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Ancient Maya Settlement in the Valley of Peace Area

Lisa J. Lucero, Scott L. Fedick, Andrew Kinkella, and Sean M. Graebner

In their seminal book on Barton Ramie and the Belize River Valley, Gordon R. Willey and his colleagues (1965) asked several questions about ancient Maya society that are still relevant today. They realized that to reveal anything about ancient Maya social structure, it was necessary to move away from major centers to smaller settlement systems. As the chapters in this volume illustrate, this strategy continues to yield significant information. The major contributions of the Valley of Peace Archaeology (VOPA) project are twofold: we have expanded survey east beyond Cocos Bank, the eastern edge of Willey's survey area, and we address their question regarding where and why the Maya settled where they did and how they interacted with their physical and social surroundings.

Settlement decisions and density are largely related to agricultural potential of the soils. In the Belize River area there are two distinct resource zones, alluvial terraces and uplands. In the former, one finds minor centers and dispersed settlement (e.g., Barton Ramie, Saturday Creek). In the latter, one finds diverse settlement, from major centers to solitary farmsteads. In this chapter, we present results of a land evaluation and survey project conducted in the Valley of Peace area, situated north of the Belize River in central Belize. We first describe a predictive settlement model and mapping methods. We then describe seven surveyed areas selected based on their agricultural potential. We discuss the relationship of agricultural potential, settlement patterns, and social organization by briefly comparing results with those from the Belize River Archaeological Settlement Survey (BRASS) of the upper Belize River area where Fedick originally

developed and applied the model (Fedick 1995, 1996; Fedick and Ford 1990; Ford and Fedick 1992).

Archaeology of the Valley of Peace Area

The VOPA research area is located in central Belize (40–120 m asl) north of the Belize River. The only previous archaeological research carried out in the VOPA area was a salvage operation conducted in 1982 when the Valley of Peace Village was founded (Awe 1984; Awe and Topsey 1984). Ceramic analysis indicates occupation from at least the Early Classic (ca. A.D. 250–550) through Terminal Classic (ca. A.D. 850–950) periods (Morris 1984).

The major goals of the VOPA project, initiated in 1997, were to assess a settlement pattern model devised by Fedick (1988) based on the agricultural potential of soils and to establish an initial regional chronology.

Land Evaluation and Predictive Modeling

An evaluation of land resources in and surrounding the Valley of Peace study area was conducted by Fedick prior to initiation of the VOPA project (Fedick 1988). Soil type definitions, properties, and mapped distributions are based on earlier, independent studies of soils in the Belize Valley (Birchall and Jenkin 1979; Jenkin et al. 1976). The soil maps used in the evaluation (Birchall and Jenkin 1979) were originally compiled at a scale of 1:50,000, a level of mapping intensity that distinguishes soil-type areas (mapping units) larger than about 10 ha in extent (Fedick 1996). The goal of the evaluation was to characterize the agricultural capability of soils from the perspective of hand-cultivation technology by farmers concerned with the potential for intensification (see Fedick 1995, 1996:121–122). The evaluation quantified limitations to cultivation as indicated by effective root zone, susceptibility to erosion, workability, drainage, and inherent fertility. Each evaluated soil type was then assigned to one of five capability classes (I–V), with Class I having the fewest limitations and Class V having the greatest limitations.

The resulting land evaluation also serves to predict ancient Maya residential settlement distribution. The model assumes that people will choose to reside in resource zones that are most capable of supporting intensive hand-cultivation and home gardens. Less intensive forms of cultivation, such as slash-and-burn milpa farming, would be conducted in lands surrounding the settlement (Fedick 1996).

A few qualifying statements are necessary in applying the land evaluation for the VOPA study area as a predictive model for settlement distribution. First, since the scale of the soil maps will not distinguish soil areas less that 10 ha in extent, there will be cases where specific patches of land may not conform to the generalized land evaluation as depicted on the map. In the case of the BRASS study, this problem was resolved through detailed mapping of soils within the archaeological survey transects (Fedick 1988, 1995; Ford and Fedick 1992). The refinement of the map data has not yet been conducted in the VOPA survey areas. Second, the predictive model identifies classes of land that are most likely to contain ancient settlements, but not the specific location of a settlement within a patch of land. Third, the model works best at predicting the locations for communities where intensive gardening was practiced. Isolated farmsteads were likely to have been established as secondary residences for farmers conducting seasonal milpa cultivation in less desirable lands at greater distances from their primary residence. Fourth, and perhaps most important, the predictive model is based on locational decisions most likely to have been made by independent farming households. Decisions to locate settlement in areas not suitable for agriculture would require alternative explanations, such as unequal access to land, specialized household activities other than agricultural production, or locational decisions dictated or restricted by administrators higher up in the political hierarchy.

