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The Playas of the Southern High Plains:

An Archipelago of Human Occupation for 12,000 Years on the North American Grasslands

Luc Litwinionek, Eileen Johnson, and Vance T. Holliday

Investigations of archaeological sites located near playa basins on the Southern High Plains of the United States indicate that human groups used these physiographic and ecological settings repeatedly. Although these basins are often overlooked as areas of potential human use, renewed archaeological and ge archaeological research documents their occupation, demonstrating their relevance to our understanding of settlement strategies from the initial occupation of the area through historic times.

In this chapter we review the documentation of occupations during the Paleoindian period, the Archaic period, and the late Holocene of selected archaeological sites located in proximity to playa lakes. Ultimately, we find that these playas, because of their distinct ecological characteristics, were important to hunter-gatherer groups and should be viewed as islands on the regional landscape.

Islands globally are disjunct parcels of territory with boundaries delimited by the isolating mechanism of water. Because of their isolation, islands are recognized by biologists as geographical areas with distinct environmental characteristics. Natural studies on the distribution of species demonstrate that islands are characterized by species richness in relation to distinct taxonomic groups (MacArthur and Wilson 1967). Moreover, studies indicate that species richness decreases in relation to distance from the original source (i.e., the island) (Spellerberg and Sawyer 1999:62). Thus islands can be viewed as distinct ecosystems with focal species richness determined by one or more isolating mechanisms.

Islands can also be located in the terrestrial landscape, where other isolating mechanisms come into play. Terrestrial islands are bounded parcels where resource predictability is relatively high and thus where human groups could generally expect easily accessible resources (Johnson 1991:218). High predictability and low risk are significant factors in defining exploitation strategies. Therefore, islands with high resource potential are sought out repeatedly.
Landscape archaeology (Ashmore and Bernard 1999; Rossignol and Wandsnider 1992) and ecological anthropology (Orlove 1980; Vayda and Rappaport 1968) provide a general research framework that considers the basis for understanding human activities in relationship to ecosystems. In this approach, archaeological data are used to understand dynamic relationships between human populations and their environments (Butzer 1982; Hardesty 1977; Jochem 1990; Moran 1990), and the landscape, past and present, is related to prehistoric and historic settlement patterns. Cultural changes can be linked to physical markers or physiographic and topographic peculiarities. This approach has conceptual and methodological implications for survey and excavation as well as for the analysis of archaeological data.

At the conceptual level, the value of using the ecosystem approach in archaeology is demonstrated in the case of temporal variables. Temporal variables encompass changes in the physical environment that are relevant to understanding the social mechanisms of human groups (Moran 1990:12). By recognizing the dynamic nature of the ecosystem, we can identify relationships between the environment and the behavioral responses formulated by human groups through time.

The use of the ecological approach also facilitates couching subsistence activities in terms of a cost-benefit balancing act in which relative costs are weighed against possible payoffs to determine adaptive strategies used by human groups (Betten 1980:221). Such relationships are best understood in terms of resource acquisition behaviors and optimization. Risk is an important factor in the acquisition of resources in such a context, as the equation between energy spent and energy acquired might be negative, for there is no guarantee that each acquisition will result in an energy gain. Ecological niches that offer a high diversity of resources are less risky simply because they provide a variety of choices (Hayden 1981; Moore 1981).

The ecological approach is particularly insightful for the study of prehistoric hunter-gatherer societies such as the ones that occupied the Southern High Plains (Figure 1.1). Though seemingly monotonous, these plains offer a diversity of ecological settings. Occupations through time on the Southern High Plains are characterized by highly mobile hunter-gatherers who exploited a broad resource base.

Hunter-gatherers in the Southern High Plains have a close relationship to their environment, organizing their movement, settlement patterns, and resource exploitation strategies in relation to specific ecosystems (Binford 1989: 144). Choices made by human groups exploiting the environment depend on the potential benefits of using ecological niches that provide a number of species on a regular basis (Moore 1981:195).

Decision-making behaviors concerning the use of the Southern High Plains ecosystems (Johnson 1991, in press) are dictated by environmental diversity, the “number and proportional representation of different species in a given environment” (Bettinger 1980:204). A high-diversity environment contains numerous species with a nonseasonal persistence (Hayden 1981).

At the methodological level, the ecosystem approach takes into account not only the environment but also participates in the larger concept of landscape organization, in the distribution, and in the adaptive potential of the landscape. Perspectives over the territory may extend to a region that in turn reflects the functional organization of archaeology and to adaptive strategy.
numerous species in approximately equal proportions. High diversity coupled with a nonseasonal climate can produce a steady food supply and stable subsistence (Hayden 1981:349, 378).

At the methodological level, the merit of the ecosystem approach is that it takes into account not only biotic organisms identified in the environment but also particular physical environments, or landscape. By integrating the concept of landscape, we can apply a regional perspective to understanding the distribution of artifacts and features relative to the different characteristics of the landscape (Rossignol 1992:4). Distribution of archaeological sites over the territory, therefore, is indicative of resource exploitation strategies that in turn reflect ecological constraints. In this sense, distribution and location of archaeological sites are defined by decision-making behaviors related to adaptive strategies devised by human groups occupying the landscape.

