Approaches to Monumental Landscapes of the Ancient Maya
Edited by Brett A. Houk, , Bárbara Arroyo, and Terry G. Powis
University Press of Florida 2020

2

The Holocene Occupations of Southern Belize

Keith M. Prufer and Douglas J. Kennett

This chapter discusses the history of human occupations in southern Belize over the last 13,000 years (see Table 1.1). It is a story that suggests humans have been active agents on this landscape almost continuously throughout the Holocene, likely dating back to the initial colonization of the New World. The first Mesoamericans arrived in the region 10 millennia prior to the development of urban populations and set into motion cultural adaptations and environmental impacts that continue today. Drawing on more than two decades of archaeological research in southern Belize, this chapter links changing natural and constructed landscapes to cultural developments and climate variability beginning with Paleoamerican colonists and continuing to the present. Behaviors originating in the Preceramic period became further amplified as agricultural communities coalesced into states and emergent rulers drew on already long-established human–landscape relationships to legitimize their status. The collapse of regional polities in the tenth century CE brought with it demographic changes, as did the arrival of Europeans, with clear evidence of rebounds after each decline. More recent developments in the region show a revitalized and highly contested focus on land and represent the most recent cycle of adaptation to what has always been an important cultural landscape.

Environmental Context of Southern Belize

Southern Belize is a geographically distinct region in Central America with a diverse set of geological and biotic resources that have facilitated a history of human occupation (Figure 2.1). Physically, the region is circumscribed by the Maya Mountains to the west, a series of swampy *bajos* to the south

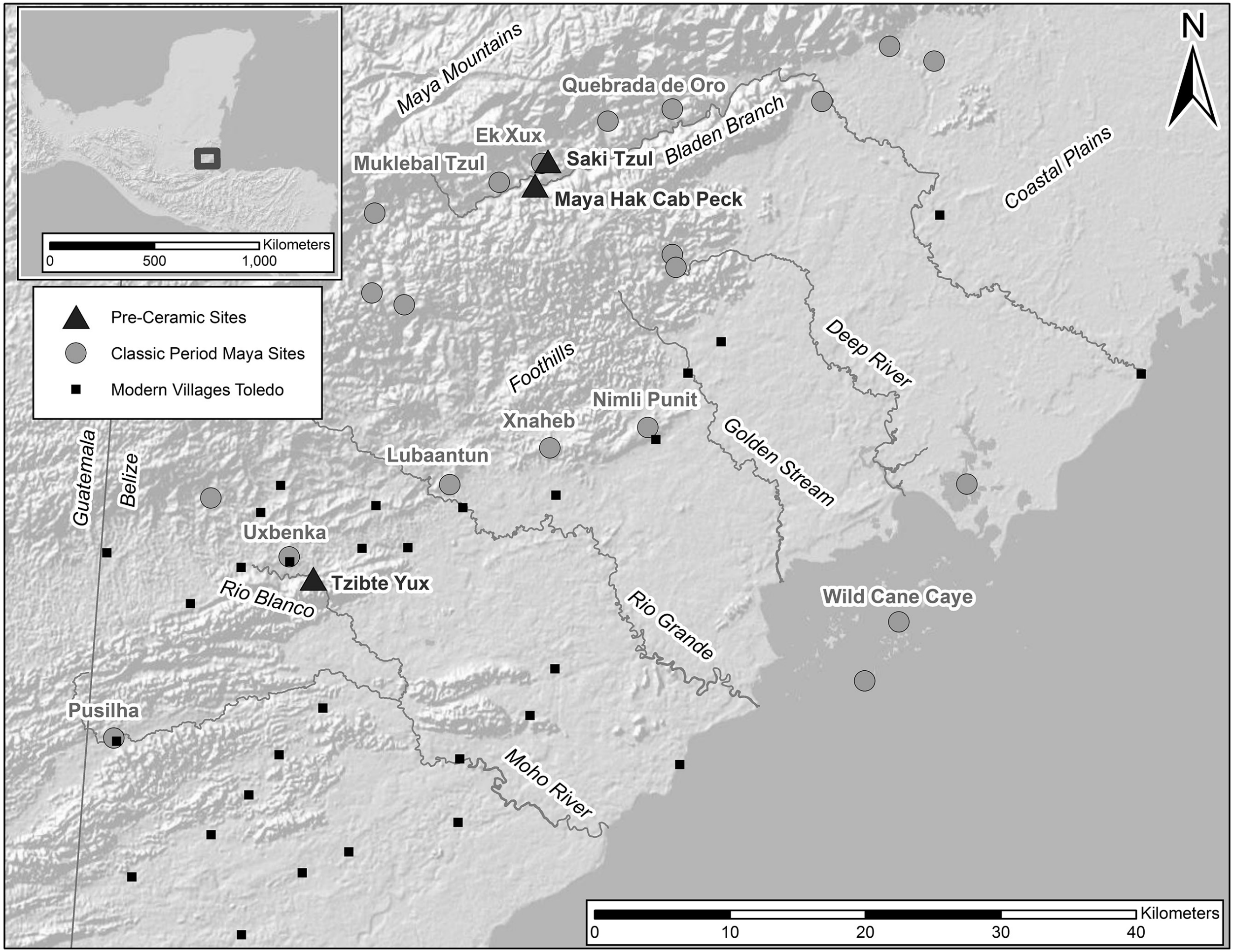

Figure 2.1. Map showing topographic features in southern Belize as well as archaeological sites (Preceramic and Classic period Maya) discussed in this chapter as well as the distribution of modern villages across the landscape. Map by Amy E. Thompson for the Bladen Paleoindian and Archaic Archaeological Project.

along the Temash and Moho Rivers, the Caribbean Sea to the east, and inhospitable pine barrens to the north. It is one of the wettest places in the Americas, receiving over 4,000 mm of rainfall annually, more than double the precipitation of central Petén and seven times as much as the northern Yucatan Peninsula (Douglas et al. 2015). It is also a seasonal desert (Haug et al. 2003) where, for several months each year, there is little to no rainfall and evaporation exceeds precipitation.

Geologically, the region is complex. The central topographic feature, the Maya Mountains, was formed by Devonian subaerial volcanics characterized by lava flows and pyroclastic and volcanoclastic activity, some locally altered hydrothermally, and by the Pennsylvanian-Permian Santa Rosa Group of argillaceous and arenaceous sediments and carbonates. The eastern slope is aproned by Tertiary and Cretaceous limestones of the Cobán Formation (Petersen et al. 2012). Combined with high precipitation during the Quaternary, the result is a hydrologically carved network of caves and cockpit karst overlaying earlier volcanics. This rugged landscape has been central to the lives of all people who have lived in the Maya Mountains. The interior valleys, where people lived, have a unique geological history compared to the rest of the Maya Lowlands. The upper reaches of tributaries contain volcanic and metamorphic float eroding off the spine of the mountains, and soil pedogenesis in the alluvial valleys incorporates carbonate and volcanic materials. The valleys form a rich agricultural landscape surrounded by near vertical mountains and host diverse biotic communities and economic resources (Dunham and Prufer 1998).