Archaeological Fieldwork, 1997–2001

The 1997 VOPA survey was designed to investigate accessible locations as per Fedick's predictive model. Modern roads and trails provided access to the full range of land Capability Classes, where modern farmsteads and recently cleared fields were examined for evidence of ancient settlement. Visibility in the cleared fields was typically adequate. Tape and compass maps were generated for each exposed site, and their UTM coordinates were determined using a GPS unit. When possible, we collected diagnostic ceramics from mound surfaces. Ceramic analysis was conducted using the ceramic chronology developed for Barton Ramie (Gifford 1976), located about 20 km to the southwest. In general, analysis indicates the ancient Maya occupied the area from about the Middle Preclassic (ca. 900–400 B.C.) through at least the Late Classic (ca. A.D. 550–850), if not later (ca. 1200+).

In 1998 we mapped and collected ceramic data from one test pit and several looter's trenches in structures located at Cara Blanca Pool 1 in the

north part of the project area. We also explored the pool for ritual offerings (Kinkella 2000; Osterholtz 1999). Finally, we mapped the minor river center of Saturday Creek and collected surface ceramics. In 1999, we test excavated 10 mounds at Saturday Creek to collect chronological data. In 2001, we conducted extensive excavations at Saturday Creek and mapped Yalbac, a major center 19 km northwest of Saturday Creek.

Results: The Agricultural Landscape

The land evaluation (table 6.1) and resulting map (fig. 6.1) represent a landscape viewed from the perspective of agricultural capability under hand-cultivation technology. The VOPA study area is 308 km^2, 300 km^2 of which has been classified (table 6.2). The other 8 km^2 of the area (3 percent) are bodies of water, land outside of the original soil-mapping project area, or land outside of the VOPA study area on the south side of the Belize River.

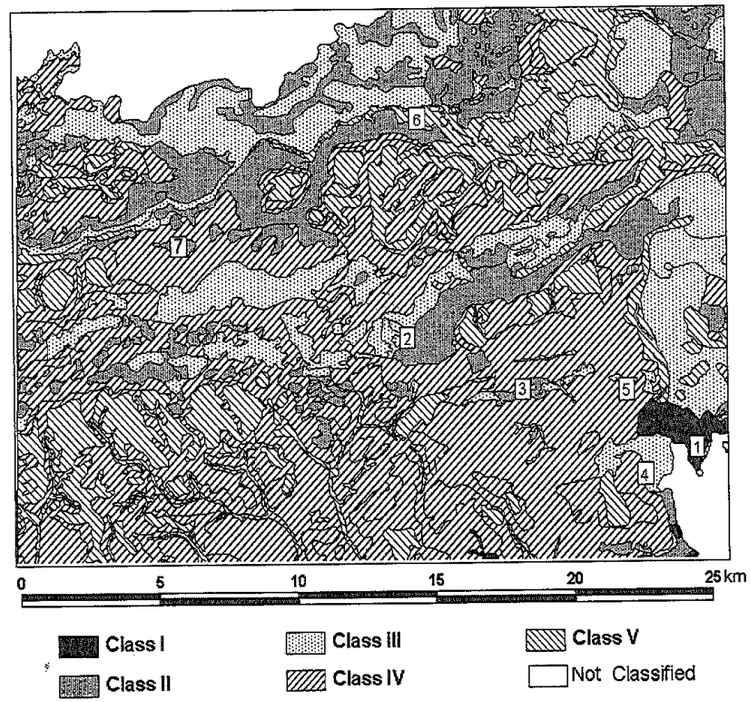

Fig. 6.1. Land classes in the VOPA area: (1) Saturday Creek; (2) Old Tom's Milpa; (3) Terrence Flowers' Pasture; (4) Three Sisters; (5) Milpa 1; (6) Cara Blanca; (7) Yalbac.

