

8 **TIKIN HA AND ANCIENT MAYA CITY PLANNING IN THE EASTERN THREE RIVERS ADAPTIVE REGION**

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With funding from the National Geographic Society, the Belize Estates Archaeological Survey Team spent approximately 5 weeks exploring, mapping, and testing Tikin Ha, a recently recorded major Maya ceremonial center in northwestern Belize. The work determined that Tikin Ha has the second largest plaza and one of the tallest structures (approximately 18 m tall) in the eastern half of the Three Rivers adaptive region but is only the 6th largest site. The site does not follow either of the common site planning templates documented in the area. We located seven stone monuments, but only one, a highly fragmented stela, shows evidence of having been carved. The plaza and courtyard test pits all encountered a heavily eroded floor with one layer of fill over shallowly buried rock approximately 40 cm below the modern surface. Ceramics date the construction to the late Late Classic period, and a single radiometric age from a bone pin dates one of the structures in the acropolis to cal AD 669–769 (2 sigma). The available data suggest Tikin Ha was short lived and apparently abandoned while some of the key architectural features were still under construction, as evidenced by a construction ramp in the site core. Tikin Ha's brief occupation period may explain why the Main Plaza accounts for such a high percentage of the monumental area at the site.

Introduction

In the eastern Three Rivers adaptive region, two patterns of ancient Maya urban design prevail, which likely reflect broader spheres of cultural and political engagement to the west (Petén template) and to the east (northern Belize template). Yet, Tikin Ha, a newly recorded ceremonial center in northwestern Belize that was unknown to the archaeological community prior to its chance discovery by loggers in 2016, exhibits urban design principles that differ from the two broadly established patterns of city building in the region. In this article, we review the brief history of investigations at the site and consider its implications for our models of Maya settlement history and city building in northwestern Belize. We suggest that Tikin Ha's unique plan may have been the result of its emerging, but short lived, status as a player on the regional political stage, perhaps as the capital of a small Late Classic territory (see Garrison 2007).

Discovery and Initial Investigations

In 2016, while inventorying trees, a logging crew working on Laguna Seca Ranch reported coming across large mounds near the remote northeastern corner of the property atop the Booth's River Escarpment, the rugged and hilly eastern limit of the Petén Karst Plateau and the eastern edge of the Three Rivers adaptive region (Figure 1). In February of 2017, we secured permission from the Institute of

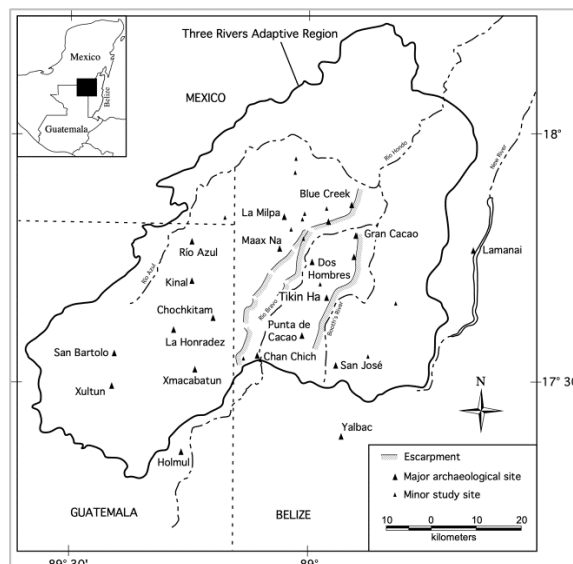


Figure 1. Location of Tikin Ha in the Three Rivers adaptive region.

Archaeology in Belize to visit the location described by the logging crew and encountered a large, previously unrecorded, Maya site, which we initially named Xma Ha Ak'al, Mayan for "lagoon without water" (Houk et al. 2017). Subsequent discussions with Mopan speakers and the Institute of Archaeology led us to change the name of the site to Tikin Ha, Mayan for "dry water." Our small team, which consisted of the three authors of this report, had about three hours to explore the ruins—only enough time to produce a sketch map of a large plaza and associated structures and to conduct one drone