The foothills region, which was home to many of the Classic period centers as well as most of the modern Maya-speaking agricultural villages, also has an unusual geological history. Known as the Toledo Formation (or the Toledo Uplands), these rolling hills are composed of Late Cretaceous–Early Tertiary turbidite conglomerates with interbedded sandstones, mudstones, volcanics, and volcanoclastics, with sediments likely originating from the Cuban volcanic arc migration (Cornec 1986). In some portions of the Toledo Formation, hilltops, particularly near several major Classic period centers (Uxbenka, Lubaantun, and Nimli Punit), are dominated by soft interbedded sandstone and mudstone bedrock exposed through weathering and human-mediated agricultural clearing. When cleared of vegetation as part of an agricultural cycle, pedogenesis is rapid, with calcareous sandstone and mudstone breaking down rapidly as it is exposed to temperature and moisture differentials and rootlet activity (Culleton 2012). The result is an almost renewable source of high-quality soils for farming, and there is little need to engage in landscape intensification techniques like terracing to conserve soils (Prufer et al. 2015).

Interspersed across this hilly landscape are massive karst ridges rising over 250 m above the Toledo Formation. These limestone remnants are Late Tertiary–Early Cretaceous La Cumbre carbonate megabreccias (Cornec 1986), possibly formed during the collapse of the platform paleoscarp immediately following the K-T boundary Chicxulub impact event (Bralower et al. 1998). The coastline and pine forest to the north are Quaternary in age and composed of chert/quartz terraces as well as alluvial river terraces and sandbars. Pleistocene and Holocene karstification of the Cretaceous-Tertiary limestones have produced some of the key features used by humans as they colonized and modified these landscapes in southern Belize. These include the rockshelters occupied during the Paleoamerican and Archaic periods and the incredible subterranean cave landscape that formed a key component of the Mesoamerican worldview (Prufer and Brady, eds. 2005).

Rainfall distribution and seasonality controls are dominated by the annual migration of the intertropical convergence zone (ITCZ) with marked meridional contrast. Southern Belize receives considerable rainfall each year, often in excess of 4,000 mm. Mean annual temperature is approximately 26 degrees Celsius. During the winter dry season (February–May) evapotranspiration frequently exceeds precipitation. Given its location relative to the equator, near the northern margin of the annual ITCZ migration, southern Belize is sensitive to even small variations in the mean position of the ITCZ and its rainfall distribution (Lechleitner et al. 2017; Ridley et al. 2015). Other climate modulators that play significant roles in the precipitation variability of the region include changes in the strength of atmospheric pressure in the North Atlantic (North Atlantic high) and variability in El Niño–Southern Oscillation (ENSO). High sea-level pressure (SLP) in the North Atlantic leads to stronger trade winds, resulting in cooler than normal sea-surface temperatures (SST) and reduced Caribbean basin precipitation that has decadal scale variability through the North Atlantic Oscillation (Proctor et al. 2000; Lechleitner et al. 2017; Smirnov et al. 2017). At shorter timescales, ENSO exerts strong interannual precipitation variability in the Central American tropics, establishing a zonal seesaw SLP and SST pattern across the eastern Pacific and western Atlantic region. The result is that during ENSO+ (lower SLP and higher SST) periods, it is often dryer and warmer along the Caribbean coastline during the rainy season (Zhu et al. 2012).