Table 6.1. Soil attributes and land capability classes

Soil series (phase)	Fertility	Erosion	Root Zone	Workability	Drainage	Rating total	Capability class[a]
Young Girl	1	1	1	1	1	5	I
Listowel	2	1	1	1	1	6	I
Chorro	1	2	2	1	1	7	II
Piedregal	1	2	3	1	1	8	II
Barton Ramie	1	1	3	1	3	9	II
Banana Bank	1	1	4	1	2	9	II
Seven Mile	1	1	3	3	2	10	II
Mumble de Peg	1	1	4	3	1	10	II
Seven Mile (Shallow)	1	2	3	3	2	11	III
Meditation (Pale)	2	1	4	1	3	11	III
Tambos (Shallow)	2	1	3	3	2	11	III
Banana Bank (Wet)	1	1	4	3	4	13	III
Piedregal (Hill)	1	4	4	2	2	13	III
Rancho Delores	2	1	4	4	2	13	III
Tambos	2	1	4	4	3	14	IV
Spanish Lookout	2	2	4	4	3	15	IV
Beaver Dam	3	1	4	4	4	16	IV
Iguana	3	3	3	3	4	16	IV
Cara Blanca	4	1	4	3	4	16	IV
Norland	3	3	3	4	4	17	V
Cadena Creek	2	3	4	4	4	17	V
Akalche	4	1	4	4	4	17	V
Akalche (Sand)	4	1	4	4	4	17	V
Garbutt (Sand)	1	1	1	2	1	6	V[b]
Pucte	?	1	4	?	4	9+	V[c]

a. Class limitations: I, few or none; II, some: reduces plant choices or may need to use conservation techniques; III, severe: above, even more so, or both; IV, very severe: restricted plant choices or management, or both; V, generally not suited for agriculture unless major reclamation and conservation techniques used.

b. In addition to the rating factors used, this soil is subject to annual or nearly annual flooding by the Belize River.

c. Swamp soil not suitable for habitation without substantial modification.

The most likely sites for the location of ancient communities are within land Capability Classes I and II. Class I lands are restricted in extent (1 percent), and are found only in the fertile, well-drained alluvium adjacent to the Belize River. Class II lands (16 percent) are fertile well-drained soils of the uplands that are well suited for communities practicing intensive

Table 6.2. VOPA soil classes

Class	Percentage of study area
I	1
II	16
III	19
IV	44
V	17

cultivation in home gardens and adjacent fields. Class III lands (19 percent) have agricultural limitations related primarily to steep slopes or impeded drainage. Class III lands are less suitable for residential construction, although hilltops, or better-drained locations within low areas, are potentially habitable. Class III lands are suitable for swidden cultivation and can be intensified through terracing on hill slopes or improvement of drainage in low areas. Class IV lands are the most common type in the study area (44 percent) but are not well suited for residential locations, as the soils are generally poorly drained. The Class IV lands are marginally suitable for swidden cultivation and are not favored by Maya farmers of the area today. Field houses or secondary residences may be established in Class IV lands in areas far from more suitable residential locations. Class V lands (17 percent) are very poorly suited as either residential sites or for agricultural production. A total of seven discrete areas were surveyed, each of which is described below.

Saturday Creek

Saturday Creek is a minor river center on the north side of the Belize River (map 1), and is similar in layout to Barton Ramie. It includes solitary mounds, patio groups, range structures or palaces, and temples over 10 m in height and a ballcourt of uncut stone facades with clay fill (fig. 6.2). Site layout does not appear to have been planned (Arie 2001). The core area of Saturday Creek rests upon an expansive terrace, which likely has been modified. Analysis of surface ceramics collected demonstrates a Middle Preclassic through Postclassic occupation (ca. 900 B.C.–A.D. 1200).

Saturday Creek is located within the only expanse of Class I lands (Young Girl and Listowel series) in the VOPA study area, consisting of rich alluvial soils. Seventy-nine structures were mapped in a 0.81 km^2 area bounded by roads on the north side of the river. Most of the site is located in a plowed field. It is currently intensively cultivated by Mennonite farmers and plowed at least twice a year to plant maize, beans, and water-