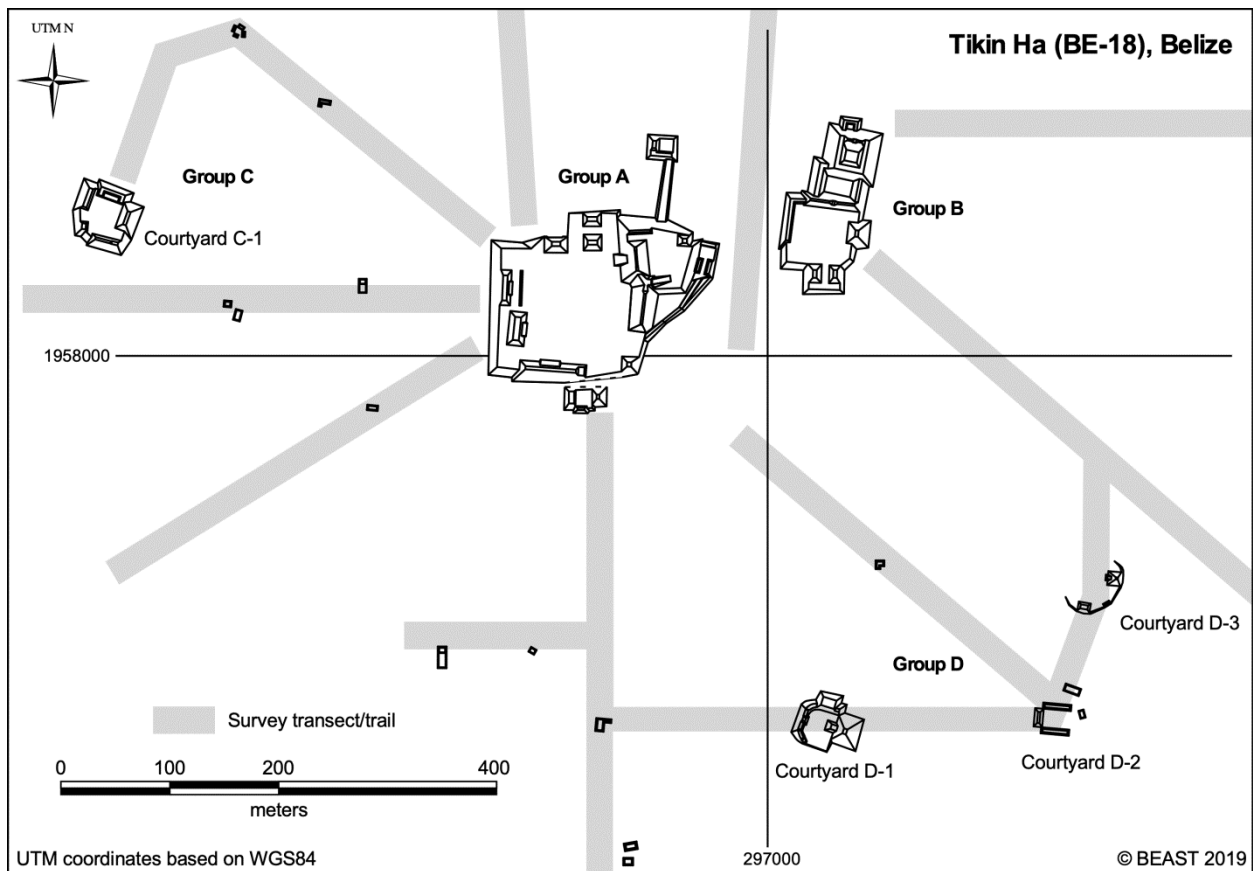


Figure 2. Prismatic map of Tikin Ha showing the location of survey brechas and known architectural groups.

mission above the forest canopy (Houk et al. 2017).

Our initial assessment indicated that the plaza was the sixth largest known in the Three Rivers adaptive region, and the crew mapped an alignment of massive structures along the eastern edge of the plaza, with the tallest building, a temple-pyramid, rising an estimated 20 m above the plaza floor. Based on the size of the plaza, we proposed that more monumental structures remained undiscovered at the site, including the likelihood of a large acropolis or several elite palace structures (Houk et al. 2017). With generous support from the National Geographic Society (NGS), we returned to Tikin Ha in February and March of 2019 to map and test the ruins. Based on its apparent size and plan, we believed the site had the potential to challenge the narrative of how the Maya built cities in this part of their world during the Classic period.

Patterns of Urban Design in the Eastern Three Rivers Adaptive Region

The Three Rivers adaptive region can roughly be divided into eastern and western halves along Belize's western border. While both halves of the region include major ceremonial centers (see Figure 1), the ceremonial centers in the western half, including Xultun and Rio Azul, are larger than those in the eastern half. In a previous study of Maya cities in the eastern half of Three Rivers adaptive region, Houk (2003:54) noted that the larger sites share some of the following site planning traits: a large, rectangular plaza; a quadrangle group attached to, and elevated above, the largest plaza; an acropolis juxtaposed with the largest plaza; a ball court mediating between the largest plaza and the acropolis; at least one stela; internal *sacbeob* connecting otherwise separated groups of the site core; large radial *sacbeob*; and a north-south alignment of the major groups of architecture.

Houk (2003:54) also observed that sites generally fall into one of two groups. In the first group, the main plaza is at the northern end of the site core and the acropolis is at the southern end. In the second group, the pattern is reversed. The sites in the first group, which include Dos Hombres, Chan Chich, and La Milpa, share many traits of the so called “Petén template” first identified by Wendy Ashmore (1991; see Houk 2015:272). Sites in the second group are found along the eastern edge of the Three Rivers adaptive region and include Blue Creek, Gran Cacao, Punta de Cacao, and San José. Their layout seems to follow a northern-Belize pattern of city design, first noted by Hammond (1981:165) at sites like Nohmul and El Pozito. The major difference between the two groups of sites is the spatial relationship between the largest plaza and the acropolis at each site. While this may seem trivial, the “Petén template” used by the western sites may have deeper, cosmological significance (Ashmore 1991). Houk (1996, 2003) has previously proposed that the two groups reflect fundamentally different ideas about how to build Maya cities stemming from participation in different cultural/political interaction spheres.