There are a diversity of paleoclimate records for Mesoamerica (Douglas,

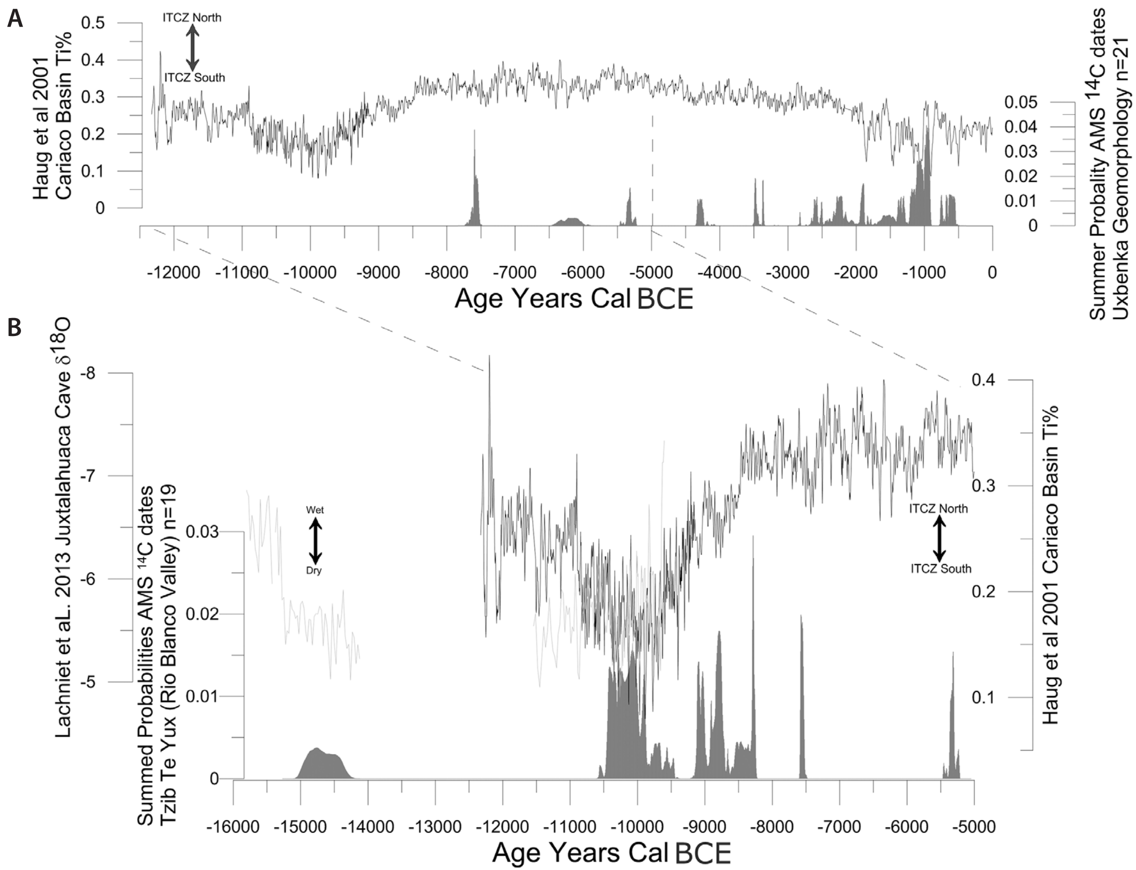

Figure 2.2. Climate and summed ^{14}C probability distributions from Rio Blanco Valley sites. (*A*) The Cariaco Basin percent titanium ITCZ precipitation proxy (Haug et al. 2001) plotted with 14^{C} probability density from geomorphological excavations of the Rio Blanco terraces. (*B*) is the Central Mexico Juxtlahuaca Cave $\delta^{18}O$ oxygen proxy (Lachniet et al. 2013) plotted with the probability distributions of ^{14}C dates from Tzibte Yux rockshelter, located in the Rio Blanco. These are only dates from intact stratigraphic layers. The cultural affiliation of the earliest dates (pre-14,000 BCE) is tentative. Combined, these show regular human activity and landscape impacts throughout the Holocene.

Demarest, et al. 2016), characterized by ranges of sampling resolution, chronological precision, and issues of comparability surrounding the use of multiple proxies (isotopes, sediment density, carbonate weight percent, and flouresence). Paleoclimate data suggest cooler and drier conditions when the first humans arrived in the region. The Cariaco shallow marine record off the coast of Venezuela (Haug et al. 2001; Petersen et al. 2012) and shallow lake records from Petén provide a proxy for changes in the position of the ITCZ, suggesting that the initial human colonization of the neotropics was during a period that was drier (Escobar et al. 2012; Haug et al. 2001) and cooler (Grauel et al. 2016) than the Holocene. This is supported by numerous ecological studies in lower Central America and tropical South America (e.g., Piperno 2011a; Piperno and Jones 2003).

Rainfall reconstruction provides a paleoclimate backdrop for our research in southern Belize (Figure 2.2). A drier Late Pleistocene shifts to wetter conditions during the early Holocene and then a trend toward drier conditions later in the Holocene, likely related to insolation changes in the strength of the regional monsoon. The Juxtlahuaca $\delta^{18}O$ speleothem record (Lachniet et al. 2013) from Central Mexico is closer to southern Belize and is one of the few records of the North American monsoon covering parts of the Late Pleistocene and Younger Dryas. We rely on two locally generated rainfall records from Yok Balum Cave, located near to the ancient city of Uxbenka in southern Belize, for the last 2,100 years. The Yok I $\delta^{18}O$ record (Kennett et al. 2012) is a highly resolved (mean resolution ~1 year, error <10 years) ITCZ rainfall reconstruction covering the last 2,100 years. The Yok G $\delta^{13}C$ speleothem gives even higher resolution covering the last 550 years (mean resolution 0.3 years, error <4 years).

Cultural History of Southern Belize

Mesoamerican Foragers before Agriculture

New World colonists arriving in Central America by at least 12,500 BCE (Chatters et al. 2014) encountered a very different, and less tropical, environment than today. The landscape was composed of "heterogeneous, even patchy, vegetation across small distance scales; and stretches of forest alongside water courses in regions where forests were significantly reduced" (Piperno 2006:286). Pollen and macrofossil plant data suggest forested areas were composed of tropical vegetation, but with a patchy distribution in more diverse ecosystems than simple Pleistocene grassland / Holocene forest models suggest (Piperno 2011a). Confronted with a diversity of large and small mammals and a wider range of riparian forest and grasslands, humans would have initially adapted to landscapes that were different from today's. By 9000 BCE conditions were becoming wetter and warmer and, in the Petén, there is evidence that closed-canopy forests were undergoing anthropogenic burning (Anderson and Wahl 2015; Renssen et al. 2009), with mixed herbaceous and woody plants being represented in charcoal records. Pre-agricultural burning peaks between 6000 and 4000 BCE (Schüpbach et al. 2015), during the Holocene Thermal Maximum, arguably the warmest and wettest period of the Holocene (Renssen et al. 2009). After 8500 BCE the abundance of higher-ranked plant and animal resources declined as rainforest overtook many Pleistocene open areas where game would have fed on scrub and grasses (Piperno and Pearsall 1998).

Waves of early colonists spread rapidly along the Pacific coast, reaching southern Chile before 12,500 years ago (Braje et al. 2017; Dillehay et al. 2017). This rapid southward migration was accompanied by significant eastward movements in North America (Halligan et al. 2016; Rasmussen et al. 2014). Colonization of South America necessitated the movement of people through Central America. Human presence has been documented in Panama (Ranere and Cooke 1991) and Costa Rica (Snarskis 1979; Swauger and Mayer-Oakes 1952), Nicaragua (Waters 1985), Honduras (Kennett et al. 2017; Scheffler et al. 2012), and highland Guatemala (Brown 1980; Gruhn et al. 1977).

In Mesoamerica, drier conditions to the north of the tropical Maya Lowlands have facilitated the identification of Paleoamerican surface sites, including locales in central, west, and north Mexico (Gonzalez et al. 2015; Ochoa 2012; Sanchez and Carpenter 2012). In the Maya Lowlands, with high precipitation and extensive tropical foliage, fewer surface sites have been identified. One exception is El Gigante rockshelter (Kennett et al. 2017; Scheffler et al. 2012), a large rockshelter in western Honduras on the periphery of the Maya Lowlands. There, stratified deposits from 7000 to 9000 cal BCE include well-preserved macrobotanical remains as well as evidence of hunting and food preparation. In the northern Yucatan Peninsula, a near-complete human skeleton was found with extinct fauna in a submerged cave (Chatters et al. 2014). The minimum age of this skeleton is 10,000 BCE based on U-series dates of small calcite florets that had precipitated on bone before the skeleton was submerged by rising sea and groundwater levels.