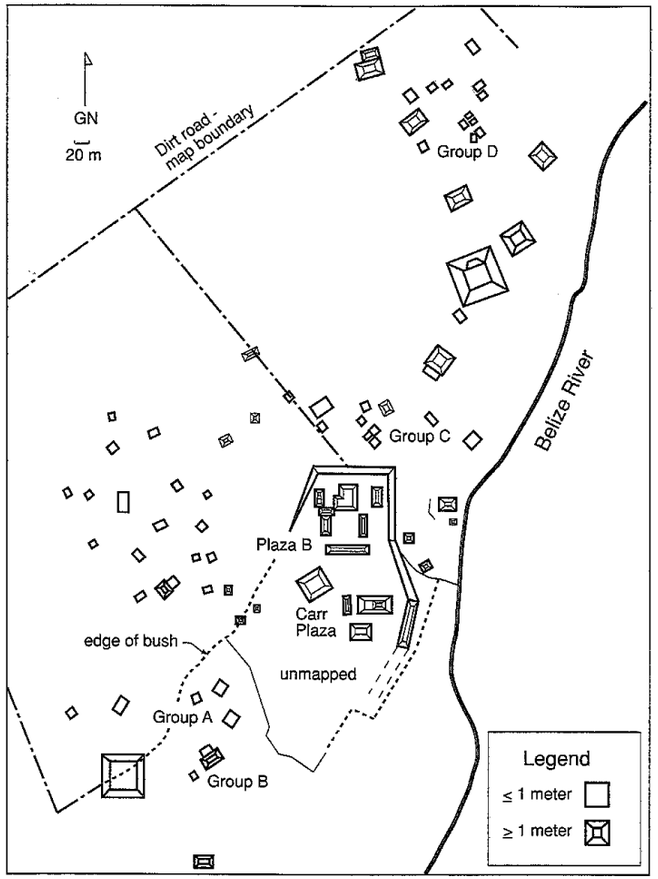

Fig. 6.2. Saturday Creek (map produced by A. Kinkella and L. J. Lucero).

melon. Consequently, mounds in the plowed field have been reduced in height and spread in areal extent. A large portion of the site (ca. 350 × 300 m), including the center core, has not been plowed. The core area has not been mapped in its entirety due to dense secondary growth. Adjacent to the settlement area is an expanse of Class V lands (Garbutt series), which are of high fertility, but are considered risky for cultivation and unsuitable for settlement due to annual or nearly annual flooding. While it was impossible to wade through the deep, soggy soils of this low-lying terrace in 1998, the area was dry in 1999, and survey did not indicate the presence of any cultural remains.

There are 53 solitary mounds (67 percent) that likely represent raised foundations for thatched wattle-and-daub structures. Surface artifacts such as plain and decorated ceramic bowls and jars, grinding stone fragments, chert tools, obsidian cutting blades, and daub indicate a probable domestic function (Lucero 2001). The four plazuela groups mapped at Saturday Creek (A–D) each consist of four to five mounds for a total of 15 mounds (19 percent). Surface artifacts differ from those at solitary mounds (e.g., ceramic figurine fragments, decorated vase sherds, and obsidian cores) and suggest higher social status.

Old Tom's Milpa

Old Tom's Milpa consists of a series of hills and the surrounding flat-lying area (fig. 6.1). The area surveyed was approximately 200 × 100 m. Due to time constraints, we only mapped the one mound on the top of a large hill. This mound was over 8 m in height with two major looter's trenches. At the base of the hill were other mounds about 1.5–2 m in height extending out from the side of the hill. No additional mounds were observed in the 200 × 100 m survey area, although visibility was difficult due to dense secondary growth. Surface sherds were too eroded for chronological assessment.

The mapped area of Old Tom's Milpa is situated at the southwest end of a large expanse of Class II soils. The tall, pyramidal mound is located on the summit of a hill with Class III agricultural land (Piedregal series, Hill phase). The smaller mounds at the base of the hill are within Class II soils (Chorro series).

Terrence Flowers' Pasture

Terrence Flowers' Pasture is approximately 620 × 230 m and is located on the crest of a hill in the northeast part of the Valley of Peace village (fig. 6.1). Modern construction includes a house, corral, and pigpens. Prehispanic settlement consists of solitary mounds (N = 4) and mound groups (N = 3, ranging from 14 × 12 m to 5 × 5 m and 5 m to 1 m high) on Class II soils (Chorro series). The mounds cluster east-west along the hillside and/or natural or artificial terraces. A larger mound, (14 × 12 m, 4+ m high) on top of a platform is constructed with cobble and boulder fill, plaster floors, and faced boulders. The other structures do not have standing walls. Preliminary ceramic analysis indicates Middle Preclassic through the Late Classic occupation. No settlement is present in the flat, low-lying expanse below the hillside, which comprises Class IV soils (Spanish Lookout series), which are particularly clayey.

