



Buried Sites on the Soconusco Coastal Plain, Chiapas, Mexico

Barbara Voorhies; Douglas Kennett

Journal of Field Archaeology, Vol. 22, No. 1. (Spring, 1995), pp. 65-79.

Stable URL:

<http://links.jstor.org/sici?sici=0093-4690%28199521%2922%3A1%3C65%3ABSOTSC%3E2.0.CO%3B2-I>

Journal of Field Archaeology is currently published by Boston University.

Your use of the JSTOR archive indicates your acceptance of JSTOR's Terms and Conditions of Use, available at <http://www.jstor.org/about/terms.html>. JSTOR's Terms and Conditions of Use provides, in part, that unless you have obtained prior permission, you may not download an entire issue of a journal or multiple copies of articles, and you may use content in the JSTOR archive only for your personal, non-commercial use.

Please contact the publisher regarding any further use of this work. Publisher contact information may be obtained at <http://www.jstor.org/journals/boston.html>.

Each copy of any part of a JSTOR transmission must contain the same copyright notice that appears on the screen or printed page of such transmission.

The JSTOR Archive is a trusted digital repository providing for long-term preservation and access to leading academic journals and scholarly literature from around the world. The Archive is supported by libraries, scholarly societies, publishers, and foundations. It is an initiative of JSTOR, a not-for-profit organization with a mission to help the scholarly community take advantage of advances in technology. For more information regarding JSTOR, please contact support@jstor.org.

Buried Sites on the Soconusco Coastal Plain, Chiapas, Mexico

Barbara Voorhies
University of Colorado, Boulder

Douglas Kennett
University of California, Santa Barbara

A systematic survey was conducted of all river systems along a 100 km segment of the coastal plain of Chiapas, Mexico, in order to find buried archaeological sites. The survey was undertaken because the only known sites of the Late Archaic Period were highly obtrusive shell heaps situated in the littoral wetlands, but they seemed to have been formed by itinerant people; no coeval sites, presumed to have been left by the same group, had been found farther inland on the coastal plain. It is surmised that the “missing sites” had become buried by alluvium but that some of these might be visible in river cuts. Twenty-two such buried sites in river cuts were found and examined during this survey, including one site that possibly dates to the Archaic Period.

In addition, a greater understanding was gained of the fluvial processes in the region and their roles as transformers of the archaeological record. This information will be crucial for developing predictive models to locate buried early sites.

Introduction

We conducted an archaeological site survey on the Pacific coastal plain of Chiapas, Mexico, that was undertaken specifically to recover preceramic sites. Prior research in this region (FIG. 1, inset) had documented preceramic shell heaps, dating to the Chantuto Phase (4650–2150 B.C.; Blake et al. in press), in the estuarine wetlands near the coast (Drucker 1948; Lorenzo 1955; Voorhies 1976) but before the 1991 study which we report here, no preceramic sites had been found farther inland. Voorhies suspected that such sites must exist because she interpreted the shell heap sites as having been occupied episodically, not continuously. Thus, she reasoned that the known sites presented only a partial picture of the overall settlement pattern of the Chantuto people; other sites were likely to be situated on the upper gradient of the coastal plain.

No inland preceramic sites had been discovered despite three prior archaeological surveys in the region, however (Drucker 1948; Navarrete n.d.; Voorhies 1989b). In the most thorough and recent of these studies, Voorhies (1989b) investigated an area of the coastal plain directly inland from the estuary containing the shell heap sites. This survey used two complementary methods of site recovery: a pedestrian survey along linear transects and the informant method. Although the archaeologists identified nearly 100 sites during the survey, almost all of them had some form of topographic modification. That is, they either contained artificial platforms, or the entire sites

comprised accretionary mounds. Only one inland site consisted solely of an artifact scatter. Missing altogether from the inventory were preceramic sites, except for the wetland sites mentioned above, which constitute artificial islands. These results suggest strongly that sites without substantial construction features, especially early sites, are invisible on the present ground surface.

Voorhies reasoned that the “missing” sites probably were now buried beneath a sedimentary overburden that resulted from the ongoing alluviation of the Soconusco coast. This situation reflects a combination of environmental factors that we discuss in the following section. The archaeological implication, however, is that a method of site recovery had to be adopted that would discover buried sites.

The method chosen was to examine river cuts. We walked along the rivers that cross-cut the coastal plain and systematically searched all unobstructed banks for buried archaeological sites. In this way we used the downcutting action of the rivers as “excavation devices” to expose buried sites. Because of the importance of river systems to this survey, we discuss this aspect of the regional geography in the following section.

River Systems of the Soconusco Coast

The study area is located on the narrow coastal plain of Chiapas, Mexico, which extends 280 km from Oaxaca to the international border with Guatemala. It is the southern

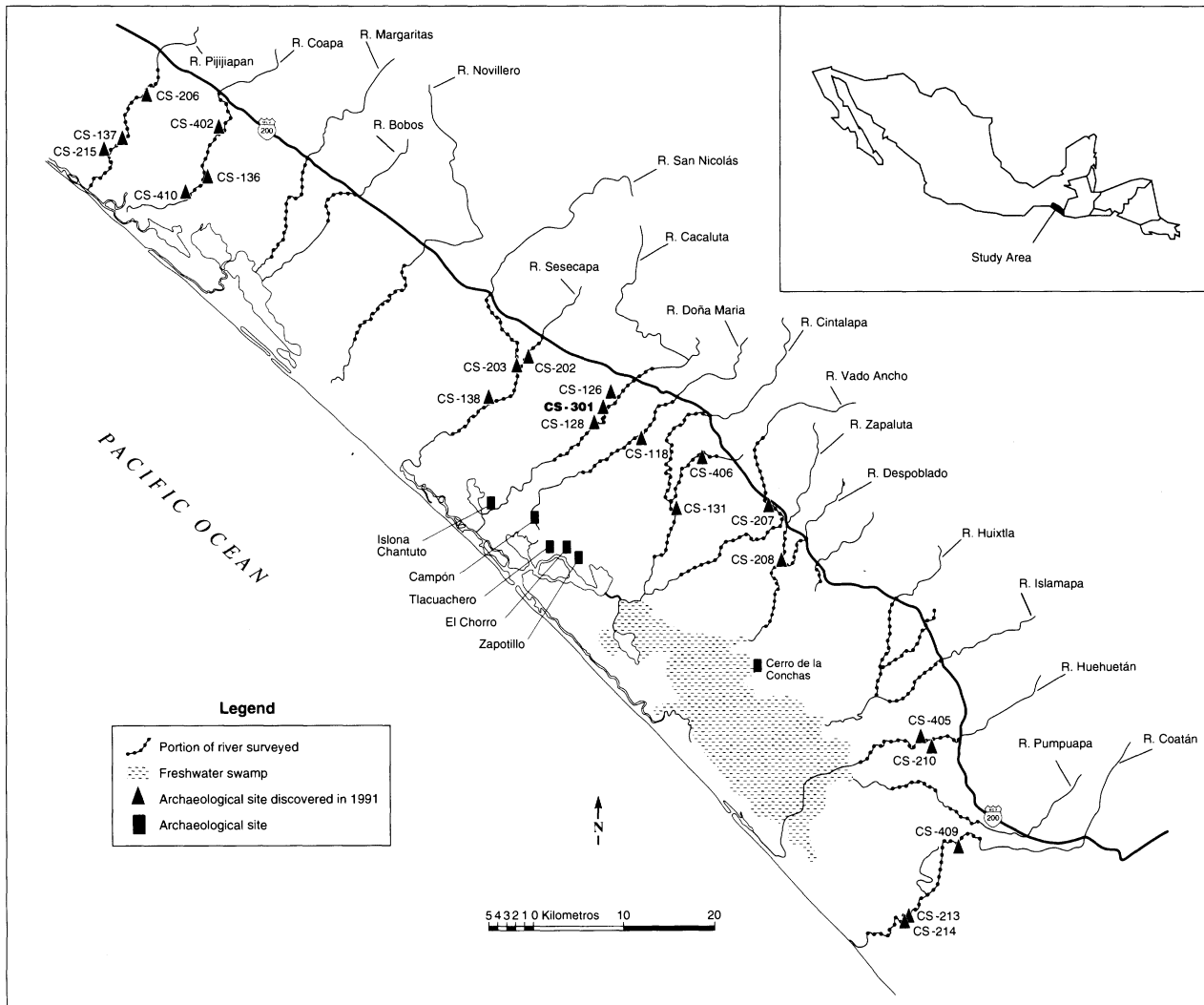


Figure 1. Study area showing river systems, surveyed portions of rivers, and archaeological sites.

half of this coastal strip, from Mapastepec to the border, traditionally called the Soconusco (Helbig 1964: 24), that is the focus of our research. The Soconusco is distinguishable from the drier Tonalá section of the coast to the NW and the wetter Suchitepeques coastal strip to the SE (Voorhies 1989a).

