. Degree of Modification vs. Cave Entrance Size and Type**

Looking at the cave entrance allows for a more performance-based approach to the analysis of degree of modification outside of caves as it allows for the consideration of not only visibility of the ritual practitioners, but the visibility of the rituals themselves, and the possibility of hearing these rituals from outside the cave. It is impossible to block the larger

cave entrances in my study, and anyone entering to perform a ceremony in the entrance chamber would be visible and audible to outside spectators. However, with smaller cave entrances, these activities would be nearly impossible to see and to hear, with no way of verifying or participating by means of bearing witness.

The three sites which have the most phases of construction are also the three with the greatest degree formality and largest number of structures. These three caves are also the only three caves at which the cave entrance was not easily visible from the area outside of the cave – Nohoch Ka' Actun and Moth Cave both have the smallest cave entrances which are not visible until you are within 5m of them, and Actun Tunichil Muknal is the only swim-in entrance, the only level area outside of the cave and above the floodplain being around the side of it making it impossible to see from the structures. Following a performance-based approach, these exterior spaces could have been designed in the Late Classic to provide a venue for more public performances in relation to the cave rituals taking place within the caves. It is worthy of note that the only two vertical drop caves in my sample either has no modification or only minimal modification, even though the surrounding landscape provided ample natural forms which could have been easily modified to accommodate a larger audience. This may indicate that the types of activities that took place at vertical drop caves may have been altogether different than the types of activities that took place in horizontal caves, and that not only the type of cave, but the existing ritual practices, were simply not conducive to public expansion.

### **5.3.3. Degree of Modification vs. Cave Interior Size**

Comparing the degree of modification outside of caves to the size of the interiors of the caves allows for a more in-depth discussion of the types of ritual activities that may have been taking place within the caves and which ones were more conducive to expansion to the exteriors and the existing social stratification present at these sites. Just as with the distinction between horizontal caves and vertical drop caves mentioned above, the smaller caves in my sample often only had their main entrance chamber modified to accommodate ritual performances, whereas longer caves have distinct areas of activity with potentially increasingly restricted access to these deeper recesses (Awe 1992; Awe, Campbell, and Conlon 1991; Brady 1989:402-406; Houston 1998:522-523).

The cave at Las Cuevas provides the best example of this (for detailed discussion see Moyes 2012a). The cave at Las Cuevas has a large entrance chamber (108m L, 40m W, 17m H) with over 80 platforms, stairs, and retaining walls which face an active cenote and a window which is formed by the cave circling 335m around itself and ending back in the entrance chamber (Moyes 2012a:101). This shape to the cave created several naturally distinct chambers separated by natural narrow spots which were then modified by the Maya to create formal doorways which could be blocked up when they wanted to seal the rest of the cave off from unwanted visitors. The amount of artifact deposition drops significantly as one moves from one chamber to the next, but there are several distinct areas of charcoal scatters in the further areas, in particular the area at the window at the end of the cave which opens back on to the entrance chamber, indicating that activities were taking place, but that these activities were likely different from those in the earlier chambers and were conducted by far fewer participants with different social permissions and status.

However, the sites in my sample ranked in order of degree of modification do not correspond to the depth or size of the interiors of the caves themselves. The modifications to the exterior of Las Cuevas are among the most minimal of the sites. The longest cave by far, Actun Tunichil Muknal, is approximately 5km long, however most activities are focused in areas within 1.5km of the cave entrance. This site has three structures including one with up to four phases of construction with formalized cut facing stones. And yet, the two sites in my sample which have the most modification are outside of some of the shortest caves. It does not appear that the length or size of cave can be correlated to degree of modification, or even who was using these exterior spaces with certainty since the timing of construction and use activities inside and outside the caves cannot be pinpointed accurately enough.

#### **5.3.4. Degree of Modification Outside the Cave vs. Degree of Modification Inside the Cave**

As with the length or size of the cave, the amount of modification inside of the caves is hypothesized to be an indicator of the status of the participants in cave rituals (as shown through access to resources to modify a sacred space which was restricted in use to certain classes of society) as well as indicating that such caves may have been important in the region and been worthy of longer distance pilgrimages. It is also assumed that the amount of modification inside the cave would correspond to the degree of modification outside the cave if one of the functions of these exterior spaces was to witness the elite conducting certain phases of the rituals before entering the cave. As was seen above with the cave at Las Cuevas, that system is possibly the most heavily modified interior cave space in all of Belize, and yet the exterior modifications are among the most minimal. Unfortunately, no correspondence between cave exterior site type and amount of modification inside the cave appears in this sample.

#### **5.3.5. Degree of Modification vs. Duration of Cave Use**

Comparing the degree of modification to the duration of use of the caves will provide insight into the impact of social memory on the choice of caves to be exteriorly modified. However, the use of most caves in my sample ranges from the Late Preclassic to the Terminal Classic, with no association between intensity of modification and duration of use. For example, Actun Isabella has some of the oldest dates in Belize, yet had only the small terrace at the top of a slope beside the cave and a very rough modified pathway leading down from this terrace to the cave entrance. On the other hand, Nohoch Ka' Actun has the most complex architecture of this sample and yet the cave itself dates solely to the Late Classic with very few artifacts in comparison to other caves.

### **5.3.6. Degree of Modification vs. Distance and Time of Abandonment of Nearest Major Site**

#### **5.3.6.1. Direct connection**

Las Cuevas Cave and Macal Chasm are the only two caves in this sample which are located within the boundaries of site cores of substantial sites and are therefore most likely to have been under the control of the elite residents of these cores. However, as Macal Chasm's exterior was unmodified, discussion will here be limited to the cave at Las Cuevas. Las Cuevas is a mid-sized site constructed and used almost exclusively during the Late Classic. It is one of the most salient examples of the tie between the monumental plazas and ritual cave sites. The site's main plaza and eastern structure lie directly above the large cave set in the western side of the base of a sinkhole. The construction during the Late Classic of the linear structures around the top of the sinkhole acted to restrict access the sinkhole while the pathway down the slope to the cave entrance served to restrict the movement of any ritual participants to this prescribed route. Just as all other construction in the site core, the construction of this pathway was probably overseen and designed by the ruling classes to serve their needs. At a ceremonial site such as the cave at Las Cuevas with such a large entrance chamber and so many platforms, the site was surely a center for ritual activity frequented by other large sites in the area. This restriction of access reveals the deliberate strategy on the part of the ruling classes to control ritual resources through the appropriation of sacred space. This control was enacted by the elite by means of a "ritual descent" (Arksey and Moyes 2015) through the creation of a pathway which directly connects the surface site to the cave site.

#### **5.3.6.2. Close Association**

The site of Rice Mill 3 in Northern Belize demonstrates some of the clearest association of a cave site with a nearby surface site. The abundance of lithics at all Rice Mill caves in comparison to the amount of ceramics indicates that these sites were being frequented by the residents of the lithic production sites of Bedrock, Sotohob, and Aak Witz. The amount of labor involved in the construction of the terraces, wall blocking the cave, and the platform outside of the cave would have been extensive and it is likely that this work would have been organized by higher status members of society. While these sites are not as large as the other sites in the area such as Blue Creek, La Milpa, and Nojol Naj, Bedrock and Aak Witz are both identified as elite residential plazas associated with the lithic production sites in the area. The majority of the construction of these sites took place during the Late Classic and is indicative of the rise in economic complexity in this area and the need for the larger sites to control access to local lithic resources. These sites declined and were abandoned in the Terminal Classic (Greaves and Guderjan 2012:29; Mongelluzzo 2003).

In keeping with this theme, construction outside of the cave at Rice Mill 3 placed further control over natural and sacred resources in the hands of the elites moving in to this area. The platform and pathway construction effectively restricted viewing and physical access to the cave which would have originally been open enough for anyone see into or walk into upright. Not only did this construction create a darker entrance chamber to the

cave, but it made it so that only one person can enter at a time, and then, only in a stooped position. The platform is naturally an ideal location from which to address a larger audience, and with the nearest sites being relatively small elite residences, the small plaza space outside of the cave would likely have been able to comfortably host the essential local members of society. There is no evidence that anyone other than the local residents were using this site, and there were no termination deposits either inside or outside of the cave, such as those seen at the site of Blue Creek in the Terminal Classic prior to that site's abandonment. It is probable that use of this cave was limited to the residential occupation of the nearby sites and when those elite-centric sites were abandoned in the Terminal Classic (Guderjan 2004, 2007; Hanratty 2008), all activity ceased.

Actun Tunichil Muknal is another example in my research of a cave being closely associated with a surface site which is not directly attached to the cave. Excavations at Cahal Uitz Na have been minimal but demonstrate that the site's primary building phase was in the Late Classic and that the site was abandoned in the Terminal Classic. The interior of ATM however indicates intensive use from at least the Early Classic, which might indicate that occupation of the area began in this period. Even though 1999 excavations of Structure 1 outside of ATM uncovered seven small sherds from a single Early Classic flanged bowl at the base of the structure, during a leveling or preparation phase for the earliest construction phase of this structure (Song et al. 1999:226), this deposition does not indicate that this leveling off took place in the Early Classic, but rather indicates the incorporation of available material in what is more likely an early Late Classic construction dating to ~600 C.E. (Song et al. 1999). With the reported termination cache on the uppermost floor of Structure 1 dating to the Terminal Classic, coinciding with the abandonment of the site core of Cahal Uitz Na, the association between this space and the ceremonial center of that nearby site is clear. While there were some residents who stayed in the area into the early Postclassic as evidenced by the Postclassic Yaxteel Ahau Censer (Awe and Helmke 1998), there is no evidence that these residents made use of the interior of the cave or the structures outside of Actun Tunichil Muknal. However, following the pattern of activity at Nohoch Ka' Actun, it is possible that while the use of these structures was probably overseen by the elites of the Late Classic, the termination cache could have been deposited by any class of residents during a mass departure from the area.

Actun Isabella is located 700m east of the site core of Minanha, slightly closer to the site core than ATM is to Cahal Uitz Na. Similar to the cave at Las Cuevas, the entrance to Isabella is surrounded by ridges that form a low bowl in front of the cave. Just as at other sites, the site core of Minanha was abandoned by the elites in the Terminal Classic. The tallest and steepest of these ridges is the ridge to the right or west of the cave entrance. This is also the direction of the site core of Minanha. Excavations showed that the top of this ridge was modified to create a terrace or level area at the top before descending down a modified pathway down to the cave entrance. Again following the pattern of activity at Las Cuevas, no other area outside of the cave was modified. The pattern of activity seen here closely mimics that of the elite core modifications of Las Cuevas. However, this similar pattern of activity and the proximity of the cave to Minanha do not make as strong an argument for the elite being responsible for the exterior modifications. It is still possible that any residents who continued to subsist in the area after the departure of the elites could have modified this space, especially considering the pathway and terrace are of such rough quality and minor extent in comparison to Las Cuevas.

Nohoch Ka' Actun is 15km South of Pacbitun and 8km east of Minanha, but only 750m east of Augustine, the medium-sized site identified in 2016. The double-mounded Structure 1 provide the most compelling case for a clear separation of elite and non-elite space outside of a cave entrance of any site in my sample. The double mound formation of Structure 1 at Nohoch Ka' combines the properties of both a "twin-pyramid complex" (a layout which consists of identical pyramids with radial staircases on the east and west sides of a small plaza, with a walled enclosure to the north and a range building to the south) and twin temples (two temples built side-by-side, normally along a North-South axis, on top of a platform which can vary in size and height). The builders of this space appear to have combined the ideas of public performance in twin-pyramid complexes like those of Tikal with an early iteration of a twin temple. This layout may have been an intentional attempt to reinforce the associations of the cardinal directions with certain symbols, such as the east symbolizing the exit of the sun, fertility, the origin of the Quiche lineages (Drew 1999:294), and the west symbolizing the setting of the dying sun in the underworld (Drew 1999:294). Additionally, any participants standing in the main terrace would be south of the twin temple structure and would be facing the ritual performers located in the north, a direction associated with annual rains (Drew 1999:294).

From a performance perspective, this small plaza on the northwest corner of the terrace would provide an ideal stopping point or staging area for a very small group of people before they passed through the structures, past a larger audience on the terrace to the south of Structure 1, and on to the cave itself. Considering the discovery of the medium-sized site of Augustine 750m to the west of the cave, it is likely that spectators and ritual participants were coming from this site to the caves in the area. In addition to the series of terraces on the western side off the main terrace, there is a large, flat, minimally modified terrace to the north of the site. Performers of these rituals or anyone desiring to be kept apart from this crowd would have also been able to approach the main terrace from the west but could have approached this main terrace from the flat area to the north and ascended to the small plaza from the northern edge of the main terrace. The separation of this corner from the rest of the main terrace reinforced a class-based separation of this small group from the mass of spectators on the main part of the terrace to the south of Structure 1.

The placement of the two termination offerings on this more accessible southern side of Structure 1 provides its own insight into the social separation of space at this ritual site. Provided that the northwest corner of the terrace had been set aside as the 'elite' corner of this sacred space, any non-elites or lower level elites who remained for a time after the rulership left and who wanted to make offerings at these sacred sites would have stuck to the pathways that were familiar to them. Before leaving the area, this site was terminated, and it was on this more accessible southern side of Structure 1 that the deposition and burning of artifacts took place, indicating the possibility that it was this remaining populace that terminated the space before abandoning it.

### **5.3.6.3. Distant or the Nearest Site is Minor**

Moth Cave is ~1km southeast of the site core of Minanha and borders on the Contreras archaeological zone. It has ceramics and radio carbon dates pointing to earliest use during the Early Preclassic and extending into the Late Classic, at the end of which the cave

was likely sealed off and abandoned (Moyes and Awe 2010:151, 156-7). The exterior of Moth Cave is one of the most labor intensive constructions outside of a cave in this sample, the others being Nohoch Ka' Actun and Actun Tunichil Muknal. Following Moyes' and Awe's (2010:145) suggestion that labor intensive modifications to caves were sanctioned and organized by community leaders and employed by them for rituals, this mound group likely required a significant amount of labor to construct and, along with the plastered earlier structure, would seem to indicate that the individuals responsible for this group were of at least a low-level elite status within the community.

Iannone et al. (2007:154) theorized that the rarity of Type III formal groups in the Contreras Zone indicate that they belonged to the successful later arrivals of rural and agrarian families to the area (and could represent either residential or ritually oriented complexes) while the prevalence of the same Type III groups in the Minanha site core are indicative of their occupants' being established households with a closer relationship to the site core. Moth Cave falls between the Minanha and Contreras zones and while its arrangement is consistent with Type III settlements, its liminality between these two zones does not make it clear which area this site would have been associated with. However, based on the intensity of labor and the site layout patterns established in the Minanha and Contreras areas, this site does appear to be an elite or elite-sponsored site.

The construction of this group coincides with the significant population growth, socio-political reorganization, and establishment of the Minanha royal court in the 8<sup>th</sup> century (Iannone et al. 2007:153). Its use did not extend beyond this Late Classic growth, and indeed both the group is abandoned and the cave was sealed off at the end of the Late Classic when the royal court also abandons the site core of Minanha (Iannone et al. 2007:156-7), further strengthening the connection between its last use and the control of this space by elite groups in the area. This idea is also supported by Moyes and her colleagues (2009) who argue that cave ritual was primarily an elite activity because there was virtually no cave use in the Postclassic period in this area even though small populations still inhabited the area (Moyes and Awe 2010:4). Even though it was likely an elite group that oversaw this site, it is not possible to tell if they were directly connected to elite rulers of Minanha or merely within Minanha's sphere of influence.

Actun K'in K'aba is a medium sized cave set into a hillside 1.4 kilometers west of the site core of Las Cuevas and is ~20m west of Group 80, a small group with five structures on a raised platform with a short sacbe which extends towards the cave but stops short by about 15m. The terrace which extends across the entrance of K'in K'aba dates to the Late Classic, as does Group 80 and the other small groups in the area. Its distance from Las Cuevas and the availability of a cave directly under Las Cuevas mean that K'in K'aba was likely not used by Las Cuevas, but by these nearby groups. However, evidence remains scant at this point and no clear conclusions can be made about who was using this site.

Actun Ho Ak (Turtle Head Cave) is a vertical drop cave approximately 1.5km southwest of Ixchel, a medium-sized center located 14 km north of Caracol and 10 km southwest of Minanha and occupied from the Terminal Preclassic to the Terminal Classic. Actun Ho Ak is surrounded by other caves and is the least impressive of these, being only a single 9m vertical drop with no other chambers. Despite this, it is the only one in the area to have been modified exteriorly in any way. The four terraces, including the retaining wall around the southern edge of the drop into the cave, all appear to have been constructed in the Late Classic, but apart from this, it shares no other similarities to other sites in my

sample. The nearest sites to this cave are located in the hills to the north but apart from a cursory survey in 2016 which noted that there is a moderately sized site with a plaza and a ballcourt approximately 2km away, nothing is known about these sites or their relation to Ixchel. The amount of effort required to construct these terraces is minimal and could have been carried out by any small group, though their function beyond potential erosion control remains unknown.

Actun Sak Tuch is noted in this section due to its distance from any surface sites – it is 5km east-northeast from the site of Pakal Na on the other side of the Sibun River and there are no surface sites visible in the area. There were no modifications noted outside of this cave or any other cave in the area.

Ofrenda is 9.5km southwest of Pacbitun, 7.5km southeast of the site of Guacamayo, and 7.5km north of the newly discovered medium-sized site core of Augustine. The overwhelming majority of artifacts from this cave, including the 11 floors and use surfaces excavated in one of the entrance chambers, date to the Late Classic. Similarly, the constructions outside of the cave date exclusively to the Late Classic. The only site nearby which has been excavated, Pacbitun, was similarly abandoned in the Terminal Classic (Healy et al. 2007). However, with the distance from any major or secondary centers and lack of excavation at these sites, it is difficult to pinpoint not only which site but which class of people were using this site. While we know that there are prestige goods inside the cave which would have probably only been available to the elite or upper classes of residents in the area, the exterior deposits and architecture do not echo this class distinction. In fact, the architectural style is extremely rough, as were the artifacts recovered from the construction fill. The fact that ceramics were recovered from the fill would seem to indicate easy access to midden fill from a nearby site, yet no site close enough to the cave which would support this amount of discard has thus far been identified. The deposition of small cobbles and pebbles along the front of the structure (the side with steps, facing the cave entrance) remains a perplexing challenge to interpret. As this deposition covers the front of the structure, making the steps unusable, it is probably a form of termination ritual, though who performed this termination is unclear.

#### **5.4. Who Was Using These Spaces?**

The above discussion makes several things clear:

1. The artifact assemblages and architecture are more in keeping with ritual spaces than residential spaces
2. The smaller and more inaccessible the entrance, the greater the degree of modification
3. The greater the distance to a major site core, the greater the degree of modification
4. With those sites that are furthest from site cores and that have minimal or rough modifications (K'in K'aba, Ho Ak, and Ofrenda), it is difficult to tell for sure who was using the spaces
5. Despite the initial construction and use of these exterior spaces possibly being elite-influenced (whether coming from the nearest major site or from lower-level local elites), there is a case for some of these sites being used by non-elites after the elite abandonment of the area

This shift to the exterior of the caves during the Late Classic across the country of Belize indicates a widespread shift in the ritual practices of the ancient Maya in the Lowlands as ritual practitioners extend the sacred space of the interior of the cave to include the exterior for the first time.

These modifications ranged from pathways outside of caves with large entrances, to mini-plazas, full plazuelas, and more elaborate structures outside of caves with smaller entrances. Construction techniques tend to favor a rougher style of construction with minimal use of cut or facing stones, a technique which mirrors that of the interiors of caves where walls and platforms are largely constructed of rough boulders and cobbles. At the sites with more minimal construction, these techniques included leaving the natural landscape largely intact with the final result being barely distinguishable from the surrounding landscape. The imitation of nature in ritual spaces is prevalent among many cultures, including the Maya (Brown 2004; Lefebvre 1991 [1974]:48). Combining aspects of “natural spaces” with “constructed places”, the techniques used outside of caves instilled a mixed notion of “natural places” in the minds of the audience.

The process of creating these natural places builds on the concept of “social space”, in which the ideas of a mental or ideological space are combined with that of the physical or natural space, demonstrating that space was political and inextricably linked in processes subsumed under modes of production and material practices (Douglas 1982; Green 1995; Ingold 1993, 2000; Lefebvre 1991 [1974]; Tilley 1994; Wylie 2007). Bringing speleothems outside of the cave to be placed in the same context as the water-related jute and the river cobble contributed to bringing the sacred space of the cave outside. These techniques are particularly noticeable in the pathways at Las Cuevas and Actun Isabella, and outside of Ofrenda Cave where the shape of the structure is rounded and undulates to follow the existing outline of an outcropping of bedrock. Whereas large boulders and bedrock outcroppings and boulders could have been broken and moved as at other sites, they have instead been left in place and constructions have been worked around them, leaving the naturalness of the space intact.

Features of the landscape where boundaries of the natural landscape are visible, such as caves, are rarely used as habitation spaces but are frequently used as ritual spaces because of the emotive response they illicit – feelings of awe, power, majestic beauty, respect, and fear (Brady and Ashmore 1999; Montello and Moyes 2013; Moyes and Brady 2005; Peatfield 2007; Skeates 2007; Taçon 1999:37). Mimicking the appearance of naturalness in manmade constructions which connect two distinct areas in the natural landscape, in this case between the underground and the aboveground, breaks down the boundaries between these spaces and connects them in both a physical and ideological way in the minds of the audience. This in turn effects an extension of the emotive responses that people have to these natural sacred features of the landscape. By not modifying the exterior of caves with salient and formal architecture, but keeping it in line with the style of modification inside the caves, the ruling classes both refuse to allow the participants and observers of these practices feelings of security that a built environment would offer, as well as give an indicator that this space now belongs to the sanctity of the cave and is likewise in their possession.

At those sites with smaller cave entrances or entrances which are not easily visible from the exteriors of caves, the sites were laid out more formally and included more refined construction techniques, such as facing stones and plastered floors. They were also the sites which had more than one phase of construction, indicating a greater investment of resources

over time. The amount of modification (and implied dedication to place-making), in addition to the arguments that the interiors of caves were increasingly in the possession of elite classes in this time period and trends towards more public spectacle, makes a strong case for these spaces to have been modified by some level of elite group – whether the elite of a larger site or lower-level elite at a secondary or satellite site.

Returning to the two hypotheses discussed at the beginning of this chapter, although it is probably that these spaces were being used by the elite as part of their ongoing and increasingly public and theatrical ritual program during the Late Classic, it is nonetheless possible that these spaces were being used by non-elites or local, lower-level elites either at the same time, or shortly after elite abandonment. Regardless of the type of modification, these efforts nonetheless restrict access to and movement through these exterior spaces for the purposes of creating a performance space where none had previously existed. Ngugi wa Thiong'o's (1997) discussion of 'open spaces' is particularly relevant to the interpretation of spaces outside of cave entrances. These spaces are much more open than the extremely physically and socially restricted spaces inside of caves, and the social implications of the transition from the inside of caves to the exterior cannot be understated. Open spaces are often used for performances and because of their lack of clear delimitation and their capacity for large, public gatherings (Ngugi wa Thiong'o 1997). The creation of formal and bounded enclosures indicates an attempt at control in direct opposition to the open spaces of public-controlled performances spaces (Kertzer 1988; Ngugi wa Thiong'o 1997:21-27). While the construction of the spaces outside of the caves may control the participation in the rituals, it does not entirely restrict how many people could view the rituals from a distance, providing the audience required for the possibility of the performance to be effective on a large scale.

#### **5.4.1. Elite Use of the Exteriors of Caves**

At those sites closer to or within major site cores, my findings provide for the possibility of placing the elite members of society who were allowed to partake in rituals taking place within the cave on display during their procession into the cave. Controlling access to space enforces hegemony - the creation of formal and bounded enclosures is a suppressing practice that is evident in the creation of venues for performances in which the elite can control who has access to view the performances and restrict access to only those who support the elite agenda (Kertzer 1988; Ngugi wa Thiong'o 1997). At a time when the non-elites and lower level elites of the Southern Lowlands were growing dissatisfied with their rulers' abilities to control the universe, making their participation in such efforts conspicuous, while still maintaining the secrecy of the actual ritual efforts themselves, could have provided the elite classes a means of mollifying their followers.

Constructing pathways outside of the caves at Las Cuevas and Actun Isabella recalls the concept of ritual circuits, in particular Reese's (2002) Base-to-Summit type of ritual circuit which move from the base to the summit of a mountain or temple, symbolizing the transformation of the ruler from mortal to deity as he ascends the steps of temple structures, and thus uniting the three levels of the cosmos. It has been proposed elsewhere (Arksey and Moyes 2015) that this type of ritual circuit be expanded upon to include caves, the ultimate third tier of the cosmos, as destinations/starting points. A "ritual descent" is a directional procession, connecting a surface site to an underground location, conspicuously linking all

three realms of the cosmos, but with the emphasis on bringing the forces of underworld under control of the performers of the rituals (Arksey and Moyes 2015:114). At both Las Cuevas and Actun Isabella, these pathways would have led participants from light to progressively darker spaces as one moved from the top of the sinkhole or bowl, down into to the light entrance chamber, and through the progressively darker interior chambers of the cave. At Las Cuevas, the ritual descent model reinforces the deliberate site plan placing the Eastern Structure over the cave entrance (Arksey and Moyes 2015).

At both sites, it is impossible to tell if the entirety of any audience would have followed these paths into the cave entrance area, or if there may have been an audience already in the bowl outside of the cave watching the selected ritual performers enter the cave space along this path. The latter option would fit with notions of public spectacles and provide an explanation for the small terrace at the top of the slope at Isabella – a platform for the ritual practitioners to gather and stage the beginning of a ceremony before descending into the cave in front of an audience, but this is speculative. At Las Cuevas, with the site core directly connected to the sinkhole and cave, any audience moving from the sinkhole to the main plaza (or vice versa) would have been fairly large and required some separation between the general audience and the ritual performers. It is possible that these more general audiences at both sites would have used other means of gaining access to the open spaces outside of the caves which were not deemed worthy of modification. In either case, the formalization of these spaces through the construction of pathways to caves either within or very close to site cores, as minimal as these modifications are, appear to fit with the hypothesis that it was the elite modifying these spaces as a deliberate performative strategy designed to engage with a larger audience than before while simultaneously communicating and reinforcing social status distinctions.

In an attempt to maintain control over these spaces, it is possible that the elite or rulers of the communities overseeing the construction outside of these caves may have employed a caretaker to reside outside of the cave. In this hypothesized caretaker scenario, it may be that one or more of the structures outside of caves was occupied by a member of society whose purpose was to maintain the integrity of the ritual space and enforce social rules and norms. This theory was put forth by Pendergast (1971) who suggested that Pendergast Chamber 1 of Eduardo Quiroz Cave was occupied for considerable lengths of time by potential caretakers who supervised the collection of *zuhuy ha* and the cyclic destruction and replacement of *zuhuy ha* vessels. The caretaker hypothesis was picked up on by the Western Belize Regional Cave Project (Song et al. 1999) who suggest that Structure M1 outside of Actun Tunichil Muknal may have housed a caretaker for the cave, potentially a figure of the priestly classes who restricted access but also performed rituals. Of all the sites in my sample, those with structures which could fit a residential model are limited to Actun Tunichil Muknal (more likely Structure 3 than Structure 1), Nohoch Ka' (Structure 2), and Ofrenda. These sites are relatively distant from site cores and have a fairly high degree of modification. However, there was no solid evidence that any of these structures were residential in nature. While some sites, both the exteriors and the interiors of the caves, have some tenuous evidence for sweeping of spaces, there is no evidence of the typical activities that accompany modern caretakers such as regular cleaning or emptying of the ritual spaces, reuse of objects, or nearby middens (McNatt 1996:91).

#### 5.4.2. Non-Elite Use of the Exteriors of Caves

The possibility for opportunistic non-elite or lower-level local elite use of these spaces is clearer at the sites furthest away from the site cores where the type of site becomes more formalized and where smaller caves are being modified rather than the larger ones closer to site cores. These sites with more modification are indicative the creation of spaces for more prolonged activities rather than short-term activities such as walking down a pathway. In keeping with this distinction, pathways, while utilizing construction techniques which are very informal and easily built by a smaller workforce, are a clear indicator of mere movement towards the cave rather than staging new activities outside of the cave. Participants at these site core locations would have participated by observation rather than by inclusion, thus maintaining the social class distinctions of these larger sites.