The Archaic period is better documented, particularly outside of the Maya area in central and western Mexico, where studies have examined the origins of agriculture, diet changes in coastal settlements, and the emergence of social complexity (Flannery 2002; Kennett et al. 2010; Lesure 2011; MacNeish and Nelken-Terner 1983; Rosenswig 2014; Rosenswig et al. 2015; Smith 1997; Voorhies et al. 2002). In the arid regions of northern Mexico, where ground visibility and site detection are not hampered by dense tropical vegetation, there is a long history of research into Archaic period adaptations (Sanchez and Carpenter 2012). In the tropical Maya region, however, far less is known about tropical adaptations during this time (Kennett et al. 2010). Recent studies suggest a gradual adoption of domesticated plants by 4000 BCE (Rosenswig et al. 2014), although in the Soconusco, full-scale maize agriculture may not have been adopted before 1000 BCE (Rosenswig et al. 2015) even though sedentary agricultural communities were present by 1000 BCE. Between 8000 and 3000 BCE, the gradual processes of plant domestication were under way in Central America, with evidence for human cultivation of native crops including maize (*Zea*), manioc (*Manihot*), arrowroot (*Maranta*), and yams (*Dioscorea*) in parallel with the exploitation of wild resources by transitional hunter-gatherers (Greaves and Kramer 2014; Piperno 2011b). Recent studies have also emphasized the importance of the transition to the Archaic as a time of mixed and flexible subsistence economies, as evidenced by a broad range of wild plant foods and early domesticates at El Gigante rockshelter in Honduras (Kennett et al. 2017; Scheffler 2008).

The "spotty nature of Archaic-age archaeological data from Mesoamerica means that what we know is likely not representative of the range of peoples and the variety of adaptations that existed across the region" (Rosenswig 2014:142), particularly in the broadleaf forests of the tropical Maya Lowlands and especially for the Early Archaic period (8000–5000 BCE). A wide range of cultural changes occurred during the Archaic, with a general trend toward increased reliance on plants as a source of food and changing environmental conditions that may have favored plant tending and agriculture. Thus, social changes were likely mediated by subsistence changes, and these were driven by demographic pressure, environmental change, and socioeconomic competition (Winterhalder and Kennett 2006). The period from 8000 to 6000 BCE is generally considered to have been wetter and warmer, prior to a drier interval lasting until 3500 BCE (Mueller et al. 2009). This suggests that the transition to agriculture spanned several phases of significant climate and environmental change, with the relationships between them poorly constrained.

Paleoamerican and Early/Middle Archaic Sites in Southern Belize

In the Southern Maya Lowlands only a handful of Paleoamerican sites have been identified, mostly lithic scatters that cannot be accurately dated (Hester et al. 1982; Kelly 1993; Lohse et al. 2006). The Preceramic lithic chronology of the region is not secured to absolute dates (Stemp et al. 2016). Since 2012, we have been conducting excavations at three rockshelter sites in southern Belize. These sites (see Figure 2.1, Plate 2.1) are Tzibte Yux rockshelter, located in the Rio Blanco Valley near to the Classic period Maya center Uxbenka, and Mayahak Cab Pek and Saki Tzul rockshelters located in the upper reaches of the Bladen Branch of the Monkey River. All three rockshelters have stratified deposits dating to around the time of the arrival of humans into the region, sometime before 10,500 cal BCE. These sites are remarkable both for their chronological sequences, which are intact for large segments of the Late Pleistocene and Holocene; their locations; and the information they can provide regarding human adaptations over time.

Tzibte Yux (Prufer, Meredith, et al. 2017) is a dry rockshelter overlooking the Rio Blanco, 1.1 km from the Classic period site Uxbenka. The total surface area inside the dripline is approximately 190 m^2. The ground surface is a scatter of *Pachychilus* sp. (jute) snail shells, ceramics, lithics, and some modern debris, indicating that it is still used as a dry refuge from frequent rains and the tropical sun. The wall that forms the shelter overhang is coated in places with patchy remnants of a plaster mix of jute shell, carbonate minerals, ash, and ceramic, likely an ancient frieze or sculpture affixed to the massive white cliff (Meredith 2014). Jute shells are well documented as faunal remains in many Classic Maya contexts (Healy et al. 1990), including caves (Halperin et al. 2003), suggesting they were a widely consumed protein source (Nations 1979).

Between 2012 and 2015 nine 1 m^2 and 2 m^2 test units were excavated at Tzibte Yux. Excavations were in 5 cm levels, and all lithics, faunal bone, and carbonized organic remains were point plotted. They consistently reveal a uniform cultural sequence of Paleoamerican deposits overlain by highly disturbed Archaic and Classic Maya contexts. The upper levels consist of highly disturbed midden fill of fauna, lithics, ceramic, jute, and some disarticulated and very poorly preserved human remains. While several dates have been obtained from this matrix, they are not in chronological sequence and include both Classic Maya and Archaic period dates. This

Plate 2.1. View of excavations at Tzibte Yux rockshelter overlooking the Rio Blanco.

is likely due to the upper levels (Classic period and much of the Archaic) having been disturbed for the construction of the frieze and possibly mined for jute for other purposes potentially including pottery tempers or dietary calcium carbonate. A date on a single piece of wood charcoal from an intact part of the jute/plaster frieze dates to 8275–8190 cal BCE, although ceramics fragments in the plaster indicate a much later construction. While the extent of this disturbance across the rockshelter is variable, radiocarbon dates suggest that the disturbance extends to 8000 cal BCE. Below the disturbed context (see Figure 2.2) there is a dense jute middle lens, which is very tightly packed with the shells forming an interlocking surface that is very difficult to excavate. No ceramics were found in the jute lens, and preserved segments appear to constrain Early Archaic through Late Paleoamerican periods. Below the jute lens there is a distinctive change to yellow clay, overlying a darker reddish clay. The amount of jute drops off appreciably, although faunal bone, charred wood and seeds, and lithic debitage continue. Both clay layers are of Paleoamerican age, with dates ranging from 7050 to 10,500 cal BCE (Prufer, Meredith, et al. 2017). Two dates on wood charcoal and a burnt seed from the red clay layer (see Figure 2.2) provide overlapping ages between 14,227 and 15,997 cal BCE associated with lithic debitage and faunal bone fragments from small and medium size mammals. Assuming that the early dates and cultural material are contemporaneous suggests a human presence consistent with the earliest estimates in South America (Dillehay et al. 2015), although any cultural affiliations to the dates are tentative pending additional confirmatory data.

Mayahak Cab Pek and Saki Tzul are two much larger rockshelters located in an interior valley of the Maya Mountains in the Bladen Nature Reserve (Plate 2.2), a protected wilderness area where there has been minimal human disturbance of archaeological sites. Both rockshelters were first investigated in 1998 by the Maya Mountains Archaeological Project. Shallow excavations at both sites produced numerous burials and demonstrated excellent preservation of human and faunal remains (Saul et al. 2005). Recent work from 2014 to 2017 has shown that the occupation of these rockshelters began prior to 10,000 BCE and continued through 1000 CE (Prufer 2018). DNA from well-preserved skeletons from both Saki Tzul and Mayahak Cab Pek reveals that at 7300 BCE early colonists were directly related to New World founders and the Anzick Clovis skeleton found in Montana, indicating rapid radiation of humans from North to South America in several migrations prior to 6000 BCE (Posth et al. 2018). Preliminary analysis of faunal remains suggests only small shifts in species composition over the

Plate 2.2. Aerial view of the giant cliff face of Saki Tzul ("white mountain" in Q'eqchi' Maya), located in the remote Bladen Nature Reserve. This huge rockshelter served as a shelter and food-processing site for most of the Holocene.