The coastal plain of the Soconusco comprises Quaternary alluvium that is derived from the granitic bedrock of the flanking mountains of the Sierra Madre de Chiapas. The topography of the entire plain is very flat, with a gradient of only 1–2% (SARH 1979). The width of the plain between the ocean and mountains is relatively narrow; it ranges from 15 km in the NW to 35 km in the SE (Helbig 1964: 24). The mountains rise abruptly from the plain with little development of foothills, in contrast to the adjacent Suchitepeques coastal strip. Along the seaward

margin there is a broad band of wetlands consisting of lagoons and mangrove forest formations. Parallel, inactive, barrier beach ridges mark the progression of the prograding coastline.

The rivers of the Soconusco coast are hydrographically simple. They originate in the Sierra Madre de Chiapas and flow directly to the Pacific Ocean in straight courses with few affluents. The beds are narrow, the stem lengths short, and the catchment basins small (TABLE 1).

The nature of these fluvial systems changes dramatically along their lengths due to differences in slope (FIG. 2). In their upper reaches they are typical mountain streams that flow rapidly over boulder-strewn beds, but they change abruptly when the rivers descend onto the flat coastal plain. No longer capable of carrying the loads of large rocks as flow velocity diminishes, the beds become sandy

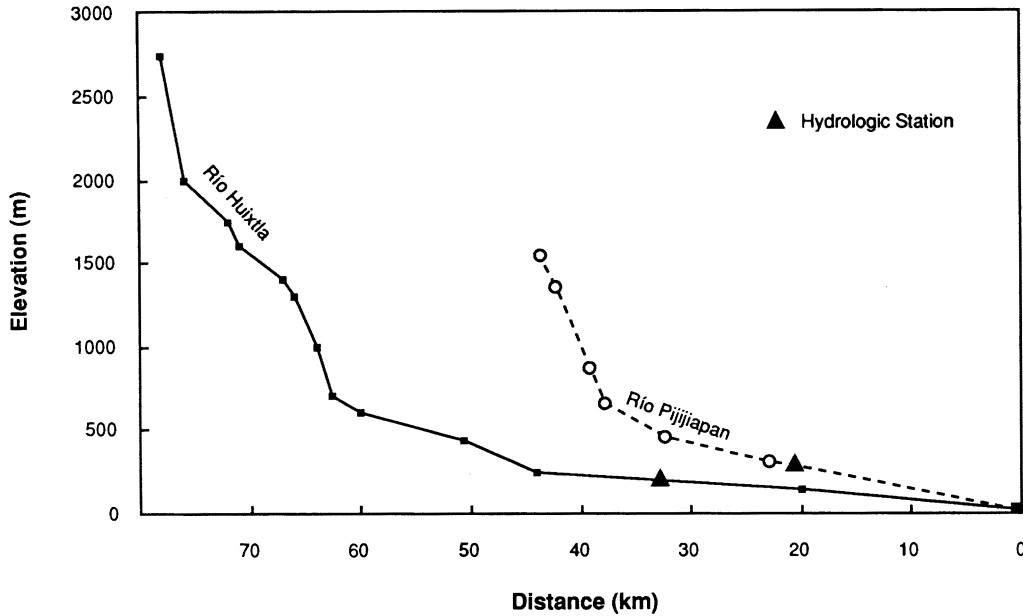


Figure 2. Graph showing elevation and length of the Rio Huixtla and Rio Pijijiapan, redrawn from SARH (1970).

within relatively short distances downstream of the fall line. It is here that the river channels are often moderately entrenched.

Farther downstream in their lower reaches, the rivers become sluggish, the beds are silty and the banks low. In some cases the river channels cease to exist as the water percolates into the alluvium. In other cases the rivers flow

in defined channels all the way to the wetlands, but they typically overflow their banks in the rainy season. The area that is flooded is very extensive, due in part to the very low slope of the lower gradient, which is less than 1% (SARH 1979).

The rainfall regime directly affects the quantity of water that is contained in the individual river systems. Rainfall is

Table 1. Drainage areas, lengths, and mean annual discharge values for selected rivers on the Soconusco coast. The discharge values are calculated for different time periods. A dash indicates that information is not available. The data are from SARH (1970) unless otherwise noted.

Rivers	Length (km)	Drainage area (sq km)	Mean annual discharge (cu m/sec)
Pijijiapan	59	227	11.7
Coapa	-	68	7.6
Margaritas	51	204	9.2
Novillero	45	388	15.5
Tablazon (Ulapa)	-	546	7.3
San Nicolás	69	77*	8.2
Cacaluta	59	307	10.1
Cintalapa	69	451	10.5
Vada Ancho	68	273	-
Despoblado	-	475	11.5
Huixtla	56	603	17.3
Huehuetán	67	809	36
Coatán	66	604	16.5

*Source: SARH (1979).

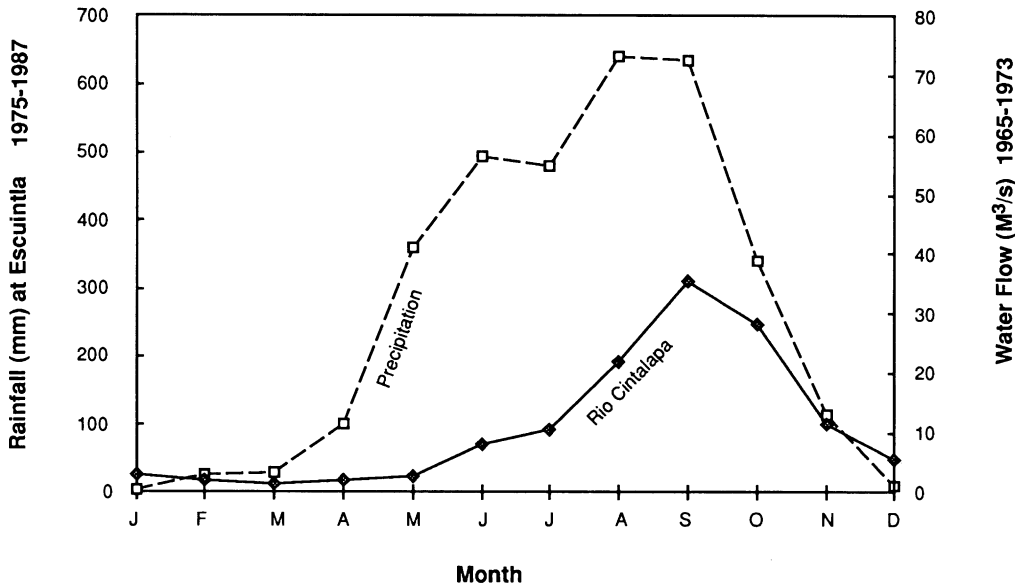


Figure 3. Average monthly rainfall measured at Escuintla (1975–1987) shown by dashed line. Monthly averages of water volume in the Rio Cintalapa (1965–1969) shown by solid line.

greatest at the SE end of the Soconusco plain and diminishes toward the NW. This is reflected to some degree in the mean discharge values (TABLE 1) of rivers compared from south to north.

The volume of river flow varies dramatically on a seasonal basis, due to the sharply-seasonal rainfall patterns of the region. The area is classed as tropical wet and dry (Aw) in the Köppen climatic regime (Vivó Escoto 1964), the wet season typically lasting from April to October. Figure 3 shows the average monthly rainfall between the years 1975 and 1987 measured at the Escuintla meteorological station. Shown on the same graph are monthly averages of the volume of water in cu m per second for the Rio Cintalapa, which flows through the town of Escuintla. These data are averaged for the interval from 1965 to 1969. In this instance the flow volumes are relatively low from December through June but increase significantly in July through November. Despite the fact that the two curves are based on data from different time periods, they are closely correlated.