By comparison, at those caves further from site cores and at which the caves have smaller entrances, any activities within the caves would be nearly impossible to see or hear. Following a performance-based approach, these exterior spaces were likely delineated in the Late and Terminal Classic to provide a venue for more public performances in relation to the cave rituals taking place within the caves. These more open performances, continued to be performed by a select group of people within ancient Maya society, would have enabled the spectatorship of a wider audience than would be able to see into or fit within the small cave and thus take advantage of the ability of ritual to reinforce a sense of social solidarity (Durkheim 1995 [1912]; Frazer 1967 [1922]; Schieffelin 1985; Turner 1969; Whitehouse 2004). In this case, it makes sense that the smallest cave openings would have the most formalized exterior construction, while the largest cave openings, which thus far have the most minimal modifications, would only have enough modification to demarcate the space outside the entrance as being part of the ritual space of the cave.

The sites furthest away from site cores are the most modified and are located outside of caves that would not have been able to accommodate audiences larger than a small group of ritual practitioners. The modification of these spaces may have been initiated by the larger site rulers, in keeping with the construction of secondary monumental centers across the lowlands in this period, or may have been a mimicking of elite strategies by local rulers who wanted to pick up on the increased group cohesion that creating a new phase in the cave rituals was creating at the larger sites. The layout of these exterior spaces, specifically the mound plazuela group at Moth Cave and the separation of the plaza and twin structure outside of Nohoch Ka', are the most formal of the sites in my sample and are likely a product of the attempt to copy known forms in order to make the creation of a new ritual space less jarring to the group (Kertzer 1988; wa Thiong'o 1997).

This creation of a known form is most salient at the site of Nohoch Ka' Actun, where a series of construction phases created two small plazas outside of the cave entrance, a secluded small plaza on the north side of a larger terrace bounded by two structures, the double-mounded Structure 1 dividing this space from a larger plaza space directly outside of the cave entrance to the south of the smaller plaza. This site layout was potentially drawn from knowledge of the site layout of Tikal and other such sites of twin pyramid complexes which were used for large-scale public performances and elite residences being located in the north, a direction associated with the heavens and the origin of seasonal rains. Assuming that ritual practitioners and audiences were arriving from the nearby site of Augustine, performers of these rituals or anyone desiring to be kept apart from this crowd would have

also been able to approach the main terrace from the west but could have approached this main terrace from the flat area to the north and ascended to the small plaza from the northern edge of the main terrace. The separation of this corner from the rest of the main terrace reinforced a class-based separation of this small group from the mass of spectators on the main part of the terrace to the south of Structure 1. The level of social stratification at this site provides interesting insight into the potential performative aspects of the other more formally constructed sites in my sample which may have used similar strategies though through different site layouts. However, while public ceremonies provide an opportunity to solidify solidarity, they also present the risk of mass dissent or disagreement. Just as at Actun Tunichil Muknal, the termination deposits leave room for the possibility that non-elites were still using these spaces after the elites responsible for the construction of these structures left.

At both Actun Tunichil Muknal and Nohoch Ka' Actun termination deposits dating to the Terminal Classic were found on top of the main structure, the penultimate deposit at Nohoch Ka' Actun having been burned (in keeping with other termination deposits across the Maya area), and coinciding with the abandonment of the nearest major site cores and the presumed emigration of the elite classes. At Nohoch Ka' Actun, the placement of the two termination offerings was on the southern side of Structure 1, the hypothesized 'more accessible' side of the structure, and provides further insight into the potential social separation of space at this ritual site. Just as Pacbitun, Guacamayo, and Minanha were abandoned by the elite in the Terminal Classic, it is likely that Augustine was as well. Provided that the northwest corner of the terrace had been set aside as the elite corner of this sacred space, when the elite departed this area would have likewise been abandoned. Any non-elites and local, lower-level elites who remained after the elites left and who wanted to do anything at these sacred sites would likely have restricted their movements to the pathways that were familiar and that had been socially engrained in them rather than use the space of the failed rulers. In this case it is possible that the remaining groups attempted to maintain a sense of continuity through the re-use of ritual forms, albeit without entering the interior of the caves themselves since these spaces were once a socially restricted, taboo sacred space. Before leaving the area, this site was terminated, and it was on this southern side of Structure 1 that the deposition and burning of artifacts took place, indicating that it may have a remaining populace that terminated the space before abandoning it as well.

There is also the possibility that the evidence outside of the cave entrances is evidence of the cooption of this space by opportunistic leaders and subversive groups attempting to critique the rulers at the larger sites and take over responsibility for the cosmos in attempts to ease the climatic events of the collapse. In this period of chaos and contradiction, while elites were losing control of the socio-political system, or just after the elites abandoned the nearby centers, these other groups may have decided to make their own efforts to regain control to benefit themselves and their kin group (Aldenderfer 2010:83). With the total collapse of the Southern Lowlands taking over two centuries, a long-term pattern of failure of the elite arose, giving multiple generations the time to become disillusioned with the status quo and begin to question the methods of their ancestors. Transforming known ritual practices would have become more acceptable the greater this temporal distance from failing traditional ways grew.

However, as with any new ritual, even in these dire times, the ritual spaces and activities could not have been created wholly from scratch and these spaces would have been

constructed using similar forms to other surface sites with known social norms and customs. The deliberate use of symbols, such as the layouts and forms of the structures, which were familiar to the public would have signaled to the public that the same accepted and inherent rules and norms governing behavior and movement at other elite spaces extended the exteriors of these caves. In addition to behavioral rules, the use of these symbols would also have reinforced some of the existing social stratification and enabled a sense of continuity with local rulers taking on the roles and performing the activities once performed by higher-level elites. Moving the rituals to a new venue would have been an effective means of communicating a break from the hegemonic practices of the failing elite classes all the while maintaining a sense of comfort and normalcy through the reuse of existing forms. In a time of crisis, this process would have reaffirmed a 'master narrative', even if the people performing the rituals were not the same, and would have lent a sense of continuity and legitimacy to the new performers (Cole 2004:96-97; Schieffelin 1985:709). This method of resistance is not without precedent – the Ain cult of New Guinea used religion to enable resistance to the destructive activities of the big men by moving their ritual practices to new venues and new practices (Aldenderfer 2010).

## 6. CONCLUSIONS

### 6.1. Archaeological Approaches to Landscape

Natural places have an archaeology because they acquired a significance in the minds of past cultures. This may not have necessarily made an impact on the physical appearance of the landscape, but one can recognize the potential importance of these locations through other evidence of human activity (Bradley 2000:35). Henri Lefebvre used the concept of ‘social space’, in which he combines the ideas of a mental or ideological space with that of the physical or natural space, to argue that space was political and inextricably linked in processes subsumed under modes of production (Lefebvre 1991 [1974]). In dealing with archaeological sites in the Maya area, these practices are often apparent through material remains and visible construction.

However, if the space is only physically modified to a minimal extent, as is the case with the majority of the sites in my sample, it is practical to focus on an archaeology of natural places and what they can afford participants over more overtly constructed places. Academics often struggle to define ritual landscapes, how to find them in the archaeological record, and how to approach their interpretation. One theme running through such studies is that there must be some physical evidence at the site, or near it, for it to be confirmed as a ritual site. Whether this is due to the nature of archaeology or the nature of ritual is little discussed. Yet it is known that many aspects of ritual do not require any material objects and will not leave a trace in the archaeological record. Can one find these natural ritual sites if there is so much lacking in the archaeological record?

Many authors agree on certain characteristics required for a site to be considered sacred and used in ritual practices. Some emphasize the physical characteristics of the site itself, others the relationship of the site to the surrounding landscape: placement on a summit; prominence; visibility; accessibility; proximity; and intervisibility; assemblage of artifacts (necessary); and, the inclusion of ethnographic records (where possible) (Peatfield 2007:297; Skeates 2007). Linda Brown argues that the worldview of the Maya dictate to a large extent the location of ritual spaces and the spatial organization of the rituals themselves (Brown 2004). However, not every site has surface remains of artifacts or ethnohistoric sources to point the way. Evangelos Kyriakidis, editor of *The Archaeology of Religion*, draws attention to some additional issues of an archaeological study of ritual sites: the similarity of rituals, the common use of one space for the performance of multiple rituals, the disjunction between ritual practice and belief, the inseparability of the ritual and the mundane spheres, and the finding of ritual items in secondary contexts (Kyriakidis 2007). Being aware of these issues and understanding their processes is argued to be able to “help ‘calibrate’ the evidence and steer research to more fruitful directions” (Kyriakidis 2007:20).

In archaeological practices, a minimally modified site may appear to be nothing more than a purely natural site, especially if a long period of time has lapsed since site abandonment. Skeates (2007) and Peatfield (2007) focus not only on the archaeological record but also remind readers of the performative aspect of rituals and that not all practices necessary to the creation of a ritual site will be present in the archaeological record. An “unmodified” ritual site could also be described as a site of ritual importance which has not been physically altered in *any* way – through the deposition of objects, the placement of signs

or symbols, or the construction of permanent or temporary structures. An unmodified ritual site would have been conceptually altered in the minds of the people who utilized it or were aware of it. These sites may be like those that Peatfield (2007) discussed as being part of a pilgrimage route or that Taçon (1999) described as being part of Dreaming Tracks. They are, in some form, a part of a ritual site assemblage extending beyond the directly visible sacred site and encompassing the surrounding living landscape of the culture. These sites may have their own set of characteristics which can help to identify them for further archaeological investigation.

Inomata and Coben (2006:31) emphasize the importance of these performative ritual spaces and objects, along with the difficulties they pose:

“Material objects are often important components of theatrical presentation. Like theatrical spaces and images, such materials may serve as repositories of narrative and practical knowledge associated with theatrical events. These artifacts, however, are rarely left on the localities of performance, which may pose difficulties for archaeological research. The identification and analysis of certain objects used in theatrical events may require the help of iconographic or documentary evidence”.

Joyce Marcus (2007) and Colin Renfrew (2007) echo this in noting that the locations and material goods of ritual practice are much more likely to be recovered than the non-material aspects such as songs and other performances (Marcus 2007:48). Ethnographic studies of modern Maya cave rituals may be able to provide much of the locational information that could be useful for determining where to begin looking for the ancient ritual practices in the archaeological record along with some of the potential material remains to be wary of, particularly the high frequency of perishable items.

Of crucial importance to the study of sacred spaces as places of potential ritual activity is the ability to identify which of these geographic features were of importance to a culture. The embodied approach has been adopted by archaeology along with its view of landscape as an entity that exists as it is perceived, experienced and contextualized (Van Dommelen 1999). If one is to work with the distinction between experience and perception, the former being emotional and the latter physical, one must take into consideration that even the basic forms of perception are culturally influenced. We develop our perception of landscape through our experiences; and in turn, the landscape shapes or creates our embodiment through what it affords us (Johnston 1998; Gibson 1979). In other words, the landscape and perception are both cultural constructs, the one inextricably linked to the other (Wylie 2007:8).

Nisbett and Miyamoto claim that there are no possible universals across human cultures (Nisbett and Miyamoto 2005), however, many scholars disagree (Montello 1995; Montello and Moyes 2013). Many cultures identify natural spaces of unusual configuration as sacred spaces. In focusing on natural sites, Paul Taçon lists four features that lend to the sacredness of a natural site: great acts of natural transformation; junctions; unusual landscapes; and panoramic views (Taçon 1999:37). Such features of the landscape, where boundaries of the natural landscape are visible, are rarely used as habitation spaces but are frequently used as ritual spaces (Moyes and Brady 2005). Among these special features of the landscape, caves feature prominently (Taçon 1999; Skeates 2007; Brady and Ashmore 1999; Peatfield 2007; Montello and Moyes 2013). The entrances to caves, that point where

“aboveground” meets “underground” constitute an ideal junction, or boundary, in the geographic landscape. Brady and Ashmore draw attention to these natural junctions in emphasizing the importance of a mountain-cave-water triad for the ancient Maya in through the use of ethnohistoric, archaeological and epigraphic evidence (Brady and Ashmore 1999).

It has been shown that the ways in which cultures define geographic boundaries and junctions is highly variable and potentially open to continuous modification within that culture (Levinson 2003; Mark 2011; Montello 1995). Yet, the artificial boundary created by geographers and modern archaeologists located exclusively at the entrance to caves has thus far restricted the study of ritual performances to the interiors of caves, to the disregard of the potential the exterior affords for public spectacle. It is important to note that for modern Maya; the outside of the cave clearly elicits a significant emotional and psychological response in conjunction with the proximity to the interior of the cave. While most people, modern Maya included, will approach the entrance of a cave and identify the interior of the cave as being the beginning of this natural feature, there is often an increasing sense of the wonder and fear associated with the approach itself. Modern Maya in Belize rarely utilize the interiors of caves any more. However, ceremonies akin to the ancient ceremonies which took place within the caves are now conducted outside the entrances to caves, indicating that this space acts equally effectively as the cave itself; that the sacred boundary of the cave does extend beyond the physical boundary of the cave.

## **6.2. Expanding the Ritual Landscape Across the Maya Lowlands: Land Tenure and the Control of Resources**

Early in the Late Classic, Naranjo was the major force in the area, with Caracol likely being relegated to a local power (Simon and Grube 2000). From 800 C.E. onwards, however Caracol reclaimed its power in the area, with Naranjo reasserting itself only sporadically, including a period of influence over the Belize River Valley in the early 9<sup>th</sup> century. Naranjo was abandoned in the 9<sup>th</sup> century, while Caracol likely lasted into the early 10<sup>th</sup> century. In the southern lowlands, the growth of the elite classes in the Late Classic and corresponding increase in number of dynasties resulted in the proliferation of smaller centers together with the construction of monumental and public architecture requiring more resources, art, tombs, and expensive supporting courts (Demarest and Rice 2005:108; Demarest 2013:25).

The placement of Late Classic centers at key areas of resource control, such as the Late Classic center of Lower Dover at the confluence of three rivers in the Belize River Valley and Las Cuevas over the site of a large and unique cave which could accommodate large numbers of people, was essential to maintaining the concentration of power in the hands of the elite and stemming the potential usurpation of power by rival groups. The shifting political powers of this time are reflected at Nohoch Ka' Actun, where Caracol's hiatus from the 7<sup>th</sup> to late 8<sup>th</sup> centuries and subsequent resurgence are reflected in the censer fragments which come from the Belize River Valley in the earlier construction phases but from the Chiquibul and Petén during the site termination activities.

Key to the demarcation of various resources as belonging to a particular polity was the use of cenotes, springs, and caves as “community boundaries” (Hodge 1997:211–212; McAnany 1995:87; Marcus 1993:126; Moyes 2005:291; Moyes and Prufer 2013; Roys 1943; Trigger 2003:94). These territorial limits were regularly surveyed by community leaders by

means of processions during which both the natural and artificial features were reconfirmed as legitimate territorial markers (Ianonne 2010:354; McAnany 1995:87; Moyes 2005:291; Roys 1943:181, 192). The widespread mention of this practice in the ethnohistoric records suggest that this was a long-standing practice that likely existed throughout pre-Columbian Mesoamerica (García-Zambrano 1994; Hodge 1997:211–212; Moyes 2005:291, 293; Smith 2008:81–83; Henderson and Sabloff 1993:454).

While many caves in Belize are known to begin usage in the Preclassic or Early Classic, all caves for which there is evidence of pre-Columbian activity have dates in the Late Classic (Moyes et al. 2017). This expansion into caves which were not previously used, or for which use was minimal, in addition to the move for the first time to the exteriors of these caves, is indicative of the general expansion of the Late Classic and the perceived need to lay claim to both practical and ritual resources. Land tenure systems are “suites of social mechanisms employed to reduce environmental uncertainty by socially mediating and circumscribing access to resources” (Brown and Strohmeier 2011:181 [following Adler 1996]). Emphasis here is on the term “resources”. The use of the term “land tenure” should not be confused with the indication of a strictly physical boundary or border in the sense of western geographic terms. Rather this system can be extended to the ancient Maya to explain how different groups claimed certain resources in areas which are non-contiguous or which overlap spatially with the claims of others. For example, a resource in one area may belong to one group whose site is nearby, while another group can claim another resource in between this site and resource which the inhabitants of the site have left available. In such a system, there is an assumed lack of ownership to any resource until such a claim has been publicly made and accepted, the end goal of which is to reduce any uncertainty by clearly demarcating possession of the space. The use of material practices to create a physical representation of an ideological boundary are essential to reaffirming the process of identity formation and building social cohesion (Douglas 1982; Helms 1993).

Returning to the concept of caves not only as sources of water and a point of access to the deities that reside in the underworld, but also as a location of ancestral lineages, claiming caves as part of the establishment of new sites makes sense in the ancient Maya concept of land tenure. A similar connection is made between the concept of land tenure and the placement of burials under the foundations of structures for the purposes of justifying possession of the land. Brown and Strohmeier (2011:181) argue that if burials and other such land tenure rituals were performed in public, it would be a clear statement to the community of this rightful possession. In keeping with the concept of land tenure, the longer one occupies a site, the more that claim to possession will be recognized by a wider audience (Adler 1996:351). Placing secondary burials in new sites, or making offerings and performing ceremonies at new caves, creates a direct connection to the ancestors which provides a more immediate legitimation for control over these sacred spaces.

The processes of land tenure also circumscribed which levels of society are allowed to have access to certain areas of sites or ritual spaces. While these rights may at times overlap, permission is required for any lower class of society to enter and interact an upper class space (Brown and Strohmeier 2011). These permissions are socially, if not legally, regulated and if enacted over a long enough period of time, become the rules and norms by which societies function in relative stability. This process is most salient at the exterior of Nohoch Ka’ Actun where multiple phases of construction indicate that this space was being

very visibly and very formally modified over the course of the two centuries of the Late Classic, all while the interior of the cave was continuing to be used.

For the non-elite or lower-level local elite, the construction of accepted architectural forms at sites further from major site cores effectively communicated their claims to these spaces and is closely tied to the legitimization rituals that elites had been enacting within caves for millennia. Whether this was on behalf of the rulers of major sites, or in direct opposition to these elite classes, the choice to use much more elaborate and formal site modifications at these more distant sites as well as the use of multiple phases of construction created a long-term connection between the groups constructing these spaces, the land, and the cave as a resource for controlling the cosmos. The form of the architectural layout at these distant sites also effectively elevated the status of the site to one beginning to approaching larger monumental centers, if not in actual size, at least symbolically. If these sites were being developed as part of elite land tenure claims or by opposing groups coopting elite spaces in opposition to the elite, these symbolic and temporal connections would have helped to legitimize the claims that these communities were making on the space. If groups were moving into these spaces after the elite abandonment, it is possible that they were attempting to maintain a sense of continuity through the re-use of ritual forms, albeit without entering the interior of the caves themselves since these spaces were once a socially restricted, taboo sacred space.

### **6.3. Public Spectacles: Ritual Performance as Discourse**

The centers of the Late Classic Southern Lowlands needed to communicate their divine status to the public in order to maintain their positions of power and this was done largely through mass public spectacles. Takeshi Inomata has argued that the mass spectacles of the Classic Maya were one of the critical elements which held the communities of this period together, providing opportunities for individuals to witness and participate in performances (Inomata and Coben 2006; Inomata 2006:818). The benefits of mass spectacles in promoting social cohesion have been discussed earlier and point to how the shared emotional experience stemming from the participation in communal actions of a large group signals commitment to the group and reinforces a shared sense of trust, cooperation, belonging (Durkheim 1995 [1912]; see also Cole 2004; Frazer 1967 [1922]; Kertzer 1988; Schieffelin 1985; Sosis and Alcorta 2003; Whitehouse 2002). In public events of the Classic Maya, rulers often emphasized their divine nature through the impersonation of deities, glorified themselves through the celebration of victories in warfare, and through the performance of ballgames that mimicked battles (Freidel and Schele 1988; Houston and Stuart 1996; Inomata and Triadan 2003;Looper 2003; Schele and Miller 1986).

Classic period main plaza construction was a deliberate creation of open spaces for the inclusion of a large number of participants (Inomata 2006:813). However, by the Late Classic, populations were growing so large that some sites were having trouble fitting their audience into the main plazas of even the largest centers (Inomata 2006:819). In addition to adding on to existing site cores with new plazas and ceremonial structures as population size increased, the elite often also constructed smaller plazas in restricted areas where performances would have retained a greater level of inclusiveness (Inomata 2006:814). The smaller audiences at these private events would have reinforced a shared status-based

identity within the group. Later in the Classic period, as we approach and enter the Terminal Classic and the collapse, there were increasing trends towards the restricting of access to even the main plazas in site cores, indicating greater necessity to favor the participation of some groups over others (Inomata 2006).

In keeping with these trends, it has been suggested that the ritual performances inside caves were also being increasingly restricted to elite use in this time period (Awe 1998; Brady 1989). However, while the small size of many of the caves in Belize would have facilitated the restriction of the use of their interiors to select members of society, the elite would have encountered a challenge in trying to incorporate the trend towards mass spectacle if they tried to make these rituals accessible to larger audiences. This wouldn't have become a problem until the issues that arose with the Terminal Classic collapse surrounding rain and agricultural stresses and the pressing need during this time to placate the public. Moving cave rituals to the exteriors of caves, be it through the creation of a publicly viewable processional pathway to a cave, or through the creation of structures and plazas, provided the performers of these rituals, regardless of their social status and intention, the opportunity to publicly communicate their connection to the sacred space of the cave and create a sense of group identity and cohesion in this time of crisis. While the many factors which contributed to this collapse have been thoroughly discussed elsewhere, the social and religious strategies that were employed to try to maintain social cohesion during these tumultuous and stressful years have been less explored.

#### **6.4. Southern Lowland Strategy Networks: Trying to Save the Status Quo**

The two-to-three centuries of the Classic Maya collapse resulted in a collapse of the Classic Period social, economic, and political systems which in turn affected the foundational concept of "divine kingship". During this period the rulers and varying elite classes of the Southern Lowlands slowly abandoned their city-states and subordinate centers. As one fell, the network of trade and alliances which they had built up over the past millennia crumbled and the system as a whole failed. The concepts of "divine kingship" and the structures of power were so ingrained in inland Maya society that the idea that these structures might have to change in order to cope with the collapse was unthinkable. "The political and ideological dependency of many Maya states and their heavy reliance on focused dynastic power was a major source of instability, causing fluctuating periods of grandeur and expanding alliances, followed by periods of decline" (Demarest 2013:38). The solidification of the power in a single, divinely-appointed individual and the great lengths that the elite classes of the Late Classic went to demarcate and separate themselves from the rest of society which, again, brought a sense of stability and infallibility during times of florescence, resulted in a system which could not easily rebound from an extended crisis (Demarest 2013:38). Evidence in the form of human remains, iconography, ceramics, and radiocarbon analysis confirm the shifting alliance structures of the Late-to-Terminal Classic transition, "when the power and reach of the Petén contracted while the northern Yucatec powers expanded" (Harrison-Buck et al. 2007:74).

This resulted in the rise of a new mercantile elite that reoccupied some old capitals and re-aligned themselves to the emerging states in the northern Yucatan and centers along the Gulf and Caribbean coasts (Andrews et al. 1988; Freidel and Sabloff 1984; Guderjan and

Garber 1995; Masson and Mock 2004; Sabloff and Rathje 1975). Along the coast of Belize, not only did these sites have the coastal trade networks to take advantage of, but they did not have the large city-state polities that the areas further inland had. Because of these two factors, their political and economic organization was significantly different from the city-states ruled by “Holy Lords” in the Classic period (Sabloff and Andrews 1986) and they lasted much longer than most other areas in Belize. Actun Sak Tuch in the Sibun, did not have any modifications, nor did any of the caves we investigated in this area. This may be related to how this area was also not experiencing the collapse in the same way as the rest of the Southern Lowlands. The sites further inland however, all experienced significant hardship and made the decision to move their cave rituals into a more public domain in order to cope.

The sites which exhibited construction outside of their entrances extend across the regions which were being affected by the events of the collapse, including diminishing access to water. Caves, as the source of clouds and rain, the entrance to the underworld, and a symbol of creation and life were essential sites of ritual activity during the events of the collapse. As supernaturally charged landscape features, these sites were used to spatially orient communities by featuring prominently place-making rituals creating legitimacy for the ruling structure (García-Zambrano 1994; Moyes 2016:3; Moyes and Prufer 2009). The increased use of caves and the placement of ollas during the Late and Terminal Classic are a testament to the clear dissatisfaction of the general populace concerning the amount of rain, and to the desperation of the elite to gain greater control over the changing climate during this period.

It is not surprising that many of these sites incorporated forms which were familiar to the Classic Maya when they reinvented the ritual program for caves and when they had to establish new centers in the hinterlands. For new forms of ritual practices to be successful they must maintain some sense of consistency with the older forms, otherwise the transition will be too jarring and the public will reject it (Kertzer 1988; Connerton 1989; Bloch 1986; Jennings 2008). Drawing on familiar forms and through the use of public ceremonies, existing hierarchies can be justified and their power can be extended to other social realms (Aldenderfer 1993:1). A slight alteration of the rituals would have been acceptable so long as the rules and behaviors governing them remained the same as those public spectacles in the ceremonial centers. Maintaining these patterns of bodily enacted and repetitive group performances is the basis for widespread but impersonal solidarity, or *communitas*, among those who share the same body of doctrine (Turner 1969, 1990; Whitehouse and Laidlaw 2007:4). In response to a crisis event, it is common to return to older forms of rituals, the implication being that nostalgia has a tendency to erase the unpleasant events from social memory. Using existing forms of architecture but opening the ritual space to a wider audience enabled the public to actively participate in a modification of these rituals.

The above discussion of the various ways in which the ritual aspects of the Late and Terminal Classic Maya attempted to maintain a sense of continuity and control during the collapse highlights how even though the specific methods employed varied from site to site, the general strategy of shifting to the exteriors of caves for the first and only time during the collapse extended from as far south as Las Cuevas in the Chiquibul Reserve to as far north as the Rio Hondo, some 125km away. Some of the more widespread strategies for dealing with events of the collapse included making main plazas increasingly restricted, constructing numerous small subordinate centers in the periphery of larger city-states in order to disperse

the elite of major centers and gain tighter control over resources, and more clearly demarcating access to resources such as caves. It is unclear how much these sites had close or direct contact with each other during this period, but they did have enough contact to initiate these changes fairly regularly across the Southern Lowlands. As sporadic as the distribution of the cave sites with modifications to their exterior appear, particularly since this sample represents the only nine out of over 70 caves sites recorded by the LCAR and BCRP projects to exhibit these exterior modifications, they nonetheless demonstrate that this strategy was shared by groups beyond those within direct contact.

The coordination of the modification of these ritual practices and the dispersal of these practices to sites which were in some cases 15km from the nearest medium-sized center required a level of organization which implies that these sites were in communication with each other. It is probable that during this period, the various levels of elite classes recognized that their status was in danger. Watching what the others were doing and trying the same tactic may indicate a level of communication and cooperation, or it may have just been the result of opportunistic observations by merchants and travelers. Alternatively, ceremonial centers and sites of pilgrimage could also have provided the social networking opportunity for the elite classes to share these ideas among themselves and take them back to their areas. Las Cuevas, as a center of high devotion characterized by a ceramic assemblage which indicates that Maya groups from all over Belize (Kosakowsky 2013; Moyes et al. 2015) came to this site, could have provided such a social venue. Regardless of the means of communication, and whether or not they were all in the same social or political network, it is clear that the sites in my sample were part of a shared strategy network based on ideological beliefs in the fundamental system in which they were all invested, and based on the communal fear of losing this system.

The sites of the Southern Lowlands to which these cave sites were connected were unable to withstand the events of the Classic Maya collapse and were eventually abandoned. The caves and their exteriors ceased being used around this time and some were either ritually terminated or sealed off with stone. These termination events were either conducted by the groups prior to leaving the area, or by those residents who remained in the area after the elite left in order to fully divest themselves from ritual sites which had failed them. In the Postclassic, power became much more distributed between lineage heads and merchants who divested themselves of the Classic Maya trappings of wealth, while the economy became far less insular (Demarest 2013:38). Cave use in Belize never regained the popularity it once had in the Classic Period (Iannone et al. 2007:156-7; Moyes and Awe 2010:151, 156-7; Moyes and Awe 2010).

The relative success or failure of these strategies is unknown since even the most cohesive society can't survive a lack of resources. What seems clear is that all levels of the elite of the Classic period had invested in a system which they could not maintain and their unwillingness to part from their symbols of status contributed to their choice to emigrate rather than restructure their society. The drastic changes to the ritual activities during the Late-to-Terminal Classic period in the Southern Lowlands, which included the increased restriction of access to sacred resources, led to such a change in the mindset of the Southern Lowland society that they never went back to those features of the landscape which had once played such a pivotal role in their lives. The crisis of the collapse led to a crisis of faith among those Maya that remained in the Southern Lowlands. Caves became taboo, either because of their association with the elite who failed them so badly, or because the caves and

the deities who were believed to live within them were believed to have abandoned them along with their “divine kings” (Moyes et al. 2009). While modern Maya continue to use the exteriors of caves for ritual purposes in the Highlands, Yucatan, and other parts of Mexico, in the area defined as the Southern Lowlands, this activity was abandoned after the collapse.