Holocene but a likely change in selection or preference from larger mammals in the early part of the record to smaller mammals in the later part (Orsini 2016). Like Tzibte Yux, the Bladen rockshelters contain enormous deposits of consumed jute shells and in some levels exceed 50% of the matrix. Evidence of Paleoamerican and Early Archic peoples in Mesoamerica is scarce. The work described here is the first stratigraphic excavations in the Maya Lowlands that are well dated.

The Late Archaic through Middle Preclassic in Southern Belize

The Late Archaic, including the transition to agriculture, is a time period for which we have some limited data, although this interval remains enigmatic. Humans were present based on geomorphological studies, but unlike for parts of northern Belize (Rosenswig et al. 2014) and the Pacific coast of Mexico (Kennett et al. 2010; Voorhies et al. 2002), we have not identified open-air habitation sites in southern Belize. In addition, Early and Middle Preclassic ceramic phases remain elusive (Jordan and Prufer 2017), and no evidence of stone platform architecture has been documented, despite a century of archaeological excavations in southern Belize (Braswell and Prufer 2009). There is still compelling evidence that early people lived in this region in smaller pre-agricultural and agricultural settlements.

Excavations in alluvial terraces and near Uxbenka, located in the Rio Blanco drainage, have documented land clearing and associated burning as early as 8000 cal BCE (see Figure 2.2a) with burnt horizons associated with lithic debris occurring throughout the Holocene (Meredith et al. 2016). Other excavations on erosional soils near the Uxbenka site core document continued land clearance away from the river, likely directly associated with early farming activity from 1720 to 970 cal BCE (Culleton 2012). Paleoecological data from a sediment core taken from the Agua Caliente National Park, a perennially inundated inland lagoon, indicate that human land alteration in association with swidden agriculture is evident by 750 cal BCE in the earliest section of that record, as is the presence of maize pollen from 350 BCE (Walsh et al. 2014). By the Middle Archaic, human impacts on the landscape seen suggest regular clearing of forest vegetation, which likely became more sustained leading up to the first agriculturalists in the region likely after 1000 BCE (Figure 2.2a).

The Late Preclassic Period through the Classic Period: Development and Decline at Uxbenka

The Classic period of the Maya represent the greatest investment in the built environment in the foothills and the Maya Mountains. The earliest known communities in southern Belize are Ek Xux, located in the Maya Mountains; Uxbenka, in the foothills (Prufer, Thompson, et al. 2017); and small coastal trading communities (McKillop 1996). Other centers did not develop until the end of the Early Classic period ca. 400 CE (Nimli Punit, Pusilha, and Quebrada de Oro) or the Late Classic ca. 700 CE (Lubaantun, Xnaheb, Muklebal Tzul, and a host of smaller centers). By 750 CE there were at least 40 centers with public architecture in southern Belize, with largely independent rulers and significant populations dispersed across the agriculturally rich hills and valleys.

These communities are distributed across four different ecological zones. Ek Xux, Quebrada de Oro, and Muklebal Tzul are located in tributary valleys of the Bladen River, an area hosting important mineral resources and rich agricultural soils derived from the underlying volcanic bedrock of the Maya Mountains (Dunham and Prufer 1998). Pusilha is located along a navigable upper section of the Moho River, with access to rich alluvial soils (Braswell and Prufer 2009). Coastal sites enjoyed marine trade routes and resources (Robinson and McKillop 2013). Finally, Uxbenka, Lubaantun, and Nimli Punit are located along the along a ridge comprising the fertile Tertiary Toledo Uplands extending from the Maya Mountains to the north to the coastal plain in the south (Hammond 1975; Prufer et al. 2011). Two general points are consistent with the evidence: first, settlements in the region appear to conform to local topographic conditions, and, second, they are closely tied to important resources such as productive farmland. For example, Pusilha, Quebrada de Oro, and Ek Xux are located on deep alluvial soils ideal for agriculture; these centers were highly nucleated. In contrast, Uxbenka, Lubaantun, Nimli Punit, and Muklebal Tzul are positioned in high-relief hilly environments with settlements spread across ridges and hilltops in clearly differentiated groups.

Given the Archaic and Preclassic background for the Rio Blanco Valley, it is likely that the Classic period chronologies for most sites, which are based on architectural seriation and ceramics, underestimate the antiquity of settled communities in the region. The exception is Uxbenka, where our work since 2005 has anchored development and decline of the community and polity to an absolute chronology grounded in over 175 high precision

