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Investigations at an Olmec Community

Research Year: 2000
Culture: Olmec
Chronology: Early Pre-Classic
Location: San Lorenzo Tenochtitlán, México
Site: El Bajío

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Introduction

Excavations were undertaken between February and June 2000 at the Early Preclassic site of El Bajío located in the hinterlands of San Lorenzo Tenochtitlán (Figure 1) in order to better understand community and household organization at a small Olmec period site. The fundamental goal of the investigation was to collect household and community level data from which we can suggest the nature of domestic organization, site composition, the degree of community nucleation/dispersion, and subsistence systems of a small Olmec community. The site of El Bajío (Figure 2) was the ideal location for the investigations since it is a small Early Preclassic period community situated within the archaeologically rich El Remolino settlement cluster (Figure 3) (see Coe and Diehl, 1980a:19, 36-37, 47-51, 159, 373; Fig. 8; Stirling, 1947:170-171; 1955:7) and since it had a cut profile that exposed a 55 meter long and 1½ meter thick, dark stain representing the Early Preclassic occupation surface.

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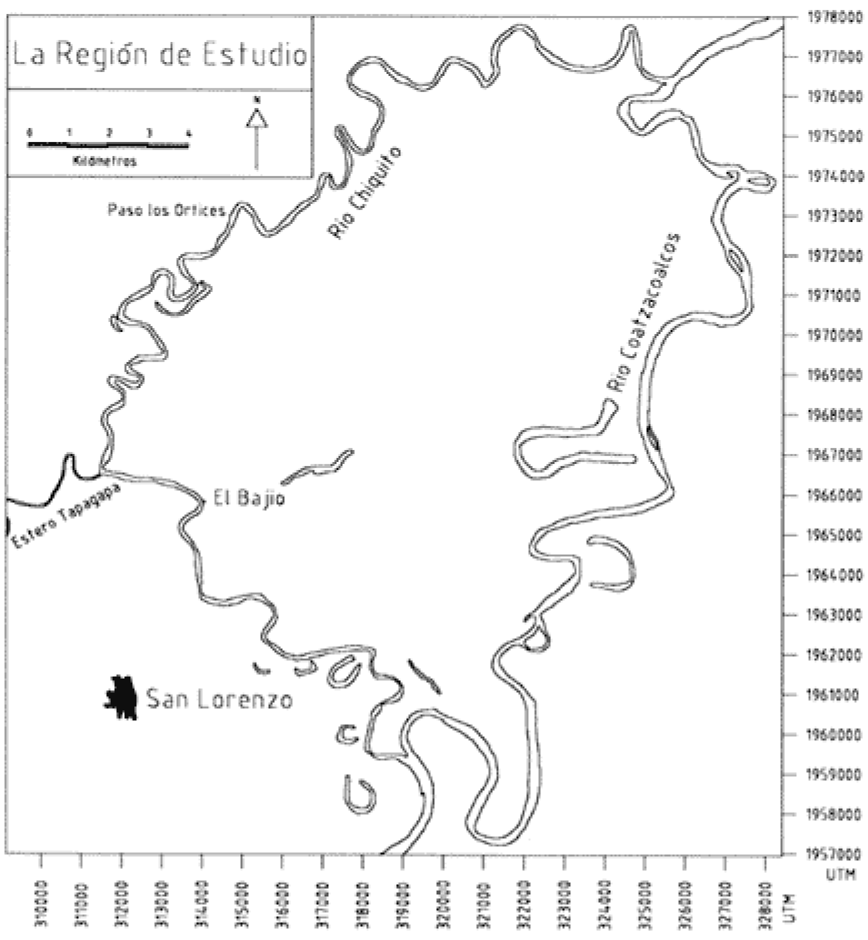

Figure 1: The San Lorenzo region showing the location of El Bajío.

Figure 2: View of El Bajío's profile prior to excavation (July 1999).