The Soconusco river systems are being increasingly modified by human activities. In some instances the Secretaría de Recursos Hidráulicos has straightened and deepened river channels in order to prevent seasonal flooding, reduce the loss of agricultural land as the result of meandering, and facilitate the diversion of water into irrigation channels. The bank cuts along the dredged sections were highly disturbed and therefore were not surveyed (we were able to readily recognize the dredged sections of the rivers

by the ridges of backdirt along the top of the banks). Fortunately, in 1991 the extent of disturbance was not great.

Additional changes to these rivers involve the use of water by large human populations concentrated in towns and the consequent pollution downstream of the settlements. River pollution was most apparent at the eastern end of the study area where populations are the largest. Rivers such as the Rio Coatán, which passes through the city of Tapachula, appear nearly devoid of animal life. The rivers at the western end of the study zone, in contrast, support populations of fish and crustacea, which are exploited by the local people, and aquatic birds are abundant.

Methods

Site Discovery

Our riverine survey encompassed all major river systems between the towns of Pijijiapan and Mazatán. The rivers, with the surveyed portions indicated, are shown in Figure 1. We briefly describe the survey methods before turning to the results of the investigation.

The survey was undertaken during the dry-season months of January and February, 1991. It was scheduled for this time so that the crews could efficiently access the river cuts. Heavy rains in the wet season cause the rivers to swell, making many portions impassable and therefore not conducive to a survey. Even in the dry season water filled

the full width of the river channels. Because of this, the survey crews always walked in water, which varied from a few centimeters to a meter in depth (FIG. 4).

Three survey teams, consisting of an archaeologist and a local guide, were dispatched daily to reconnoiter stretches of unexplored river. Because it was faster and less exhausting when the survey teams walked downstream rather than upstream, our logistical arrangements were made so as to avoid long upstream treks.

Our surveys were limited to portions of the rivers downstream of the fall line. One of the first rivers that was investigated, the Rio Vado Ancho, was explored for a distance above the fall line (FIG. 1) in the boulder-strewn section of the river. In this section the river banks consisted almost solely of rocks, making recognition of cultural deposits virtually impossible. For this reason, the beginning of each section of river surveyed subsequently was placed near the change in slope between the hills and the coastal plain, at a point where the river bed changed

from rocks to sand. This location usually was at or near the point where Highway 200 crosses the river.

The downstream terminus of the surveys also was determined by the survey teams on the basis of field conditions. When the banks in the lower reaches of a river system became low and obscured by vegetation, the archaeologist in charge made the judgment that survey was no longer productive and the team left the river.

When surveying a river we thoroughly examined only the active river cuts, leaving unexamined the banks cloaked with heavy vegetation. The active cuts are found on both banks in places where the rivers flow in straight channels and on the banks of the outer curves of meanders. Although it would have been preferable to investigate all embankments, the large amount of time required to clear a bank made systematic vegetation removal unrealistic.

The active river cuts that we examined for archaeological remains ranged in height between 1 and 8 m, with the highest cuts more often at the eastern end of the study

Figure 4. Douglas Kennett (right) and Juan Manuel Hernández surveying the Rio Huixtla. Note dense vegetation on the far bank.



area. The cuts were generally vertical and consisted of horizontal strata, usually silts and sands of riverine origin. Cultural material, when present, was customarily embedded within a dark, organic-rich stratum that was not observed in the cuts devoid of archaeological remains. The dark soils evidently are anthropogenic in origin.

In addition to carefully examining the exposed river cuts for archaeological deposits, cultural material sometimes was observed in the river beds. Accumulations of artifacts, usually ceramic material, at times were concentrated on sand bars on the inner curves of river meanders. Highly concentrated deposits were systematically recorded in daily field logs and the extent of artifact erosion was assessed to provide a means for estimating the distance the artifacts had traveled from the original archaeological source. In some instances we were successful in finding the primary deposit, especially when unweathered potsherds were found. Attempts to find the sources of artifacts deposited in the rivers were often unsuccessful, however.

Dating the Sites

All of the sites containing ceramics have been dated by comparing sherds with the known ceramic chronology for the region. This procedure was carried out by Voorhies. John E. Clark, who has been investigating the Preclassic Period in the vicinity of Mazatán (e.g., Clark 1991), reviewed the material from all Preclassic Period sites and dated them.

Aceramic sites discovered during the survey remain undated. This is because the recovered stone tools were either undiagnostic or because insufficient organic material was available for radiocarbon analysis.

Two samples of organic material were submitted to Beta Analytic for radiocarbon analysis. In one instance the sample, which came from an aceramic site, had insufficient carbon for analysis. In the other instance, a date that supports the age determined by ceramic chronology was obtained for a site with buried platform mounds.

Results

Twenty-two buried archaeological sites were discovered in the 333 km of rivers that we surveyed. The sites apparently range in age over the entire known occupational spectrum of the Soconusco region: all periods with pottery are represented, and the Archaic Period also seems to be represented but there is no firm dating for it. The sites and the times of their occupations are given in Table 2.

The results of our survey are summarized according to the conventional subdivisions recognized in the Meso-

Table 2. Archaeological sites and their periods of occupation.

<i>Site designation</i>	<i>Period of occupation</i>
Cs-406	Unknown
Cs-301	Possibly Late Archaic
Cs-409	Early Preclassic
Cs-207	Middle Preclassic
Cs-206	Middle Preclassic
Cs-128	Middle Preclassic
Cs-410	Middle-Late Preclassic
Cs-137	Late Preclassic
Cs-405	Late Preclassic-Protoclassic
Cs-402	Protoclassic-Early Classic
Cs-138	Classic
Cs-213	Early-Middle Classic
Cs-118	Middle Classic
Cs-214	Middle-Late Classic
Cs-203	Middle-Late Classic
Cs-131	Middle-Late Classic
Cs-202	Protoclassic-Late Classic
Cs-210	M. Preclassic, M.-L. Classic, Late Postclassic
Cs-208	Late Postclassic
Cs-136	Possibly Late Postclassic
Cs-126	Late Postclassic
Cs-215	Late Postclassic

american chronology. To illustrate our generalizations we discuss a few sites in detail.

Possible Preceramic Sites

Two possible preceramic sites were found. One of these, Cs-406 on the Rio Filapa, consisted of a small hearth buried 2.5 m below the surface. There were no associated artifacts recovered and what in the field appeared to be charcoal did not contain enough organic matter to permit dating by means of radiocarbon analysis. It may represent a spot where ancient people stopped briefly to prepare a meal at the edge of the river, but this is conjectural.

Cs-301, the most significant find of the season, is located on the Rio Cacaluta, approximately 1.5 km sw of the town of Bonanza. The site was found in the bank of an actively eroding meander. In a brown sandy clay, just above the water level of the river, we observed a linear deposit of cobbles (FIG. 5). This was immediately suspected as being a cultural deposit because, although most of the cobbles are waterworn and apparently had been retrieved from the river, nearly half of them are fractured. These circumstances cannot be explained easily as the result of natural agents. Upon further study we found three artifacts among the other stones. They consist of two handstones and what could be a fragment of either a metate (milling stone) or a stone bowl. Ceramic material is conspicuously absent in this stratum but a few worn sherds were observed in the overlying stratum.