Three Sisters

This floodplain site is located about 2 km southwest of Saturday Creek and about half a kilometer west of the Belize River (fig. 6.1). Three Sisters is a small monumental complex surrounded by dispersed settlement. This is the site that Willey et al. (1965:13) refer to as Cocos Bank, the easternmost extent of their survey area:

> Cocos Bank is about 20 km. northeast of Barton Ramie air line distance, but over 40 km. via the river. The terrain is flat alluvial soil. The ceremonial group is raised on a square, probably earth-filled, basal platform which is about 100 m. across and about 5.00 m. high. . . . Four rectangular mounds are placed on the edges of the basal platform so as to form a plaza group. The highest of these, on the east side, rise 4.00 to 5.00 m above the plaza and is thus 9.0 or 10 m above the ground level. A bulldozer cut at one corner of this highest mound shows rubble and earth fill with boulder retaining walls. The other mounds are one meter or so high and have signs of smaller superimposed platforms. Traces of stone pavement, at ground level, can be seen adjacent to the east side of the Cocos Bank group. On the north, west, and south sides of the group are deep pits from which soil was probably obtained for the construction of the mounds. These depressions now form small ponds. In addition to the ceremonial group, housemounds and occasional "plazuelas" are scattered on the flat alluvial terrain both at Cocos Bank and at the nearby Banana Bank.

The current landowner, John Carr of Banana Bank Ranch and Lodge, renamed the site Three Sisters based on local stories about three Maya sisters being entombed in the largest structure, TS-1. The large architectural features cluster near an aguada on top of a large artificially flattened hilltop approximately 195 × 180 m. The largest structure, TS-1, has at least four corbel arch rooms and is ca. 35 × 15 m, 5 m high. While there is evidence for further settlement between the complex and river, the dense secondary growth made survey difficult.

The dispersed settlement located west of the complex has been intensively plowed by Mennonite farmers. We mapped nine solitary mounds ranging from 0.5 (plowed) to 1.5 (unplowed) m in height, and 35 × 30 m (plowed) to 9 × 9 m (unplowed) in size. Surface collections suggest that prehistoric occupants had access to a variety of prestige or exotic goods,

including Pachuca obsidian and hematite ornaments. Ceramic types indicate Early Classic (ca. A.D. 250–550) and Late Classic (ca. A.D. 550–850) occupation.

Three Sisters is situated in a large expanse of Class III lands (Banana Bank series, Wet phase). Field observations indicate that the Three Sisters site is not located in a Wet phase zone, and would accurately be classified as Class II (Banana Bank series).

Milpa 1

Milpa 1 is located in the eastern sector of the project area and is about 500 × 170 m (fig. 6.1). It includes various architectural types from solitary mounds (N = 4) to multimound platform groups (N = 3). The solitary mounds range in size from 12 × 12 m (1.33 m high) to 5 × 4 m (0.57 m high). The three-structure group mounds range in size from 11 × 9 to 7 × 7 m (heights range from 1.1 to 0.2 m). Preliminary ceramic analysis indicates Early Classic (ca. A.D. 250–550) and Late Classic (ca. A.D. 550–850) occupation. We also collected obsidian and polychrome pottery from the larger structures. While it is not clear in figure 6.1, Milpa 1 is situated in a patch of Class II lands (Piedregal series) that is bordered on the north by poorer agricultural soils of Class IV. While Class III land (Piedregal series, Hill phase) is indicated on the 1:50,000 maps, on site observation indicates that structures are on relatively level areas of Piedregal soils (not Hill phase) or Class II lands.

Cara Blanca

Cara Blanca consists of 22 pools extending east-west along the base of limestone cliffs/ridges (up to ca. 80–100 m high) in the northern section of the VOPA area (fig. 6.1). This is an uninhabited expanse of primary forest currently owned by a logging and citrus company. Of the six pools investigated in 1998, four have been distinguished as springs/wells (vs. rain-fed pools). The source of springs/wells consists of a subsurface cave and river system. All are surrounded by Class V land (Cadena Creek series) with black, poorly drained clay soils that flood during the rainy season.

The only pool associated with settlement is Pool 1, defined as a spring/well. The pool measures approximately 100 × 61 m and is surrounded by seven mounds. Looter's trenches show that the largest structure (Str. 1, 22 × 15 m, 4 m high) is a multiroomed vaulted building. Test excavations yielded mostly jar rims (63 percent of total rims) largely dating to the Late

Classic (79 percent, A.D. 700–900) (Kinkella 2000), which the Maya may have used to collect sacred water. In 1998, two scuba divers explored the pool. The sheer pool walls, relatively poor visibility (c. 10 m) and depth (40 m), however, prevented them reaching bottom (Osterholtz 1999). Consequently, we still do not know if the Maya made offerings in this particular pool, though we expect they did.