2019 Field and Lab Methods

Our documentation of Tikin Ha in 2019 involved cutting *brechas*, through the dense jungle, in the cardinal directions from the known plaza, as well as to the northwest, southwest, and southeast (Figure 2). One *brecha* extended from the site core 1.1 km southeast to the base of the Booth’s River Escarpment, terminating at the Booth’s River Marsh. In addition to these formally cut transects, we also utilized more informally cleared walking trails between discovered groups of architecture as a way to explore the terrain around the monumental core. To facilitate mapping, project workers cleared the undergrowth from major architectural groups.

Mapping proceeded in two phases. Initially, Mark Willis and Julia Kleine used a reflectorless Leica TS15 Total Data Station (TDS) to establish control points and map the large plaza at the site. Willis used an iGage iG3S GNSS unit to determine the UTM coordinates for each control point. In the second

phase, Brett Houk and Kleine used a Nikon DTM 322+ TDS and Spectra Precision Nomad data collector to map additional groups of architecture and refine areas of the large plaza’s map. In addition, Gregory Zaro and Briana Smith used the tape-and-compass technique to document small settlement mounds and patio groups visible along transect lines and informal trails.

To establish the chronology and age of Tikin Ha, crews excavated eight test pits at the site in plazas or courtyards. Zaro oversaw the overall excavation program, and Briana Smith and Bridgette Degnan supervised individual excavation units. In all cases, units were excavated in cultural/natural levels to bedrock to document the number of construction episodes. We relied primarily on ceramics, which Fred Valdez analyzed, and an AMS date from a single faunal bone from a primary context to date various architectural features.

Results of Exploration, Mapping, and Test Excavations

Exploration at Tikin Ha resulted in the documentation of the large plaza (Group A) originally visited by Houk and colleagues (2017) and the discovery of another large monumental group of architecture to the east of the plaza (Group B). Combined, Groups A and B constitute the monumental core of Tikin Ha. The final topographic map of the two groups is based on over 12,500 individual TDS points. Exploration and mapping also recorded a large courtyard group west of the Main Plaza (Group C), three moderate-to-large courtyards southeast of the Main Plaza (Group D), and smaller mounds and courtyards along various survey *brechas* (see Figure 2). Due to space restrictions, only the major groups and structures are described below.

Site Core

Group A comprises the Main Plaza (Plaza A-1), three associated courtyards, two *sacbeob*, and 21 numbered structures (Table 1; Figure 3). It is also home to Stelae 1, 2, and 3, and Altars 1 and 2. Stela 4 is located between Groups A and B. The Main Plaza occupies a large, artificial platform. The maximum length and width of the Main Plaza are 150 m north-south and 130 m

Table 1. Data on Structures in Groups A and B at Tikin Ha.

#	Type	Associated Courtyard/Plaza	Orientation (degrees)	Height (m)	Number of Looters' Trenches	Looting Impact
A-1	Temple-pyramid	Main Plaza and Courtyard A-2	354	18	4	Minimal
A-2	Range building?	Main Plaza and Courtyard A-2	330	11.2	0	None
A-3	Range building	Main Plaza	7	11.9	1	Minimal
A-4	Temple-pyramid	Main Plaza	0	5.1	2	Severe
A-5	Range building	Main Plaza	94	6.2	0	None
A-6	Range building	Main Plaza	7	7.7	0	None
A-7	Range building	Main Plaza	3	5	0	None
A-8	Unknown, wall	Main Plaza	3	0.6	0	None
A-9	Temple-pyramid	Main Plaza	91	10.2	0	None
A-10	Ball court	Main Plaza	91	4.6	0	None
A-11	Ball court	Main Plaza	91	5.4	0	None
A-12	Unknown, platform?	Courtyard A-2	87	2.2	0	None
A-13	Shrine?	Courtyard A-2	90	2.6	0	None
A-14	Unknown	Courtyard A-2	?	3.6	0	None
A-15	Unknown, platform?	Courtyard A-5	16	1	0	None
A-16	Unknown, platform?	Courtyard A-5	16	1	0	None
A-17	Range building?	Courtyard A-3	3	1.6	0	None
A-18	Range building	Courtyard A-3	94	1	0	None
A-19	Eastern shrine?	Courtyard A-4	0	3.3	1	Severe
A-20	Unknown, platform?	Courtyard A-4	92	0.8	0	None
A-21	Range building?	Courtyard A-4	0	1	0	None
B-1	Temple-pyramid	East Plaza	3	9.2	3	Severe
B-2	Ball court	East Plaza	2	3	0	None
B-3	Ball court	East Plaza	1	2.5	0	None
B-4	Range building	East Plaza	7	1.5	0	None
B-5	Range building	East Plaza and Courtyard B-2	98	4.4	0	None
B-6	Range building	Courtyard B-2	12	2.3	0	None
B-7	Range building	Courtyard B-2	10	2.5	1	Minimal
B-8	Range building	Courtyards B-2 and B-3	101	5.2	0	None
B-9	Range building	Courtyard B-3	11	2.2	0	None
B-10	Range building	Courtyard B-3	11	2.2	0	None
B-11	Range building	Courtyard B-3	100	4.6	6	Severe
B-12	C-shaped platform	Base of Courtyard B-3	100	0.4	0	None

east-west; the open floor space of the plaza—the plaza's internal perimeter minus the footprints of structures contained within it—covers 13,139 m².