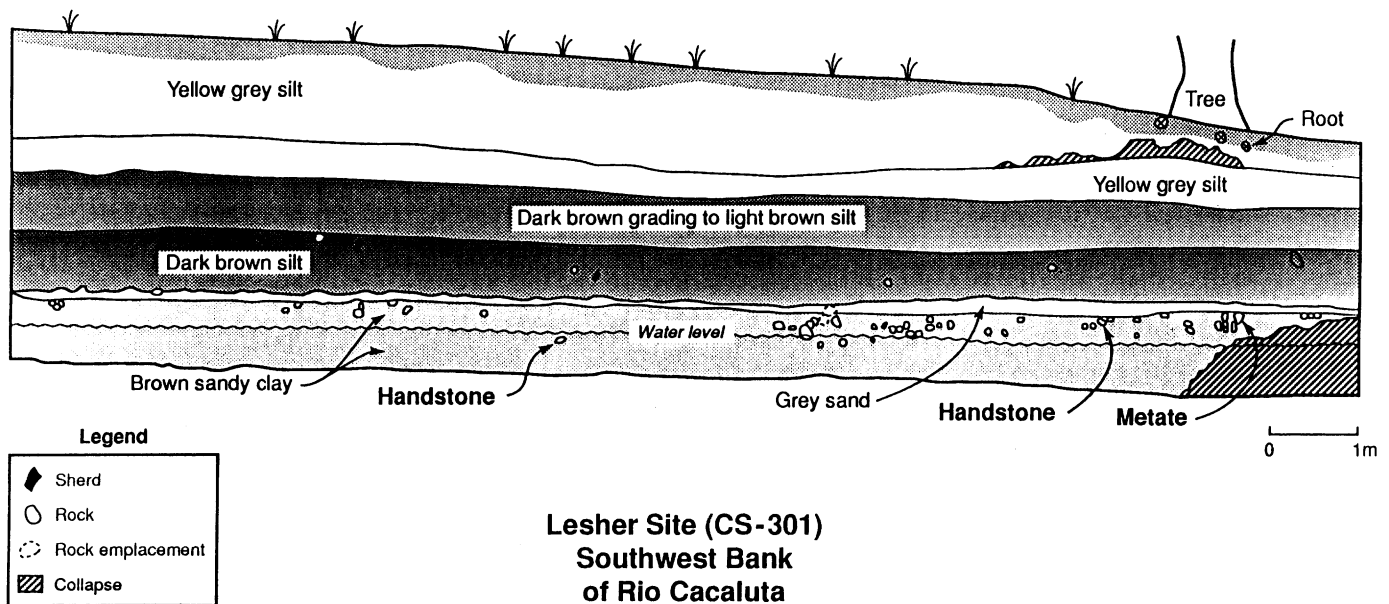


Figure 5. Profile of Cs-301 (Lesher site).

This deposit is likely preceramic in age but cannot be firmly dated at the present time. There are reasons to suspect it may date to the Late Archaic Period. First, the cultural material is located within a paleosol that is buried by at least two other paleosoils, suggesting considerable antiquity. Second, sherds in the dark brown silt immediately above the preceramic deposit probably date to the Middle Preclassic Period, but as they are small and eroded, this is not certain. Third, the few tools that have been recovered are identical to those from the Late Archaic Period wetland sites located directly downstream from this site, and no other tools suggesting a different age were found in association.

Soil samples were taken from the stratigraphic section and were analyzed by paleobotanist John G. Jones. This exploratory study showed that phytoliths are abundant at the site and that they can potentially inform us about regional vegetation and the possible presence of cultigens.

Briefly, Jones has found that at the time of the site occupation the regional biome was a dry, semi-deciduous tropical forest. Massive clearing of all forest components took place following this time and the area became an open savanna with cultigens (maize) present. These findings, while based on preliminary data, support the tentative placement of the site in the Late Archaic Period.

We plan to excavate this site in the near future to enable us to learn more about the adaptation of preceramic people in the upper gradient of the Soconusco plain and their transition from use of wild to domesticated foods.

Preclassic Period Sites

Only one Early Preclassic site (Cs-409) was discovered. It is situated on the Rio Coatán (FIG. 1) between Tapachula and Mazatán. The site consists of a sherd-bearing dark brown soil that is buried under approximately 3.5 m of river silt (FIG. 6). A two-handed mano and an obsidian flake were found in association with the ceramics. According to John E. Clark, the ceramics date to the Ocos phase of the Early Preclassic Period.

Five sites had Middle Preclassic components: Cs-207, Cs-206, Cs-128, Cs-410, and Cs-210 (FIG. 7). The sites span the width of the surveyed coastal strip, suggesting that by the Middle Preclassic Period the entire region was occupied.

The Middle Preclassic Period sites in our inventory consist of cultural material embedded in dark brown soils and buried by 0.5–6.75 m of overburden. The only feature that was discovered within these deposits was a hearth found at site Cs-210 on the Rio Huehuetán. This was the most deeply buried of the Middle Preclassic Period deposits, and is discussed in more detail below. This site had the longest occupation and occurred in the highest stratigraphic cut in our inventory.

Cs-128, on the Rio Cacaluta a short distance downstream from the possible Late Archaic Period site (Cs-310) is selected as an example of a Middle Preclassic Period site.

At Cs-128, two episodes of occupation were apparent in a river cut that is approximately 3.5 m high (FIG. 8). There

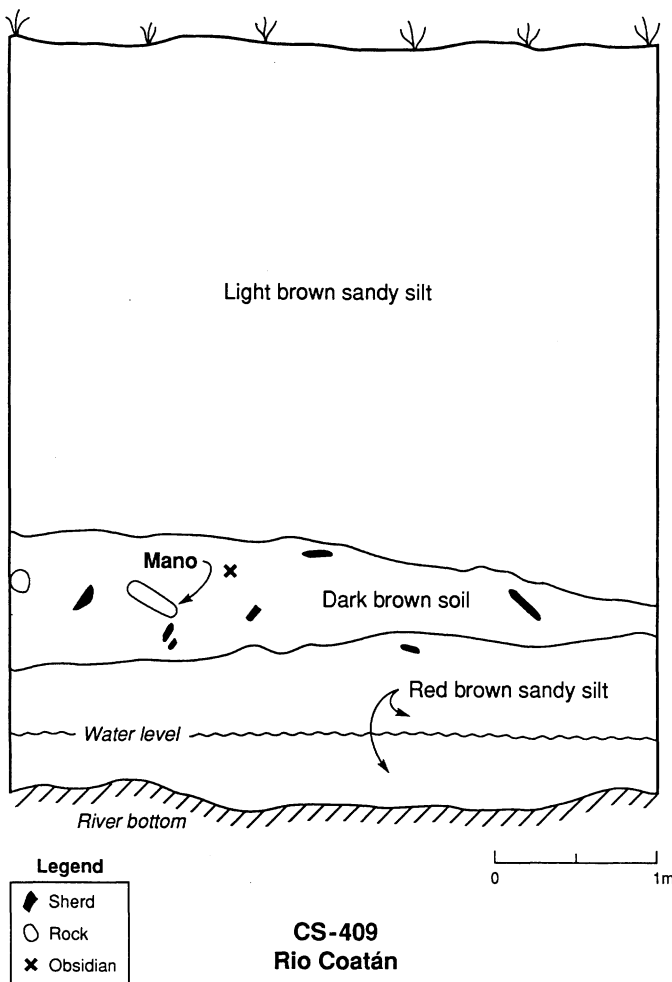


Figure 6. Profile of Cs-409.

is a distinct difference between the paleosoils that represent each occupation. The upper stratum consists of a reddish brown, silty clay with small, reddish, sherd inclusions that we could not date. Within this, two separate cobble strata were observed, each representing a single building episode of a pavement or floor.

A dark brown, silty clay is located stratigraphically below the reddish-brown clay and cobble floors but is separated from it by a sterile layer of sand. Potsherds from this clay stratum are larger and better preserved compared to those in the overlying stratum. This stratum is not confined to the limits shown on the profile drawing, but is present in the river cut for approximately 100 m downstream.

The lower of the sherd-bearing strata dates to the Middle Preclassic Period. Most of the diagnostic sherds have been placed by Clark (personal communication, 1991) in

the Jocotal or Cuadros phases. He thinks that an Ocos occupation might also be present but is not certain about this.

Three sites, Cs-410, Cs-137, and Cs-405, have Late Preclassic Period material (FIG. 7). They are located at the two ends of the surveyed coastal strip. In each case the cultural material is embedded in a flat-lying dark brown stratum, which ranges from 1.25 to 4 m below the present surface. No archaeological features were observed at any of the sites, so it seems unnecessary to present a detailed discussion.

Classic Period Sites

Nine sites have Classic Period components: Cs-402, Cs-138, Cs-213, Cs-118, Cs-214, Cs-203, Cs-131, Cs-202, and Cs-210 (FIG. 7). They are located on rivers across the entire width of the surveyed coastal plain. Although usually we are able to detect occupations that correspond to subdivisions of the Classic Period, at most Classic Period sites more than one of these is represented, and the potsherds are not stratigraphically separate. For this reason we shall discuss all Classic Period sites together.

The Classic Period deposits are buried by between 0.25 and 3.5 m of overburden. In most instances the deposits are horizontal, organic-rich soils with potsherd inclusions. In two cases (Cs-202 and Cs-214) discrete middens were sectioned by the river and in two other cases (Cs-118 and Cs-203) cobble-faced mounds are visible in cross section. We discuss one of the latter two sites for illustration.