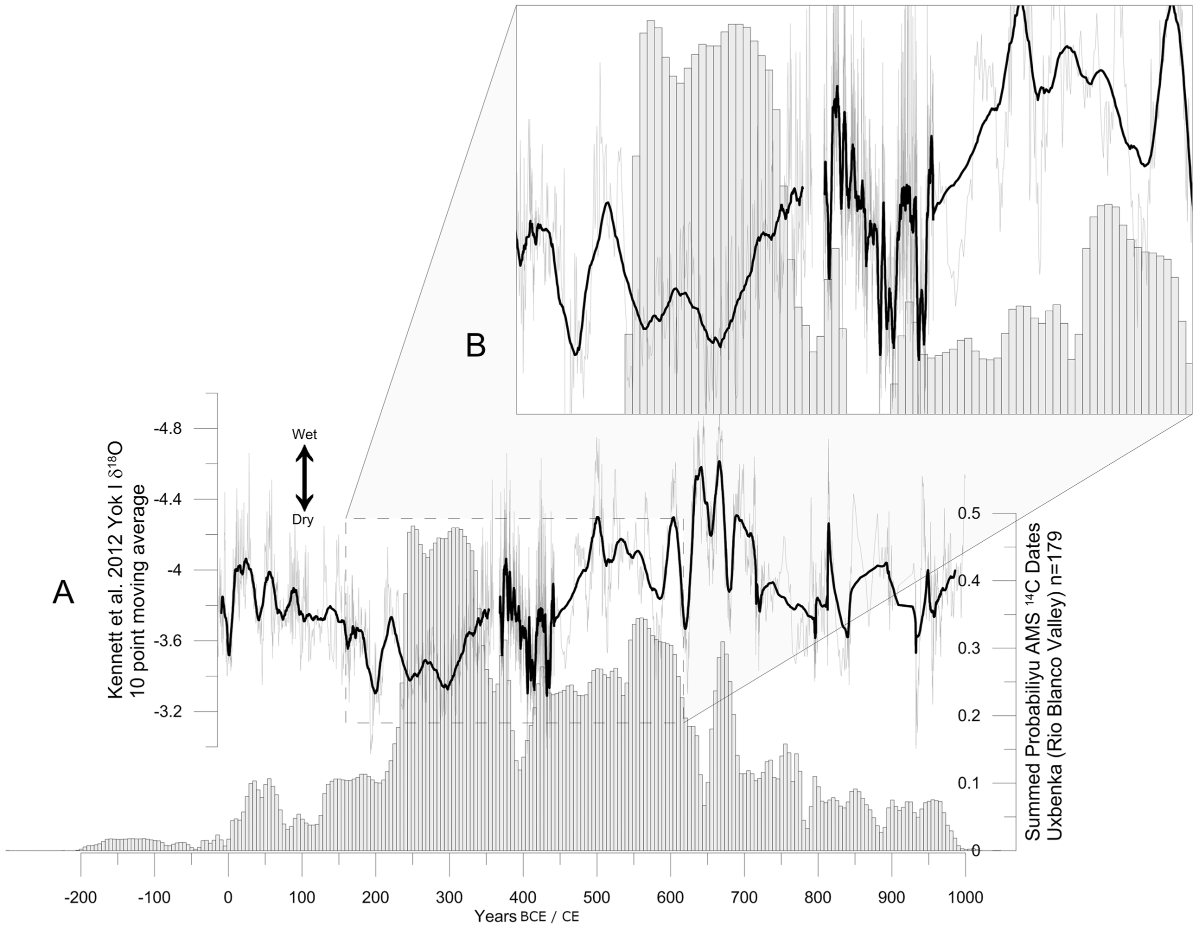

Figure 2.3. (*A*) Yok Balum Cave Yok I $\delta^{18}O$ climate proxy with a 10-point average. This shows significant volatility from 350 to 500 CE, a time of reduced activity at Uxbenka in both the site core and settlements based on summed ^{14}C probabilities. Other periods of intensive multidecadal drying are found in the Late and Terminal Classic periods, corresponding with the decline of the polity before 880 CE. Inset (*B*) shows detail of period from 250 CE to 550 CE. Bar plot is probability distributions of ^{14}C dates from Uxbenka from the Classic period occupation from 200 BCE until 1000 CE.

AMS ^{14}C dates (Figure 2.3) from both settlement and site core areas. Locally developed paleoclimate proxies for the region provide context for interpreting some periods of cultural change.

The first known settlements at Uxbenka date to after 200 cal BCE based on charcoal dates from east of the site core near the Rio Blanco (Prufer, Thompson, et al. 2017). The few dates from this time period suggest low population density, and there is no evidence of masonry architecture. Approximately two centuries later we begin to see architectural developments in the site core (Aquino et al. 2013; Culleton et al. 2012). During this time Uxbenka was the only known site in the region with monumental architecture until sometime after 300 CE, when Ek Xux is founded in the Bladen Branch. It is not until three centuries after Uxbenka was an established polity that competing sites on the Toledo Uplands begin to appear. Elsewhere we have argued that this lack of competing polities and contestable boundaries makes the site an ideal laboratory to study the spatial expansion and evolution of status differences in a geopolitical state (Prufer, Thompson, et al. 2017).

Investment in the site core focuses initially on the Group A Stela Plaza between 60 and 250 CE (Culleton et al. 2012) and a 550 m long ridge housing public architecture that was initially settled before 250 CE (Aquino et al. 2013). Both of these areas may have housed earlier populations and small dirt platforms, and some postholes have been identified in the core area dating to before 100 CE (Prufer et al. 2011). The development of the site involved monumental landscape alterations, including leveling of hill and ridge tops and filling of hill slopes with debris to accommodate the footprint of monumental architecture. Data from lidar and excavations indicate that this investment of human capital produced an elite-focused political and ceremonial core by 400 CE (Figure 2.4). Additional modifications to the site core did not involve platform expansions (Prufer and Thompson 2014; Prufer et al. 2011). The Early Classic represents the greatest sustained investment in monumental construction at the site. The cessation of this activity corresponds to what may be a period of climate volitility around 400 CE seen in Yok I (see Figure 2.3).

Following 500 CE, construction in the site core is limited to the expansion of existing large structures and construction of small, single-phase buildings as well as episodes of replastering plazas and architecture. This is accompanied by continued expansion of the settlement system, including high-status households. Dynastic leadership of the site appears to continue unabated with the erection of monuments beginning in the Early Classic

Figure 2.4. Monumental alterations to the landscape to accommodate core architecture are clearly visible on a lidar elevation map of Uxbenka. Cut and filled hill and ridge tops were mostly constructed before AD 400 (Prufer et al. 2015; Prufer and Thompson 2016). This high-relief landscape is partly a result of 10 millennia of fire and erosion. Perhaps the largest contributor to the current landscape has been agricultural clearing starting by the end of the archaic (Culleton 2012). Groups discussed in the text are labeled, with Group A being the Stela Plaza. Map by A. E. Thompson for BPAAP.

period (at approximately 380 CE) and continuing through the Late Classic period with the final known date at 780 CE (Wanyerka 2009). A large tomb, featuring an entry stairway and located in a settlement group connected by a ramp to the Stela Plaza, contains multiple interments dating to both the Early and Late Classic periods. Clusters of higher-status residential and public architecture, which we designate as district seats, continue to flourish up to 2 km from the site core, although they are primarily located near to probable east–west trade routes connecting the Caribbean Sea to the Petén (Prufer, Thompson, et al. 2017). These developments correspond with several centuries of stable precipitation (Figure 2.3).

Following the establishment of Nimli Punit, Pusilha, and perhaps Lubaantun(and many smaller centers) all within 20 km of Uxbenka by CE 550, Uxbenka's geopolitical primacy began to wane. A major ceremonial cave used throughout the Early Classic period and located in view of all the larger architectural groups at Uxbenka ceased to be used after 500 CE (Moyes and Prufer 2013). Throughout the Late Classic period, settlements expand farther from the Uxbenka site core but become more impoverished, while larger settlements near to the site core enjoyed access to a range of trade goods. This is likely an indicator that established elites were retaining control over key resources related to agricultural and economic production, while growing populations living on the periphery had access to a smaller proportion of benefits conferred on those near the site core.