## FIGURES

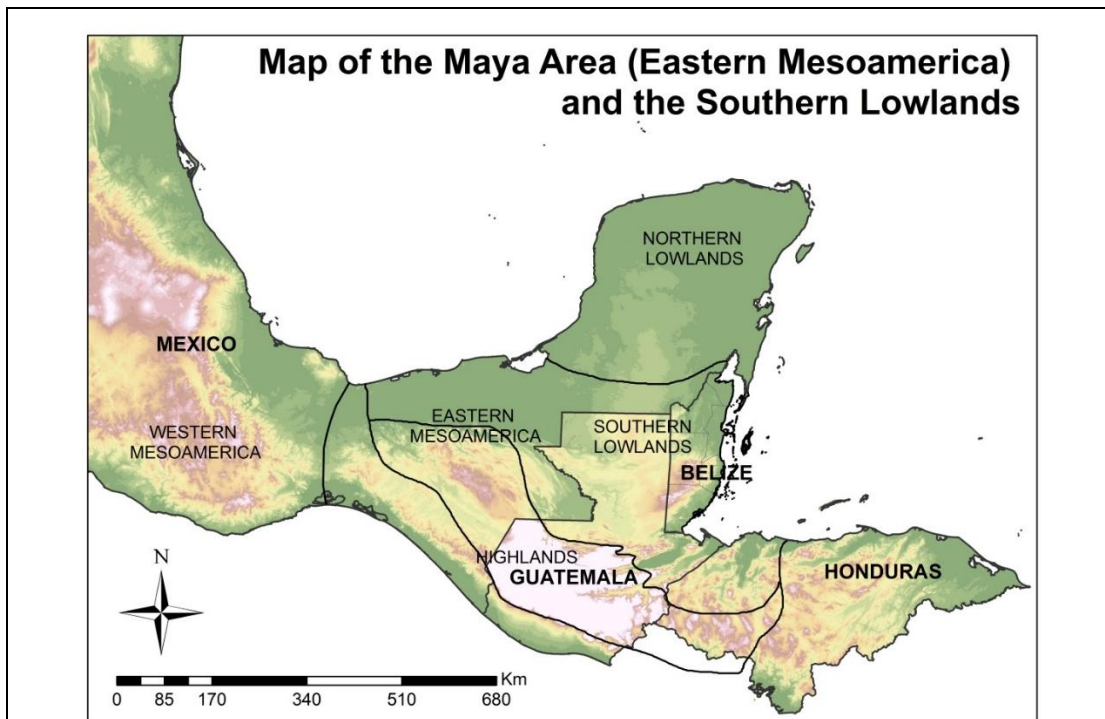


Figure 1. The Maya regions of Eastern Mesoamerica: Northern Lowlands, Southern Lowlands, and Highlands.

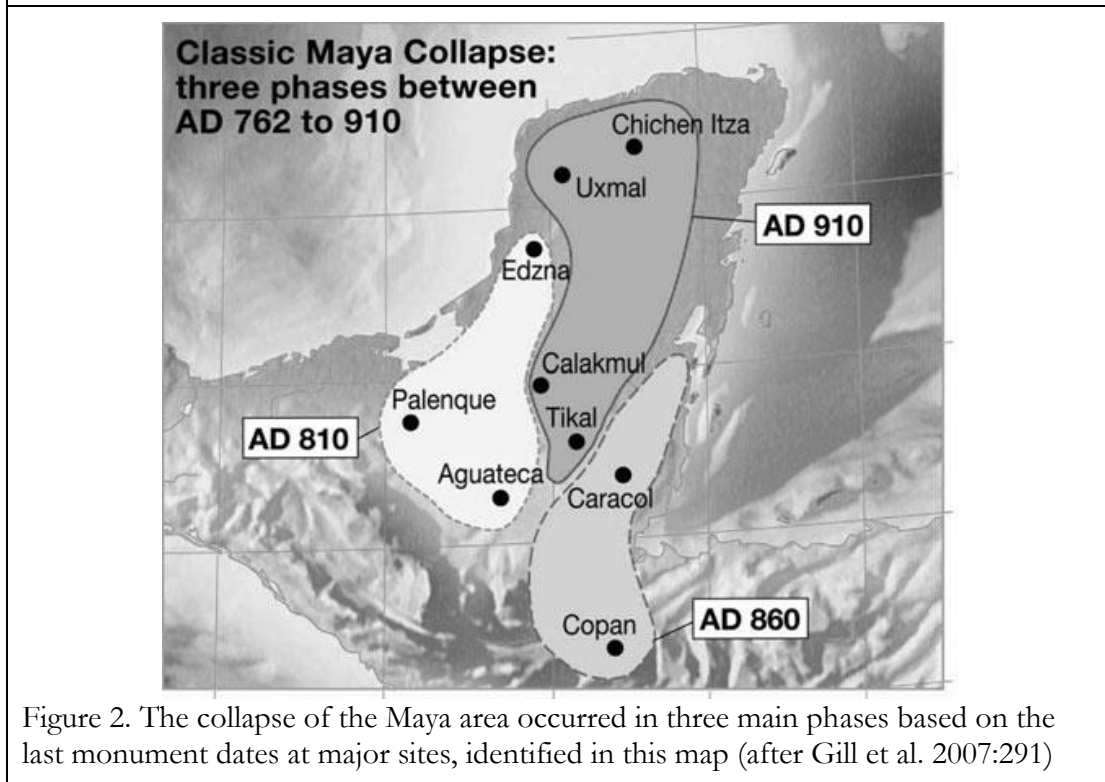


Figure 2. The collapse of the Maya area occurred in three main phases based on the last monument dates at major sites, identified in this map (after Gill et al. 2007:291)



Figure 3. Map of the cave sites in my sample and the nearest major and secondary sites.

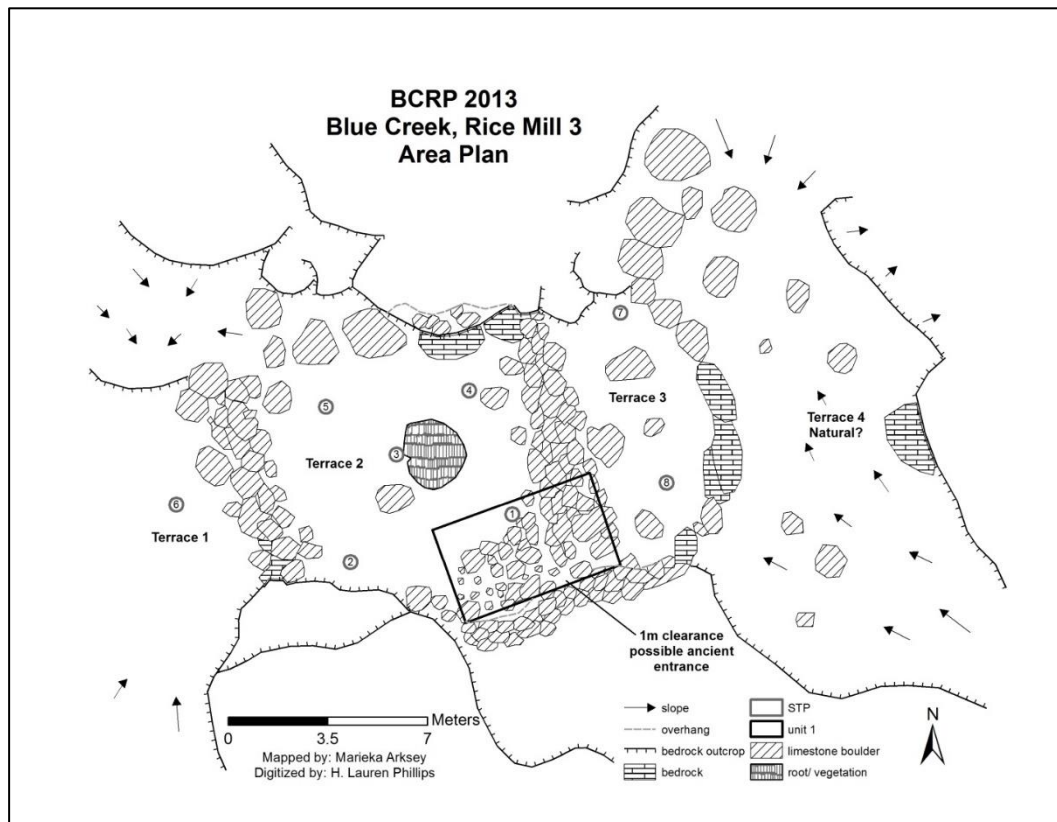


Figure 4. The terraced area surrounding the cave entrance. The cave extends south into the hills.

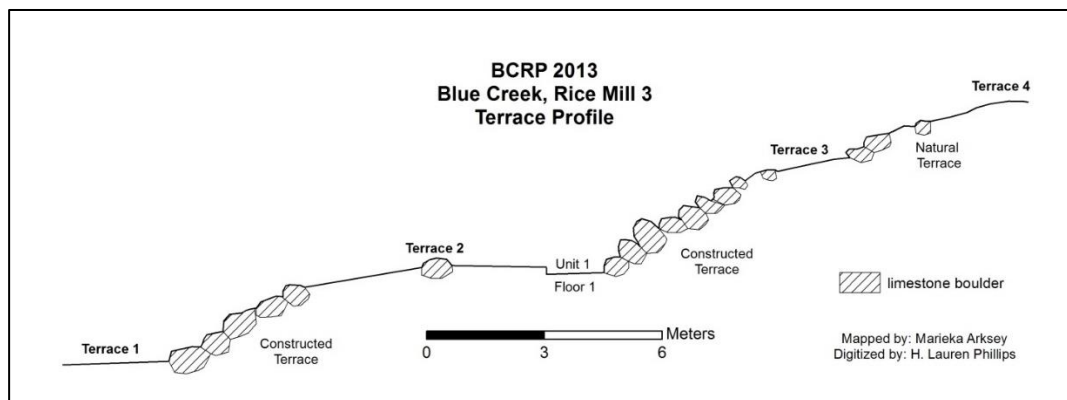


Figure 5. Profile view of the terracing outside of the cave entrance. Terrace 2 is the location of the cave entrance.



Figure 6. Showing the terrace wall to the left (East) of the cave entrance.



Figure 7. Showing the construction in front of the cave entrance with the cobble/pebble floor visible in the front.



Figure 8. The pathway lined with small cobbles and pebbles into the cave between the terrace wall and the platform.



Figure 9. The pathway made accessible by means of a rough step up from the terrace floor.

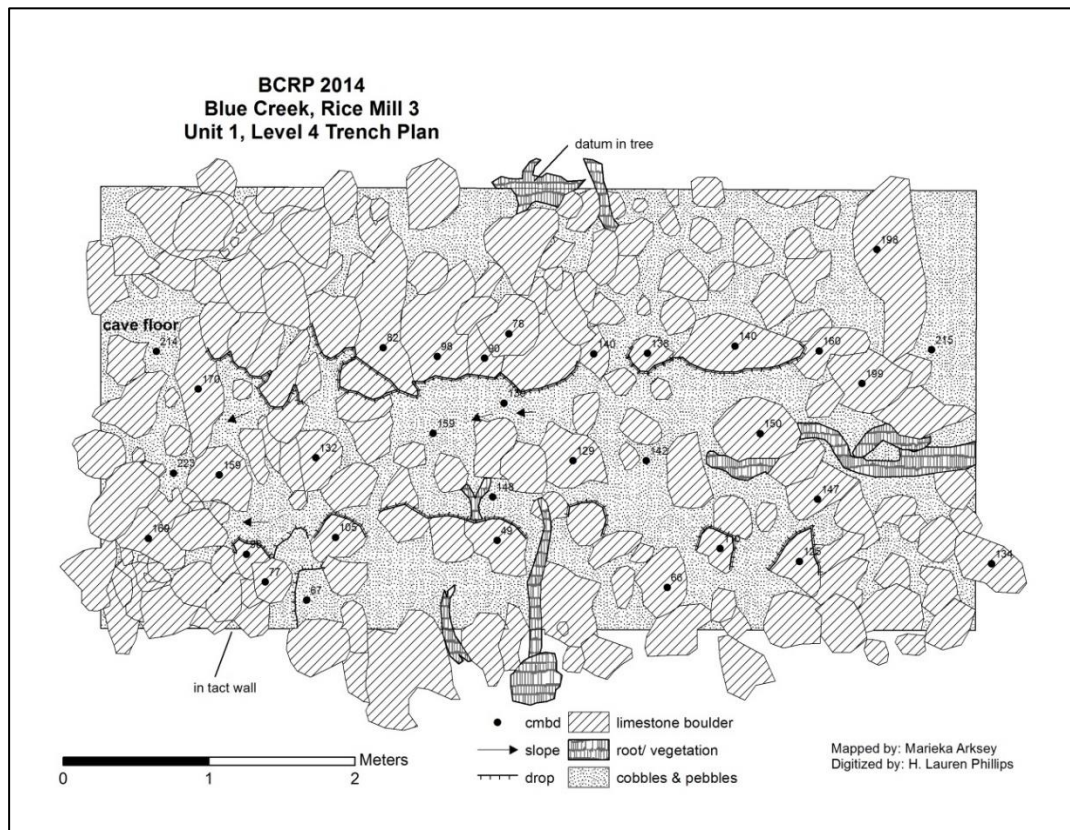


Figure 10. Plan of the 2014 excavation of the path along the terrace and platform edges into the cave.

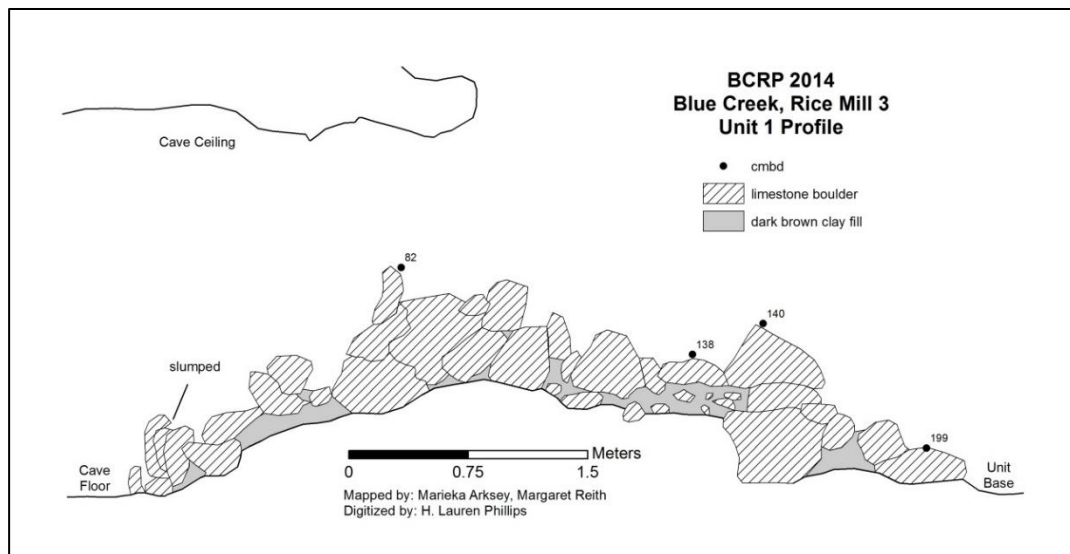


Figure 11. Profile of the 2014 excavation showing the construction of the side of the platform, the rise in the path, and the height of the cave ceiling above the construction.



Figure 12. The western entrance is midway up a hillside and appeared to be terraced.

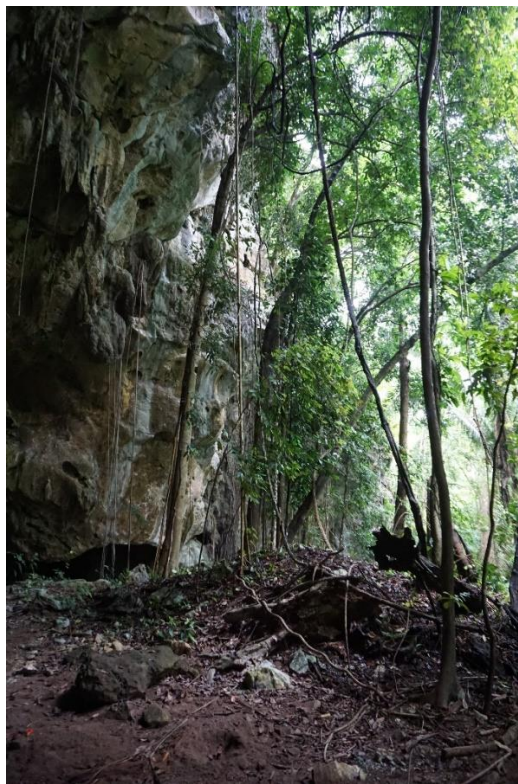


Figure 13. A possible mound near the entrance to the cave.



Figure 14. The mound appears to have collapsed from the dripline above - all stones were jumbled, mixed in sizes, and there was no cultural material recovered.

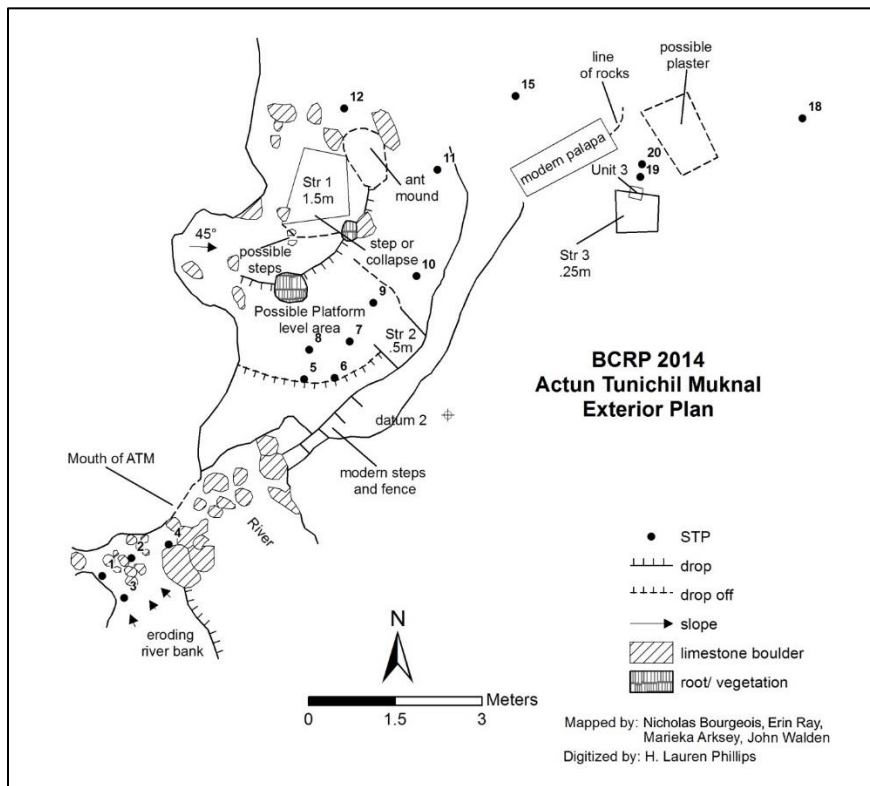


Figure 15. The area outside of the main entrance to ATM showing the locations of Structures 1-3, the shovel test pits, and the location of the modern pathway to the cave entrance which flows out into the river in the southwest of the map.

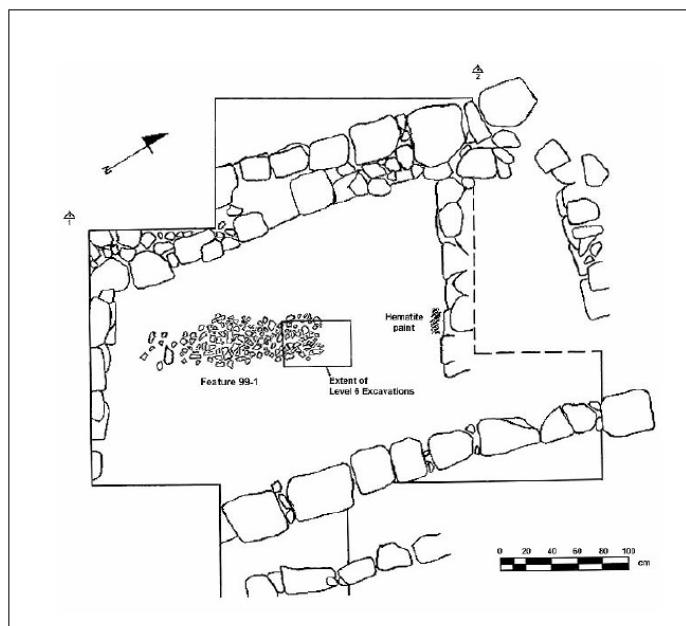


Figure 16. The extent of the 1999 excavation of ATM-M1. After Song et al. 1999.



Figure 17. The southern half of the structure uncovered to reveal a step running the length of the structure. Also visible are the leaning partition walls in this half of the structure (with no noticeable break creating a corridor), the rough boulders forming the back of the structure in relation to the cut stone of the front of the structure, and how badly this half of the structure has sunk (likely due to the number of very large cieba trees in this area) over time.



Figure 18. One of the slate pieces that was found on the platform in front of the structure.

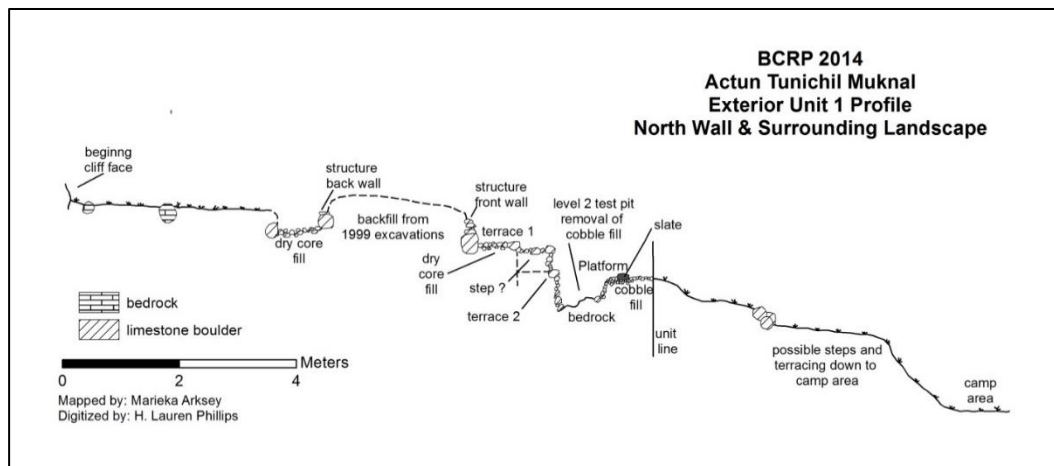


Figure 19. Profile of the structure ATM-M1 running from west to east down to the camp area level. The platform in front of the structure is shown midway where the fill was removed down to bedrock with the piece of slate and cobble fill still visible towards the unit line. The slope down to the camp area not excavated this season.



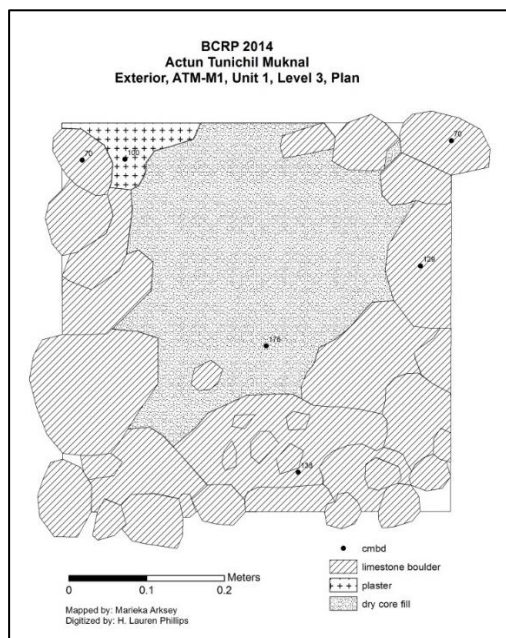


Figure 21. The fill of the structure was made of dry core fill. The plaster of one of the floor was found to run under one of the walls of the partition, indicating its construction after the formal floor was laid.

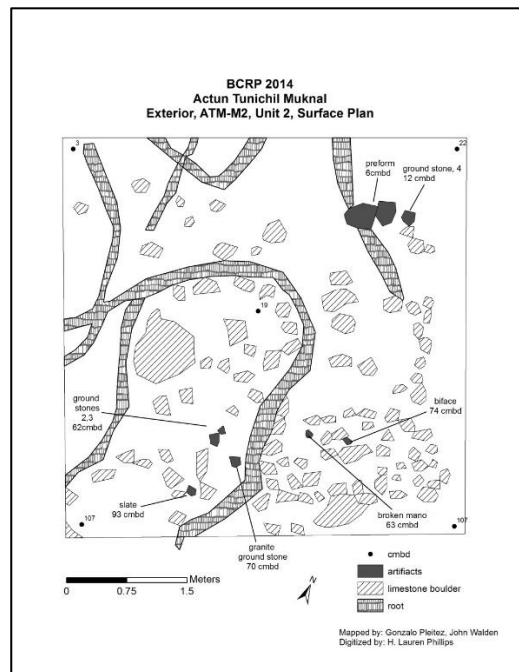


Figure 22. Plan of the surface of structure ATM-M2 before excavation began. Numerous lithics and groundstone were visible on the surface, many of which were pointed out to us by tour guides who show them to their groups as they enter the cave.

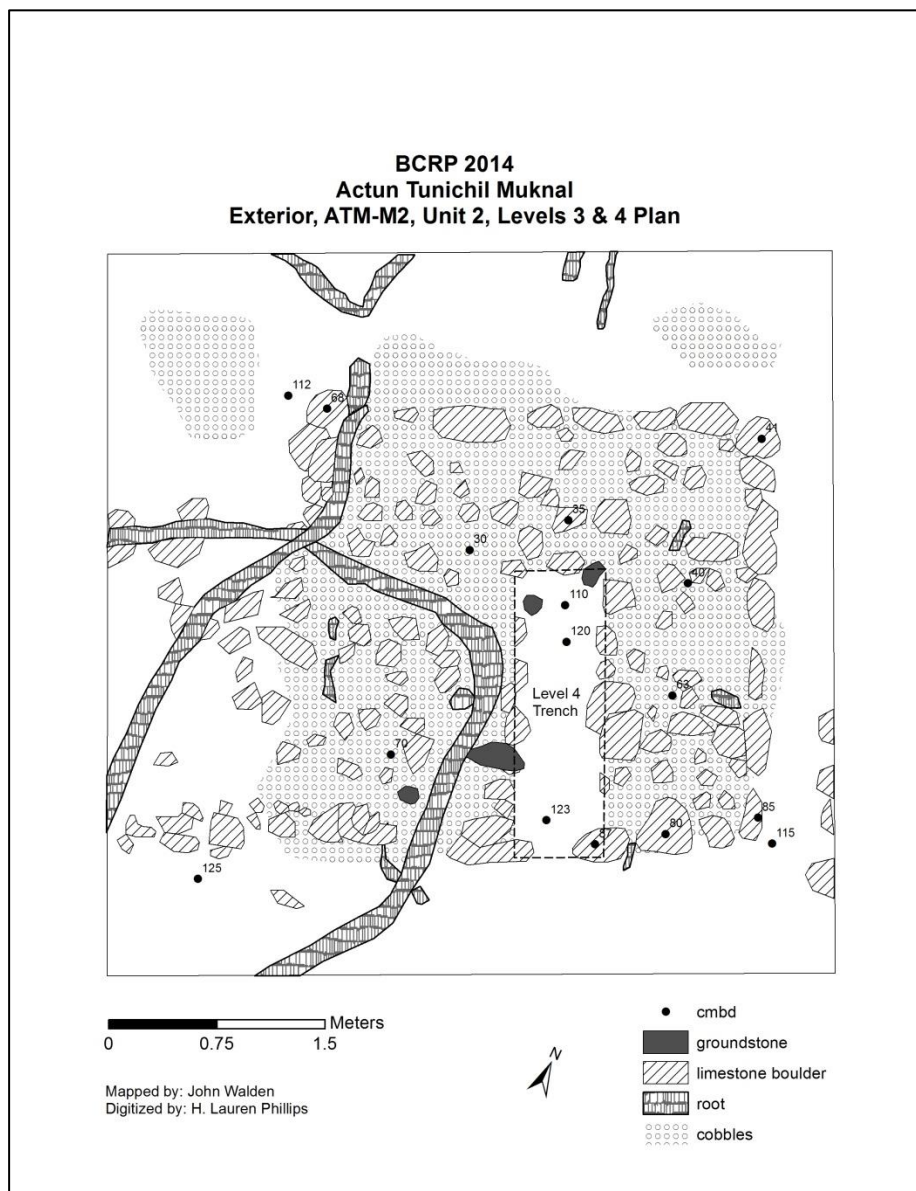


Figure 23. ATM-M2 was found to be bounded by rough boulders and filled with cobbles and groundstone. A trench was dug into the center of it to confirm that this construction technique was used throughout. The stones to the west of the structure were hypothesized to be a platform extending off of the structure but the amount of bioturbation in this area makes this difficult to confirm.