Setting

The archaeological site of El Bajío is located along the eastern bank of the Río Chiquito, approximately 5 km northeast of the San Lorenzo plateau. This levee site is part of a cluster of what appears to be small residential sites covering a one kilometer linear area along the Chiquito River; an area that I refer to as the Remolino settlement cluster (see Figure 3) after the most well known site in the area. The archaeological richness of the area has been known for years through the work of Matthew Stirling and Philip Drucker (Stirling, 1947; 1955; Coe and Diehl, 1980a:36-37), and Michael Coe and Richard Diehl (1980a:19, 47-51, 159, 373); the latter team found stratified deposits at the site of El Remolino that included two distinct, intact Early Formative strata containing hearths, midden debris, intact pottery vessels, and well preserved animal bones (1980a:48-50, 395).

Seasonal rains cause the Río Chiquito to rise and overflow its banks, and therefore, archaeological excavations (especially along the site's exposed profile) can only be undertaken during the dry season between January and June. The fluctuating river levels cause a seasonal rising and falling of the water table, which results in a mottled soils and often poor preservation of certain botanical and archaeological materials (see below).

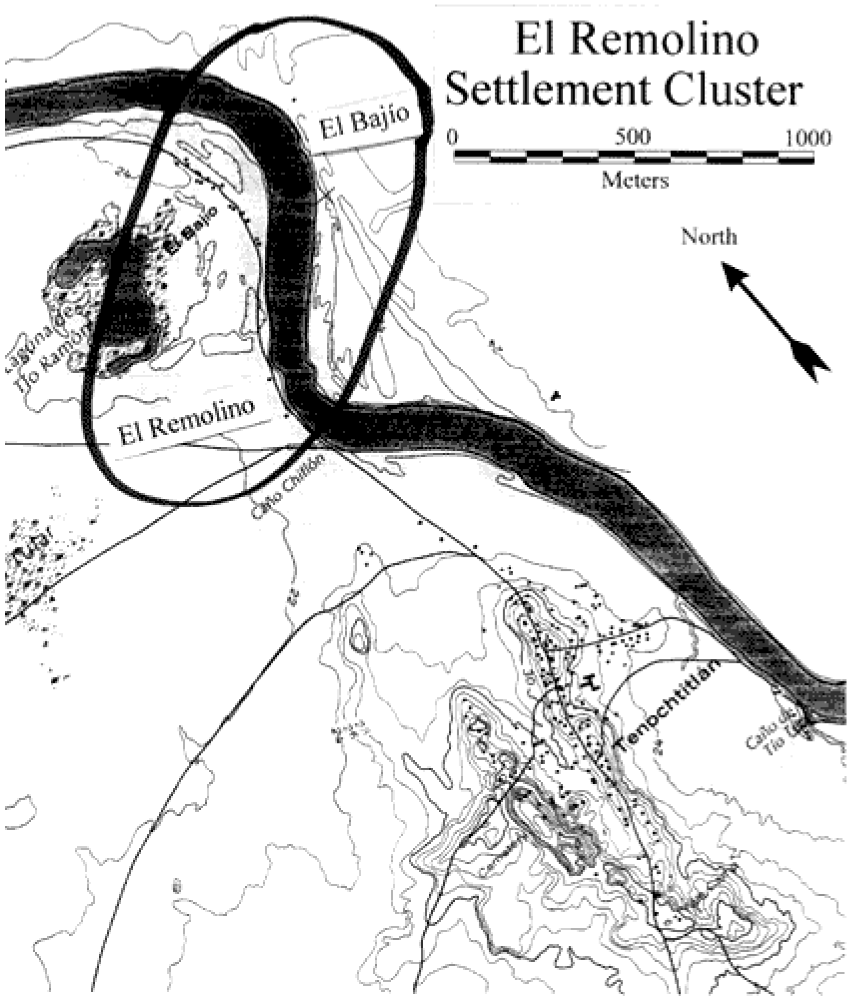

Figure 3: El Remolino Settlement Cluster.