We only briefly visited five other pools. Pool 2 is located about 1 km west-southwest of Pool 1. This pool is known as Cara Blanca or "white face," aptly named for the steep cliff above (about 80–100 m in height). Also near Pool 1 is Pool 3, a clear, teal blue pool with good visibility and a steep drop-off. East of Pool 3, following the base of the ridge, is Pool 4, east of which is Pool 5 and Pool 6.

The limited survey we conducted north of Pool 1 in the surrounding ridges and cliffs also did not reveal any obvious settlement. These areas consist of Class III land (Piedregal Hill series) with relatively severe restrictions regarding intensive agriculture.

The Cara Blanca area is unique. Although there is plentiful water, steep cliffs and swampy/clayey soils present considerable limitations. The structures at Pool 1 are located on soils poorly suited for agriculture (Class V), as well as a seemingly undesirable location for residences. It seems clear that the structures built in association with Pool 1 were not located with consideration for agricultural activities, at least not for home gardens. Apparently, there were other reasons why the Maya built at Pool 1.

Yalbac

The medium-sized major center of Yalbac is located in the uplands along a perennial stream, Yalbac Creek, in central Belize. There are at least 19 monumental core structures and 28 looter's trenches (not all shown on fig. 6.3). The core consists of five major temples, several range structures, a ballcourt, possible causeways, three large plazas, and an acropolis over 20 m tall. We also excavated 1 × 2 m test pits in the centers of Plazas 2 and 3 to collect chronological information. They each had at least six construction phases consisting of plaster floors and cobble ballasts that date from 300 B.C. to A.D. 900.

Plaza 2 is ca. 70 × 49 m, around which are seven monumental structures, two of which comprise a temple ballcourt (Structures 2B and 2C). Plaza 3 is ca. 52 × 48 m, around which are six large buildings. Plaza 1 is the smallest (37 × 35 m), and is ringed by five structures, one of which is the

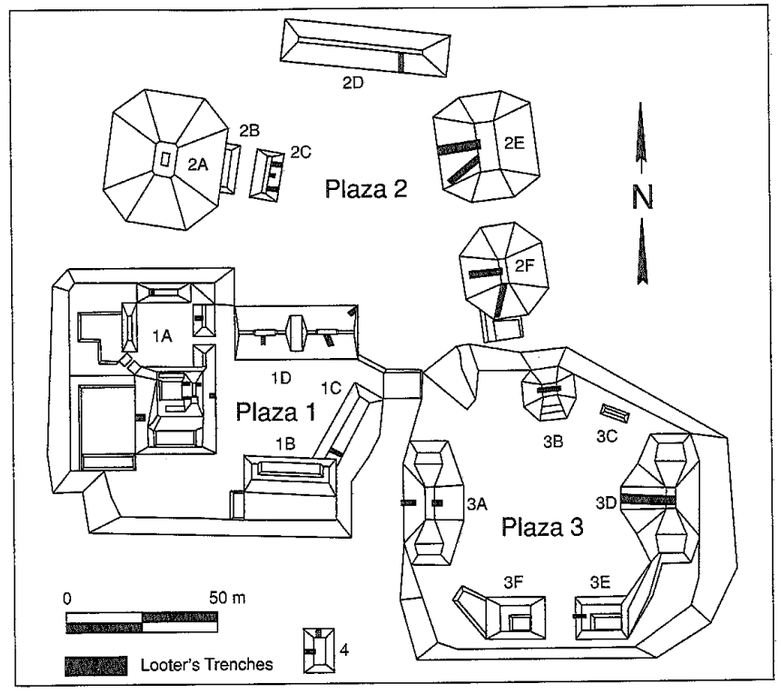

Fig. 6.3. Yalbac (map produced by S. M. Graebner and J. Wakeman).

acropolis (1A). The acropolis is ca. 57 × 52 m and over 20 m in height. It has four sunken plazas on top, and at least 18 structures. One of the looter's trenches (LT 1) on top has exposed two rooms, one with an intact corbel arch and red-plastered walls. Another (LT 2) has exposed a bench that overlooks Plaza 1.