Despite the massive structures that surround it and the steep drops that mark its western and eastern edges, the Main Plaza appears to have been constructed in one event. Although the plaza surface is approximately 6 to 7 m higher than the natural ground surface at the base of its platform, the five excavations placed on the plaza's surface (Suboperations TH-01-A-D and -H) all encountered bedrock between 0.35 m and 0.49 m below modern ground surface.

Structures A-1, A-2, and A-3 (18 m, 11 m, and 12 m tall, respectively) form the eastern side of the plaza. The northern two of these massive buildings also form the western side of Courtyard A-2, an irregular, elevated group attached to the northeastern corner of the plaza and described in more detail below. The floor of the courtyard is approximately 7.5 m higher than the floor of the Main Plaza. Stela 3, a broken, plain monument, sits at the base of Structure A-3.

Over 20 m to the south, a small 5-m high temple-pyramid (Structure A-4) occupies the southeastern corner of the plaza. Midway

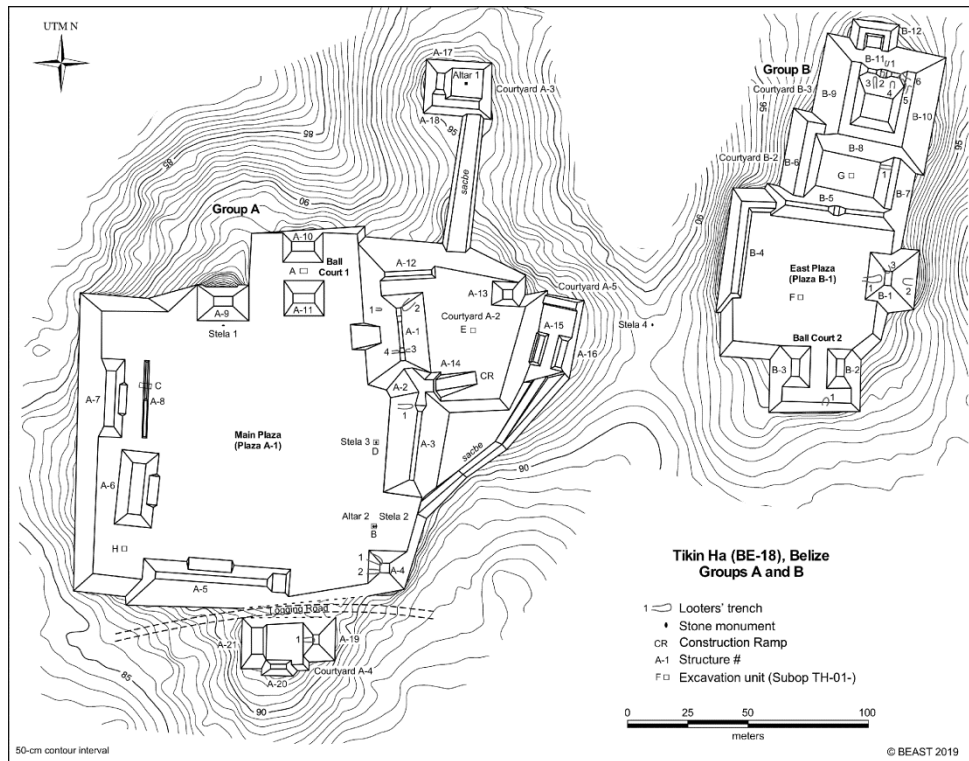


Figure 3. Prismatic map of Groups A and B at Tikin Ha showing the locations of structures, looters' trenches, stone monuments, sacbeob, test excavations, and an old logging road.

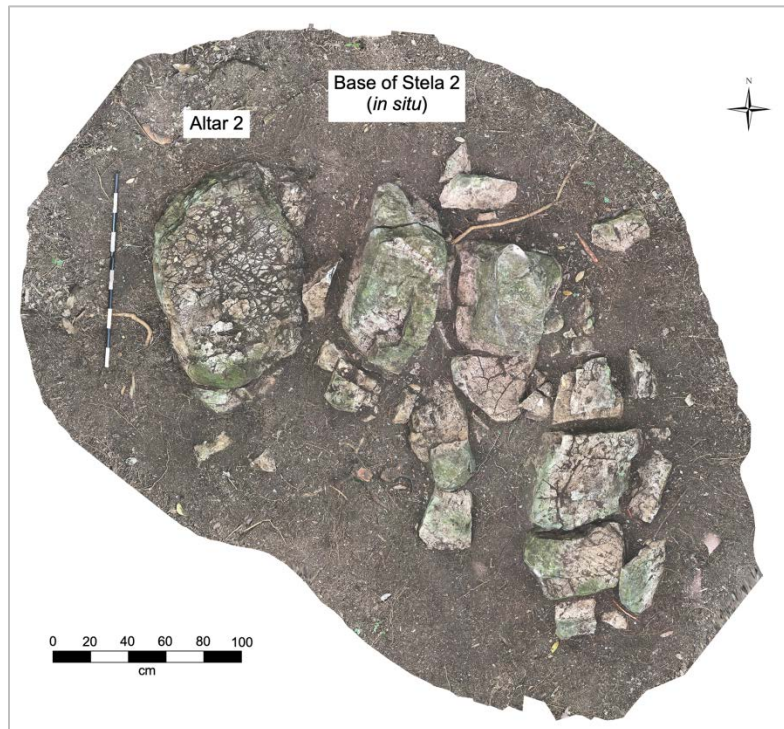


Figure 4. Structure from Motion orthophoto of Altar 2 and Stela 2 prior to excavation of Subop TH-01-B. Note the shattered and scattered stela fragments east and southeast of the altar.