Figure 24. Structure ATM-M2 with the preform that was found on top of it.

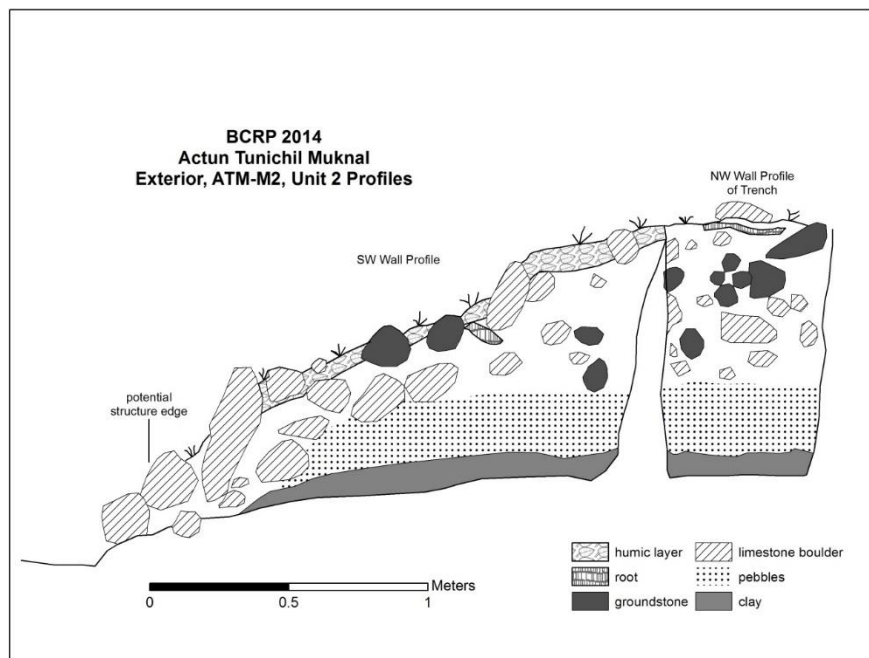


Figure 25. Profile of the trench that was dug into the center of ATM-M2, confirming that the structure was built, or placed, in one phase directly on top of the clay and pebbles of the floodplain.



Figure 26. The trench that was dug into ATM-M2. Note the construction directly on top of the clay, and the construction utilizing a very large proportion of groundstone visible in the profile.



Figure 27. The wall of STM-M3 with the small cobble and pebble fill of the interior of the structure.

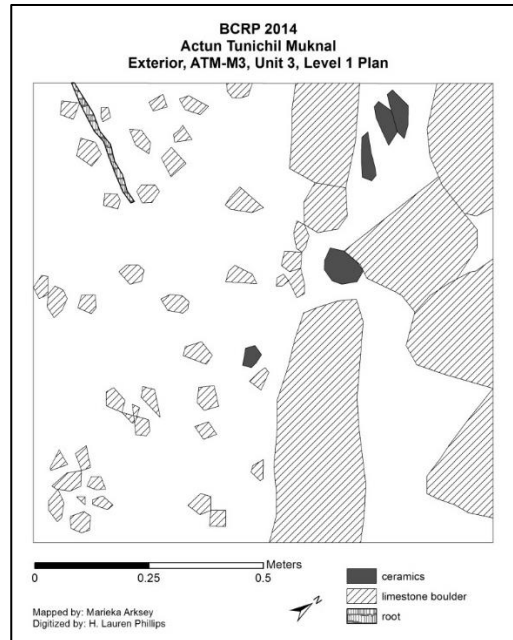


Figure 28. Small pebble and cobbles were found a few centimeters below the surface on the interior of the structure.

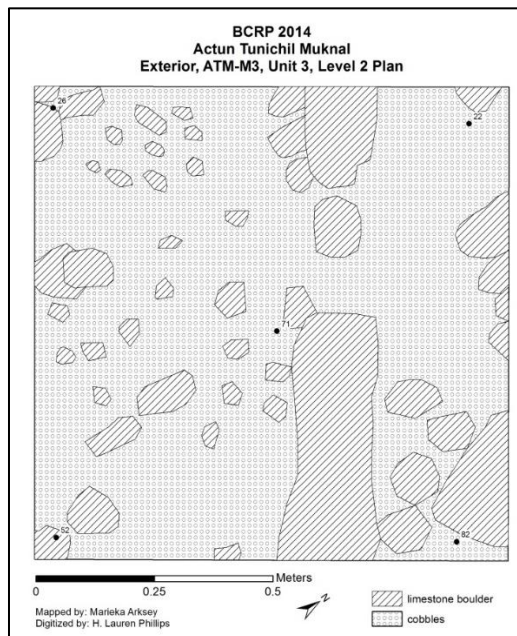


Figure 29. The same sized pebbles that were found on the interior of the structure were also found at a level 30cm below the structure facing north towards the camp.

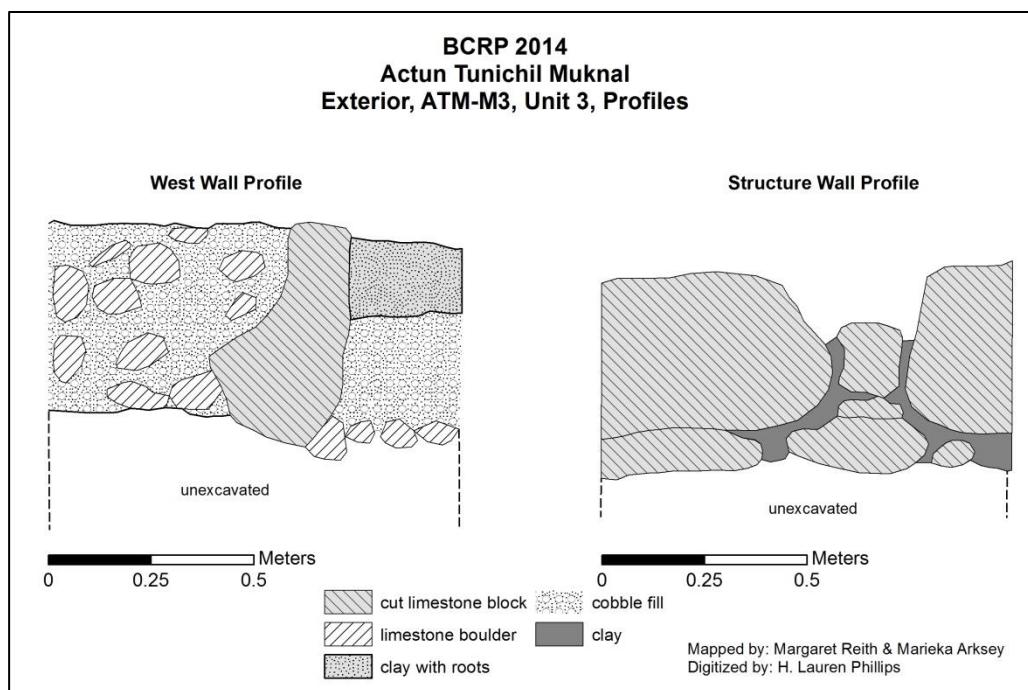


Figure 30. Profile of the structure showing (on the left) the difference in elevation of the structure fill and the pebble/cobble fill in front of the structure, as well as (on the right) the construction of the structure's wall being made of at least two courses

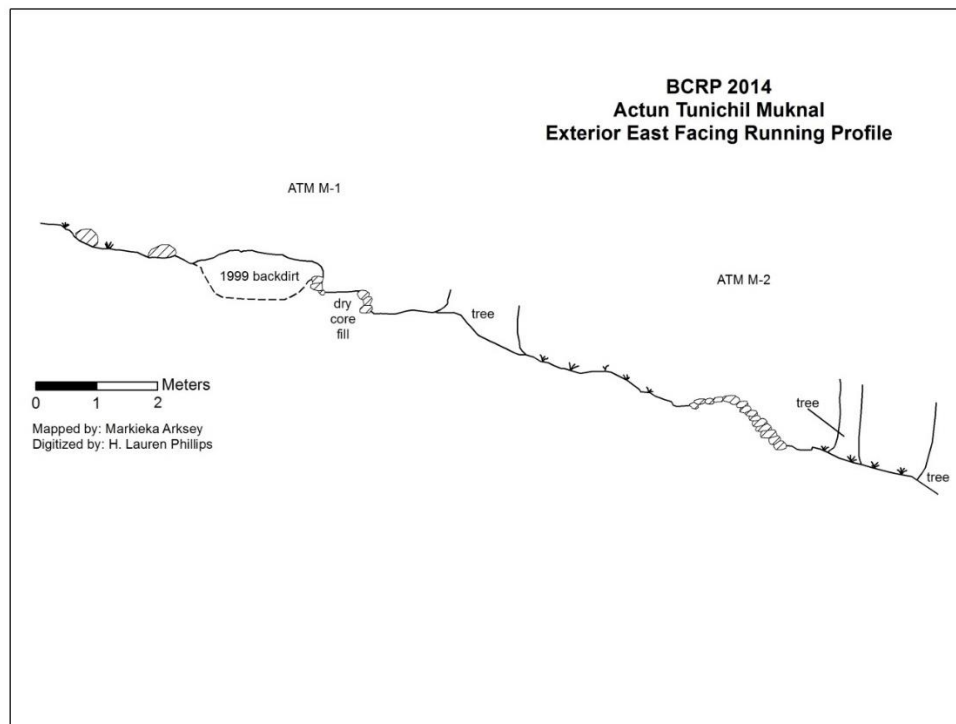
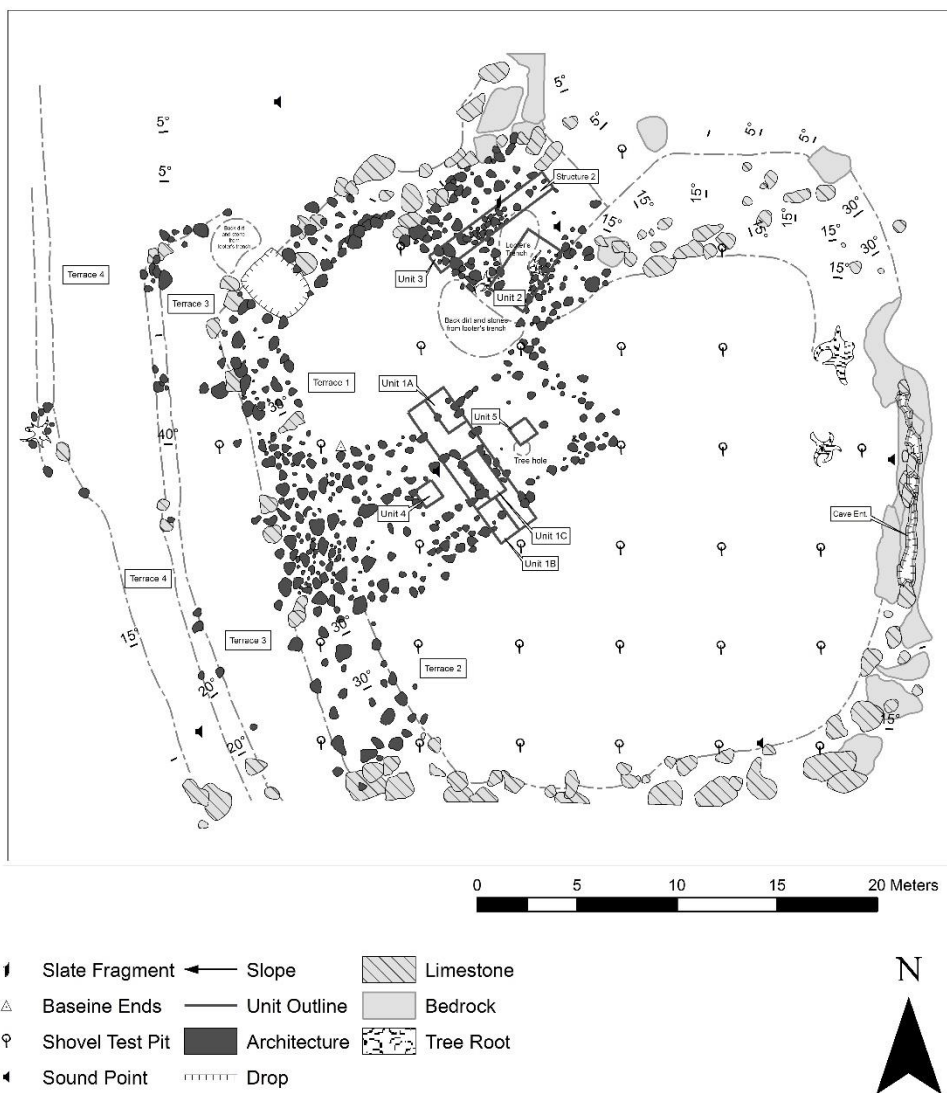


Figure 31. Running profile of the slope on which ATM-M1 is located down and across ATM-M2. The step seen in the profile of ATM-M1 is the southern side platform. No other steps or modifications were found in between these two structures that would indicate any.



Figure 32. The entrance to Nohoch Ka' Actun is located in a small cliff face and is not visible from the large terrace which has been constructed outside of it.

## BCRP 2016 Nohoch Ka' Exterior Area



Drawn by: Marieka Arksey  
Digitized by: Estrella Garcia

Figure 33. The exterior of Nohoch Ka' Actun is heavily modified with terracing, structures, and division of space.



Figure 34. Structure 1 (in the left foreground) is relatively short in comparison with Structure 2 (in the right background).



Figure 35. Level 1 revealed the edges of the two mounds on either side of a raised channel, the north and south ends of which are set back from the edges of the mounds.



Figure 36. The second level cleared the collapse out of the channel and defined the ends.

BCRP 2016  
 NohochKa' Cave Exterior  
 Structure 1  
 Unit 1 Level 2

- CM Below Unit Datum
- ▨ Clay
- ▨ Limestone
- ▨ Granite Fragment
- ▨ Pebbles, Cobbles and Sherds
- Unit Reduction



Drawn by: Marieka Arksey  
 Digitized by: Tamara Spann

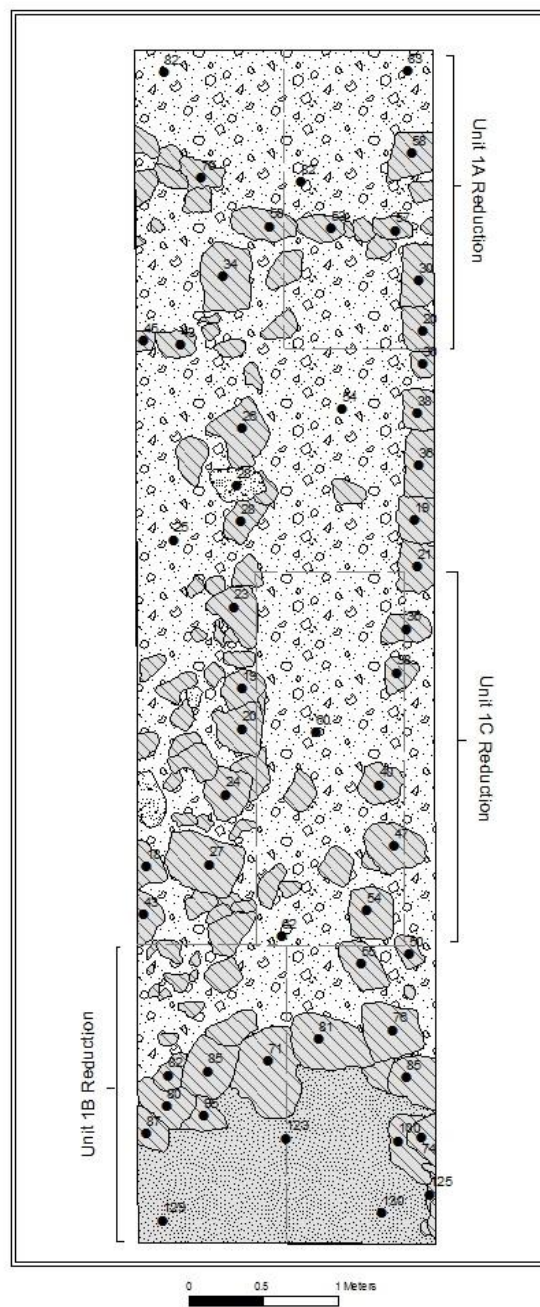


Figure 37. Plan view of the raised channel in between the west and east mounds of Structure 1.



Figure 38. Unit 1A, Level 4 (left) revealed a degraded plaster floor which Level 5 (right) confirmed ran underneath the channel construction but abutted the base eastern mound wall, confirming that the two mounds were built separately at first and later joined by the channel.



Figure 39. Level 6 revealed another plastered floor which ran under the mound walls.

BCRP 2016  
Nohoch Ka' Cave Exterior  
Structure 1  
Unit 1A Level 7

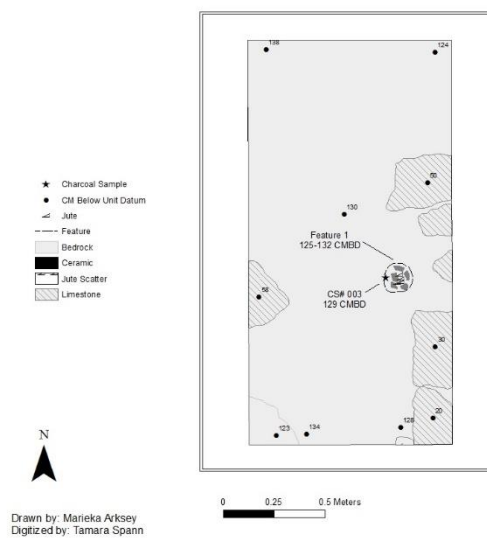


Figure 40. The base of Unit 1A off the northern end of Structure 1, showing the feature deposit of jute and ceramics.



Figure 41. Feature 1A-1: a cluster of jute in a broken ceramic vessel in the cobble fill of the terrace just above bedrock. The cluster of jute on top of the earlier floor is visible in the background (circled).

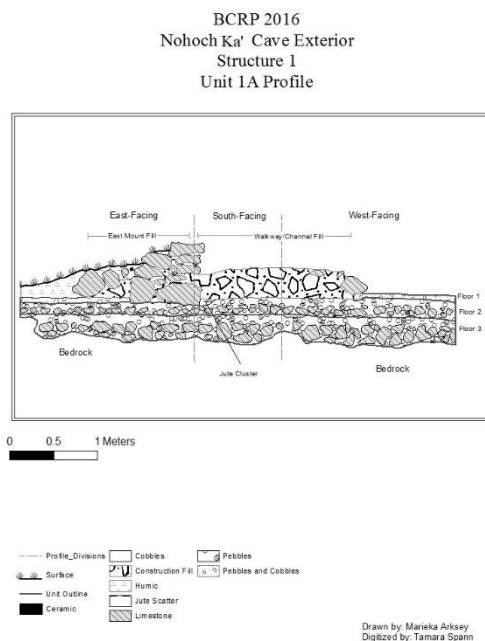


Figure 42. Profile of the eastern, southern, and western walls of Unit 1A off the northern end of the channel showing the different floor constructions running under the mound and channel constructions.



Figure 43. Level 2 had revealed some burnt clay, jumbled ceramics, and charcoal off the southern end of the unit. This matrix was removed as Level 3 in Unit 1A and also identified in the channel itself and collected as Level 3 in Unit 1C.



Figure 44. Removal of the fire-hardened matrix showed the channel and mound construction directly on top of bedrock on the southern edge of the channel and mound construction.

BCRP 2016  
Nohoch Ka' Cave Exterior  
Structure 1  
Unit 1B Level 3

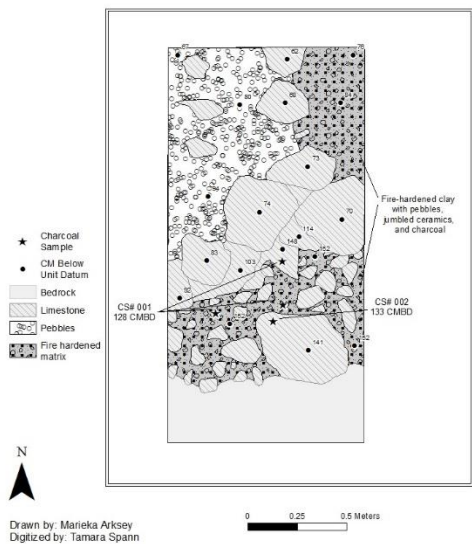


Figure 45. Plan of the southeastern corner of the west mound along with the edge of the raised channel and the fire-hardened clay, ceramics, and charcoal that were found to have been placed over this end of the channel and structure.



Figure 46. Level 4 removed the fill from the southeastern corner of the western mound and revealed that the last construction phase of the mound wall on this side was built as an extension off of an earlier mound wall (visible behind the wall in the foreground).



Figure 47. The earlier wall was confirmed to be the corner of an earlier western mound construction in Level 5 when the corner of the structure became apparent – lining up with both a visible step on the southern side of the mound and with the stones forming the wall on this side of the channel.



Figure 48. The fire-hardened matrix (visible in the back right of the unit) in this area of the channel was removed as part of Level 5 to define the corner of the structure and the later channel wall, which incorporated a half of a rounded piece of granite.

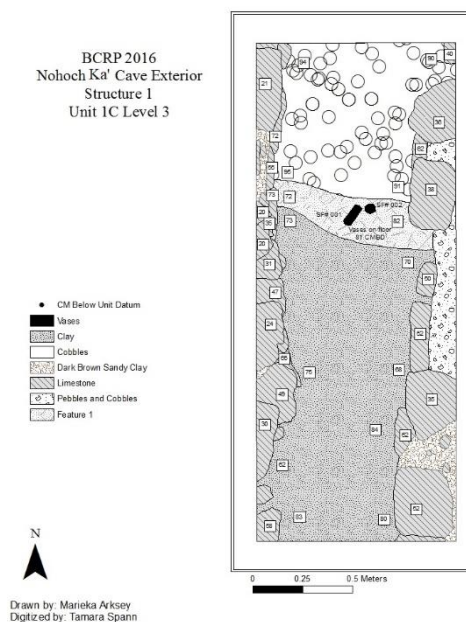
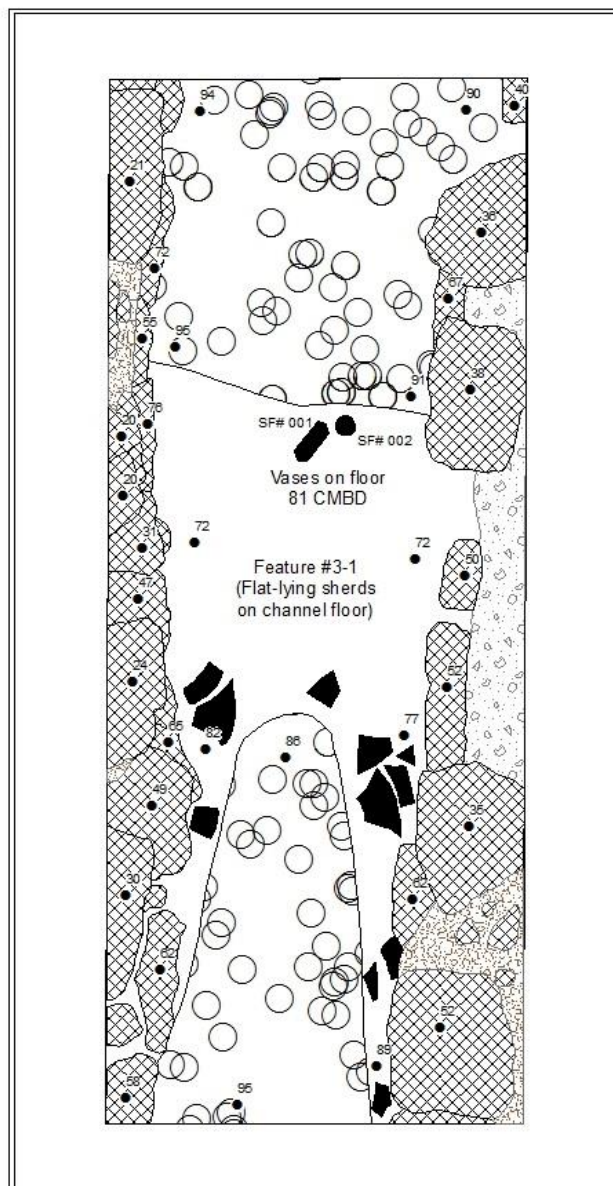


Figure 49. Middle of the channel showing the layer of fire-hardened clay, ceramics, and charcoal overlying an earlier deposit (Feature 1) of flat lying sherds and vases.

BCRP 2016  
 Nochoch Ka' Cave Exterior  
 Structure 1  
 Unit 1C Level 4

- CM Below Unit Datum
- Ceramic
- Cobbles
- ▨ Dark Brown Sandy Clay
- ▧ Pebbles and Cobbles



0      0.25      0.5 Meters

Drawn by: Marieka Arksey  
 Digitized by: Tamara Spann

Figure 50. Plan of the feature identified by flat lying sherds mounded in the center of the channel and abutting the channel walls on the southern half of the channel.



Figure 51. Mid-removal of the flat-lying sherds showing the sherds lying one directly on top of the other (facing south).



Figure 52. Feature 1C-1 shown abutting the eastern channel wall and sloping down to the north.



Figure 53. Two vases were found underneath the flat lying sherds, apparently deposited whole and either broken upon deposit or over time due to the compression of the overlying material.



Figure 54. Once the ceramic deposits were removed, the channel was shown to be a depth of ~70cm and filled in with cobbles.



Figure 55. Level 2 of Unit 4 revealed a poorly preserved floor underneath the cobble fill of the mound.



Figure 56. Level 3 revealed a well preserved plaster floor which had a section cut into it with ceramic vessel fragments placed in it (visible in the top right of the unit).

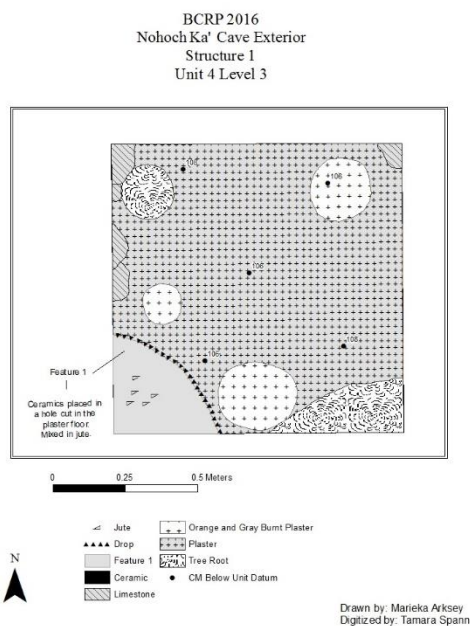


Figure 57. Level 3 of Unit 4 revealed an intact plaster floor about 4cm thick with areas on it which were discolored (orange and grey) indicating possible areas of burning. The Southwest corner had a pit cut into it with ceramics placed in it.



Figure 58. Ceramics placed into a cut in the plaster floor

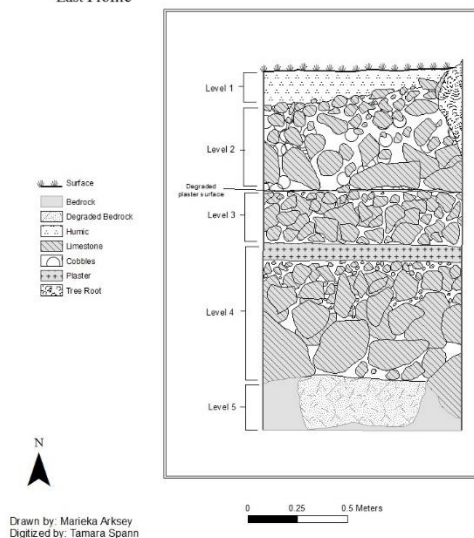


Figure 59. Level 4 went through the plaster floor down to bedrock and showed that the floor was ~4cm thick.



Figure 61. Level 1 of Unit 5 in the middle of the eastern mound uncovered the construction fill. View facing the cave entrance.

BCRP 2016  
Nohoch Ka' Cave Exterior  
Structure 1  
Unit 4  
East Profile



Drawn by: Marielka Arkosey  
Digitized by: Tamara Spann

Figure 60. Profile of the western mound showing the construction of the terrace on top of bedrock followed by the mound on top of it.



Figure 62. Level 2 removed the construction fill down to the first degraded plaster floor. The western side of the unit appears to have a small stone wall but these stones are badly displaced and it is difficult to confirm.



Figure 63. Level 3 removed the degraded floor down to a level of better preserved plaster floor which was at the same elevation as the plaster floor of the western mound.