THE SOUTHERN HIGH PLAINS

The Southern High Plains occupy a broad plateau in northwest Texas and eastern New Mexico (Figure 2.1). The region, also known as the Llano Estacado, covers about 130,000 km² and has an almost featureless constructional surface formed by deposition of Pleistocene aeolian sediments, the Blackwater Draw Formation (Hawley et al. 1976; Holliday 1995a and 1995b; Reeves 1976). The plateau is bounded by escarpments along the eastern, northern, and western sides; the southern edge merges with the Edwards Plateau. The physical landscape is defined locally by dune fields, lunettes, draws, and thousands of small basins with ephemeral lakes. The draws are northwest-to-southeast-trending, predominantly dry tributaries of the Red, Brazos, and Colorado Rivers and are incised as much as 15 m into the landscape (Holliday 1995b). The dune fields generally are located on the western side of the Southern High Plains and are associated with the three major reentrant valleys (Portales, Simanola, and Winkler), which probably acted as funnels to concentrate wind flow and erode the sandy substrate (Holliday 1995a). The dune fields and lunettes rest on the Blackwater Draw Formation, and the plays and draws are inset into it.

Today playa lakes are the dominant features on the Southern High Plains; about 25,000 of them occur in the region (Sabin and Holliday 1995). On an otherwise flat and treeless landscape, playas are focal areas, providing seasonal water for a variety of resources. Playas are formed through the interaction of geomorphic, pedogenic, hydrochemical, and biologic processes (Gustavson et al. 1995) with wind deflation being the agent of sediment removal. In some cases, playas are associated with lunettes (low, crescentic dune ridges) on their leeward margins (Holliday 1997a; Sabin and Holliday 1995). The basins accumulate drainage from local watersheds that range in size from less than 250 to approximately 1,000 ha (Meade et al. 1974). Approximately 40 larger and deeper basins contain saline lakes, referred to as both salinas and playas (though the former term should be used exclusively for these saline
basins) (Holliday et al. 1996). These basins may be entrenched up to 30 m below the plateau surface, and they drain areas as large as 13,000 ha (Meade et al. 1974). Most playas, however, are less than 1.5 km², and more than half are smaller than 0.1 km². Depths of the basins are extremely variable as some are filled with lacustrine sediments and have no topographic expression whereas others reach depths greater than 14 m.

The larger salina basins often are associated with springs and are thought to have evolved in settings where infiltration of groundwater has led to the dissolution and collapse of the underlying Permian salts (Reeves 1990, 1991). Although their mineral content is very high, these basins may provide surface water seasonally. The solutes in these lakes and springs originate from the Ogallala aquifer and from overland runoff (Wood and Jones 1990) and are concentrated by evaporation.

Radiocarbon dating of lacustrine mud in 11 lunettes (Holliday et al. 1996) indicates that the Pleistocene, Holocene, and modern periods all have playas. A few small basins, like those at Amarillo and Lubbock, fill throughout the year (Hartwell 1995). Other basins are less continuous in their filling, as in the basins at Garner and Odessa.

The fill is typically spotty and patchy in a few basins. In these cases, a 1-m-thick (Meyers 1962), a thick, clay-rich, black-colored, surface undulated surface, called the black clay; Soil Survey Staff (1989).

Soils and aquifers are often associated with the dating of the basins. The basins starting around 11,000 years ago are older than more stable ones that formed during the Holocene and are more rapidly filled and desiccating seasonally than continuously filled seasonally to year-round (Hartwell 1995).

These depressions, usually quite small and associated with springs, may not yet be significant in such settings where they support groundwater resources (Johnson et al. 1996). It is likely that the playas undoubtably have great potential. The value of the playa basins is due to the fact that the associated fresh water is not subject to recharge. The basin's water is essentially self-contained and constitutes a self-sustaining ecosystem less landscape by nature. Its ability to support a variety of resources is significant.

THE ARCHaeOLOGICAL SITES

The relationship between playas and regional archaeological sites is beginning to be understood (Holliday et al. 1995, 1997; Litwinonek 1996). Archaeological research has indicated the importance of playas in the formation of these basins and their role in regional culture.
Radiocarbon dating of fill in 12 playa basins and organic sediments from 11 lunettes (Holliday et al. 1996) indicates that most playa basins formed in the Pleistocene, acquiring their present size and shape before humans arrived. A few small basins formed and completely filled in the Pleistocene, but most filled throughout at least the late Pleistocene and into the Holocene (e.g., Hartwell 1995). In some playas the data suggest that the basins filled more or less continuously through the Holocene, indicating that water was available in the basins throughout much of this time.