Fieldwork

The primary focus of the investigations at El Bajío (UTM 1965768 N, 0313973 E) was the excavations along the profile that was cut by the Río Chiquito (Figure 4 and Figure 5, shown below). In addition to the profile excavations, we excavated two test pits (2x2 m and 2x4 m) and two trenches (both 1.5x12 m) – the positioning of these was determined by the results of the auger testing program. The test pit and trench excavations are described elsewhere (Wendt, 2000; 2001).

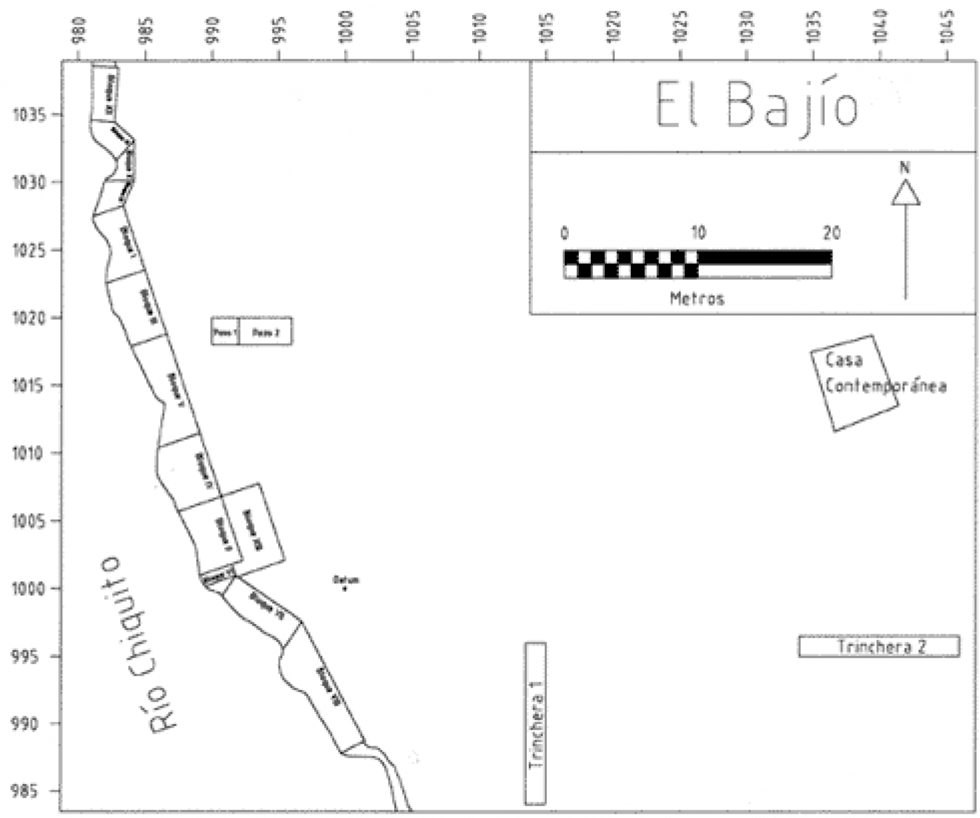

Figure 4: Plan map of El Bajío showing the location of the excavations.

Figure 5: View of the excavations from western bank of the Río Chiquito.

The auger testing program was initiated at El Bajío in order to identify and sample the site's strata and buried archaeological materials. Auger tests were dug every 5 meters throughout the entire site core. In order to determine the total site area, auger tests were also dug at twenty-meter intervals to the north and east of the site core and at twenty-meter intervals along a southern transect (Figure 6). In all, 283 auger tests were completed at El Bajío.

Profile Operations: In an attempt to destroy as little land as possible, we were forced to situate the excavations in a manner that conformed to the natural surface contours of the profile. We did this by dividing the entire 55-meter long profile into 12 Blocks, ranging from .90 to 7.75 meters in length that matched up with the river cut. Using this technique, our excavations only cut into the surface area a maximum of 40 cm in any particular area.