BCRP 2016  
Nohoeh Ka' Cave Exterior  
Structure 1  
Unit 5 Level 2

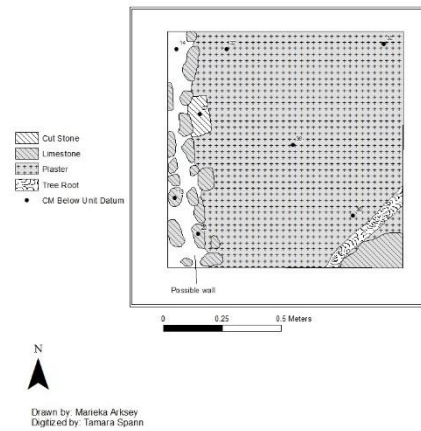
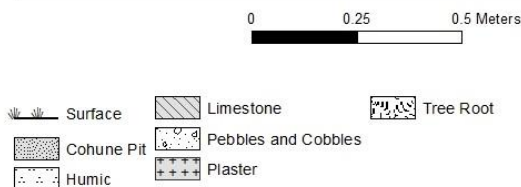
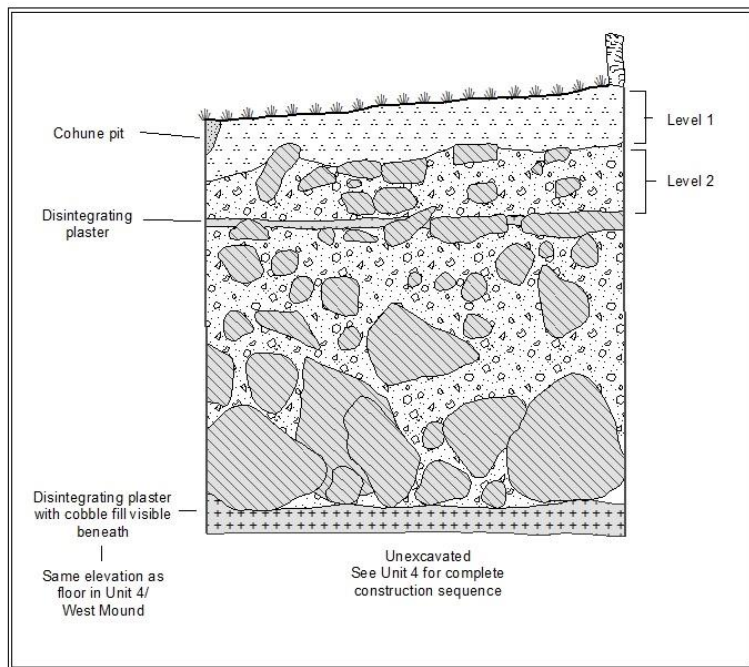


Figure 64. Level 2 of the east mound showing the plaster floor and small partition wall on the western side of this unit.

BCRP 2016  
 Nohoch Ka' Cave Exterior  
 Structure 1  
 Unit 5  
 West Profile



Drawn by: Marieka Arksey  
 Digitized by: Tamara Spann

Figure 65. Profile of the east mound which was terminated upon revealing a thicker plaster floor which correlates with the plaster floor in Unit 4.



Figure 66. Unit 2 was placed in a visible looters trench in order to provide quick access to assess the construction technique of this structure.



Figure 67. Level 1 of the looter's trench cleaned out the distinguishable debris from the looting activities down to a layer of cobbles and pebbles.



Figure 68. The front of this structure has visibly collapse outwards at the southwest corner. The northern edge of the unit shows better preservation with vertically stacked stones still visible in profile.

BCRP2016  
Nohoch Ka' Cave Exterior  
Structure 2  
Unit 2 Level 2

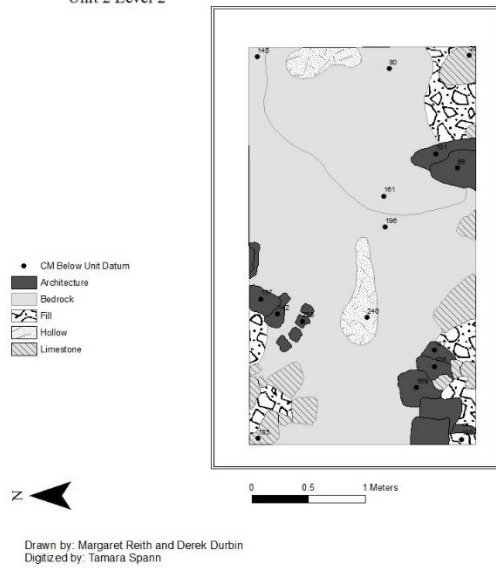


Figure 69. Unit 2 cleaned the looters trench and showed that the structure was built around a massive bedrock outcrop.

Figure 70. The structure was clearly built in one phase directly on top of bedrock.

BCRP2016  
Nohoch Ka' Cave Exterior  
Structure 2  
Unit 2  
North Wall Profile

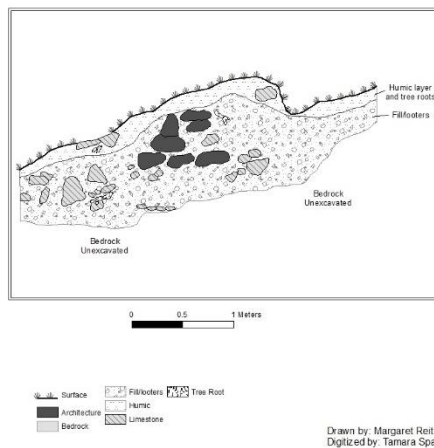


Figure 71. The profile of Unit 2 facing north showed several alignments of limestone blocks and cut stones indicating a generally stepped and terraced shape to the western side of the structure.



Figure 72. Unit 3 was placed adjacent to Unit 2 on Structure 2 to determine the form of the structure.

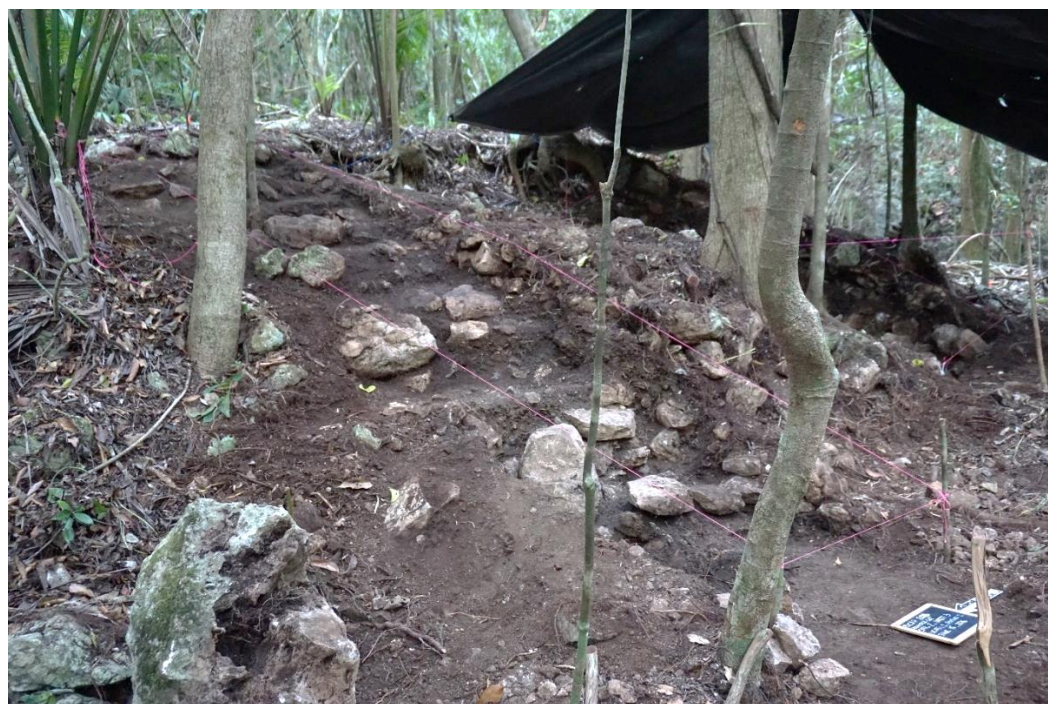


Figure 73. Level 1 removed the overlying humic and collapse down to where some facing and cut stones were visible, the form indicating a series of steps down this side of the structure.



Figure 74. The location of steps were confirmed by large facing stones which did not appear to have moved and the deposit of a cluster of ceramics on top of and up against other stones indicating the corner where a step met a riser.

BCRP 2016  
Nohoch Ka' Cave Exterior  
Structure 2  
Unit 3 Level 1



Drawn by: Marielka Arksey  
Digitized by: Tamara Spann

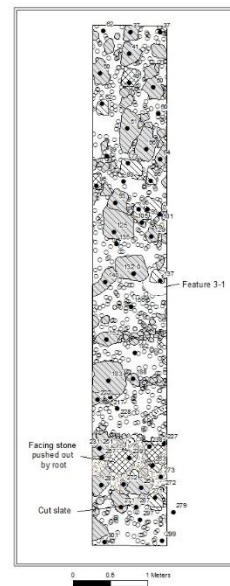
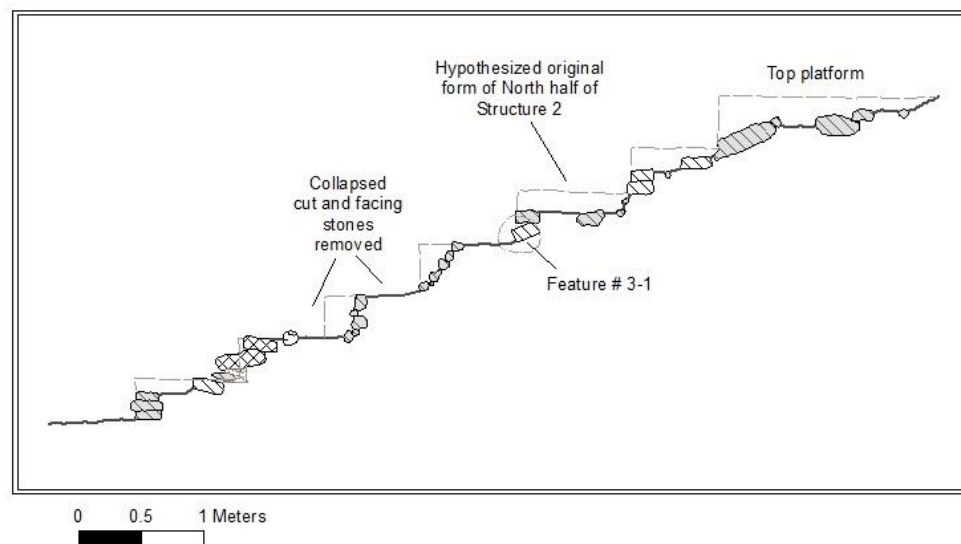


Figure 75. Plan of Unit 3 on the northern half of Structure 2. Several steps were decipherable based on the location of cut and facing stones, confirming that this western side of the structure was the front.

BCRP 2016  
 NohochKa' Cave Exterior  
 Structure 2  
 Unit 3 Profile



Drawn by: Marieka Arksey  
 Digitized by: Tamara Spann

Figure 76. Profile of Unit 3 along with hypothesized original placement of the steps on this side of the structure.

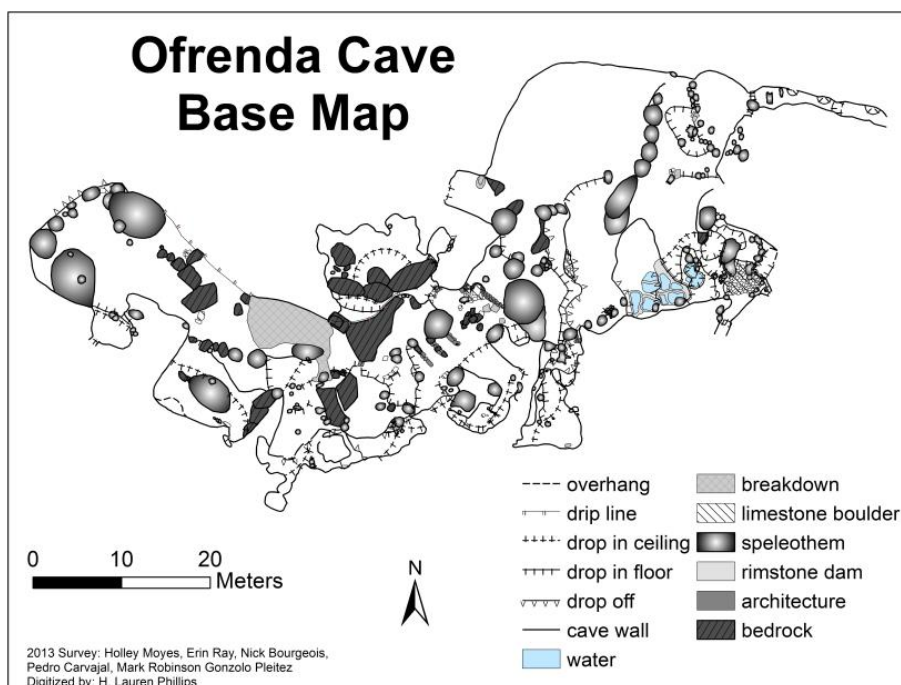


Figure 77. Map of Ofrenda Cave showing several entrances along the top left of the map where the title is located. The excavations outside of the entrances took place in this area.

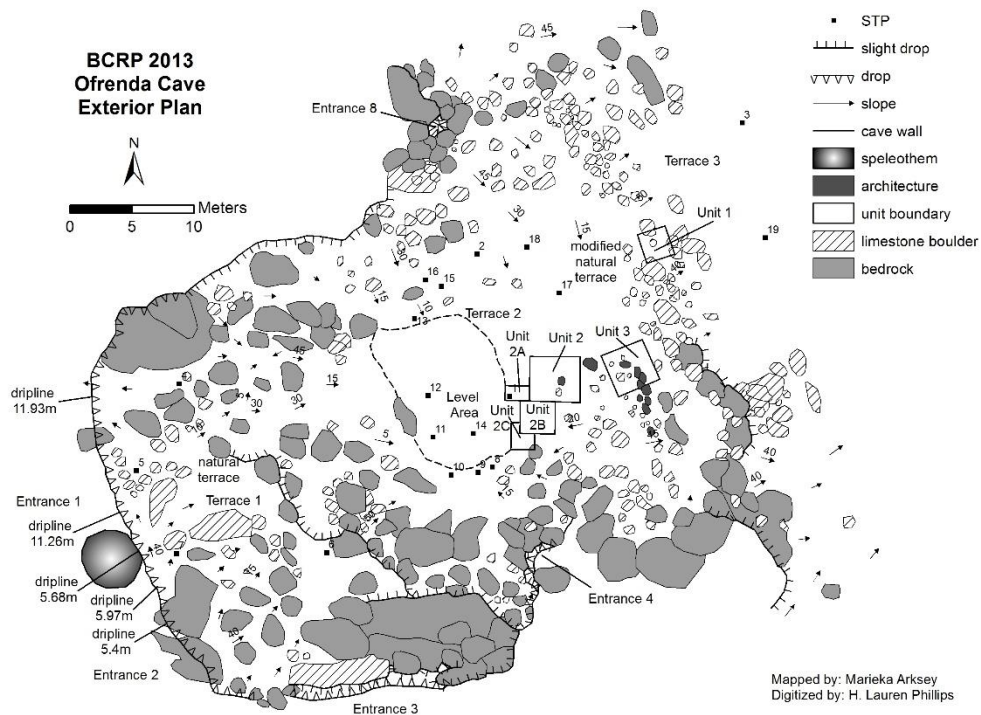


Figure 78. Exterior of Ofrenda cave showing the U-shape created by the surrounding cliffs and the bounding of this U by a terrace running NW-SE across the eastern side of the area.



Figure 79. View up from the modern pathway from Terrace 3 up to Terrace 2, facing the direction of the cave. The tarp indicates the location of Unit 2. Exposed bedrock on the terrace wall is Unit 1.



Figure 80. Unit 1 excavations on the terrace wall east of the cave entrances showing the primarily natural boulders with large cobbles placed in between.



Figure 81. Excavation of Level 1 revealed the tops of boulders in a curved alignment with cobbles mounded on top.



Figure 82. The pebble/cobble mixture in front of the boulders and running over the slope of the mound.



Figure 83. The pebble/cobble mixture was found to extend around the natural ridge along the base of the southern hillslope up to the bedrock outcrops there.



Figure 84. Boulders in a curved alignment were found behind the pebble/cobble mixture in this area of the unit. They were all around the same size and were placed on bedrock at the same level.



Figure 85. Trench excavation revealing the boulder construction behind the pebbles and steps.



Figure 86. The limestone/rough chert biface that was found directly behind the bounding boulders of the mound.



Figure 87. Unit 3 on the northeastern edge of the mound, facing the southern hillslope. The boulders on the edge of this side of the mound formed an almost 90 degree angle with straight edges.



Figure 88. The boulders along the north of the mound were resting on bedrock and lined up with a boulder midway across the mound (seen in weathered greenish grey just outside of the unit) and the boulders in Unit 2 (under the tarp).



Figure 89. The caves and major surface sites in my sample on the Vaca Plateau

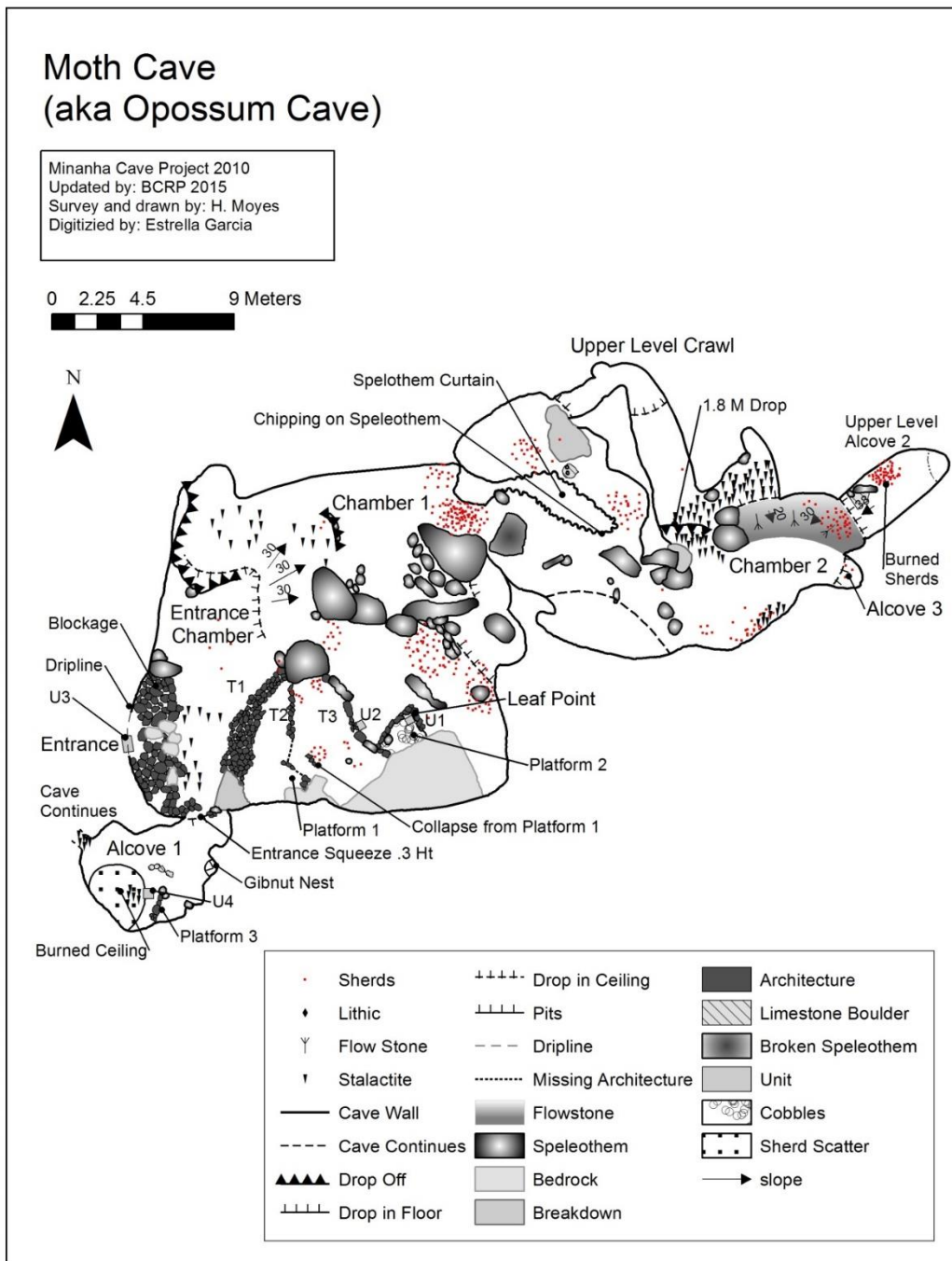


Figure 90. Map of the interior of Moth Cave, revised in 2015.



Figure 91. Due to the angle of the entrance, Moth Cave remains unseen until visitors are on top of the constructed terrace.



Figure 92. The area outside of the cave entrance has a raised quadrangular mound with three structures on the North, West, and South sides.



Figure 93. The view to the cave entrance is unobstructed from the front of Structure 1.



Figure 94. The unit was aligned with visible architecture.



Figure 95. The purpose of the size of the unit was to uncover the collapse off the eastern side of the mound.



Figure 96. The structure has three tiers to it, ending on top with a small platform.



Figure 97. The mound is shored up on the eastern side with a series of boulders, filled in with cobbles and other dry fill material.



Figure 98. Some of the artifacts from this level included several granite fragments, lithics, and a stalactite fragment.

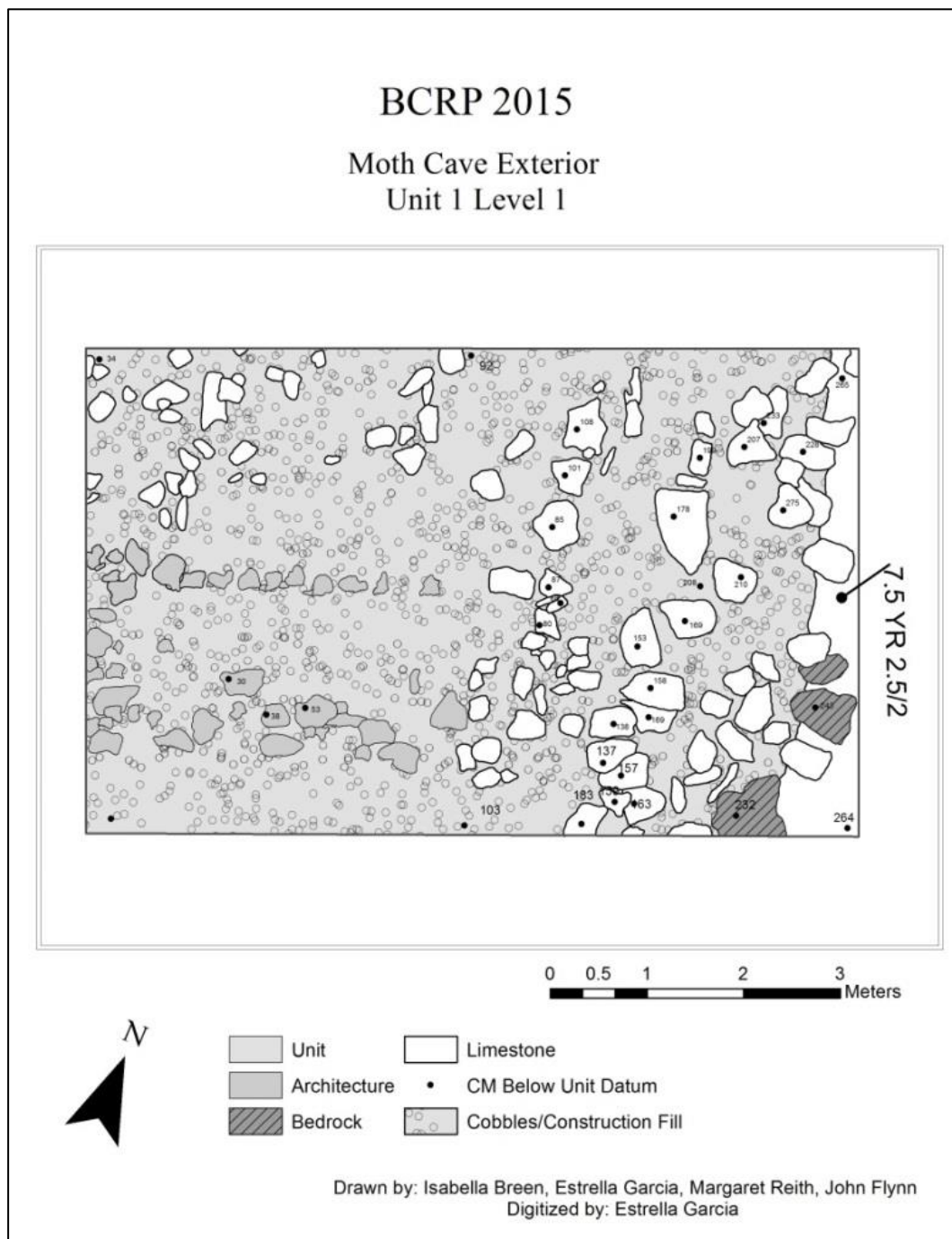


Figure 99. Map of Unit 1 showing the tiered construction of both the mound and the structure.



Figure 100. The tumbled boulders from the first step were removed to reveal stacked stones indicating the true front of the structure.

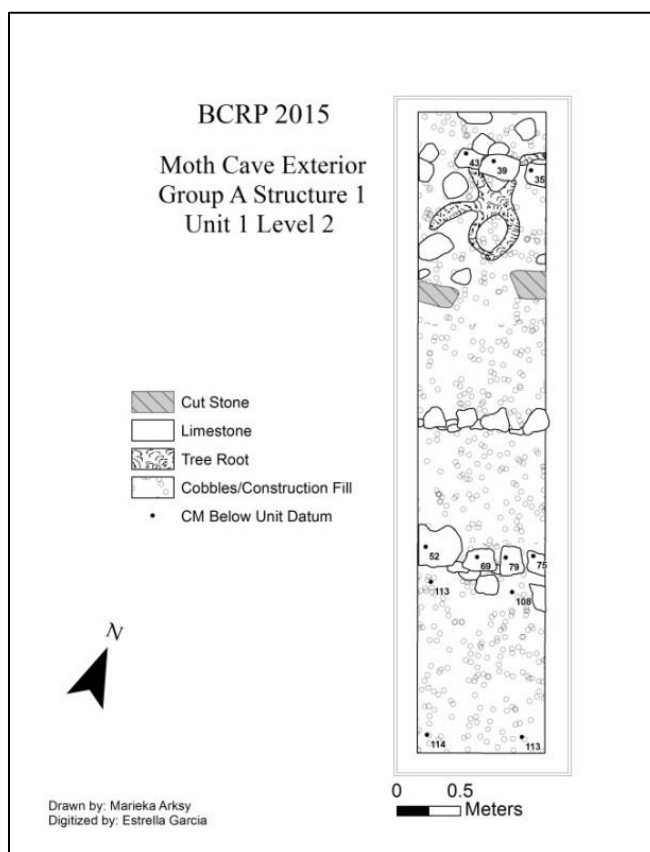


Figure 101. Plan of the unit reduction indicating the first step.



Figure 102. The front step of the structure was left intact. Excavations took the fill behind this step down to bedrock and uncovered a plastered wall/surface in the back half of the unit.



Figure 103. Plaster was still evident on top of this substructure and on the step down to the north.

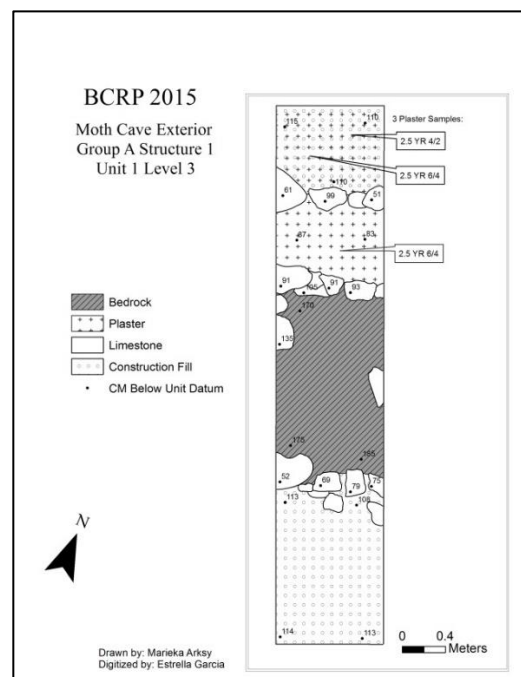


Figure 104. Plan of the close of Level 1 showing the two underlying plastered steps descending to the north.