The disintegration of the Uxbenka polity was part of a regional geopolitical collapse during the early Terminal Classic period. At Uxbenka, the elite power may have been in decline by 800 CE. The final monument date at Uxbenka was 780 CE (Stela 15), within 30 years of terminal dates from Lubaantun, Pusilha, Nimli Punit, and several smaller sites in the region (Ebert et al. 2014). The final secure dates on architecture from the Uxbenka site core are prior to 880 cal CE, although settlements may persist through 1000 cal CE (Aquino et al. 2013; Culleton et al. 2012; Prufer, Thompson, et al. 2017). This occurs in the context of dry intervals observed in the Yok I paleorainfall record (see Figure 2.3a). Terminal Classic dates from within the site core suggest a residual population from 850 to 1000 CE.

Postclassic to Historical Populations

There are no known Postclassic centers in southern Belize, aside from a network of small Postclassic island trade centers (McKillop 2010). Still, there were people living and farming near the abandoned Classic period political centers. At the time of Spanish contact there were dispersed

Mopan- and Chol-speaking Maya communities in southern Belize (Sapper 1985; Thompson 1930, 1988). The town of Campin was located along the Monkey River, and the town of Paliac was probably located along the Rio Grande (Jones 1989). Two other villages, one named Yaxal, said to have been located 38 km from Paliac, and another named Misit, are less clearly described.

In 1684 Paliac residents killed three Franciscan missionaries who had accompanied an expedition to southern Belize seeking to extract marketable cacao. Gov. Bruno Tello y Guzman, following a decree authorizing the reduction Paliac, formally announced a policy to avenge the killings of the three Franciscans. A large expedition headed by Capt. Juan del Castillo y Toledo was mounted, but, ironically, it instead proceeded to try to open a route to Tah Itza in Petén, Guatemala, to conquer the Itza Maya (Jones 1989).

Forced resettlements in southern Belize have not been documented, although if J. Eric Thompson's (1938) recounting of archival documents is credible, these efforts were episodic and fomented repeated rebellion. Less credible are assertions (Thompson 1938:593) that the result of the forced population movements was the region becoming "to all intents and purposes, uninhabited forest," largely because this is inconsistent with the evidence. There is a growing consensus among scholars that some numbers of Maya-speaking people remained present in southern Belize after the Spanish incursions (Downey 2009; Wainwright 2015).

Several lines of evidence support the continuous presence of people in southern Belize during the last 400 years. Data from Agua Caliente (Walsh et al. 2014) indicate that fire activity within its watershed did decline during the Postclassic, 1000–1520 CE, but fire was never entirely absent. After 1400 CE, fire intensity increased until 1900 CE, suggesting that the watershed surrounding Agua Caliente (which includes Uxbenka) was an active agricultural landscape.

Five radiocarbon dates from small settlement groups at Uxbenka date between 1400 and 1900 CE, suggesting that people resided and farmed in the region during the Postclassic and early historical periods. These are supported by charcoal dates from geomorphological pits along the Rio Blanco (Figure 2.5). Near to several outlying settlements at Uxbenka we have documented historical households, all of which have surface scatters of pottery mixed with other debris including bottle glass and metal fragments. The ceramics are primarily the remains of jars and bowls and are undecorated, making comparative analyses difficult.

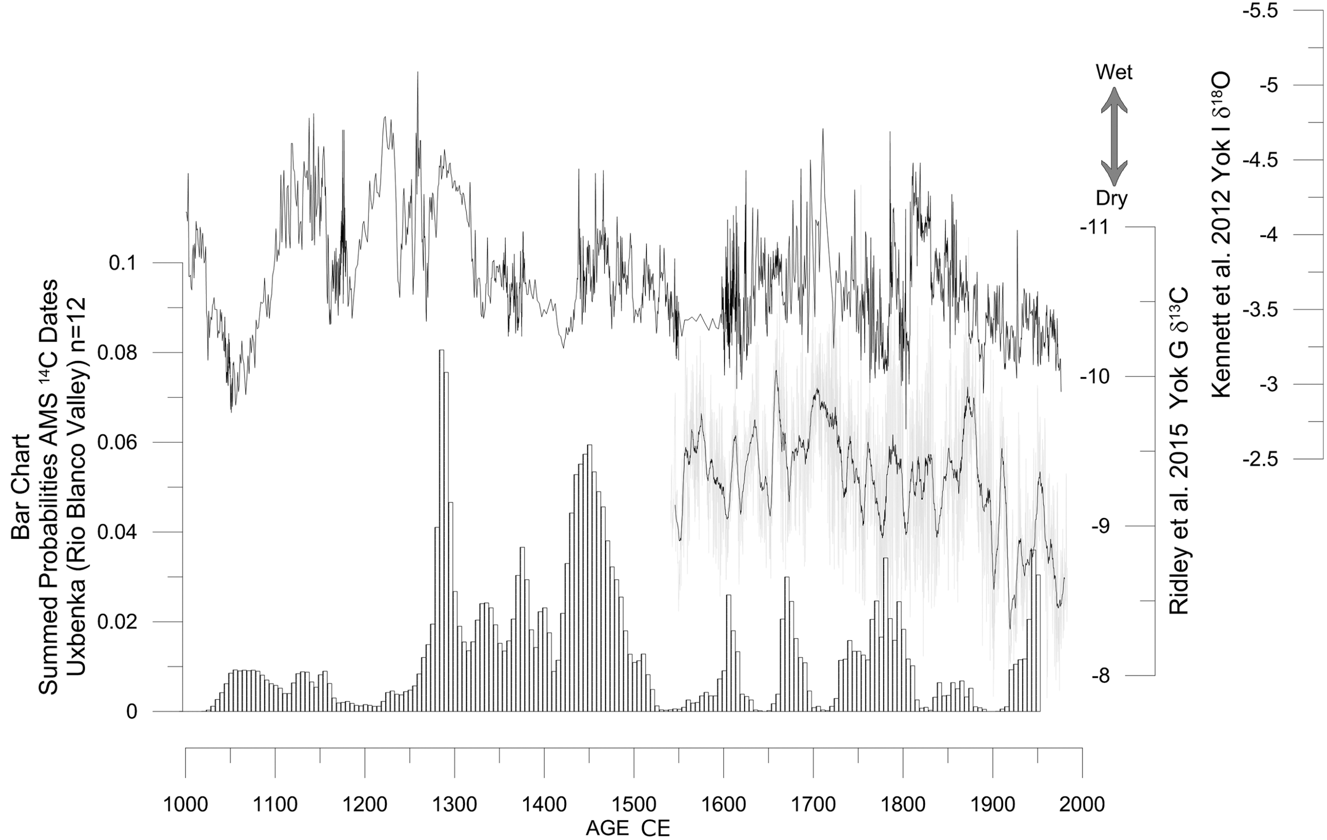

Figure 2.5. Yok Balum Cave Yok I $\delta^{18}O$ climate proxy from 1000 to 2000 CE plotted with Yok Balum Cave $\delta^{13}C$ climate proxy from 500 to 2000 CE. Bar plot is probability distributions of ^{14}C dates from Postclassic and early historic contexts at Uxbenka and from dates on surfaces from geomorphological testing in the Rio Blanco Valley.