Initial work along this cut was tedious due to the lack of work space, but since the natural riverbank was at an angle, the deeper we excavated, the larger the excavations area became, hence the easier it was to work inside the excavations. Once the intact Early Preclassic deposits were encountered (roughly 2 to 2.5 meters in depth), we had a 1.5 to 3 meters wide and 55 meter long exposure. Horizontal control along the 55-meter profile was achieved by dividing the area into 55 separate one-meter divisions, which were subsequently subdivided into 1 or 0.5 meter quadrants and sampled when we encountered any sort of archaeological feature. Halfway through the season, it was necessary to excavate a 3x6 meter extension off Block 2 to follow-out features in what appears to be a domestic structure. All of the excavations were dug following both natural/cultural and arbitrary levels.

The profile operations, test pitting, trenching, and subsurface surveys together allowed us, (1) to identify the site boundaries, (2) to map and sample the distribution and density of subsurface cultural deposits, (3) to determine the depth and stratigraphy of the subsurface deposits, and (4) to locate, sample, and excavate important archaeological features. Pollen and phytolith samples were taken, along with standard excavation samples (e.g., carbon and flotation), to address the environmental aspect of the research.

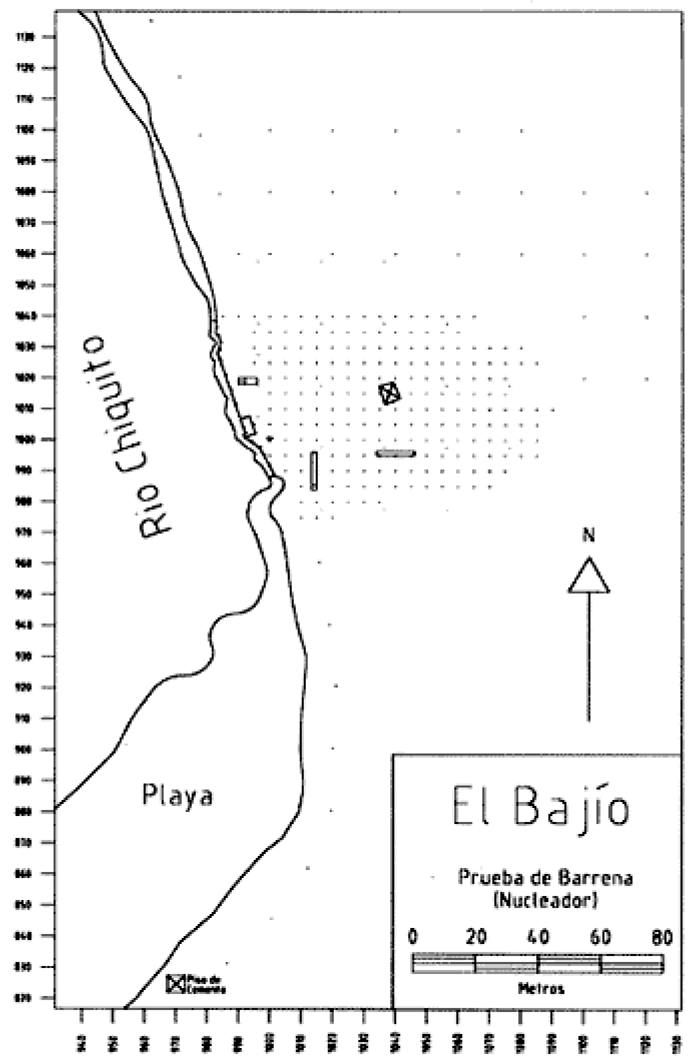

Figure 6: Plan map of El Bajío showing the location of the auger tests.

Tentative Results and Preliminary Observations

Although the analysis of archeological materials from the 2000 investigations have not been completed, it is possible to offer some tentative results and preliminary observations. Results of the subsurface testing and excavations indicate that a major part of the site has been washed away by the yearly cutting action of the Río Chiquito. Even though we obtained archaeological material (ceramics, lithics, burnt clay, etc.) within the entire site area using manually driven bucket augers, the area of most dense material came from the portion of the site within 5-10 meters of the river cut. Thus, the profile operations became the focus of our excavations.