Figure 105. The second plastered step was removed down to bedrock to collect construction fill that might help date this phase of construction.

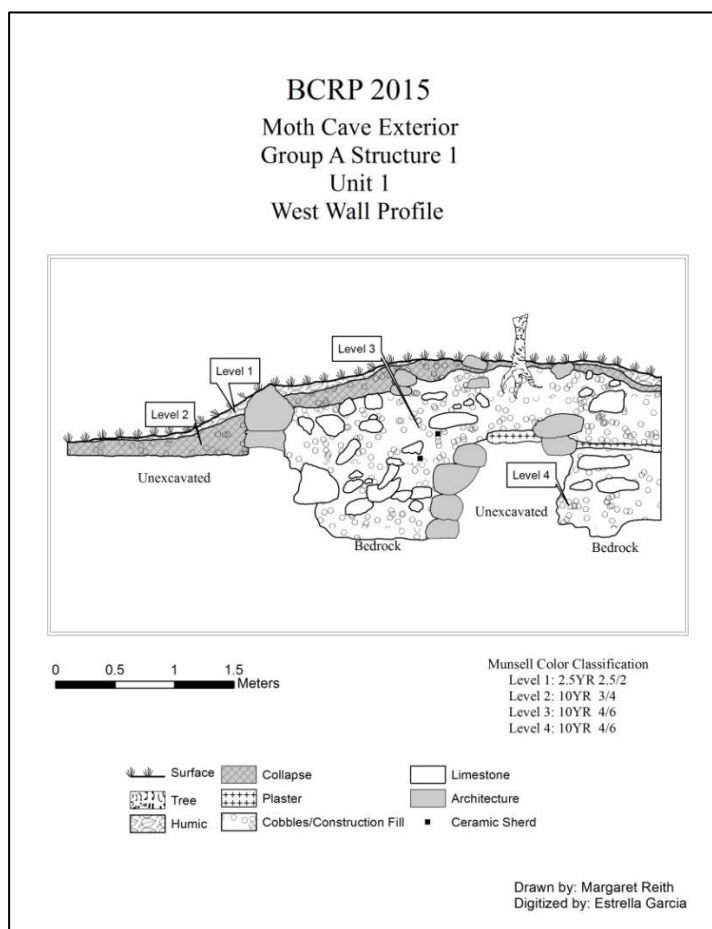


Figure 106. Profile of Structure 1 showing the two phases of construction.



Figure 107. Structure 1 had a three-tiered construction overlying an earlier smaller structure which faced the opposite direction.



Figure 108. Unit 2 was placed at the corner of the terrace just before it turns north as this section was likely to have been the most heavily modified.

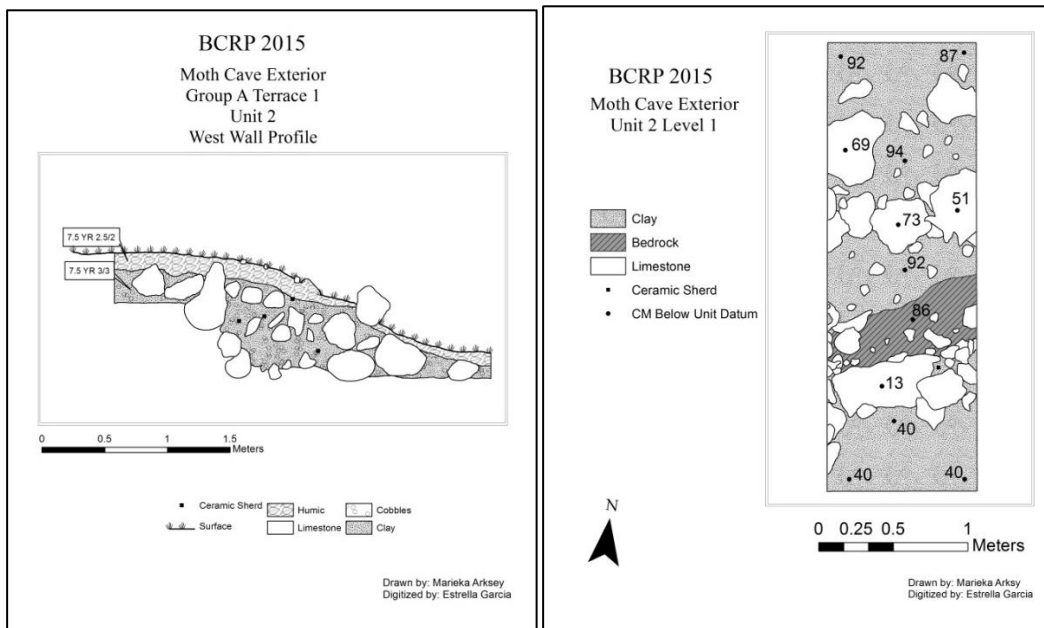


Figure 109. The terrace was constructed with two retaining walls made of large cobbles and small boulders.



Figure 110. The terrace joins up to the cave entrance and creates a level space in front of it.



Figure 111. Structure 3 faces away from the cave entrance. Unit 3 is oriented in line with the visible architecture running from the top of the structure to the patio floor.



Figure 112. Structure 3 is similar in form to Structure 1 with three tiers ending in a narrow platform at the top.

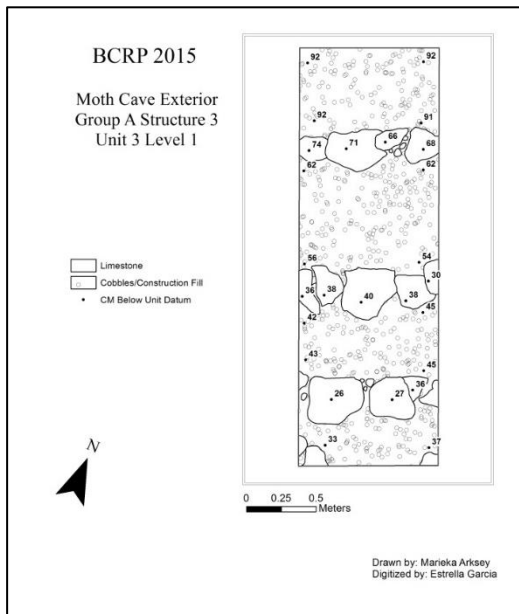


Figure 113. Plan of the three tiers of Structure 3, the top tier being better preserved than the top tier of Structure 1.

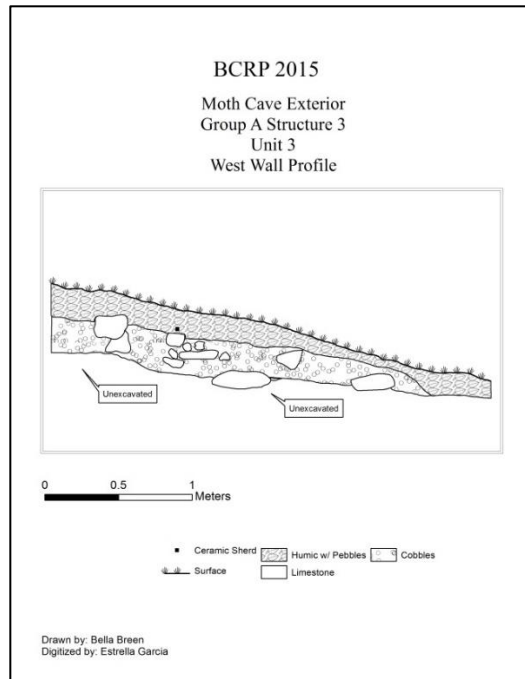
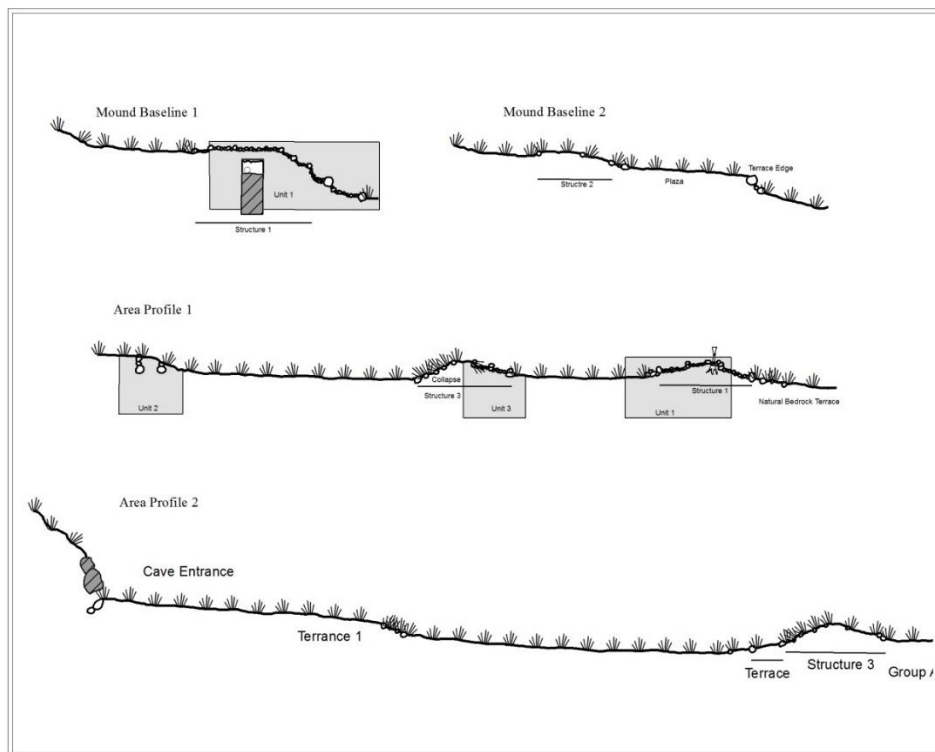


Figure 114 Profile of the unit, excavated to the fill underlying the stopes, which runs under the front step to the level of the patio floor.

# BCRP 2015

## Group A Mound Profiles



0 2 4 8  
Meters

- |         |                   |
|---------|-------------------|
| Unit    | Limestone         |
| Plaster | Tree Root         |
| Surface | Construction Fill |
| Bedrock |                   |

Drawn by: Marieka Arsky  
Digitized by: Estrella Garcia

Figure 115. Running profiles of the structures and mounds across the area outside of the cave entrance.

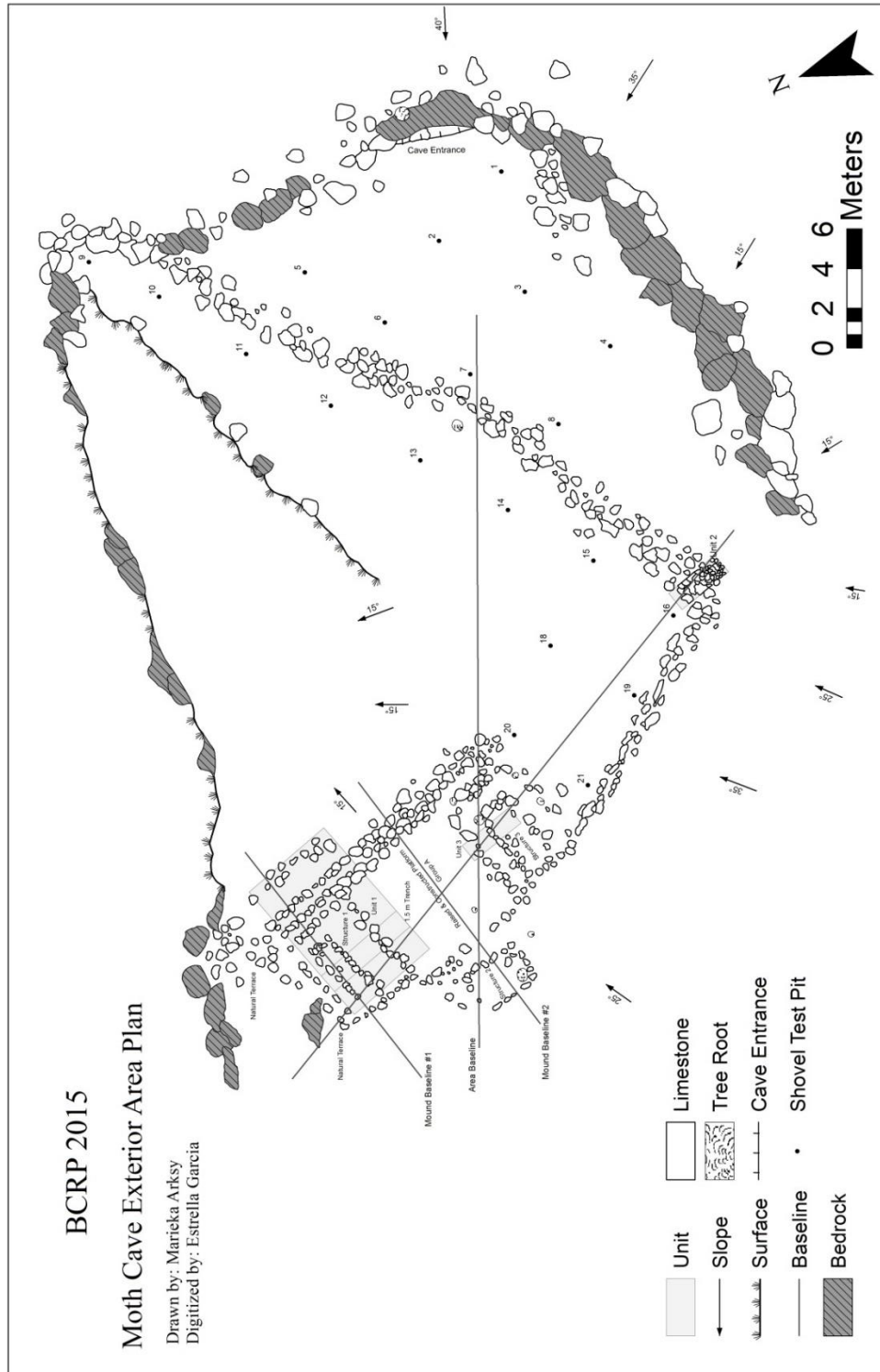


Figure 116. Area map outside of Moth Cave (in the top left of image) showing how Group A has been physically connected to the cave by a terrace.



Figure 117. The mouth of the cave would only be partially visible from the center of the patio if these stone foundations supported any type of perishable superstructure.

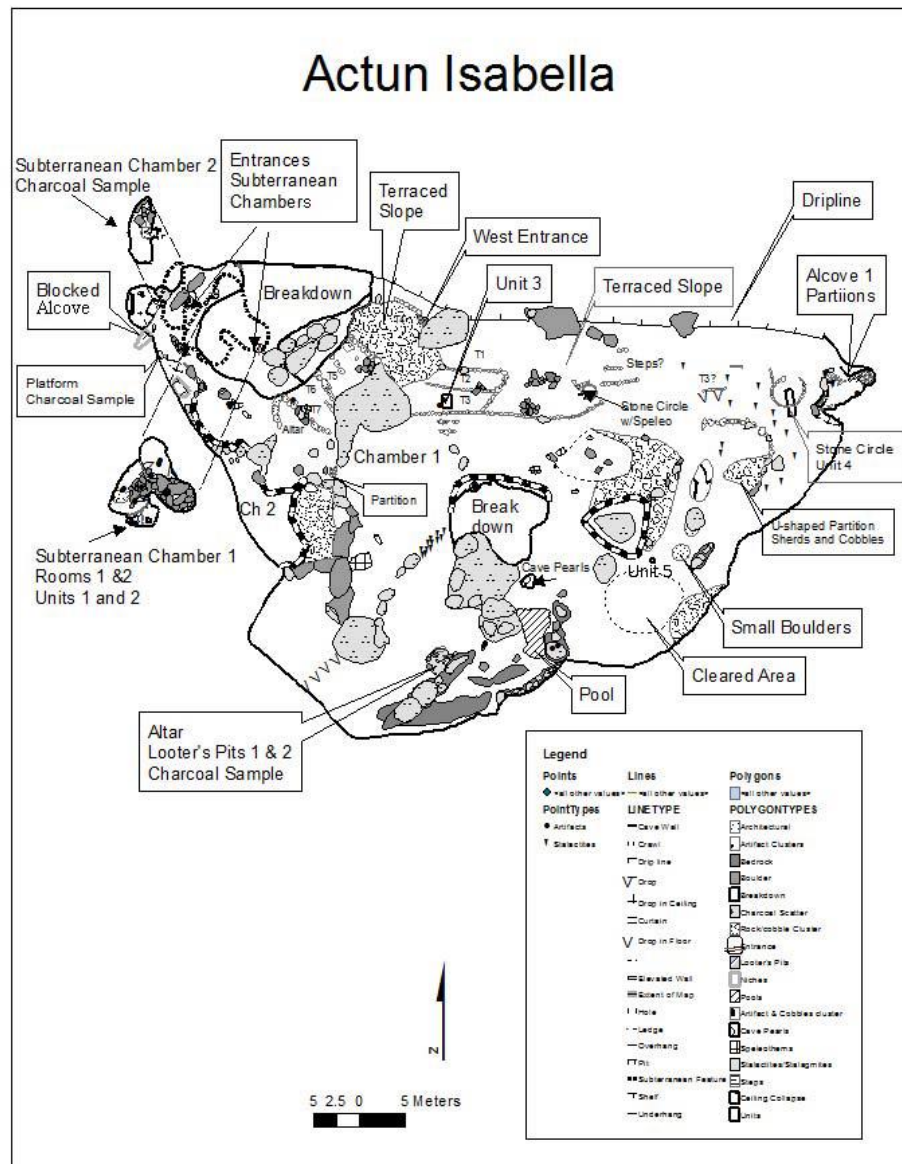


Figure 118. Plan and Profile of Actun Isabella drawn in 2010 showing the degree of modification in the interior of the cave. (Moyes and Awe 2010).

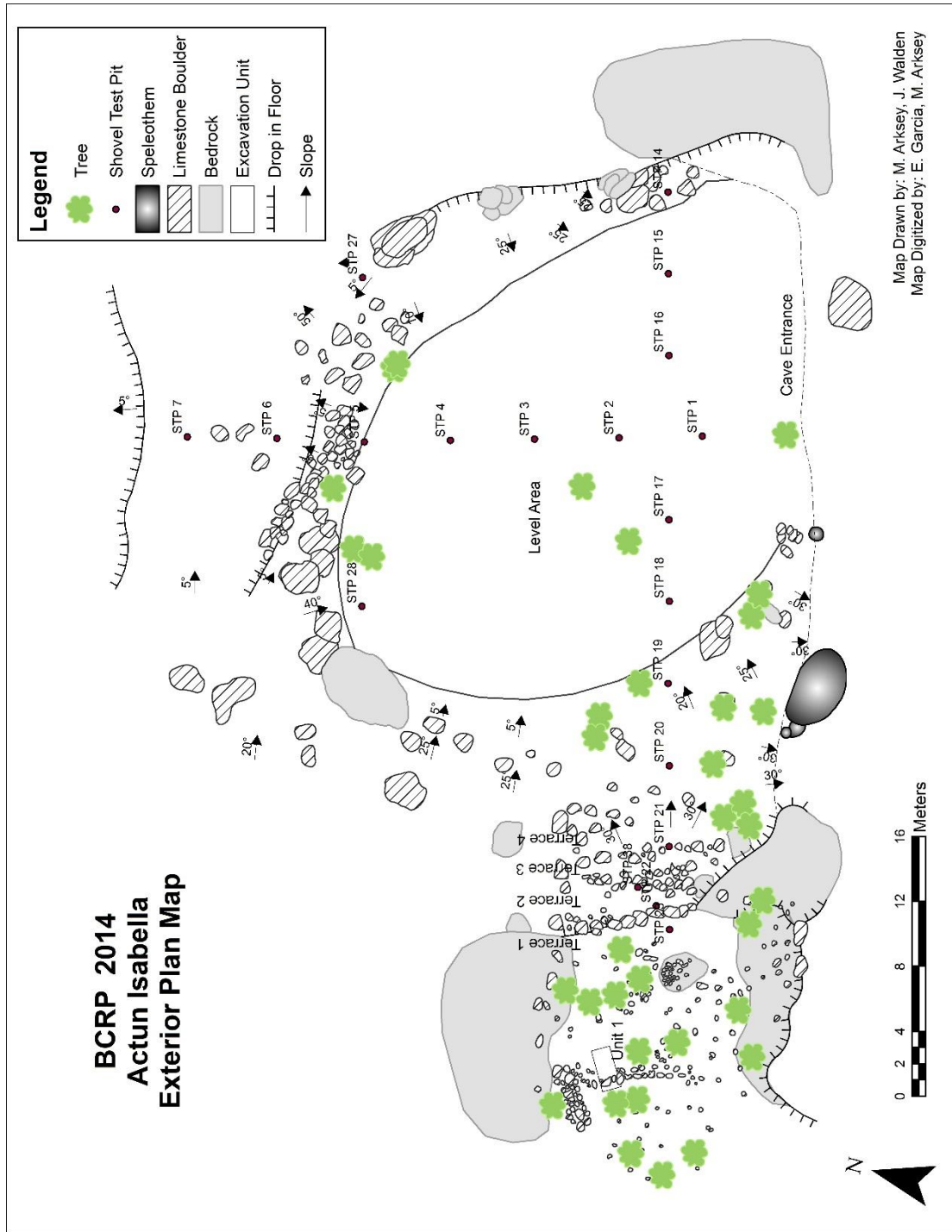


Figure 119. Map of the exterior of Actun Isabella.



Figure 120. The entrance to Actun Isabella in a large flat bowl surrounded by low hills.



Figure 121. The Western slope down to the cave entrance.

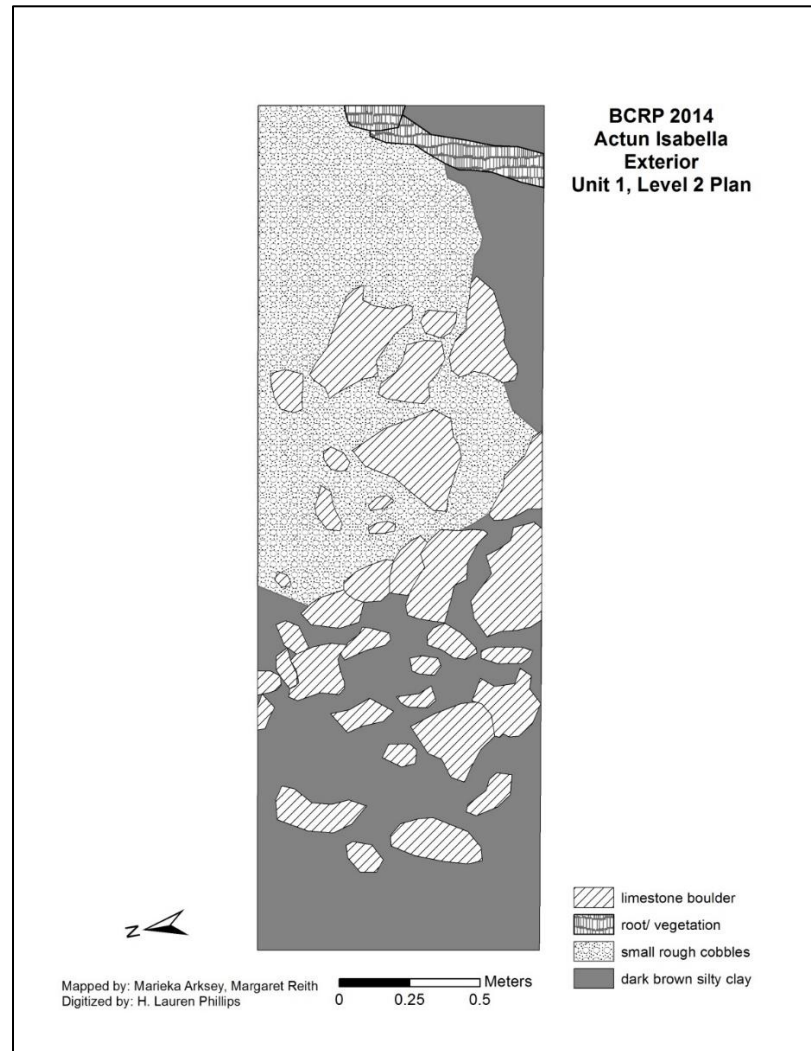


Figure 122. Plan view of the cobble and boulder construction of the terrace.



Figure 123. The top of the terrace had been leveled off with smaller cobbles and pebbles, larger boulders made up the edge of this terrace.

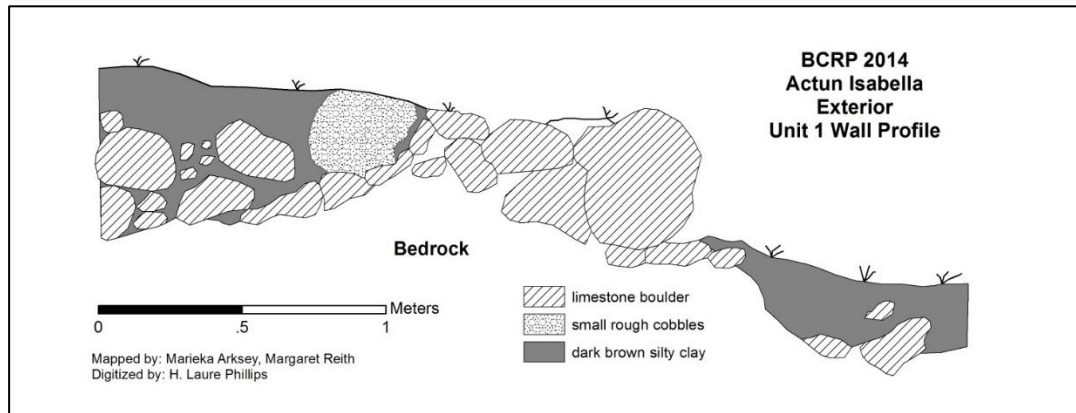


Figure 124. Profile of Unit 1 showing the construction which raised and leveled the natural bedrock terrace.



Figure 125. Entrance to Macal Chasm.



Figure 126. Terracing coming down one of the slopes of the sinkhole.



Figure 127. Terrace 1 wall showing the stacked stone in between natural boulders.



Figure 128. Figure 95. The construction of the terrace wall showing the fill on top of the terrace.

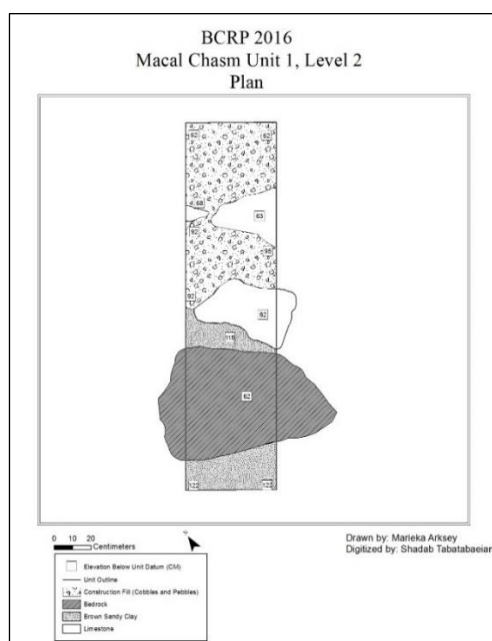


Figure 129. Plan map of Level 2 showing the two-retaining wall style of construction with small pebble construction fill in between the boulders.