Cs-118 is situated on the Río Doña María, approximately 0.5 km south of the rail line. Buried cobble-faced mounds were discovered at two separate locations (A and B) which are approximately 10 m apart on the SE bank of the river. These mounds had been truncated by river action (FIG. 9) before being buried by the fine, light-brown silt that was deposited by river flooding.

Many potsherds and some stone tools were collected at the site. They were found both in the banks and in the talus and river bed in the vicinity of the mounds. The potsherds indicate that the site was occupied during the Middle Classic Period.

Charcoal for radiocarbon analysis was collected from a burned stratum that underlies the mound at location Cs-118B. The sample (Beta-44755) was dated at 1320 ± 110 b.p. The indicated range of dates (a.c. 520–740) is acceptable for the Middle Classic Period. The calibrated dates (Klein et al. 1982) make the sample slightly more recent: between A.C. 575 and 885.

Postclassic Period Sites

There are five sites in our inventory that were occupied during the Late Postclassic Period: Cs-136, Cs-215, Cs-126, Cs-208, and Cs-210 (FIG. 7). They are located across the entire width of the survey zone. The deposits are buried under 0.5–1 m of overburden. In all cases the Late Postclassic Period cultural material was embedded in horizontal strata; that is, we did not find any archaeological features in these Late Postclassic Period deposits.

To illustrate the Late Postclassic Period deposits, we describe the most dramatic stratigraphic section that we discovered during this survey. Cs-210 is located on the Rio Huehuetán about 2 km SW of the rail line. The river cut, which is 8 m high, has four separate strata that contain cultural material (FIGS. 10, 11). At the top of the stratigraphic sequence, near the present ground surface, an old humus layer contained ceramic material consisting of large, uneroded potsherds. We also discovered an intact grater bowl (*molcajete*). This deposit dates to the Late Postclassic Period. Below this deposit, separated by a stratum of coarse and fine river sands, are two superimposed strata containing cultural material. Stratigraphically, they consist of silty clay deposits, both grading from dark to light brown. The lower of the two strata clearly contains potsherds and stone tool inclusions. This is less clear with respect to the upper stratum. Ceramic analysis dates both strata to the Middle–Late Classic periods.

In the same river cut, just downstream from the location that is shown on the profile (FIG. 10), a fourth and lower stratum with cultural material is present. This stratum is a continuation of the grey clay in Figure 10 but it is discolored by organic matter. We found a small hearth and several small and eroded potsherds. It is difficult, of course, to securely date this material but we think that it is Middle Preclassic in age.

Approximately 200 m east of the river we found a platform mound complex of unknown age. Surface sherds of Late Postclassic age were found between these mounds and the river cut, so it is possible that the mounds were constructed during that time. The central and largest platform mound had an uncarved stela at its base. Philip Drucker (1948), who worked in the Soconusco region in 1947, describes a similar site which he labeled Huehuetán I, with the river cut designated by him as Huehuetán II. We are certain that Cs-210 is the same bank he described.

Conclusions

The principal reason for undertaking a survey of river cuts along the Chiapas coast was to find preceramic sites

dating to the Archaic Period. Prior to this study the only known sites of that period in the region were located within or at the edge of the wetlands that form the seaward margin of the coastal plain. The pattern gave the impression that during the Late Archaic Period the native population depended solely or primarily upon wetland resources, but other evidence suggested to Voorhies (e.g., Michaels and Voorhies in press) that such an interpretation was incorrect. Her view was that the complete settlement pattern for the Late Archaic Period must consist of inland sites, as well as those in or near the wetlands, but the inland sites were buried due to coastal alluviation. Thus the problem became one of site discovery and preservation.

Archaeologists have become increasingly aware of the problem of buried sites and have devised various ways to enhance site discovery (e.g., McManamon 1984). Sites situated near water courses often present particular challenges for archaeologists. To cite one example, Joffrey Coe (1964: 9) combined his knowledge of cultural and fluvial processes to predict the location of buried sites near the fall line of rivers flowing from the uplands onto the coastal plain of North Carolina. Coe's objective, like ours, was to discover preceramic sites of the Archaic Period. One deeply stratified site had been found on the narrow floodplain at the confluence of the Yadkin River and one of its tributaries just below the falls where the river descended from the piedmont onto the coastal plain. Coe recognized that the movements of people often follow waterways and that the narrowing of the floodplain would tend to funnel them through this gap. Also, fish and molluscs, especially concentrated in the water below the falls, would have attracted people to that particular location. He recognized also that site preservation was more likely in places such as the narrows as compared with farther downstream in the river system where the bed was aggrading and the channel regularly shifted across the wide floodplain; any sites "that managed to escape destruction were buried and their locations were lost in the homogeneity of the flood plain" (Coe 1964: 11).

Coe hypothesized that additional Archaic sites might be found on other drainage systems at locations analogous to the known Archaic site. To test this, he dug deep excavations at places with similar geomorphology where there were known sites that dated to later time periods, reasoning that locations that had been attractive to people during later periods might have been used earlier as well. The excavations revealed deeply-buried early materials dating to the preceramic period. These discoveries then led to investigations of the buried sites, which advanced greatly