In June 1999 the portion of the profile containing the dark stain (representing the Early Preclassic occupation) was 70 meters in length (Wendt, 1999). This past season, the dark stain measured 55 meters, providing further evidence to suggest the site is rapidly washing away.

Based on limited analysis of ceramic material (and using ceramic crossties) and two radiocarbon dates (see below), the major occupation at El Bajío appears to have been confined to the Early Preclassic (Olmec) period. Ceramic material from later periods is restricted to the first four strata (Capas 1, 2, 3, and 4), which were clearly deposited through alluvial action. However, there was one exception to this situation. We excavated a pit feature that was intrusive into Preclassic strata that, based on the ceramic types and forms present, dates to the Classic or Postclassic period. The remaining three cultural strata (Capas 5, 6, and 6a) contain only Early Preclassic material.

We encountered many categories of artifacts in our excavations including ground stone, obsidian, green stone, ceramics (including partial and whole vessels), figurines, pigment, burnt clay, and chapopote (or bitumen). Interestingly, a large proportion of the tecomate vessel fragments and rim sherds excavated had chapopote affixed to their interior surfaces. This may indicate that some type of chapopote processing took place at El Bajío; however, it is premature to make any predictions at this early stage of investigation. Aside from the various artifacts encountered, we excavated a number of intact features that have been identified as living surfaces, trash pits, fire pits, walls, and what appear to be the partial remains of a domestic structure.

In the central portion of the profile cut (Blocks 2 and 13) we discovered what we have tentatively identified as the remains of an Early Preclassic domestic structure (Figure 7, Figure 8, and Figure 9). This domestic structure has been identified based on the presence of (1) two parallel walls made of broken ceramic sherds densely packed together with clay, (2) numerous vessels situated in an upside-down position (a similar pattern has been observed in modern-day Tenochtitlán when a vessel is not being used), (3) dark organic stains containing abundant cultural material, (4) an oval shaped fire pit (and associated upside-down vessels) two meters away from, or "outside" the "interior structure" area, and (5) the results of the phytolith analysis. This interpretation is tentative since all archeological materials have not yet been analyzed. Once analyses of the material remains are completed we will be in a better position to make a more precise determination of the function of this area. From this point on I refer to this area as the "domestic structure."

Figure 7: View of domestic area (from above).

Figure 8: View of domestic area (looking south).

Figure 9: View of domestic area (looking east).

Charred material excavated from within a dark stain and a concentration of large ceramic sherds in the "interior structure area" yielded an AMS date of 2910 +/- 40 BP (Beta – 155697) with the corrected, but uncalibrated age of 920-1000 B.C. (1 sigma, 66.7% probability) or 880-1040 B.C. (2 sigma, 95% probability).

To the north (Block 1 and 3; Figure 10, shown below) and south (Block 8 and the south portion of Trench 1) of the domestic structure we encountered what appear to be the remains of two Early Preclassic middens. Deposits in these areas contained more cultural material (mainly ceramics) than soil. Ceramic sherds from these areas were large in size (+ 5 / 10 cm) leading us to believe these areas were primary depositories of refuse. Charred material excavated from within the northern midden (Block 3, ceramic concentration 9) yielded a standard radiocarbon date of 2970 +/- 100 BP (Beta – 155700) with the corrected, but uncalibrated age of 920-1120 B.C. (1 sigma, 66.7% probability) or 820-1220 B.C. (2 sigma, 95% probability).

Figure 10: View of northern midden (from above).

Tentative results indicate the Preclassic occupation at El Bajío was contemporaneous and dated to the San Lorenzo phase (1150-900 B.C.). This tentative conclusion is substantiated by the two carbon dates as well as by ceramic material from features and living surfaces. A sample of ceramic material from El Bajío, analyzed in 2001, corresponds to San Lorenzo phase ceramic material from other excavations in the area (Coe and Diehl, 1980a:159-187; A. Cyphers, personal communication, 2001). Although the archaeological deposits are contemporaneous, those deposits from the northern midden are most likely deposited at the close of the San Lorenzo phase when the environment was becoming more arid (see below).