We also surveyed the area around the core. The majority of settlement consists of solitary mounds, though we also noted groups of three to six structures, all constructed with cut stone. Surface ceramics were collected from 78 structures, which predominantly date to ca. A.D. 700–900 but range from ca. A.D. 400 to 1150–1500 (Conlon and Ehret 2002). Over 150 hinterland structures were mapped in an area roughly 5 km^2. The highest density of structures is located northwest of Yalbac in hilly areas largely on Class II (Seven Mile, Chorro series) and Class III (Piedregal series, Hill phase) soils. The core was built on Class II land (Chorro series), surrounded by Class IV land (Tambos series).

Discussion

In the Belize River Archaeological Settlement Survey (BRASS) area where Fedick (1988) first devised the predictive settlement model, he found the highest residential density in Class II soils, followed by Class I soils (table 6.3). Settlement generally concentrated in the well-drained alluvium adjacent to the river, as well as on the well-drained fertile, limestone-derived soils in the surrounding higher elevations (Ford 1990; Ford and Fedick 1992). During the Late Preclassic period (ca. 400 B.C.–A.D. 250), settlement increased and spread throughout the well-drained upland areas. This pattern more or less continued through the Late Classic period (ca. A.D. 550–850), when settlement spread into areas with poorer soils, or slow-draining marly soils (Ford 1990). Evidence from areas with large tracts of productive land indicates the presence of farming activities, wealth differentiation, and civic-ceremonial centers (Fedick and Ford 1990; Ford 1991a; Ford and Fedick 1992). Evidence from areas with less productive land indicates the presence of diverse economic activities, less wealth, and few, small, or no centers (Lucero 2001). Similar to settlement patterns in the BRASS area, VOPA settlement also largely corresponds to agricultural potential of the soils.

It is clear that the fertile alluvial soils found at Saturday Creek provided its former inhabitants with the means to sustain a relatively dense community for over a millennium. While Class I soils of Saturday Creek have a relatively high settlement density, it is lower than that found in the upper Belize River area (table 6.4). This pattern might partially be explained if the unsettled areas of the settlement were used for particular crops such as cotton and cacao. As figure 6.2 illustrates, there are sections in the mapped area that do not show any settlement. In addition, we were not able to map all the structures in the unplowed area due to dense vegetation; this fact would at least partially account for the difference. No settlement was found on Class V soils in the BRASS area or at Saturday Creek.

Table 6.3. Residential unit density by soil class in the upper Belize River area

Class	RU/km²	Structure/km²
I	98	157 (average 1.6 structures/RU)
II	208	291 (average 1.4 structures/RU)
III	46	46
IV	3	3
V	0	0

Source: After Fedick 1996a: tables 7.3, 7.4.

Table 6.4. Average structure/residential unit per km²

Class	VOPA	BRASS
I	97/84	157/98
II alluvial	48/48	–[1]
II non-alluvial	189/157	291/208
III	0[2]	46/46
IV	0	3/3
V	19/11	0

Notes: 1 = not present in the Brass survey transects; 2 = data not available for Old Tom's Milpa, only for Cara Blanca.

The relatively rich Class II soils with only a few limitations found at Old Tom's Milpa provides a reasonable explanation for the location of settlement in the flat-lying area. The large mound on top of the hill could have provided local religious or administrative functions for the farmers living below. Settlement density differs from that found in the BRASS area, perhaps because access to the area was controlled by a landowner. Water would not have been a problem, as there is a creek within walking distance, just over 1 km.

Yalbac's location near water and good land provided the means to sustain large enough populations to build monumental architecture. The core of Yalbac lies on top a natural, and perhaps modified hill on Class II soils surrounded by Class IV soils nearby pockets of Class II and Class III land. Yalbac Creek provided water for daily needs, as well as a probable trade route. Hinterland farmers provided foodstuffs and labor for Yalbac royal and elite families. Our preliminary density figures are not adequate to compare with BRASS data.

Settlement density at Terrence Flowers' Pasture is comparable to that found in the BRASS area. The mounds on Class II soils for the most part were relatively small compared to other areas. It is possible that the area was used for living areas and home gardens, and that milpas were located somewhere else. This fact likely has to do with the area being hilly and with limestone outcrops. In addition, the flat-lying areas are clayey (Class IV). When it is dry, it is rock hard; when it is wet, it becomes a mire. Consequently, this area is not suitable for living or planting. The noticeably larger structure on the west side of the pasture could have provided

some local religious and/or political functions for the densely packed community.