between it and Structure A-3 are Stela 2 and Altar 2 (Figure 4). The stela is shattered and scattered behind the altar, although its base is still upright and in situ. A careful inspection of the monument failed to discover any recognizable shapes or hieroglyphs, but one fragment of the stela shows clear evidence that it was once carved. The placement of Altar 2 and Stela 2 suggest that the gap between Structures A-3 and A-4 may have been a formal entrance into the plaza. As discussed below, an apparent *sacbe* enters the plaza near the southeastern corner of Structure A-3, supporting this interpretation.

Smaller range buildings and temples occupy the other margins of the plaza. Structure A-5, a 6-m high range building, marks the southern edge of the plaza and exhibits a low platform extending from its east end. Structure A-6 is a nearly 8-m high range building atypically placed away from the western edge of the plaza, occupying a portion of the plaza floor between the southwestern corner of the plaza and Structure A-7. Structure A-7 is situated 5 m to the north of Structure A-6 but it is built on the western edge of the plaza. At 5 m, it measures a bit shorter than its southern neighbor, but at 32.5 m long it is approximately the same length as Structure A-6. Structure A-7 appears to be paired with Structure A-8, a low, 60-cm high mound of the same length and positioned 8 m east of Structure A-7. Excavations confirmed that Structure A-8 is a poorly preserved, low masonry wall, approximately 90 cm wide and constructed of cut limestone facing stones with cobble fill at its core. Our excavations recovered abundant, but eroded, Tepeu 2 and 3 ceramic sherds from the collapse debris on either side of the feature. Unfortunately, no other artifacts that might hint at the feature's function were recovered.

Structure A-9 is a 10-m tall unlooted temple-pyramid built at the northern edge of the plaza. Stela 1, originally discovered in 2017, was found face down in front of Structure A-9. As noted in our reconnaissance report, it appeared as if looters had originally cleaned around this monument and attempted to lift it (see Houk et al. 2017). The monument is uncarved and measures 1.28 m tall, 0.78 m wide, and 0.35 m thick, and it is clearly broken at one

end, if not both ends. A possible fragment, measuring 0.68 m long, lays nearby.

East of Structure A-9, the plaza juts to the north and supports Ball Court 1, an east-west oriented court formed by Structures A-10 and A-11. The ball court's alley measures approximately 16.5 by 7.65 m, and the mounds are approximately 5 m high. A test excavation in the center of the alley did not encounter any markers or caches and terminated on bedrock approximately 50 cm below the surface. The ceramic sherds from the single construction phase in this part of the plaza are Tepeu 3 types, suggesting a late construction date for the ball court.

As shown in Table 1, the orientations of structures in the Main Plaza vary from 30° west of north (Structure A-2) to 7° east of north (Structures A-3 and A-6). Nowhere is the variability in orientation more noticeable than on the eastern side of the Main Plaza, where Structures A-1, A-2, and A-3, though connected to one another, have three different orientations. Structure A-1's 6° west of north alignment is perhaps most surprising since all of the other buildings in the plaza, with the exception of Structure A-2 (whose function is difficult to classify), are oriented north-south to a few degrees east of north.

Structures A-1 and A-2 face the Main Plaza but also form the western side of Courtyard A-2. The courtyard's northern edge drops several meters to a *sacbe*, which extends northward to Courtyard A-3. Structure A-14, which abuts the back of Structure A-2, was apparently never completed; a sloping, irregular feature extending off the eastern end of Structure A-14 appears to be a construction ramp.

Attached to the eastern base of Courtyard A-2 is Courtyard A-5, a lower platform that supports two parallel, 1-m high mounds that resemble a ball court in plan but not size. A *sacbe* connects the southern end of Courtyard A-5 to the opening in the southeastern corner of the Main Plaza, implying some sort of functional relationship between the two groups.

Courtyard A-3, though small and housing only two modest structures, is arguably important given that it is physically connected to the north side of Courtyard A-2 via a 60-m *sacbe* and contains a stone monument. Altar 1

sits in the center of the courtyard with additional stone pieces found just to its west. The primary piece measures 1.0 x 0.80 m and is 0.32 m thick. It appears to be uncarved but is partially obscured by tree roots.

Courtyard A-4 lies just south of Group A and is today separated from the Main Plaza by an old logging road. The courtyard has a small eastern shrine/temple-pyramid, which has been severely damaged by a centerline looters' trench, and two smaller buildings on its southern and western sides. It is possible a fourth building once closed off the northern side of the courtyard, but disturbance from the logging road makes it difficult to determine.