Starting around 1880, Q'eqchi' and Mopan Maya in Guatemala began to seek refuge in southern Belize. For the Q'eqchi', this was largely in response to labor conditions deteriorating into slavery on German-owned coffee plantations in Alta Verapaz. For the Mopan, it was in response to increasing economic disparities and land dispossession in the Petén (Castellanos Cambranes 1985; McCaffrey 1967). For both groups, the value of fleeing highly oppressive and violent colonial and national structures outweighed advantages of remaining in familiar environments. These migrants no doubt encountered existing farming communities in the form of small hamlets or family groups. This is consistent with archaeological evidence suggesting low-density farming and little investment in monumental landscape alteration in the early historic period. At that time the colonial government in the district capital, Punta Gorda, was largely unaware of anyone living in the interior and lacked even the most basic maps of the region (Wainwright 2015). In 1880 the first rural settlement acknowledged by the government was a plantation established by the Kramer estate on purchased land, and a group of Q'eqchi' Maya from Guatemala were somehow enticed to settle and work lands of the estate (Wilk 1991). Within a decade, the first recognized Mopan Maya village was established at San Antonio, but not before stopping at what may have been an existing community in Pueblo Viejo (Thompson 1930). Uxbenka and the community of Santa Cruz lie between those two settlements. Thompson (1930:40) also notes smaller settlements called *alquilos* consisting of a few families living in the forest outside of San Antonio. Several of the historic sites we documented are likely old *alquilos*, and this was a pattern of settlement prior to formal villages.

Village populations grew over the next century, and communities fissioned with emigrants forming new villages. By 1997 the number of Q'eqchi'- and Mopan-speaking villages in the Toledo exceeded 35, and the population surpassed 11,000 (Toledo Maya Cultural Council and Toledo Alcaldes Association 1997). The majority of the Maya-speaking villages are scattered across the Toledo Uplands (Figure 2.1), farming the same lands that were first cleared as long as 10,000 years ago.

The distribution of the modern villages highlights the importance of trade routes throughout the occupation of the region. We know little about spatial relationships during the Preceramic, but they likely were guided by access to water. From the Late Preclassic period onward, coastal, riverine, and overland foot paths dominated economic and social interactions and networks. Archaeological reconstructions of past economies in southern Belize have frequently cited proximity to trade and communication routes as central to site locations and success (Braswell and Prufer 2009; Hammond 1978; Prufer, Thompson, et al. 2017). At Uxbenka a likely ancient route connected the coastal plain to the central Petén, and today this same route is a modern road. Beginning in the 1950s with a dirt road connecting the district capital of Punta Gorda to the village of San Antonio, the development of roads has been a political priority. At the time, most villages were connected only by foot paths or muddy logging paths, and rivers played an import role as routes of commerce and information.

Today population growth follows roads. Some of the earliest modern settlements were located on lands near to larger Classic period political centers prior to the development of major roads, including the Mopan communities of Pueblo Viejo and San Antonio, within 3 km of Uxbenka, and the Q'eqchi' villages San Pedro Columbia, proximate to Lubaantun, and Poite, near to Pusilha. Others, like Cramer Estates and Crique Sarco, were settled in response to economic opportunities provided by plantation agriculture and logging and do not have clear links to precolumbian agricultural landscapes. In the Toledo Uplands, road development likely traces a series of foot paths connecting communities, many of which predate vehicular access. There we see modern populations sharing the landscape in close proximity to ancient population centers. Along the southern highway, villages have been settled because of access the highway afforded as an economic corridor. There are fewer associations with ancient settlements. Finally, a large series of ancient settlement in the Maya Mountains have no corresponding modern settlements specifically because they have been set aside as forest or nature preserves.

Conclusions

Historical trajectories of settlements within a region can provide data of how humans adapt and reorganize over long periods of time, providing insights into underlying processes of resilience and reorganization in response to climatic, demographic, and social changes. Such approaches have been more common in Old World archaeology (Adams 1965; Jameson et al. 1994), where longitudinal studies capture aspects of human–environmental dynamics across major technological innovations. These types of studies point to critical environmental qualities as being constant in their importance, such as access to water, productive soils, and spatial networks connecting human communities for trade and communication (Adams 1978). Similar studies in the New World have also emphasized shifting relationships between people and their landscapes but on shorter time scales than we present here (Sabloff and Ashmore 2001).

Southern Belize is a relatively small region with a continuous history of occupation dating from the initial colonization of the Americas at the end of the Pleistocene though to the present. Humans on this long-modified landscape have been continuously drawn to the same features and resources throughout the Holocene, most notably perennial water and rich soils of the Toledo Uplands and the alluvial valleys of the Maya Mountains—the same landforms and notably rich soils as those of the first cities and states. The early Holocene colonists used fire for land clearing millennia prior to the development of agriculture. The Classic period was the time of peak populations and monumental transformations to the landscape and the built environment. In the foothills we have no evidence of agricultural intensification in the form of extensive terracing as seen at Caracol (Chase et al., Chapter 6 this volume) or ditched or raised fields commonly found throughout the lowlands. We attribute this largely to a combination of high rainfall and the Toledo Uplands soils, which form rapidly when exposed to weathering and erosion.

Following the regional disintegration of geopolitical institutions in the Terminal Classic period, there is significant evidence that small populations remained but without monumental investment in the built environment. It is likely that agricultural communities continued to thrive in the region following Spanish attempts to forcibly relocate communities. Starting in the 1880s, as Q'eqchi' and Mopan speakers established new communities in the Toledo district, they likely settled among or near to small hamlets of farmers in the region, connecting modern residents to a 10 millennia history of continuous occupation.

Acknowledgments

We are grateful to the Alphawood Foundation for their long-term support of this research in southern Belize. We are also grateful to the National Science Foundation (HSD0827305, BCES163206). This work would not have been possible without support of the Belize Institute of Archaeology and in particular John Morris. We thank Amy Thompson for map production. We acknowledge out partners at Ya'axché Conservation Trust and the people of Santa Cruz village.