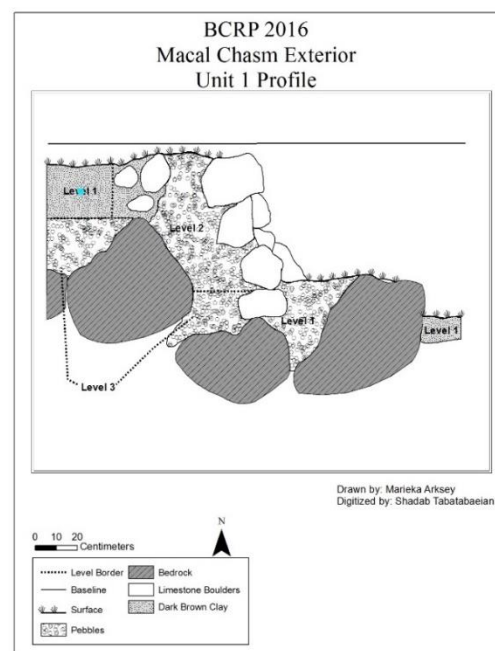
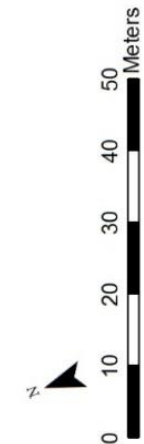
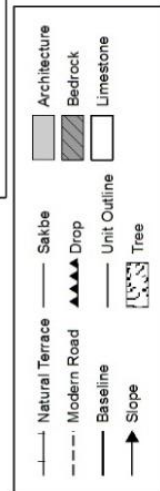
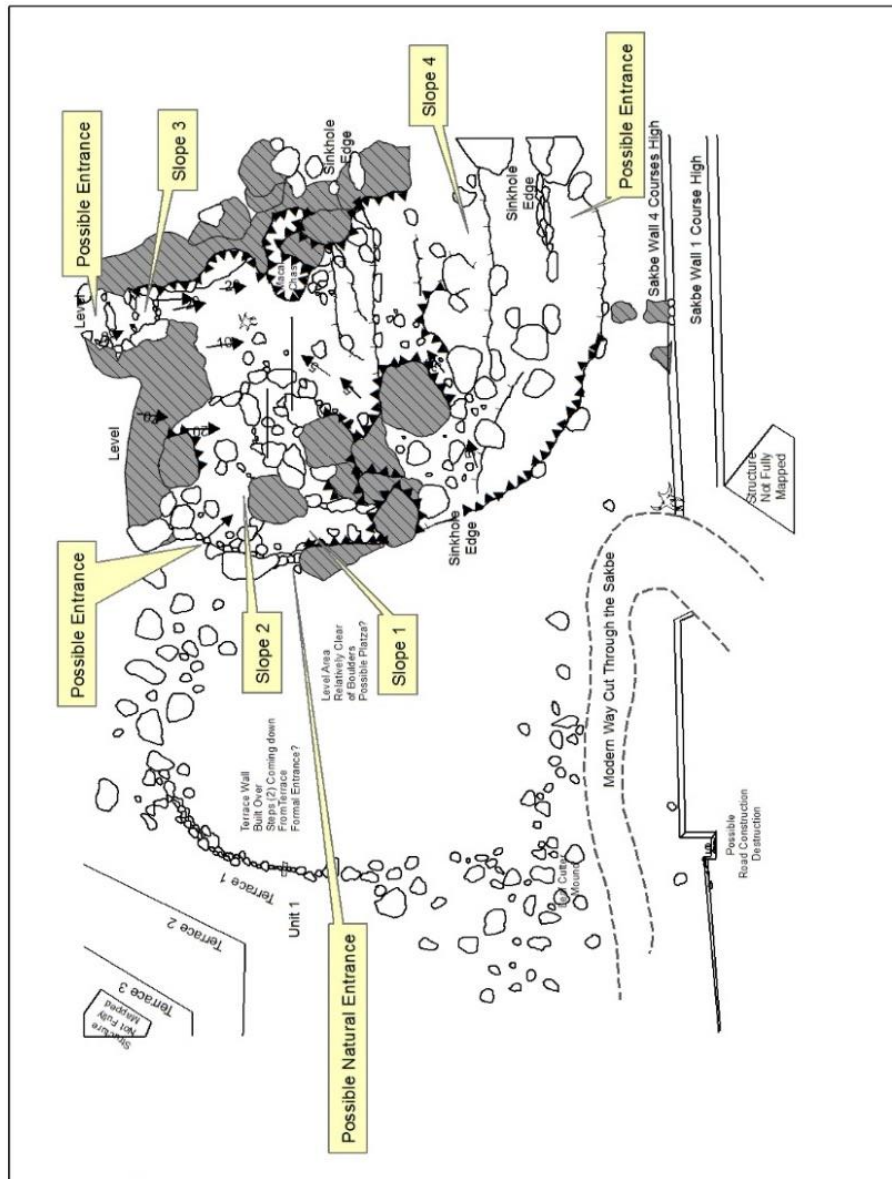


Figure 130. Profile of the terrace wall showing the retaining wall construction with smaller stacked cobbles on top of boulders and bedrock.

BCRP 2016  
Macal Chasm  
Exterior Area Plan



Drawn by: Mariëka Arksey  
Digitized by: Shadab Tabatabaieian

Figure 131. Plan map of the area around the sinkhole and entrance to Macal Chasm, including the bounded flat area to the west of the sinkhole formed by the terrace and sakbe walls.



Figure 132. The exterior of Actun Ho Ak, showing the terracing around the vertical drop entrance.

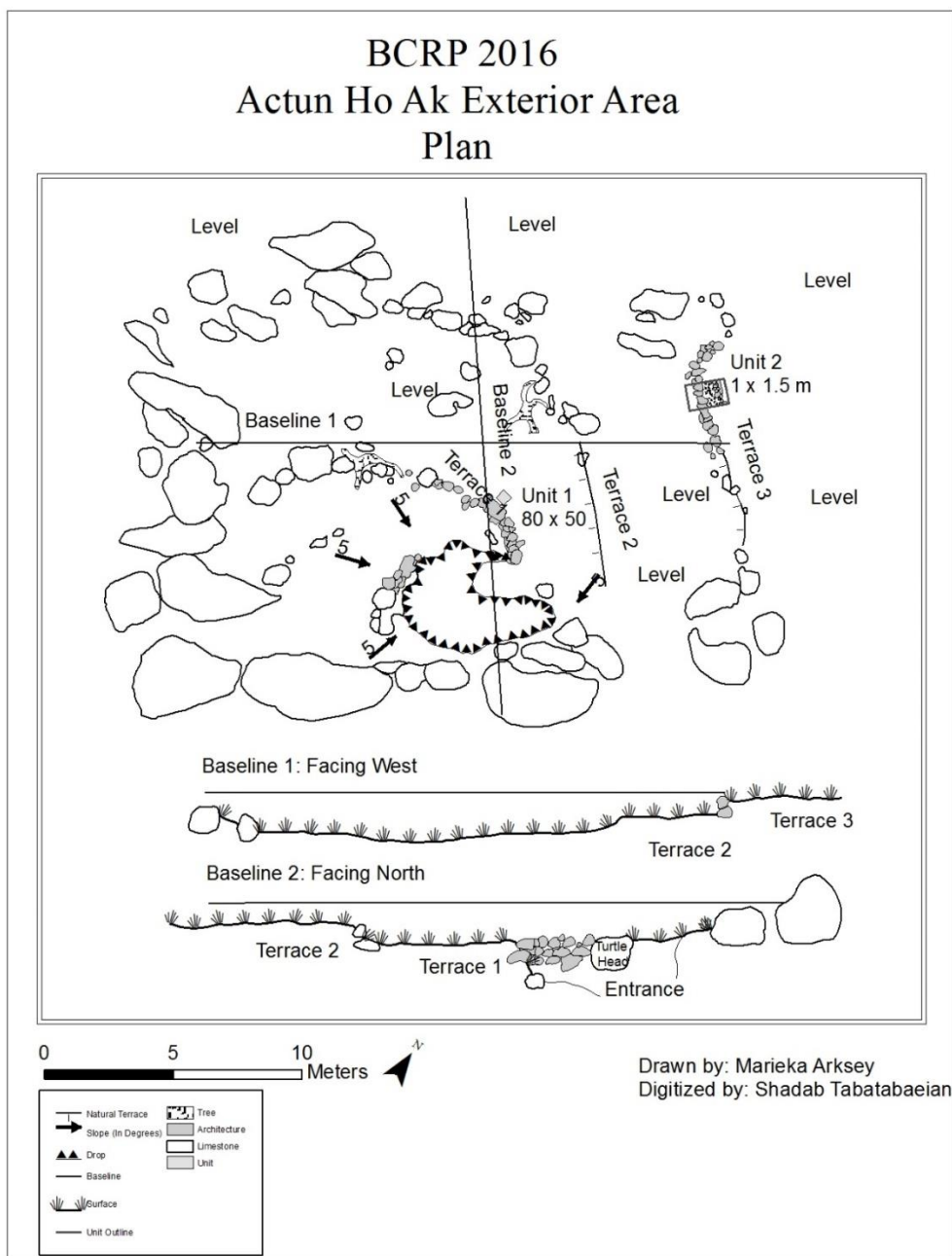


Figure 133. Plan map and area profiles outside of Actun Ho Ak.



Figure 134. The terrace wall next to the cave entrance where Unit 1 was placed.

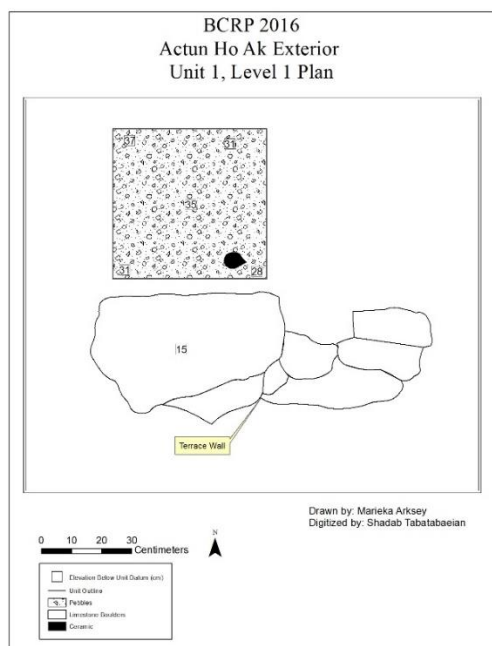


Figure 135. Plan of level one, showing the construction fill behind the terrace wall.

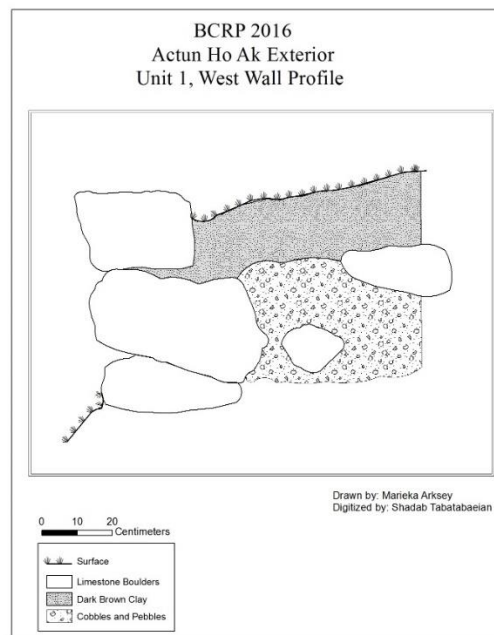


Figure 136. Profile of the terrace wall construction showing the stacked stone wall with pebble fill and natural sediments.



Figure 137. Terrace wall furthest from the cave entrance.



Figure 138. The base of the wall was found to be on top of bedrock, making the construction four courses high.

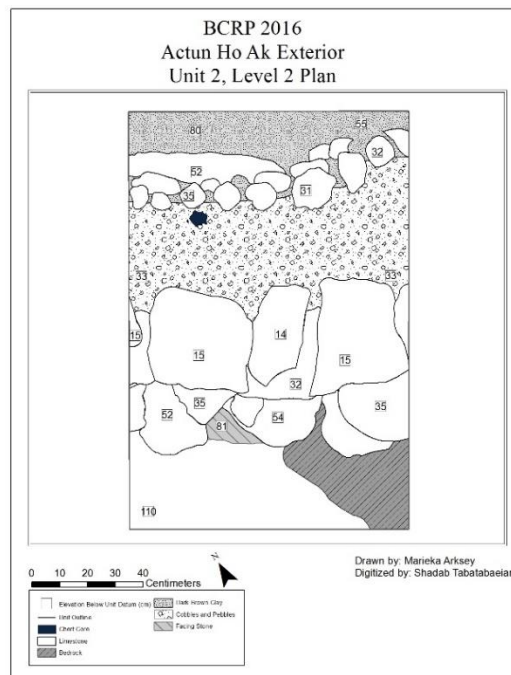


Figure 139. The terrace wall construction consisted of larger stones in front, and smaller cobbles behind, filled in with pebbles.



Figure 140. Side view of the construction of the terrace wall. The fill consisted of limestone pebbles.

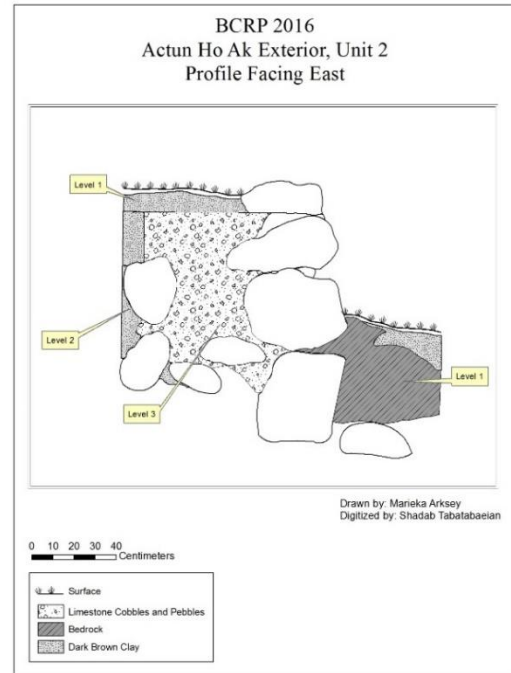


Figure 141. Profile of the terrace wall, seen resting on top of bedrock.

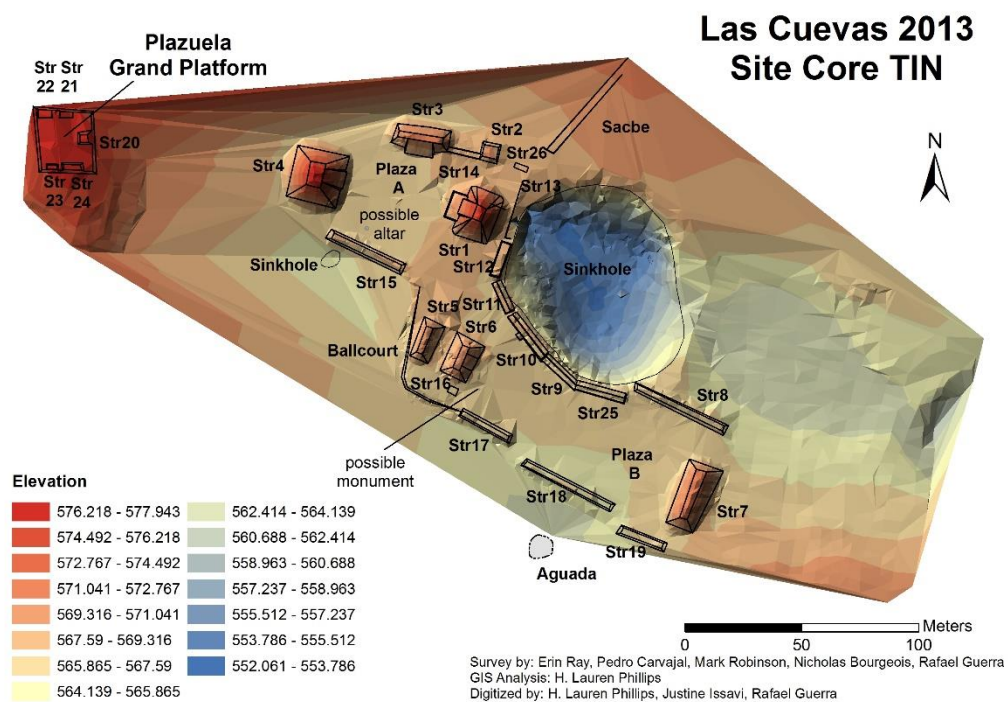


Figure 142. Map of Las Cuevas showing the site organization and the location of the sinkhole and cave entrance in relation to the surface structures.

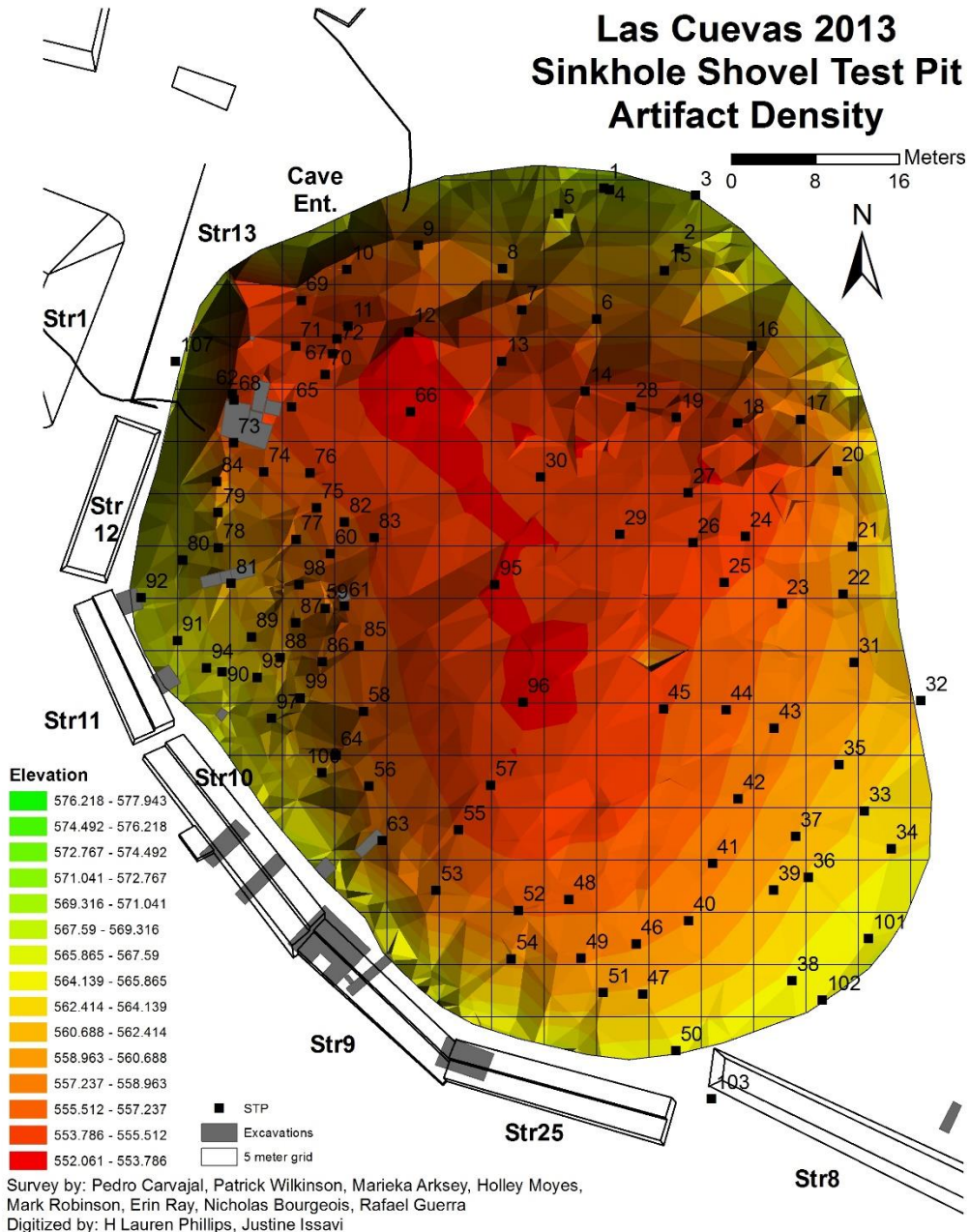


Figure 143. The sinkhole was gridded off in 5 meter increments, creating 200 grid squares covering the entirety of the interior of the sinkhole, with the intention of covering 50% of the grids.

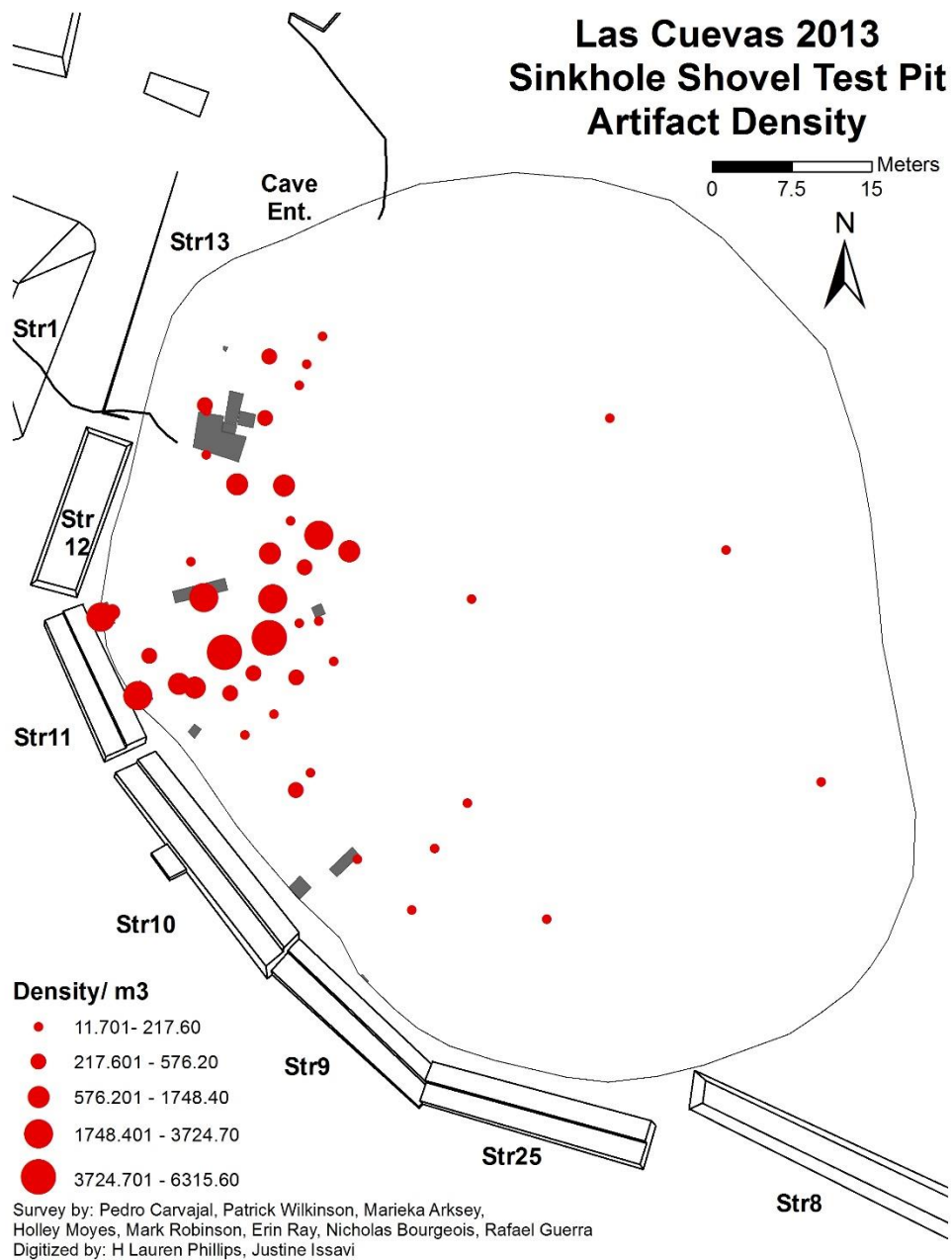


Figure 144. Shovel test pit density map of the sinkhole showing the high concentration in one area of the sinkhole only.





Figure 146. Unit 22 Context shot facing North West with cave entrance in background.

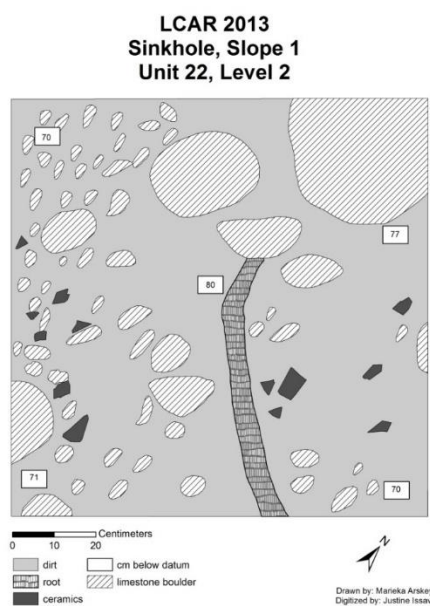


Figure 147. Unit 22 Plan Map showing denser concentrations of pebbles and ceramics at the base of the slope.



Figure 148. Unit 22 Level 3 Closing photo showing midden fill at base of level.

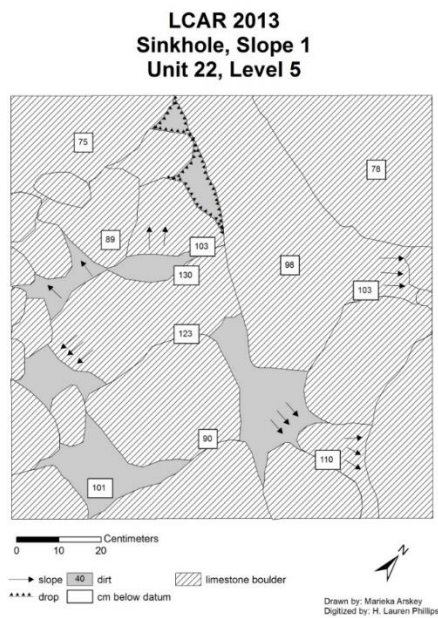


Figure 149. Level 5 plan map showing the loose conglomeration of the boulders at the base of the unit.



Figure 150. Units 22A and 22B context shots.



Figure 151. Units 22A and 22B context shot facing north with the cave entrance in the background. Unit 22 is visible at the top of the slope that forms Unit 22B.

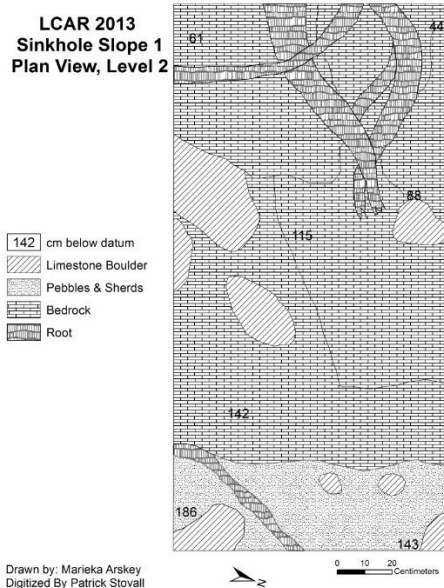


Figure 152. Level 2 Plan Map showing the midden fill in the East of the unit which coincides with the midden fill found in Unit 22.



Figure 153. Unit 22A Level 3 closing shot showing the proximity of bedrock in the majority of this level and the depth at which the base of the slope had been filled in with cultural material.



Figure 154. Unit 22B surface context shot showing the slope of the unit with level areas at the top and bottom of the slope.



Figure 155. Unit 22B Level 3 showing level fill at the top of the slope, loose smaller boulders on the slope, and level fill at the base of the slope.



Figure 156. Unit 22B Level 3 closing shot showing level midden fill at the base of the slope, loose smaller boulders on the slope, and the amount of debris that has collected on top of the boulders.

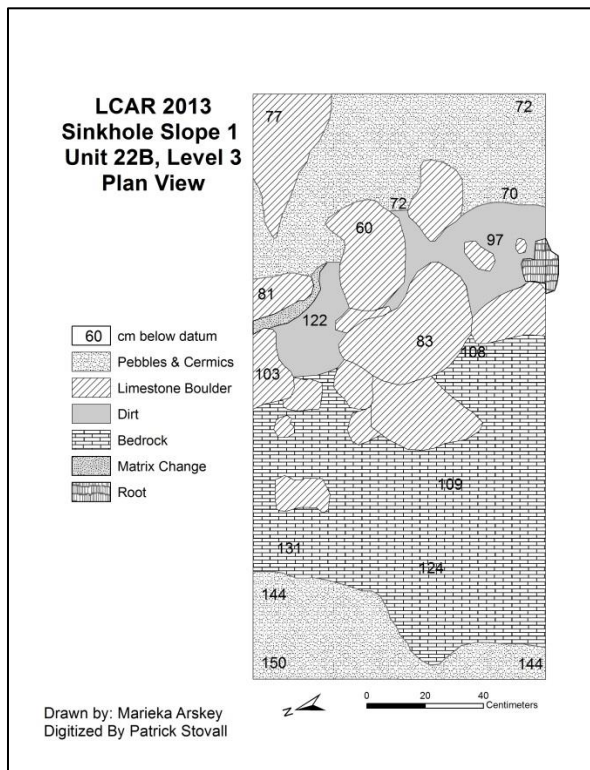


Figure 157. Unit 22B Level 3 Plan Map showing the construction of the terrace with midden fill at the top of the slope, boulders placed on top of bedrock on the slope retaining that midden fill, and midden fill at the base again.



Figure 158. Unit 22B Profile photo of southern unit wall showing boulders on top of bedrock with midden fill at the top and bottom of the slope.



Figure 159. Modern path and entrance to the cave, with Unit 31 to the left.



Figure 160. Showing the location of Unit 31 in a clearing between palms at the base of Slope 1 and against the edge of the boulders fallen in from the top of the sinkhole at the cave entrance.



Figure 161. Surface of Unit 31 showing its placement on a gentle slope at the base of Slope 1.