Paleoethnobotanical Analysis

Numerous soil samples were taken for pollen and phytolith analysis from areas in and around the domestic structure and from the northern midden. These samples were primarily collected to find evidence of cultivates species as well as to help determine the domestic structure's function. In addition to these samples, a column sample was collected to acquire paleoenvironmental data. Samples were collected according to standard pollen and phytolith collection procedures (see Zurita, 1997; Figure 11, shown below). The results of the pollen and phytolith analysis are described below.

Figure 11: Sampling around Wall #1.

Pollen Analysis

Dr. John Jones at Texas A & M University did all the pollen analysis. Given the site's tropical environmental setting and fluctuating water table, we recognized that fossil pollen might not be well preserved in our samples. Therefore, we decided to initially run only four samples that were the best candidates for having preserved fossil pollen (i.e., samples collected from the deeper units). Jones encountered no fossil pollen grains in these samples, although exotic tracer spores were abundant in all the samples tested (verifying that processor error was not a factor in pollen loss). These results indicate that all fossil pollen was lost through natural oxidation in the site area and it was recommended that no further pollen samples be examined unless they came from deposits that had remained permanently saturated with water (Jones, 2001).

Phytolith Analysis

In total, 19 soils samples were subjected to phytolith analysis – 13 from various cultural contexts and 6 from strata in a column sample (see Table 1). Biosilicates were well preserved and highly concentrated in all 19 samples. Dr. Steven Bozarth at the University of Kansas Palynology Laboratory completed all of the phytolith analysis.

Table 1. Phytolith Samples Analyzed			
Sample #	**Stratum**	**Depth**	**Context**
1	6	220cm	Northern Trash Pit; under Concentration #10
2	6	220cm	Northern Trash Pit; under Concentration #10
3	6a	263cm	"Outside Structure;" North side of Wall #1
4	6a	261cm	"Outside Structure;" North side of Wall #1
5	6a	263cm	"Inside Structure;" North side of Wall #1
6	6a	260cm	"Inside Structure;" North side of Wall #1
7	6	270cm	"Inside Structure;" Below Concentration #32
8	6	278cm	"Inside Structure;" Below Concentration #31
9	6	271cm	"Inside Structure;" under overturned Vessel #9; Associated with Concentration #31
10	6	280cm	"Inside Structure;" Dark Stain
11	6	290cm	"Inside Structure;" Dark Stain
12	6a	312cm	"Outside Structure;" Fogón (Rasgo #9)
13	6a	315cm	"Outside Structure;" Fogón (Rasgo #9)
14	2		Column Sample; from Capa 2, perfil norte
15	3		Column Sample; from Capa 3, perfil norte
16	4		Column Sample; from Capa 4, perfil norte
17	5		Column Sample; from Capa 5, perfil norte
18	6		Column Sample; from Capa 6, perfil norte
19	7		Column Sample; from Capa 7, perfil norte

Cultivated Plants — Bozarth identified phytoliths diagnostic of maize cobs (*Zea mays*) and beans (*Phaseolus*) in samples collected from within the domestic structure. This evidence demonstrates that both maize and beans were undoubtedly eaten at El Bajío (Bozarth, 2001). Of the seven samples taken from deposits within the domestic structure (samples #5-11), two samples contained maize cob phytoliths (samples #9 and #11), one contained maize cob and bean phytoliths (sample #8), and one contained a bean phytolith (sample #5). Bozarth identified four maize cob phytoliths in one of these samples (sample #9) that was collected from underneath a large overturned vessel. The context and relative high number of cob phytoliths in this one sample indicates that maize was once cooked and /or stored in this large vessel (Bozarth, 2001). It should be noted that maize cob and bean phytoliths were only discovered in the samples collected from the interior of the domestic structure.