Following terminology utilized by George Andrews (1975), Group B constitutes a small acropolis group 65 m east of Group A. It contains a small plaza, referred to here as the East Plaza, which gives way to two increasingly smaller and more elevated courtyards to the north. The plaza is notable for both the badly looted 9-m high eastern temple-pyramid, Structure B-1, and Ball Court 2, composed of approximately 3-m high mounds. The ball court sits on a small platform that juts off of the southern end of the plaza. A test pit in the East Plaza documented a single construction episode overlying bedrock, encountered just 31 cm below surface. Ceramics from the construction fill are Late Classic in age; unfortunately, the few sherds could not be more precisely dated.

We propose that the formal access into the acropolis group and the East Plaza was through the plaza's southwestern edge, immediately south of Structure B-4, a low 1.5-m tall range building. Although we did not map it as such, there may be a *sacbe* connecting Groups A and B at this proposed entrance point. The terrain forms a ridge between the two groups, and the Maya placed Stela 4 midway between the East Plaza and Courtyard A-5. Stela 4 is oriented north-south so that it "faces" both groups. The base of this uncarved monument is still upright, but the top of the monument is broken off, lying east of its base.

Courtyard B-2, the southern of two increasingly elevated courtyards in the acropolis group, is surrounded on all sides by range buildings. The formal entry into the courtyard was through the center of Structure B-5 where a

depression is visible in the summit of the mound.

The floor of Courtyard B-3, the northern courtyard in the acropolis group, is 3.2 m higher in elevation than that of Courtyard B-2 and 4.2 m higher than that of the East Plaza. It is also 0.8 m higher than the floor of Courtyard A-2, making it the most elevated courtyard in the site core. This restricted courtyard is surrounded by structures, the tallest of which is Structure B-11 on its northern side. Its prominence made it the target of looters who trenched or tunneled into it in six locations. In one of these trenches, we discovered a bone pin *in situ* within a plastered cord holder. The bone is a white-tailed deer tibia (Lori Phillips, personal communication, 2019), which we collected for radiocarbon dating. The sample returned a date of 1285 ± 20 uncalibrated years BP (PSUAMS# 6483; bone; $\delta^{13}\text{C} = -20.6\text{‰}$). The results were calibrated with OxCal v4.3 (Bronk Ramsey 2009) using the IntCal13 atmospheric curve (Reimer et al. 2013), which returned a 2σ calibrated age range of AD 669–769, falling squarely in the Late Classic period.

Structure B-11 is clearly an important building in the acropolis group and the site core. Only Structures A-1 and B-1 are higher, both of which are temple-pyramids. The occupants of Structure B-11 would have had views of all of Group B, as well as Courtyards A-2, A-3, and A-5. They may also have viewed Ball Court 1 and the southeastern entrance into the Main Plaza as well, but the mass of Structures A-1, A-2, and A-3 would have blocked their view of the majority of the Main Plaza space.

Groups C and D

Survey and exploration discovered one large hilltop group, Courtyard C-1, crowning the summit of a hill 350 m to the west of the Main Plaza (see Figure 2). It consists of five structures surrounding a 35 by 29 m courtyard. Unlike the structures in the site core, the buildings at Courtyard C-1 are oriented approximately 20° east of north. The largest structure is a 7-m tall range building on the eastern side of the courtyard, pierced by a single looters' trench. A cursory examination of the trench suggests two phases of construction are exposed. A small uncarved monument, Altar 3,

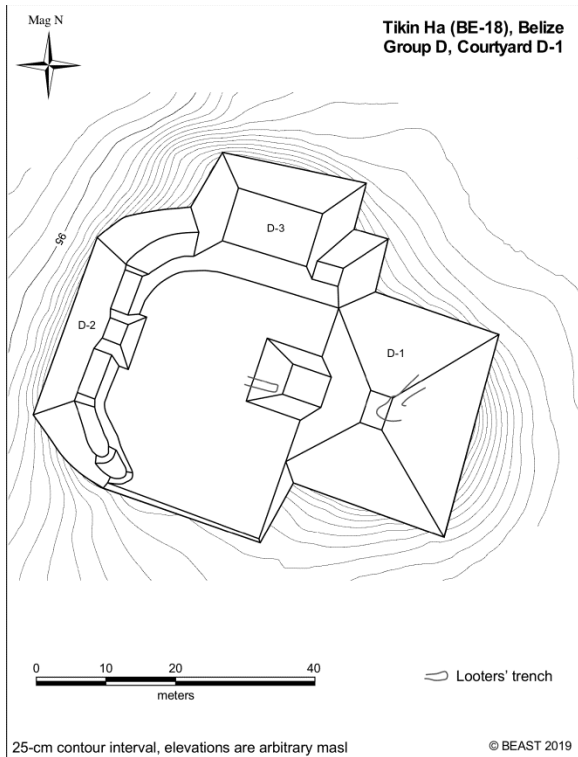


Figure 5. Prismatic map of Courtyard D-1.



Figure 6. Photograph of sherds from the adosada platform in Structure D-1. Photograph by Bruce Templeton.

in the central portion of the courtyard but does not appear to be directly in the center of the group.