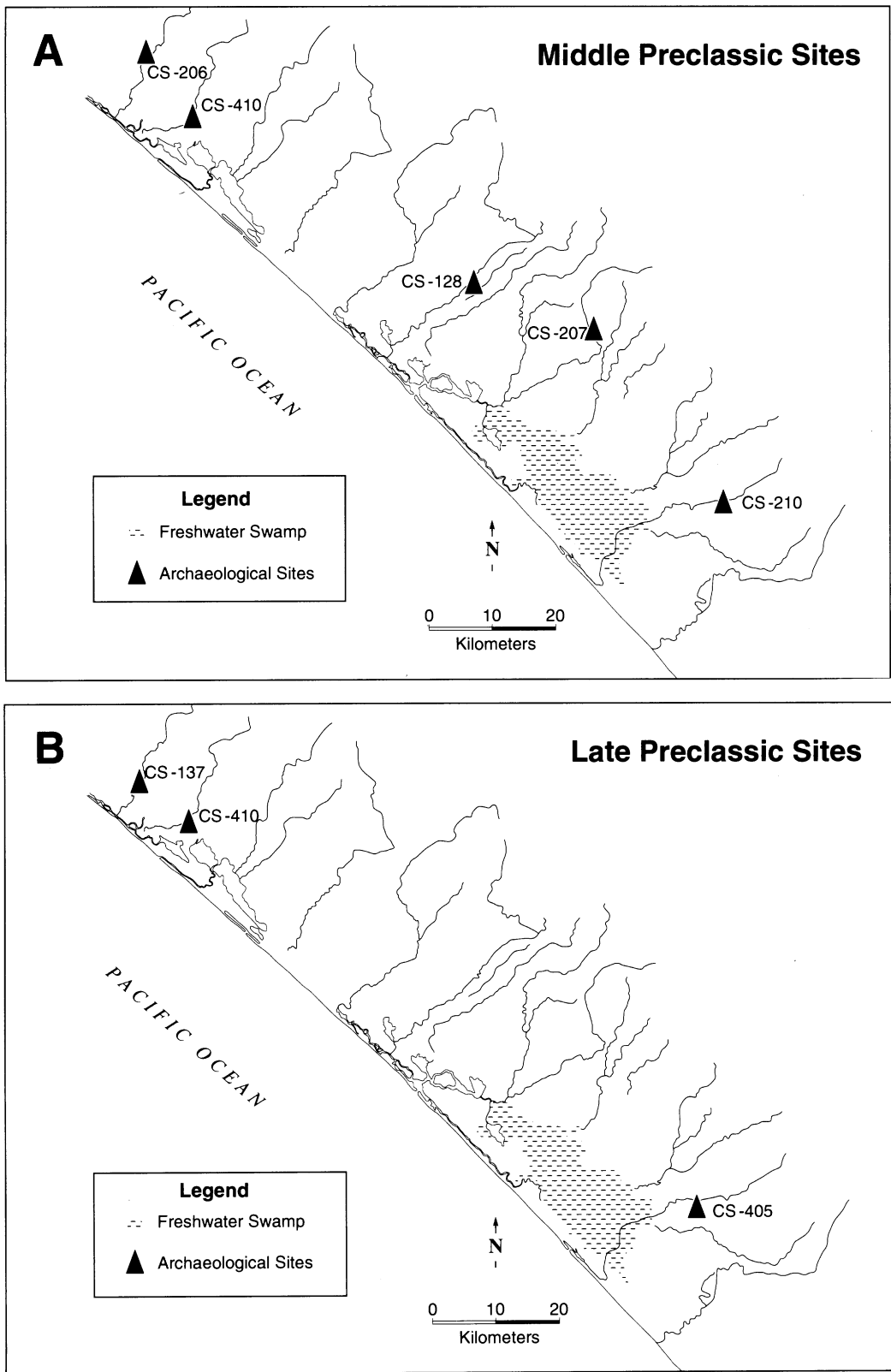
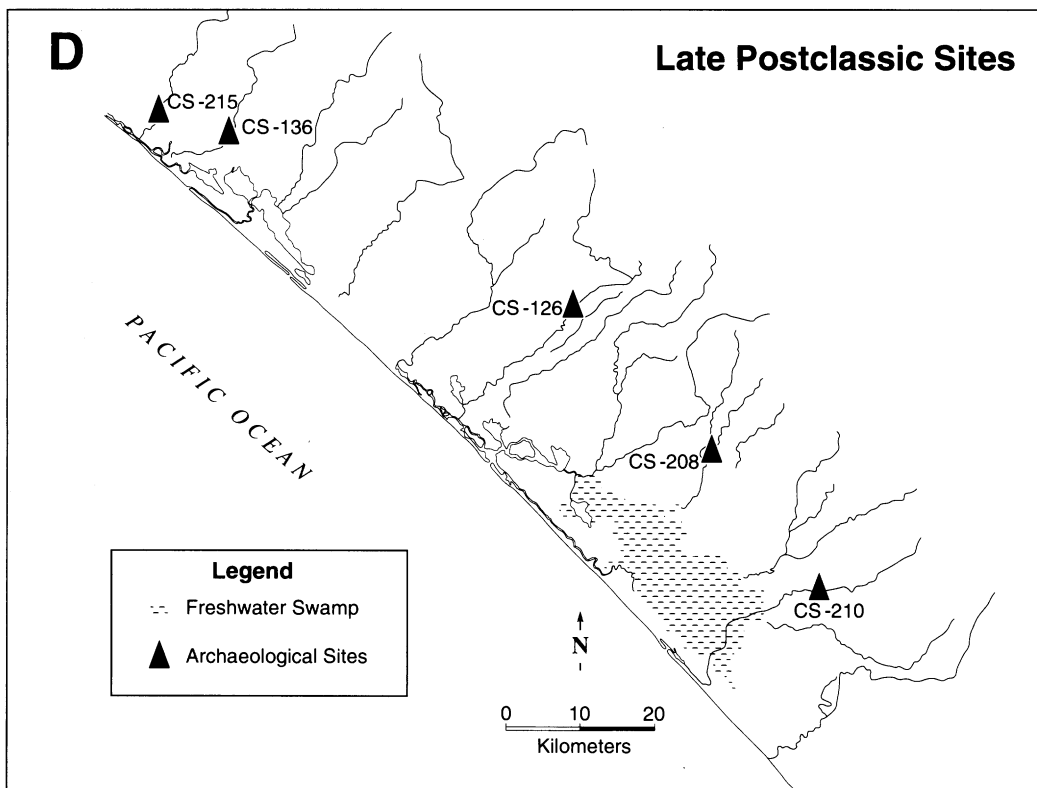
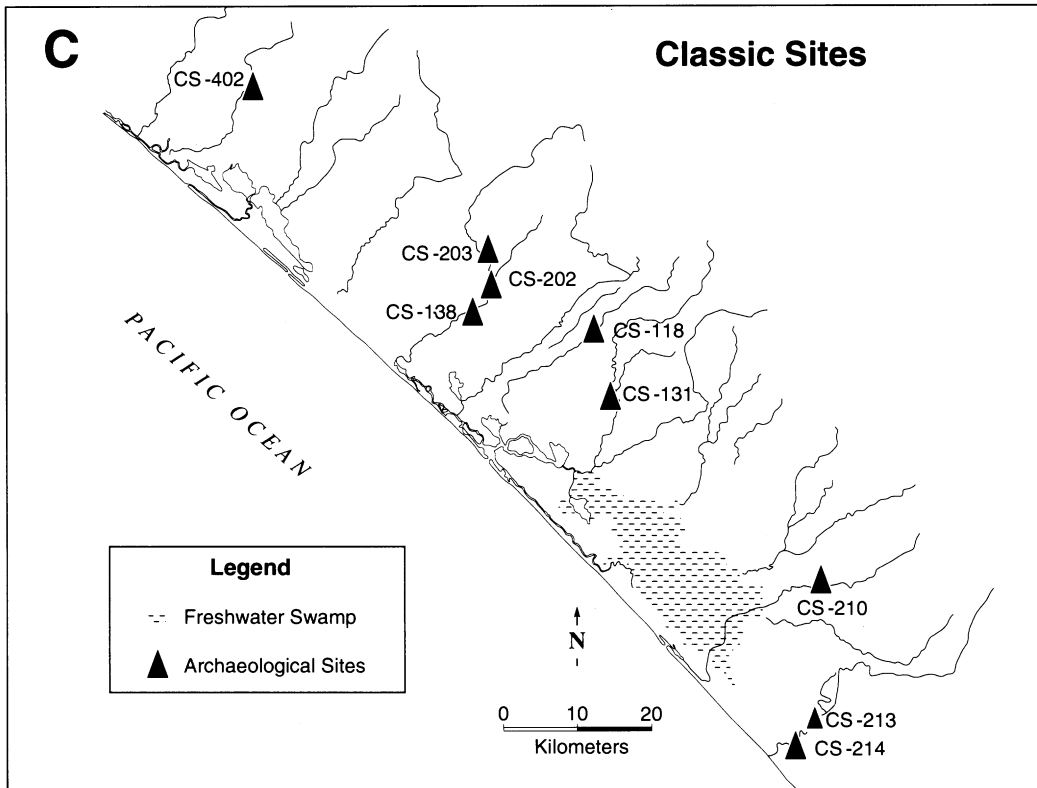


Figure 7. Study area maps by time period. A: Middle Preclassic Period sites. B: Late Preclassic Period sites. C: Classic Period sites. D: Late Postclassic Period sites.



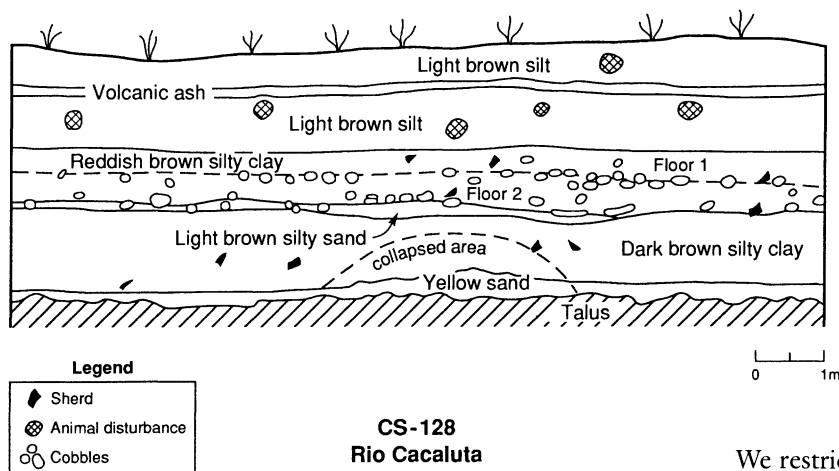


Figure 8. Profile of Cs-128.

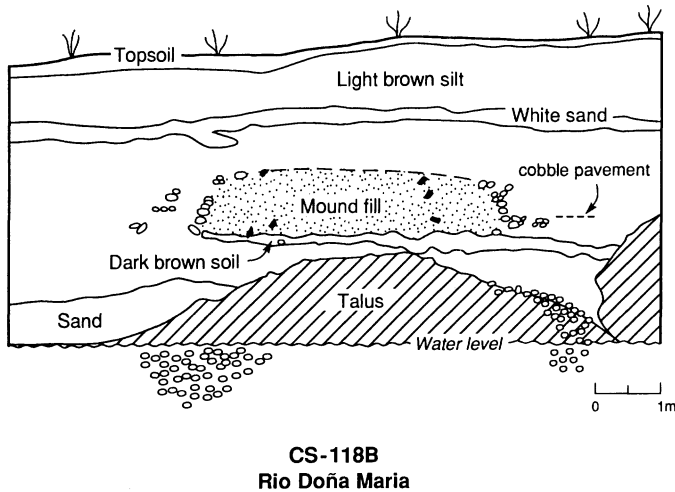


Figure 9. Profile of Cs-118 at location B.

the understanding of the Archaic Period in the Southeast.