Figure 162. Unit 31 Level 2 showing a level of cobble-sized rocks underneath the silty clay.



Figure 163. Unit 31 Level 3 showing the boulders underneath the cobbles with the alignment of boulders in the south (back) of the unit.

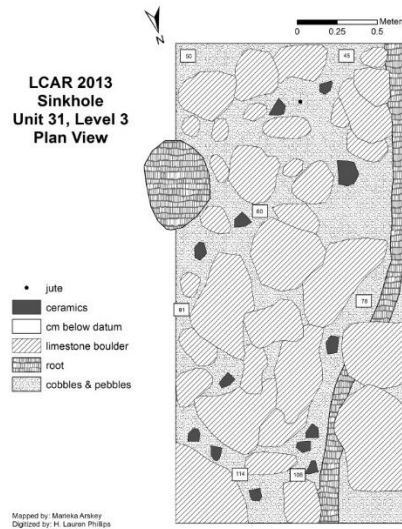


Figure 164. Plan Map of Unit 31 Level 3 showing the alignment of boulders in the Southern end of the unit.

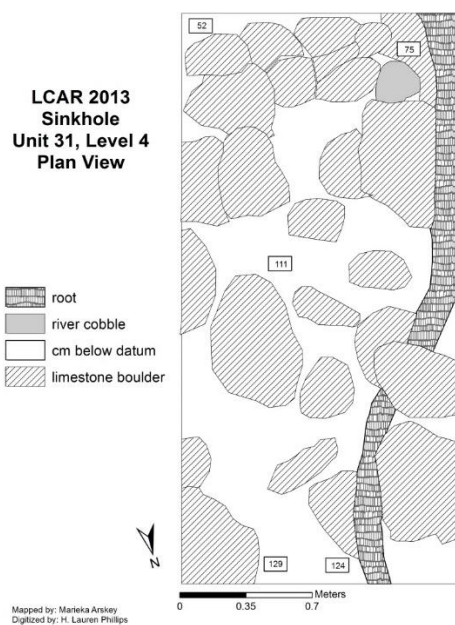


Figure 165. Plan Map of Unit 31 Level 4 showing the courses of stones forming the wall in the south of the unit as well as the river cobble that was found at the base of this wall.



Figure 166. A shell pendent with two small holes in it which was collected as a special find from just above one of the stones of the wall. A river cobble in situ at the base of the wall in the Southwest corner of Unit 31. The river cobble likely came from the river near the site of Monkey Tail 4km to the east.



Figure 167. Photo showing the cut limestone block uncovered in the southwest of Extension 31A.



Figure 168. Photos showing the closing level of Extension 31A with the cut stones appearing as much lighter than the surrounding natural stones. The large cut limestone block in the southwest appears to have been cracked by the large root running underneath it.



Figure 169. Photos showing the outline of Extension 31C in relation to the other Unit 31 unit and extensions. The images show the placement of the unit on the lowest terrace of Slope 1 at the base of the bedrock outcrop on the Northern side of the sinkhole and to



Figure 170. Photo showing Extension 31C surface level after clearing the overlying brush with the one cut stone at the base of the bedrock protrusion in the south of this extension.



Figure 171. Photo showing the close of Extension 31C and the alignments of the cut stones (the lighter stones in the photo) running from the Northwest to the Southeast across half of the unit.



Figure 172. Photo showing the steps leading down the terrace from left to right.



Figure 173. Photo showing the steps leading down the terrace from left to right.

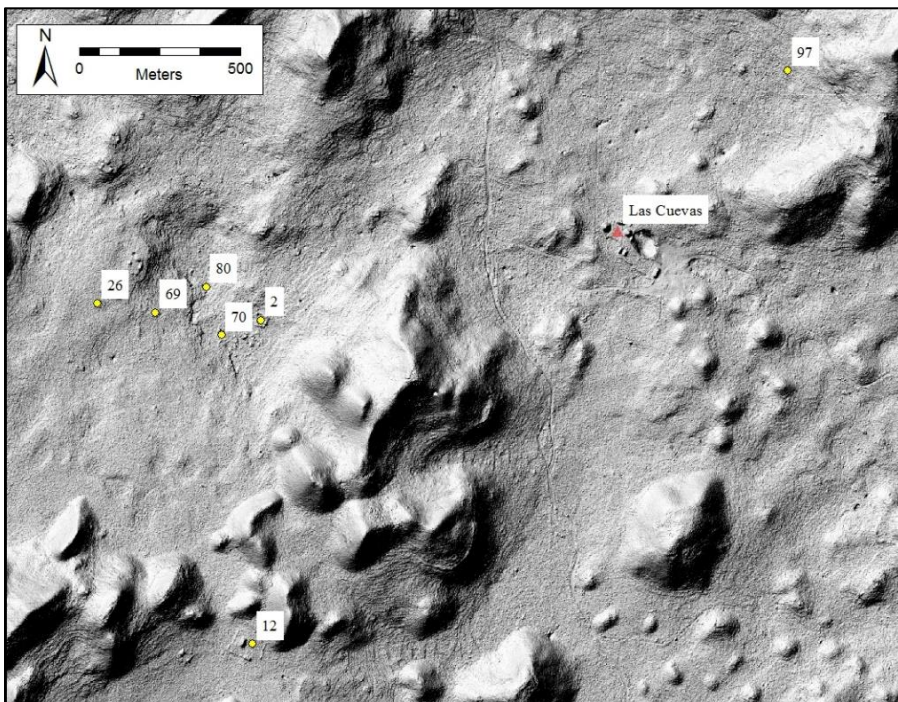


Figure 174. The locations of the Groups excavated in relation to the site core of Las Cuevas. Group 80 is located 20m west of Actun K'in K'aba.



Figure 175. The terracing along the dripline of Entrance 1 – visible are the two main terraces or steps entering the cave.



Figure 176. The sacbe running East-West from Group 80 towards Actun K'in K'aba.

## TABLES

Table 1. Settlement unit classification scheme established by the Xunantunich Archaeological Project (after Ashmore et al. 1994; Ehret et al. 1995).

Type	Description	Mounds/ Platforms	Height (general)	Height	Focus	Layout
0	no mounds					
1	1 isolated mound	1 mound, 0 platforms	low	<1m		
2	informally arranged groups or clusters of mounds	>2 mounds, 0 platforms	low	≤1m	lacking focus	informally arranged
3	formally arranged patio group	>2 mounds, 0 platforms	low	≤1m	lacking focal mound	formally arranged
4	structure-focused group	>2 mounds, platforms	low to moderate	1-2m	focal structure	formally arranged
5	group focused clusters with at least one formal group on a platform	>4 mounds, platforms	low to moderate	1-2m	group focus	at least one formally arranged group
6	formal patio group with platform and mounds	>4 mounds, platforms	moderate	2-5m	focal mound possible	formally arranged
7	formal patio group with platform and focal mounds	>4 mounds, platforms	high	≥5m	focal mound	formally arranged

Table 2. Settlement Type Classification for Exterior Cave Sites (continued on next page)

Site	Settle- ment Type	# Phases of Const.	Type of Const.	Cave Ent. Size	Ent. Type	Cave Int. Size	Amount of Modification Inside the Cave	Duration of Cave Use	Nearest Site(s)	Dist. to Nearest Site(s)	Occupation of Nearest Surface Site
Sak Tuch	0	0	none	Large 24m W	walk in	45m L 25m W	Minimal 3 walls, alcove rocks	Terminal Classic	Pakal Na	500m	Pre-Classic - Post-Classic (?)
Macal Chasm	0	0	none	Vertical	vertical drop	53m Deep	none	Late Classic	Ixchel	0m	Late Pre-Classic - Terminal Classic
Actun Kin K'aba	0a	1	terracing (unknown number)	Large 20m W 5m H	walk in	unknown	Moderate <10 platforms and terraces	unknown	Las Cuevas	1400m	Late Classic - Terminal Classic
Actun Isabella	0a	1	minimal terracing pathway	Large 50m W 15m H	walk in	72m W 53m L 15m H	Moderate 4 terraces, walls, platforms	Late Pre- Classic - Terminal Classic	Minanha	700m	Pre-Classic - Terminal Classic
Las Cuevas	0a	1	minimal terracing pathway	Large 28m W 7.5m H	walk in	335m L variable W and H	Extensive >80 platforms, terraces, walls, steps	Late Classic - Terminal Classic	Las Cuevas	0m	Late Classic - Terminal Classic
Actun Ho Ak	0a	1	4 small terraces	Vertical	vertical drop	9m Deep 3m W 6m L	none	unknown (Ch'en Pix: Late Classic - Terminal Classic)	Ixchel	1500m	Late Pre-Classic - Terminal Classic

Site	Settle- ment Type	# Phases of Const.	Type of Const.	Cave Ent. Size	Ent. Type	Cave Int. Size	Amount of Modification Inside the Cave	Duration of Cave Use	Nearest Site(s)	Dist. to Nearest Site(s)	Occupation of Nearest Surface Site
Rice Mill 3	1a	2	3 large terraces 1 platform	Medium 9m W 1.5m H	walk in	20m W 15m L 10m H	Minimal wall in entrance only	Late Pre- Classic - Terminal Classic	Blue Creek La Milpa Bedrock Sotohob	9500m 9500m 2500m 1500m	Blue Creek: Pre- Classic - Post Classic Bedrock: Late Pre-Classic - Terminal Classic
Ofrenda	1b	2	1 large terrace 1 structure	Large 12m W 8m H	walk in	250m L variable W and H	Moderate numerous walls and terraces	Late Pre- Classic - Terminal Classic	Pacbitun Guacamayo Augustine	9500m 7500m 7500m	Pacbitun: Late Pre-Classic - Terminal Classic
Actun Tunichil Muknal	2a	3-4	3 structures (1 large)	Medium (water entrance)	swim in	5000m L	Minimal several walls	Late Pre- Classic - Terminal Classic	Cahal Uitz Na	700m	Classic - Terminal Classic
Nohoch Ka' Actun	3a	5	3 large terraces 2.5 structures	Medium 5m W 1m H	walk in	12.5m W 19.2m L 15m H	Minimal 2 terraces	Terminal Classic	Pacbitun Augustine	1500m 750m	Pacbitun: Late Pre-Classic - Terminal Classic
Moth Cave (Opossum Cave)	3a	3	1 terrace 1 mound 3 structures	Fissure 1.7m W 0.5m H	walk in	22.3m L 19.3m W 4.7m H	Moderate several terraces and platforms in the entrance chamber	Late Pre- Classic - Terminal Classic	Minanha	1000m	Pre-Classic - Terminal Classic

Table 3. Rice Mill 3 Lot Numbers

Lot #	Level	Context
131014	1	Humic and silty clay fill on top of terrace wall
131015	1	Humic and silty clay fill on top of cave entrance wall
131016	2	Silty clay fill around collapsed boulders in front of terrace and cave entrance walls
131017	3	Floor fill (limestone pebbles, silty clay, ceramic sherds)
14000	4	Backfill and humic layer (outside of cave dripline)
14001	4	Humic layer (inside of cave dripline)
14002	4	Boulder removal along pathway

Table 4. Rice Mill 3 Shovel Test Pits

STP #	Ceramics	Jute	Chert	Depth (cmBS)	Total Artifacts	Volume	Density
1	17		1	57	18	0.04	450
2	3			74	3	0.052	57
3	1			29	1	0.02	50
4	2			36	2	0.025	80
5	7			35	7	0.025	280
6	1			24	1	0.017	58
7	9		1	32	10	0.023	434
8				16	0	0.011	0

Table 5. Actun Tunichil Muknal Lot Numbers

Lot #	Str.	Level	Context
14000	ATM-M2	Surf.	Groundstone objects found on surface of unit (out of context)
14001	ATM-M1	Surf.	Groundstone objects found on surface of unit (out of context)
14002	ATM-M1	1	Removal of backdirt in area of unit, humic in unexcavated area
14003	ATM-M2	1	Removal of humic level down to construction fill
14004	ATM-M2	2	Humic and sediments in front of the structure
14005	ATM-M2	3	Collapse around the structure's edges to define form
14006	ATM-M1	2	Removal of collapse down to intact architecture
14007	ATM-M2	4	Fill of structure down to clay surface below
14008	ATM-M3	Surf.	Ceramics found on surface of unit (out of context)
14009	ATM-M3	1	Removal of humic layer down to stones of construction fill

Lot #	Str.	Level	Context
14010	ATM-M3	2	Outside of structure: Lithics
14011	ATM-M3	2	Outside of structure: Slate
14012	ATM-M3	2	Outside of structure: Groundstone ball/possible river stone (?)
14013	ATM-M3	2	Inside structure/construction fill: Chert lithic
14014	ATM-M3	2	Inside structure/construction fill: Groundstone celt
14015	ATM-M3	2	Inside structure/construction fill: Ceramics

Table 6. Actun Tunichil Muknal Shovel Test Pits

STP #	Ceramics	Jute	Chert	Depth (cmBS)	Total Artifacts	Volume (m <sup>3</sup> )	Density
1	1			52	1	0.037	27
2				17	0		0
3				84	0		0
4				61	0		0
5				98	0		0
6	2		1	40	3	0.028	107
7				74	0		0
8	1			81	1	0.057	17
9	2			97	2	0.069	28
10				91	0		0
11				88	0		0
12				84	0		0
13				55	0		0
14				85	0		0
15				81	0		0
16				92	0		0
17				82	0		0
18				90	0		0
19				20	0		0
20				15	0		0

Table 7. Nohoch Ka' Actun Lot Numbers

Lot #	Str.	Unit	Level	Feature	Context
16006	1	1	1		humic and clay down to collapse
16007	2	2	1		construction fill down to terrace
16008	1	1	2		collapse down to intact architecture
16009	1	1A	3		channel fill down to floor
16010	1	1A	4		Floor 1 fill
16011	1	1B	3		fire hardened clay/ceramics/charcoal (ceramics at varying angles)
16012	1	1A	5		channel fill down to Floor 2
16013	1	1A	6		Floor 2 fill
16014	2	2	2		fill down to bedrock
16015	2	3	1		humic down to architecture
16016	1	1A	7		Floor 3 fill
16017	1	1A	7	1A-1	ceramics and jute placed in cobbles of Floor 3 fill, C14 sample collected
16018	2	3	1	3-1	ceramic cluster placed at base of step
16019	1	1B	4		fill of southeast corner of West Mound, last construction phase
16020	1	1C	3		channel fill down to Floor 2 and fire hardened clay/ceramics/charcoal
16031	1	4	1		humic down to architecture
16032	1	5	1		humic down to architecture
16033	1	4	2		construction fill
16034	1	1B	5		channel fill down to terrace edge/earlier construction of West Mound
16035	1	5	2		construction fill
16036	1	1C	3	1C-1	cluster of flat-lying ceramics on Floor 2 stretching between the walls of the West and East Mounds
16037	1	5	3		Floor fill down to Floor 2
16038	1	4	3		Floor fill down to Floor 2
16039	1	1C	4		fire hardened clay/ceramics/charcoal (ceramics at varying angles)
16040	1	4	3	4-1	cluster of ceramics and jute placed in a cut in Floor 2 of the West Mound

Table 8. Nohoch Ka' Actun Shovel Test Pits

STP #	Ceramics	Jute	Chert	Total Artifacts	Depth (cmBS)	Volume (m3)	Density
1				0	23	0.016	0
2				0	48	0.034	0

STP #	Ceramics	Jute	Chert	Total Artifacts	Depth (cmBS)	Volume (m3)	Density
3	1			1	44	0.031	32
4				0	33	0.023	0
5	6			6	41	0.029	206
6	11			11	53	0.037	297
7	23			23	64	0.045	511
8	1			1	49	0.035	28
9				0	44	0.031	0
10	5			5	21	0.015	333
11	3			3	48	0.034	88
12	30	1	1	32	54	0.038	842
13	27			27	54	0.038	710
14	8			8	44	0.031	258
15				0	47	0.033	0
16	2			2	37	0.026	76
17	3			3	25	0.018	166
18	4			4	30	0.021	190
19	7			7	34	0.024	291
20				0	40	0.028	0
21	18			18	41	0.029	620
22	12			12	24	0.017	705
23	32			32	15	0.011	2909
24	16			16	45	0.032	500
25	10			10	32	0.023	434
26	4			4	8	0.006	666
27	8			8	22	0.016	500
28	4			4	21	0.015	266
29	5			5	34	0.024	208
30	21			21	50	0.035	599

Table 9. Ofrenda Cave Lot Numbers

Lot #	Area	Unit	Level	Context
131018	Terrace 2	2	1	Humic
131019	Terrace 2	2	2	Clay under humic down to construction
131020	Terrace 2	2A	1	Humic and clay down to construction
131021	Terrace 2	2	3	Cobbles in front of construction up to facing boulders
131022	Terrace 2	2B	1	Humic and clay down to construction

Lot #	Area	Unit	Level	Context
131023	Terrace 2	2C	1	Humic and clay down to construction
131024	Terrace 2	2	4	Cobbles in front of construction down to steps
131025	Terrace 2	2	5	Steps up to facing boulders
131026	Terrace 2	3	1	Humic and clay down to construction
131027	Terrace 2	2	6	Facing boulders and fill down to bedrock
131028	Terrace 2/3 Wall	1	1	Humic
131029	Terrace 2/3 Wall	1	2	Clay and boulders down to bedrock

Table 10. Ofrenda Cave Shovel Test Pits

STP #	Ceramics	Quartz	Depth (cmBS)	Total Artifacts	Volume (m3)	Density
1			97	0		0
2			38	0		0
3			60	0		0
4	4		48	4	0.034	117
5			28	0		0
6			73	0		0
7			28	0		0
8	4		44	4	0.031	129
9	1		40	1	0.028	35
10			36	0		0
11			70	0		0
12	3		55	3	0.039	76
13	1		43	1	0.03	33
14	3		72	3	0.051	58
15			36	0		0
16	2		43	2	0.03	66
17			33	0		0
18			36	0		0
19	1	1	30	2	0.021	95
20			31	0		0

Table 11. Moth Cave Lot Numbers

Lot #	Area	Unit	Level	Context
201562	Group A, Str. 1	1	Surface	Cleaning organic debris off surface
201563	Group A, Str. 1	1	1	Humic and collapse down to intact architecture

Lot #	Area	Unit	Level	Context
201564	Terrace 1	2	1	Humic and cobble fill in between two retaining walls
201565	Terrace 1	2	1	Humic down to fill behind second retaining wall
201566	Group A, Str. 1	1	2	Collapsed construction fill from in front of the structure to the mound floor
201567	Group A, Str. 1	1	3	Construction fill and architecture of the interior of Structure 1
201568	Group A, Str. 1	3	1	Humic and collapse down to intact architecture
201569	Group A, Str. 1	3	2	Construction fill down to mound floor
201573	Group A, Str. 1	1	4	Construction fill of earlier substructure

Table 12. Moth Cave Shovel Test Pits

STP #	Ceramics	Total Artifacts	Depth (mBS)	Volume (m <sup>3</sup> )	Density
1		0	0.19	0.0134	0.0
2		0	0.35	0.0247	0.0
3		0	0.42	0.0297	0.0
4		0	0.37	0.0262	0.0
5		0	0.36	0.0254	0.0
6		0	0.74	0.0523	0.0
7		0	0.72	0.0509	0.0
8	2	2	0.55	0.0389	51.4
9		0	0.39	0.0276	0.0
10		0	0.39	0.0276	0.0
11		0	0.15	0.0106	0.0
12		0	0.57	0.0403	0.0
13		0	0.4	0.0283	0.0
14		0	0.58	0.0410	0.0
15		0	0.57	0.0403	0.0
16		0	0.37	0.0262	0.0
17		0	0.39	0.0276	0.0
18		0	0.64	0.0452	0.0
19	1	1	0.36	0.0254	39.3
20	1	1	0.33	0.0233	42.9
21	8	8	0.39	0.0276	290.2

STP #	Ceramics	Total Artifacts	Depth (mBS)	Volume (m <sup>3</sup> )	Density
22	4	4	0.38	0.0269	148.9
23	9	9	0.39	0.0276	326.5

Table 13. Actun Isabella Lot Numbers

Lot #	Area	Unit	Level	Context
14000	Top of slope	1	2	Removal of silty clay on top of terrace down to cobble fill
14001	Top of slope	1	3	Removal of silty clay at base of terrace down to cobble fill
14002	Top of slope	1	4	1x1 reduction of Eastern portion of unit (on top of terrace)

Table 14. Actun Isabella Shovel Test Pits

STP #	Ceramics	Spelothem	Slate	Total Artifacts	Depth (cmBS)	Volume (m <sup>3</sup> )	Density
1	2			2	70	0.049	40
2				0	80		0
3				0	70		0
4				0	70		0
5				0	26		0
6				0	37		0
7				0	34		0
8				0	39		0
9				0	24		0
10				0	25		0
11				0	34		0
12				0	34		0
13				0	32		0
14				0	19		0
15				0	60		0
16				0	70		0
17				0	70		0
18				0	70		0
19				0	57		0
20				0	32		0
21	19			19	37	0.026	730
22	9			9	21	0.015	600
23	2			2	37	0.026	76
24				0	23		0

STP #	Ceramics	Spelothem	Slate	Total Artifacts	Depth (cmBS)	Volume (m <sup>3</sup> )	Density
25				0	21		0
26				0	41		0
27				0	17		0
28				0	28		0
29	4	1		5	40	0.028	178
30				0	38		0
31				0	45		0
32				0	37		0
33	3			3	19	0.013	230
34	9	2		11	33	0.023	478
35	7			7	22	0.016	437
36				0	17		0
37				0	17		0
38	63		3	66	27	0.019	3473
39				0	4		0
40				0	46		0
41				0	22		0
42				0	29		0
43				0	43		0
44				0	20		0

Table 15. Macal Chasm Lot Numbers

Lot #	Area	Unit	Level	Context
16000	Terrace 1	1	2	Upper construction fill of Terrace 1
16001	Terrace 1	1	3	Construction fill of Terrace 1 down to bedrock

Table 16. Macal Chasm Shovel Test Pits

STP #	Ceramics	Depth (cmBS)	Total Artifacts	Volume (m <sup>3</sup> )	Density
1	0	27			0
2	0	18			0
3	0	28			0
4	0	65			0
5	1	65	1	0.046	21
6	0	65			0
7	0	65			0
8	0	39			0

STP #	Ceramics	Depth (cmBS)	Total Artifacts	Volume (m <sup>3</sup> )	Density
9	0	26			0
10	0	42			0
11	0	49			0
12	0	31			0
13	0	24			0
14	0	33			0
15	0	4			0
16	0	65			0
17	0	58			0
18	0	46			0
19	1	17	1	0.012	83
20	0	22			0
21	1	30	1	0.021	47
22	0	40			0
23	0	37			0
24	2	24	2	0.017	117
25	0	16			0
26	0	34			0
27	1	49	1	0.035	28
28	2	43	2	0.03	66
29	0	29			0
30	2	38	2	0.027	74
31	3	30	3	0.021	142
32	0	32			0
33	0	14			0
34	0	41			0
35	0	21			0
36	0	31			0
37	0	32			0
38	0	19			0
39	0	75			0
40	0	75			0
41	0	30			0
42	0	10			0
43	0	63			0
44	0	47			0
45	0	13			0

STP #	Ceramics	Depth (cmBS)	Total Artifacts	Volume (m <sup>3</sup> )	Density
46	0	54			0
47	0	47			0
48	0	53			0
49	0	42			0

Table 17. Actun Ho Ak Lot Numbers

Lot #	Area	Unit	Level	Context
16002	Terrace 4	2	1	Humic and sandy clay on top of wall down to construction fill
16003	Terrace 2	1	2	Construction fill of Terrace 2
16004	Terrace 4	2	1	Humic and sandy clay in front of terrace down to bedrock
16005	Terrace 4	2	3	Construction fill of Terrace 4 wall

Table 18. Las Cuevas Lot Numbers

Lot #	Unit	Level	Context
11346	22	1	Humic layer
11349	22	2	“Possible wash-down”: Dense dark brown clay with some sherds.
11351	22	3	“Possible midden fill”: Compact dark brown soil with high concentration of marl and ceramics. Some jute, lithics and other broken items dispersed throughout.
11352	22	3	Possible wash-down
11353	22	4	Possible midden fill (arbitrary 10cm level)
11356	22	5	Possible midden fill (down to bedrock)
11357	22A	1	Humic layer
11358	22B	1	Humic layer
11359	22A	2	Dense clay with some sherds (possible wash-down)
11360	22B	2	Dense clay with some sherds (possible wash-down)
11361	22A	3	Possible midden fill in Eastern half up to where boulders meet with midden fill level of unit 22. Includes a second layer of what later appeared to be the same wash-down underneath – excavated to a second level of midden fill below in front of bedrock (see profile).
11362	22B	3	Possible midden fill (down to bedrock)
11363	22B	4	Possible midden fill and boulders (down to bedrock)
11364	22B	5	Possible midden fill in Eastern side in front of bedrock (down to bedrock)
11370	31	2	Humic layer

Lot #	Unit	Level	Context
11371	31	3	Clay between humic layer and boulder/cobbles in fill (pebbles and sherds in clay)
11372	31	4	Fill and boulders and cobbles in front of boulder alignment in South of unit
11375	31A	2	Clay between humic layer and boulder/cobbles in fill (pebbles and sherds in clay)
11377	31B	1	Humic layer
11378	31B	2	Clay between humic layer and boulder/cobbles in fill (pebbles and sherds in clay)
11425	31C	1	Humic layer & clay between humic layer and boulder/cobbles in fill (pebbles and sherds in clay)

Table 19. Las Cuevas Shovel Test Pits

STP #	Ceramics	Jute	Chert	Sandstone	Quartz	Total	Depth (cmBS)	Density
1						0	45	0
2						0	33	0
3						0	37	0
4						0	40	0
5						0	35	0
6						0	60	0
7						0	40	0
8						0	35	0
9						0	40	0
10						0	44	0
11	3					3	57	74.6
12						0	42	0
13						0	42	0
14						0	42	0
15						0	29	0
16						0	37	0
17						0	49	0
18						0	45	0
19						0	45	0
20						0	40	0
21						0	24	0
22						0	28	0
23						0	33	0
24	1					1	30	47.1
25						0	37	0

STP #	Ceramics	Jute	Chert	Sandstone	Quartz	Total	Depth (cmBS)	Density
26						0	28	0
27						0	43	0
28	1					1	48	29.5
29						0	90	0
30						0	94	0
31						0	24	0
32						0	24	0
33						0	29	0
34						0	37	0
35	1					1	56	25.3
36						0	36	0
37						0	32	0
38						0	39	0
39						0	32	0
40						0	57	0
41						0	32	0
42						0	66	0
43						0	33	0
44						0	41	0
45						0	60	0
46						0	39	0
47						0	51	0
48	1					1	62	23.3
49						0	38	0
50						0	33	0
51						0	40	0
52						0	30	0
53	6	1				7	55	180
54						0	27	0
55	1					1	58	24.4
56						0	39	0
57		1				1	74	19.1
58						0	48	0
59	3					3	33	128.6
60	10	1				11	48	324.1
61	3					3	35	121.2
62	5					5	25	282.9
63	1					1	34	41.6

STP #	Ceramics	Jute	Chert	Sandstone	Quartz	Total	Depth (cmBS)	Density
64	2					2	49	57.7
65	18					18	47	541.7
66							120	0
67	2					2	76	37.2
68	2					2	60	47.1
69							16	0
70	1					1	70	20.2
71	22					22	54	576.2
72						0	75	0
73	3					3	28	151.5
74	27					27	40	954.7
75	6					6	49	173.2
76	31					31	44	996.5
77	17	1				18	31	821.3
78	1					1	24	58.9
79						0	24	0
80						0	6	0
81	74	3	1		1	79	30	3724.7
82	91	3				94	54	2462.2
83	89					89	72	1748.4
84						0	44	0
85	5					5	66	107.2
86	15					15	37	573.4
87	128	2				130	38	4838.8
88	12	2				14	35	565.8
89	188	3		1		192	43	6315.6
90	28	3				31	44	996.5
91	2	1			3	6	29	292.6
92	5					5	19	372.2
93	3					3	15	282.9
94	35					35	33	1500.2
95	1					1	121	11.7
96						0	116	0
97	5					5	35	202.1
98	53	6				59	27	3090.8
99	2					2	13	217.6
100	8	3				11	33	471.5

Table 20. Actun K'in K'aba Lot Numbers

Lot #	Str.	Level	Context
11493	1	2	Construction fill of sacbe

Table 21. Actun K'in K'aba Shovel Test Pits

STP #	Ceramics	Granite	Total Artifacts	Depth (cmBS)	Volume (m <sup>3</sup> )	Density
1	3		3	0.25	0.0176	169.7
2			0	0.2	0.0141	0
3	26	1	27	0.34	0.0240	1123.4
4	4		4	0.12	0.0084	471.5



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