Three Sisters is located near water on well-drained alluvium (Class II), with a much lower settlement density than that found in the upper Belize River area. The density is more in line with BRASS alluvial settlement on Class I soils—largely dispersed solitary mounds. It may have been the case that inhabitants in the Three Sisters area grew cash crops such as cacao and cotton, and that occupants of the large structures located on top of the platform owned or controlled surrounding land.

Milpa 1 settlement appears to represent a community of relatively well off farmers based on the distribution of obsidian and polychrome pottery. This is not surprising since they lived on Class II soils abutting Class I alluvium.

The only settlement found in the Cara Blanca area was within the poorly drained Class V lands, which suggests that the restricted settlement in this area had a special purpose, perhaps religious in nature. Openings in the earth, especially pools and caves, were and are considered by the Maya as portals to the underworld or Xibalba (Andrews and Corletta 1995; Thompson 1970). Its location on the edge of the pool is similar to other sacred water bodies (e.g., Chichen Itza, Dzibilchaltun). The concentration of so many pools in one area might indicate that Cara Blanca was a sacred place to the prehispanic Maya, perhaps as a pilgrimage center (e.g., Lake Amatitlan, Guatemala; Borhegyi 1959). The major centers of Yalbac and San Jose are both about 10 km from Cara Blanca, and the minor center of Saturday Creek is just over 10 km distant. The Maya may have collected sacred water for special religious and ceremonial events that take place either at the pool(s) or centers.

As table 6.4 shows, there is some variability in average BRASS and VOPA settlement densities. It is clear that in both cases, the greatest settlement densities are in the best available lands of the uplands (Class II). The model seems to work quite well for predicting the type of land with which dense settlement is associated. The second-highest densities are in the best soils of the alluvial bottom. In the VOPA area, the third-highest densities are in Class II alluvium, just as might be expected. In both areas, the Maya avoided settling lands of lower capability. The one notable exception is Cara Blanca, which suggests that the Maya did not build there with agricultural considerations in mind.

Evaluating the land-based model for settlement requires some accommodation for differences in scale of resolution between the generalized 1:50,000 scale soil maps and the observations made in the field. In a few

instances, field observation indicated that ancient settlement and the immediate surrounding vicinity consisted of land that was more level or better drained than the generalized class of land as characterized by the land-class map. In all such cases, in the VOPA area as well as in the BRASS area, where there was a difference between the land class observed on site and that characterized on the 1:50,000 scale map, the settlement was always situated in a better land class than that of the generalized map. This type of discrepancy is to be expected when working with generalized maps, and is fairly easy to compensate for when associations between soil types are well known and when differences in land classification pertain to easily distinguishable characteristics such as slope.

Conclusion

Willey et al. (1965) realized the significance of the relationship between settlement and social structure. The results of the VOPA survey project show that understanding the economic landscape can reveal key aspects about settlement patterns and, consequently, social organization. Obviously, in areas with large tracts of good land, archaeologists find higher settlement densities. There is also evidence for greater wealth differentiation and political power represented through larger centers and more monumental architecture and exotic goods.

In conclusion, the use of a model to predict settlement location based on soil type is quite useful when taking into account available economic resources. However, it is also clear that factors other than economic ones need to be taken into consideration when using this survey strategy, specifically the sacred landscape. Even with plenty of critical resources available, Cara Blanca was only sparsely settled. Did elites at Saturday Creek or the nearby major centers of Yalbac or San Jose control this potential sacred area? To fully appreciate prehistoric sociopolitical organization, archaeologists are going to have to understand how aspects of the varied landscape—economic, social, and sacred—articulated. The use of the predictive model in conjunction with archaeologists appreciating the different aspects of the landscape can provide significant data in our attempt to reveal ancient Maya lifeways.

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Cahal Pech

The Middle Formative Period

Paul F. Healy, David Cheetham, Terry G. Powis, Jaime J. Awe

Cahal Pech is a medium-sized Maya center located about 2 km south of the confluence of the Macal and Mopan Rivers (map 1). The central precinct is situated atop a steep hill overlooking the Belize River Valley with a commanding view of the Maya Mountains to the south (fig. 7.1). Excavations indicate that the site flourished during the Classic period (A.D. 250–900), when its sustaining area may have been as large as 10 km^2 (Awe 1992:60; Ball 1993b). The Classic period central precinct consisted of at least 34 large masonry structures compacted on an imposing acropolis approximately 1.5 hectares in size. This area featured temple