Other investigators in the Southeast have followed Coe's lead in finding buried Archaic Period sites by adopting his principles as guides in their own research (e.g., Chapman 1985: 141). Chapman's (1976, 1985) research along the lower Little Tennessee River is an excellent example of how one archaeologist retrieved data pertaining to the Archaic that lay buried in alluvial deposits. Chapman, using his knowledge of fluvial and cultural processes, made deep exploratory trenches in promising locations, regardless of whether artifacts were visible on the surface. This work was made possible by the use of a backhoe (Chapman 1976). It resulted in the recovery of abundant information regarding Archaic Period occupations along the Little Tennessee River, where it had been thought no such settlements were present.

We restricted our own quest for Archaic Period sites on the Soconusco coastal plain to the upper gradient of the plain where rivers had cut deep channels. This is exactly the kind of situation that Coe (1964: 11) considered so unpromising for the detection of archaeological sites. Unaware of Coe's pessimistic view, we systematically explored the river cuts in order to find buried sites.

Twenty-two buried sites were discovered during the riverine survey, including two that had no ceramics and probably date to sometime within the preceramic period. One of these, the Leshar site (Cs-301), warrants further investigation; its discovery was the most significant one of the season. This site may date to the Late Archaic Period, and if so, its investigation will provide data that are crucial to the detection of the settlement and subsistence patterns of indigenous people during that time.

The other 20 sites discovered by us span the entire prehistoric record as it is currently recognizable in the archaeological record. The spatial distribution of these sites by time period (FIG. 7) in most respects conformed to the results of a previous archaeological survey conducted using other site recovery methods (Voorhies 1989b). An exception to this concerns the distribution of archaeological sites from the Early and Middle Preclassic periods. In the first survey most of the Early and Middle Preclassic sites (Voorhies 1989b: fig. 7), like those of the Late Archaic Period, were clustered within the wetlands or on their margins, giving the impression that only that particular habitat was important to the Early and Middle Preclassic peoples. These sites all consisted of accretionary mounds, which means that they are highly obtrusive (Schiffer, Sullivan, and Klinger 1978). Only one coeval site initially was found inland, at the base of the foothills. Tepalcatenco, dating to a later occupation, had platform mounds and abundant surface sherds, which made its detection a very simple matter. The buried Preclassic material was found in excavations, rather than being identified from surface finds.

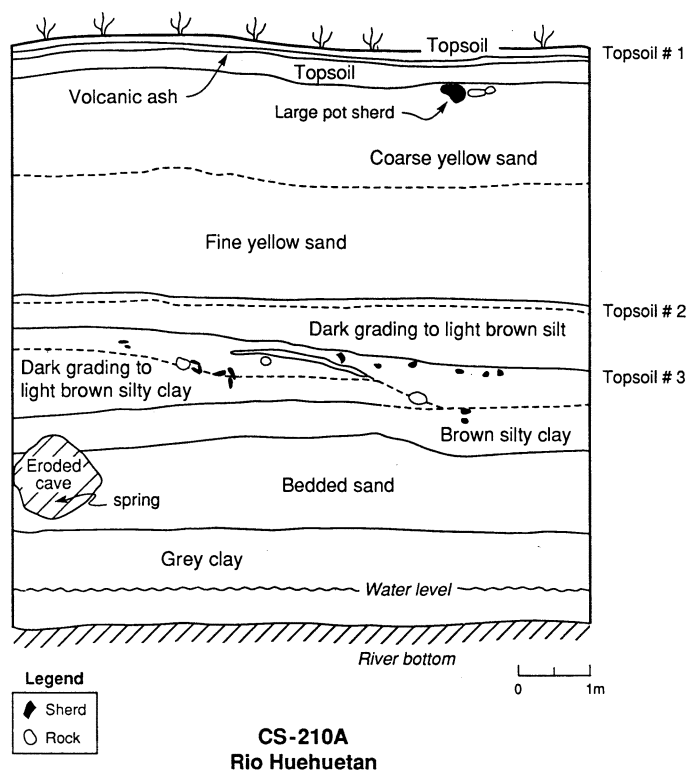


Figure 10. Profile of Cs-210 at location A.

Figure 11. Photograph of bank at Cs-210. Note shovel for scale.



Our riverine survey data reveal that there are more Early and Middle Preclassic sites at inland locations. We discovered one Early Preclassic site and five sites with Middle Preclassic Period components buried beneath river deposits. These six sites are not obtrusive; they have no known mound structures and consist only of artifacts and/or floors buried in anthropogenic soil horizons. This new finding of buried Early and Middle Preclassic sites in inland locations further convinces us that site discovery and recognition of early sites in the study area are seriously biased. Accordingly, any interpretations of archaeological settlement patterns and demographics for these time periods cannot at present be considered valid. This situation will continue until more geoarchaeological work has been carried out and we have achieved a greater understanding of the role of rivers as transformers of the archaeological record.

What we have learned so far regarding this role is that there are several powerful fluvial processes affecting archaeological sites on the coastal plain. Turnbaugh (1978) makes the significant point that erosion and deposition work in tandem, even though their effects on archaeological sites may be radically different. In our study area, the most significant type of erosion affecting sites near rivers is

channel erosion, which results from the lateral shift of rivers across their floodplains. The rivers of the Chiapas coastal plain do not have well defined floodplains with valley margins but rather flow in narrow and shallow channels that probably oscillate rapidly across the flat-lying coastal plain. Although we currently have no firm data concerning the rate of lateral shifts, one informant told us that the Rio Cacaluta laterally transgressed a distance of 20 m in the 1991 rainy season. Such rapid shifts across the landscape must cause widespread site destruction.

The presence of archaeological sites exposed in the river cuts constitutes significant evidence of channel erosion. Most telling in this regard are the two sites (Cs-118 and Cs-203) with the exposed cobble-faced platform mounds that have been sectioned by river action. But channel erosion has affected all of the sites discussed here, which were partially destroyed by such processes. At present, we do not know how much destruction has occurred at each of these sites, or the extent to which other sites have been erased by river action from the archaeological record of the coastal plain. Somewhat paradoxically, channel erosion has increased site visibility (Schiffer, Sullivan, and Klinger 1978) as well as site destruction.

We have not identified evidence of sheet erosion, in which erosion affects wide areas in a relatively uniform fashion. Nevertheless, it is possible that this process has transformed archaeological sites in the study area, for example by differentially removing archaeological sediments that are small-sized but leaving large-sized ones. The possibility of sheet erosion will have to be carefully considered during excavation of sites such as the Leshar site, which is to be investigated in 1994.

The depositional processes that we have noted are those of channel fill and vertical accretion. The artifacts that are found deposited on the river beds are examples of channel fill. These artifacts were eroded from their place of deposition and were later redeposited as fill in the river beds.

More significant, however, is vertical accretion, by which is meant the accumulation of sediments on the river floodplains when the rivers overflow their banks. This causes archaeological sites to become partially or wholly blanketed by sediments. Turnbaugh (1978) noted that a single storm in Pennsylvania resulted in sites being buried by sediments measuring 1–30 cm in depth. We are not able to quantify the depth of deposits left by single flooding episodes because the sediments overlying the archaeological sites reported here are often homogenous and unbedded. It is possible, however, to calculate relative rates of vertical accretion on particular places of specific rivers by noting the depth of sediments separating archaeological deposits of known ages.

For example, at Cs-210 (FIG. 10), on the Rio Huehuetán, there is approximately 1 m of sterile sand separating the Middle Preclassic and the Middle–Late Classic strata but there are 3 m of sterile sands between the Middle–Late Classic strata and the Late Postclassic Period material. If we use conventional dates for these time periods, the upper deposits accumulated at a rate of approximately 1 cm/year between the end of the Late Classic at A.C. 900 and the beginning of the Late Postclassic at A.C. 1200. Sedimentation, however, occurred at the rate of 1 cm/5 years between the end of the Middle Preclassic at 300 B.C. and the beginning of the Middle Classic at A.C. 200.