Group D comprises three courtyards to the south and southeast of the Main Plaza (see Figure 2). Courtyard D-1 is 375 m south-southeast of the Main Plaza and is the largest courtyard in Group D (Figure 5). The largest building is Structure D-1, a 9.5-m tall temple pyramid on the eastern side of the courtyard. The building has an apparent *adosada* platform on its face, which is highly unusual—although another example of this style of building is found in Courtyard D-3. Looters cut into the



Figure 7. Photograph of the vaulted chamber exposed by the looters' trench on the summit of Structure D-1. View to the east.

face of the *adosada* platform, slightly south of centerline, and may have encountered a crypt. We recovered two large base-to-rim sherds with basal flanges from Early Classic bowls from the possible crypt (Figure 6).

A gaping and irregular trench on the eastern face of the summit of the mound appears to have penetrated a vaulted tomb (Figure 7). We were able to peer down into the chamber from two different openings that cut partially into the ceiling and partially into the west wall, but we chose not to enter it for safety reasons. We estimate the chamber to measure approximately 2.5 x 1.5 m, with a general east-west orientation. Looters may have also penetrated the south and east walls of the chamber, but, despite this activity, it remains relatively intact, with some wall and surface debris sloping down onto the chamber floor.

Structure D-2 is located directly across from Structure D-1 and is an unusual building

Table 2. Monumental Areas for Major Sites in Belize.

City	Region ¹	Monumental Area (m ²)
Caracol	VP	236,955
Lamanai	NB	109,385
Nohmul	NB	86,393
La Milpa	E3RR	82,156
El Pilar	BV	74,206
Xunantunich	BV	73,690
Chan Chich	E3RR	68,469
Buenavista del Cayo	BV	65,407
Ka'Kabish	NB	62,159
Gran Cacao	E3RR	57,201
Baking Pot	BV	56,249
Maax Na	E3RR	53,778
Pusilha	SB	51,741
Dos Hombres	E3RR	47,014
Altun Ha	NB	46,423
Tipan Chen Uitz	BV	41,316
Pacbitun	BV	38,054
Tikin Ha	E3RR	36,526
Uxbenka	SB	35,855
Blue Creek	E3RR	35,775
Minanha	VP	32,916
Lubaantun	SB	32,306
Yalbac	BV	29,409
Punta de Cacao	E3RR	25,391
Nim Li Punit	SB	23,161
San Jose	E3RR	18,918

*Notes: 1. Area Key: BV, Belize Valley; E3RR, eastern Three Rivers adaptive region; NB, northern Belize; SB, southern Belize; VP, Vaca Plateau. 2. See Houk (2015:Table 10.1) for map sources.

that initially confounded our mapping efforts. The structure consists of a 2-m tall central platform with 1-m high rectangular platforms extending north and south. These platforms appear to curve inward, with the northern one joining Structure D-3, and the southern one terminating along the southern edge of the

courtyard. Excavations are required to confirm our impressions, but the “wings” of Structure D-2 appear rounded based on surface indications.

Discussion

The project produced detailed and accurate maps of the monumental architecture at Tikin Ha and made a preliminary determination of the age of the ruins. In this section, we textualize these spatial and temporal data within the eastern Three Rivers adaptive region. We follow the system Houk (2015) used in a previous study of Maya cities in the eastern lowlands, which examines site core areas (expressed as square meters of monumental architecture), architectural inventories, and site planning characteristics.

Site Size

Archaeologists have employed a range of methods to rank Maya sites by size in the Three Rivers adaptive region, including Adam's and Jones' (1981) courtyard counting system, Guderjan's (1991) modification to that system (which Thomas Garrison [2007] used in a separate study of sites in the Three Rivers adaptive region), and Houk's (2015) monumental area method. The third method, which we employ here, measures the horizontal area covered by monumental architecture at a site's epicenter; it does not include outlying monumental groups that appear to be primarily residential in function. Houk (2015:234–235) discusses the pros and cons of all three methods.

The monumental architecture of Groups A and B, which constitutes the epicenter of Tikin Ha, covers 36,526 m² (Table 2). A comparison to other major Maya sites in Belize shows that Tikin Ha ranks low—18th out of 26 sites. Within the eastern half of the Three Rivers adaptive region, Tikin Ha is the 6th largest site. Tikin Ha's small overall monumental area is surprising considering the size of the Main Plaza at the site (Table 3). Tikin Ha's Main Plaza is the third largest plaza in Belize and the third largest in the Three Rivers adaptive region as a whole, behind Xultun's Plaza B (22,610 m² [Garrison 2007:Table 6.3]) and La Milpa's Great Plaza (17,713 m²). Among the other sites in Table 3, which includes the largest sites in each of the five regions of Belize in Houk's (2015) study of

Table 3. Largest Plazas as a Percentage of Monumental Area at Major Sites in Belize.