Bozarth also identified large, Variant 1, cross-shaped phytoliths in nine of the 13 samples collected from cultural contexts both within and outside the domestic structure (samples #2-7, 9, 11, and 13). He also identified this type of phytolith in three of the six column samples that were collected form strata containing very little archaeological material (samples #16, 18, and 19). This size and type of Panicoid phytolith is considered to be characteristic of maize in southwestern Ecuador and Panama (Pearsall, 1982; Piperno, 1984; 1988). However, the presence of this type of phytolith in most of the samples indicates that it was formed in native grasses (Bozarth, 2001). Bozarth (2001) notes that limited presence of this phytolith can be explained by the large number of phytoliths (>10,000) scanned for cultigens.

Paleoenvironmental Data — Six phytolith samples were collected from a column at El Bajío. These column samples, along with the samples from cultural contexts, were analyzed for paleoenvironmental data. Paleoenvironmental reconstruction is somewhat problematic given El Bajío's alluvial setting. Some of the phytoliths identified in the column sample are undoubtedly from plants growing upstream, which washed in during seasonal flooding. However, many phytoliths are undoubtedly from vegetation that was once growing on the site itself. Therefore, the column phytolith assemblages probably represent Río Chiquito river bank/riparian vegetation.

Overall, there was a dominance of grass phytoliths, along with various types of arboreal phytoliths in all the samples. This high number of grass phytoliths was not expected since the natural vegetation has been reported as being predominantly tall perennial forest (see Coe and Diehl, 1980b:34-39). Popals, a type of marsh, likely occurred in the area before modern disturbance (Rzedowski, 1981). Bozarth reports that it is possible that grasses are over represented in the samples due to the fact that they produce numerous, well preserved, phytoliths, which contrasts with arboreal phytoliths that are less well preserved or not as abundantly produced. Another contributing factor to the high number of grass phytoliths may be that the area's inhabitants were clearing their riverbank fields of grasses that grew the previous year (Bozarth 2001). Coe and Diehl (1980b:77) note that *Paspalum fasciculatum*, a Panicoid grass, grows readily in fields cultivated on the levees of the Río Chiquito. They repost that field preparation involved cutting the grass, piling it in rows, and using it for mulch (1980b:77).

Other phytoliths such as those from palms and *Heliconia* were identified in many of the samples from El Bajío. The overall importance of these and other phytoliths identified in the samples remain tentative until a range of modern analogs can be collected and analyzed (Bozarth, 2001).

Looked at diachronically, the phytolith column data show an interesting pattern. The column samples exhibit a consistent decrease in Panicoids (tall-grasses) and a simultaneous increase in Chloridoids (short-grasses) from the deeper strata (initial Preclassic deposits) to the upper strata (fairly recent times). This change appears to indicate a shift from a relatively humid climate in the Preclassic to one that became more arid through time (see Twiss, 1987). There is a dominance of Panicoids in the uppermost stratum at the site (Sample #14), which apparently indicates a fairly recent increase in precipitation when this stratum was formed (Bozarth, 2001).

Moreover, it is interesting to note that the samples collected from in and around the domestic structure (samples #3-13) show a high degree of similarity. This indicates that the climate was evidently stable during the time when these deposits were formed. Two samples from the northern midden (samples #1-2) show an increase in Chloridoids when compared to the domestic structure samples (#3-13). This pattern indicates (1) that the environment was less humid when the northern midden deposits were formed (Bozarth, 2001) and (2) that the northern midden may be slightly later in date when compared to the domestic structure. However, the confirmation of the second point awaits further analysis.

Significance of Research

This research is significant for its contribution to the understanding of the Olmec as well as to broader questions regarding the structure and make-up of developing complex societies. We are now able to compare domestic assemblages between different types/sizes of sites within the San Lorenzo Tenochtitlán region. This will allow us to test recent hypotheses on the nature of the San Lorenzo Tenochtitlán hierarchy including hypotheses regarding community specialization and political and economic subservience (see Symonds *et al*., n.d.).

These insights will lead to a greater and more complete understanding of the processes and factors involved in the rise of complex society in the New World. More broadly, the results from this research will be able to address questions as to how people adapted to tropical lowland environments.

Acknowledgements

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