In summary, in regions characterized by episodic flooding, the archaeological record is often biased toward sites spared from burial by alluvial deposits, thus making interpretation of prehistoric patterns difficult or impossible. This is the case for the Chiapas coast where fluvial activity has obscured archaeological deposits dating to all periods of prehistory, particularly early sites. If we are to understand the magnitude of the Archaic Period occupation and to make valid interpretations of the prehistoric lifeways during this time, methods of locating subsurface cultural deposits must be developed. A systematic survey of the major river systems of the region was a logical first step for locating buried sites that would have remained undetected otherwise. In addition, the survey provided us with a greater understanding of the fluvial processes of the river systems so that predictive models for locating buried cultural deposits possibly can be developed in the future.

Acknowledgments

Funds in support of this research were provided by the National Geographic Society and the University of California, while the New World Archaeological Foundation, Brigham Young University, assisted us greatly by the loan of a truck. The work was carried out under the supervision of the Consejo de Arqueología, Instituto Nacional de Antropología e Historia. We are indebted to these institutions for making this research possible. Our fellow field archaeologists were Charley Angel and Mark Selverston. We are grateful to Valarie Kalupa and Dirk Brandts for producing some of the illustrations and to John E. Clark for his help in dating Preclassic Period sites. We extend our thanks also to John G. Jones for his contribution.

Barbara Voorhies (Ph.D., 1969, Yale University), is currently Professor of Anthropology at the University of Colorado. For over 20 years she has been investigating the prehistory of the coast of Chiapas, Mexico. Mailing address:

Department of Anthropology, University of Colorado,
Boulder, CO 80309.

Douglas Kennett (B.A., 1990, University of California,
Santa Barbara) is currently investigating patterns of
hunter and gatherer mobility during the Archaic Period
on the coast of Chiapas, Mexico.

Blake, M., J. Clark, B. Voorhies, G. Michaels, M. Love, M. Pye,
A. Demarest, and B. Arroyo

in press "A Revised Chronology for the Late Archaic and Forma-
tive Periods Along the Pacific Coast of Southeastern
Mesoamerica," *Ancient Mesoamerica*.

Chapman, Jefferson

1976 "Early Archaic Site Location and Excavation in the Little
Tennessee River Valley: Backhoes and Trowels," *South-
eastern Archaeological Conference, Bulletin* 19: 31-36.

1985 "Archaeology and the Archaic Period in the Southern
Ridge-and-Valley Province," in Roy S. Dickens, Jr., and
H. Trawick Ward, eds., *Structure and Process in Southeast-
ern Archaeology*. Tuscaloosa: The University of Alabama
Press, 137-153.

Clark, John E.

1991 "The Beginnings of Mesoamerica: Apologia for the So-
conusco Early Formative," in William R. Fowler, Jr., ed.,
*The Formation of Complex Society in Southeastern
Mesoamerica*. Boca Raton: CRC Press, 13-26.

Coe, Joffrey Lanning

1964 "The Formative Cultures of the Carolina Piedmont,"
Transactions of the American Philosophical Society, Vol. 54,
Part 5. Philadelphia.

Drucker, Philip

1948 "Preliminary Notes on an Archaeological Survey of the
Chiapas Coast," *Middle American Research Records* 1:
151-169.

Helbig, Carlos

1964 *El Soconusco y su Zona Cafetelera en Chiapas*. Instituto de
Ciencias y Artes de Chiapas, Tuxtla Gutiérrez.

Klein, Jeffrey, J. C. Lerman, P. E. Daman, and E. K. Ralph

1982 "Calibration of Radiocarbon Dates," *Radiocarbon* 24 (2):
103-150.

Lorenzo, José Luis

1955 "Los concheros de la costa de Chiapas," *Anales del Insti-
tuto Nacional de Antropología e Historia* 7: 41-50.

McManamon, Francis P.

1984 "Discovering Sites Unseen" in Michael B. Schiffer, ed.,
Advances in Archaeological Method and Theory 7: 223-
292. New York: Academic Press.

Michaels, George H., and Barbara Voorhies

in press "Late Archaic Period Coastal Collectors in Southern
Mesoamerica: The Chantuto People Revisited," in *Pro-
ceedings of the Circum-Pacific Prehistory Conference, Seat-
tle, Washington, August, 1989*. Vol. 3. *Developments of
Hunting-Fishing-Gathering Maritime Societies on the
Pacific*. Seattle: University of Washington Press.

Navarrete, Carlos

n.d. "Resumen de las Exploraciones del Reconocimiento Ar-
queológico de la Costa de Chiapas (Región del So-
conusco), en la Temporada de 1969," report on file at the
New World Archaeological Foundation, San Cristobal de
las Casas, México.

Schiffer, Michael B., Alan P. Sullivan, and Timothy C. Klinger

1978 "The Design of Archaeological Survey," *World Archaeol-
ogy* 10: 1-29.

SARH (Secretaría de Agricultura y Recursos Hidráulicos)

1970 Regiones Hidrológicas, Núm. 23 (Costa Chiapas). Datos
hasta Diciembre de 1969. *Boletín Hidrológico*, Num. 37.
México.

1979 *Estudio Agrológico Semidetallado del Proyecto de Acepta-
hua, Chiapas. Comisión de Plan Nacional Hidráulico*.
México: Prodrith Agrogeología S.A.

Turnbaugh, William A.

1978 "Floods and Archaeology," *American Antiquity* 43: 593-
607.

Vivó Escoto, J. A.

1964 "Weather and Climate of Mexico and Central America,"
in Robert Wauchope, ed., *Handbook of Middle American
Indians*, Vol. 1. Austin: University of Texas Press, 187-
215.

Voorhies, Barbara

1976 *The Chantuto People: An Archaic Period Society of the
Chiapas Littoral, Mexico. Papers of the New World Archae-
ological Foundation* 41. Provo: Brigham Young Univer-
sity.

1989a "An Introduction to the Soconusco and its Prehistory," in
Barbara Voorhies, ed., *Ancient Trade and Tribute: Econo-
mies of the Soconusco Region of Mesoamerica*. Salt Lake
City: University of Utah Press, 1-18.

1989b "Settlement Patterns in the Western Soconusco: Methods
of Site Recovery and Dating Results," in Frederick Bové
and Lynette Heller, eds., *New Frontiers in the Archaeology
of the Pacific Coast of Southern Mesoamerica. Anthropologi-
cal Research Papers* No. 39. Tempe: Arizona State Univer-
sity, 103-124.

LINKED CITATIONS

- Page 1 of 1 -



You have printed the following article:

Buried Sites on the Soconusco Coastal Plain, Chiapas, Mexico

Barbara Voorhies; Douglas Kennett

Journal of Field Archaeology, Vol. 22, No. 1. (Spring, 1995), pp. 65-79.

Stable URL:

<http://links.jstor.org/sici?sici=0093-4690%28199521%2922%3A1%3C65%3ABSOTSC%3E2.0.CO%3B2-I>

This article references the following linked citations. If you are trying to access articles from an off-campus location, you may be required to first logon via your library web site to access JSTOR. Please visit your library's website or contact a librarian to learn about options for remote access to JSTOR.

[Footnotes]

The Formative Cultures of the Carolina Piedmont

Joffre Lanning Coe

Transactions of the American Philosophical Society, New Ser., Vol. 54, No. 5. (1964), pp. 1+3+5-130.

Stable URL:

<http://links.jstor.org/sici?sici=0065-9746%281964%292%3A54%3A5%3C1%3ATFCOTC%3E2.0.CO%3B2-R>

The Design of Archaeological Surveys

Michael B. Schiffer; Alan P. Sullivan; Timothy C. Klinger

World Archaeology, Vol. 10, No. 1, Field Techniques and Research Design. (Jun., 1978), pp. 1-28.

Stable URL:

<http://links.jstor.org/sici?sici=0043-8243%28197806%2910%3A1%3C1%3ATDOAS%3E2.0.CO%3B2-X>

Floods and Archaeology

William A. Turnbaugh

American Antiquity, Vol. 43, No. 4. (Oct., 1978), pp. 593-607.

Stable URL:

<http://links.jstor.org/sici?sici=0002-7316%28197810%2943%3A4%3C593%3AFAA%3E2.0.CO%3B2-N>