City	Region ¹	Largest Plaza	Largest Plaza Area (m ²)	Monumental Area (m ²)	Plaza as Percentage of Monumental Area
Tikin Ha	E3RR	Main Plaza	13,139	36,526	36.0%
Dos Hombres	E3RR	Plaza A-1	11,651	47,014	24.8%
La Milpa	E3RR	Great Plaza	17,713	82,156	21.6%
Minanha	VP	Plaza A	6,704	32,916	20.4%
Chan Chich	E3RR	Plaza A-1	12,490	68,469	18.2%
El Pilar	BV	Copal Plaza	12,238	74,206	16.5%
Nohmul	NB	"Giant" Plaza	13,458	86,393	15.6%
Pusilha	SB	Moho Plaza	7,047	51,741	13.6%
Xunantunich	BV	Plazas A-I and A-II	9,552	73,690	13.0%
Altun Ha	NB	Plaza A	5,386	46,423	11.6%
Uxbenka	SB	Group E Plaza	3,698	35,855	10.3%
Nim Li Punit	SB	Stela Plaza	1,837	23,161	7.9%
Lamanai	NB	High Temple plaza	6,603	109,385	6.0%
Lubaantun	SB	Plaza V	1,954	32,306	6.0%
Caracol	VP	B (Caana plaza)	8,223	236,955	3.5%

*Notes: 1. Area Key: BV, Belize Valley; E3RR, eastern Three Rivers adaptive region; NB, northern Belize; SB, southern Belize; VP, Vaca Plateau. 2. Stela density is the number of stelae per 10,000 m² of monumental area.

Maya cities in the eastern lowlands, the largest plaza at any site accounts for less than 25 percent of the total monumental area at the site, and most account for less than 19 percent. Tikin Ha's Main Plaza accounts for a staggering 36 percent of the monumental area at the site. Interestingly, four of the five sites with the highest plaza area percentages are from the eastern side of the Three Rivers adaptive region and include Tikin Ha, Dos Hombres, La Milpa, and Chan Chich.

Chronology and Construction History

The ceramics from eight excavations and one surface collection in the site's epicenter suggest the site core was built near the end of the Late Classic period. Furthermore, each excavation encountered only one construction episode. While the ceramics do not provide fine enough resolution to determine if all areas of the site were constructed in one large event, they were certainly constructed around the same time. Our single absolute date from the bone cord

holder pin in Structure B-11 returned a 2σ calibrated date range of AD 669–769. Because we did not conduct excavations on structures or clean looters' trenches to draw detailed profiles, we cannot say at this time if the monumental buildings in Groups A and B are also single-phase constructions.

Our initial and admittedly limited data suggest Tikin Ha was built quickly and occupied for a comparatively short period of time. Tikin Ha's brief occupation period may explain why the Main Plaza accounts for such a high percentage of the monumental area at the site. Unlike mature cities, which have generations of growth and expansion, it is possible that Tikin Ha's builders never had time or motivation to construct additional monumental groups prior to its abandonment. In fact, what is missing from Tikin Ha's architectural inventory are additional administrative plazas and palaces, like those found at Dos Hombres and La Milpa, which likely resulted from increasing numbers of elites

and/or royal family members filling expanding bureaucracies as each center matured.

While the site core appears to be a Late Classic development, the Early Classic sherds from the looters' trench in Structure C-1 suggest earlier occupations exist in the general vicinity. Additionally, the *adosada* platforms on the fronts of Structures D-1 and D-9 are a type of Early Classic architectural form that is common at Teotihuacan in Central Mexico but is rare in the Maya lowlands (Rich and Matute 2015:81).

Site-Planning Characteristics at Tikin Ha

Tikin Ha's site plan deviates from the two recognized templates in the broader region (Houk 1996, 2003) and has some other rare city planning traits that challenge the narrative of how the Maya planned and built their cities in the area (Houk 2015). Although the major architectural groups are both aligned north-south, their spatial relationship relative to one another—with the acropolis east/northeast of the Main Plaza—does not conform to either the Petén template or the proposed northern Belize template. Furthermore, the east-west oriented ball court in the Main Plaza is rare. Noting in broad terms, Scarborough (1991:138) writes that “most” ball courts are oriented north-south, going on to list only six sites out of approximately 200 in his study that deviate from that pattern. More recently, Lohse and colleagues (2013:101) noted that 9 of 11 ball courts at seven sites in the eastern Three Rivers adaptive region are oriented north-south. Thus, the east-west court at Tikin Ha is an example of a rare architectural form.

The massive Main Plaza, on the other hand, follows a Three Rivers adaptive region preference for “overdesigned” plazas (see Stark and Stoner 2017:413), a trend noted by Houk (1996) and elaborated on by Garrison (2007). Garrison (2007:319) suggested that large plazas, along with their associated temple-pyramids, are reflective of capitals of territories and “are explicit statements of hierarchical control over their hinterland populations during the Late Classic Period.” Coupled with the apparent short-lived growth trajectory, the proportionally large plaza of Tikin Ha against its limited extent of monumental construction may suggest that it

had only recently acquired broader territorial control prior to its abandonment.

Conclusions

The mapping data and preliminary conclusions from our limited testing resulted in unexpected discoveries about Tikin Ha's physical layout and its chronology. The site's plan does not follow either of the dominant site planning templates found in the eastern Three Rivers adaptive region, although it does share the preference for massive plazas seen in both halves of the region.

Tikin Ha was apparently a late comer to the scene, but it was an ambitious political endeavor. Its four stelae are the most at any site other than La Milpa in the eastern part of the Three Rivers adaptive region. The site's builders managed to construct a massive plaza and one of the tallest temple-pyramids in the region, apparently without antecedent construction and without regard for common site planning models. Our preliminary data suggest that the site was also short lived and apparently abandoned while some of its largest buildings were still under construction.

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