The fill is typically a silty to clayey mud, but some aeolian sand is present in a few basins. The typical surface soil in playas is the Randall Clay (Sanders 1962), a thick, clayey soil that cracks when dry and has gilgai microrelief (i.e., surface undulations produced by the high shrinking and swelling capacity of the clay; Soil Survey Staff 1994).

Soils and aeolian deposits in the playa basins and in the lunettes, combined with the dating, indicate that the region was subjected to episodic aridity starting around 10,800 B.P., more persistent aridity after 8000 B.P., followed by more stable conditions and available moisture after about 4500 B.P., though cyclical droughts began between 3,000 and 2,000 years ago (Holliday 1995b, 2000; Johnson 1997). Though modern playas do not represent permanent water sources, late Pleistocene and early Holocene playas probably held water year-round (Holliday 1995a:293; Holliday et al. 1996). Archaic playas probably desiccated seasonally (Holliday 1989, 1995a) whereas late Holocene basins were seasonal to year-round (Holliday 1995a).

These depressions when filled provide wetland ecological conditions for an associated fauna and flora (Bolen et al. 1989:619; Cano 1994), including species associated with this niche as well as open-prairie species that aggregate for freshwater consumption. Resource predictability, therefore, is significant in such settings and for attracting human groups to the readily available resources (Johnson 1991). The assessment by Bolen et al. (1989:619) of modern playas undoubtedly is valid for playas throughout the late Quaternary: "The value of the playas as habitat lie in the diversity of the vegetation and thus the associated fauna." Playas are not all contemporaneous, nor did they all hold water simultaneously. Nevertheless, the playas that were filled with water constituted self-sustaining locations with set boundaries, isolated within a seamless landscape by large expanses of grassland and offering a diversified concentration of resources. In that sense, playas represent ecological islands, holding a variety of resources in an otherwise unpredictable environment.

THE ARCHAEOLOGICAL RECORD

The relationship between playa ecosystems and human groups is only beginning to be addressed (e.g., Baxevanis et al. 1997; Hartwell 1995; Johnson 1995; Litwinioneck et al. 1996). Ongoing archaeological and geoarchaeological research on the Southern High Plains is starting to underlie the importance of playas in the understanding of human settlement patterns.
The Paleoindian Evidence

The Southern High Plains were generally wetter in the late Pleistocene than today, although environmental conditions fluctuated (Holliday 1995b, 1997b; Johnson 1986, 1991). In the draws, water flowed freely during the Clovis period and was available in ponds and marshes during subsequent periods. Playas appeared to have had stable water tables. Wetland conditions prevailed around the playas, and the availability of freshwater was particularly attractive to roaming megafauna.

A number of human occupations dating to the Paleoindian period have been identified in association with playas. At the Miami site (northeastern edge of the Llano Estacado; Figure 2.1) five mammoths were excavated in association with Clovis implements (Sellards 1938). The mammoths were found in a small playa basin, probably only 30 m in diameter (Figure 2.2). The bone bed was located approximately 20 to 30 cm below the surface on top of a silty loess dated to 11,400 B.P.

The loess probably is aeolian in origin (Holliday et al. 1994). The silt averages 10 cm thick and occurs between 30 and 50 cm below the surface. The playa appears to have been filling since 13,700 B.P. with lacustrine mud and was filled completely by the beginning of the Holocene through aeolian depositional agents. Scavenging of mammoth carcasses by Paleoindian hunters, suggested initially by Sellards (1938:1008), still appears the best possible scenario (Holliday et al. 1994; Johnson 1991:229). Actualistic studies of elephant mortality (Haynes 1991) indicate that watering holes such as playas were common grounds for elephant die-offs.

San Jon (Roberts 1942) is a large, stratified, complex site on the northwestern edge of the Southern High Plains (Figure 2.1). Paleoindian and later occupations have been found in relation to several playa basins (Figure 2.3). A larger playa basin, partially covered by the Blackwater Draw Formation, underlies a younger basin dating to the late Quaternary (Hill et al. 1945; Holliday et al. 1996). The younger basin, measuring 360 m in diameter, appears to have been filling slowly since the end of the Pleistocene. Basin sediments are composed of aeolian sand and coalesced layers of lacustrine mud. Diagnostics recovered within stratum 2 indicate the presence of hunter-gatherers during Folsom and Firstview times (San Jon type). These occupations are related to butchering activities of small herds of ancient bison (*Bison antiquus*) (Hill et al. 1995; Roberts 1942).

The Ryan site (Hartwell 1995; Hartwell et al. 1989), about 48 km northwest of Lubbock, Texas (Figure 2.1), is a Plainview cache located in a small playa basin approximately 30 m in diameter (Figure 2.4). Initial filling of the basin occurred around 10,700 B.P., and sediments covered the cache by 9220 B.P. (Hartwell 1991, 1995). The playa was filled completely by gray mud in the early Holocene.

The cache assemblage includes 13 Plainview points, 50 blanks and preforms, and a number of unifacial tools (Hartwell 1991). The majority of the artifacts are produced in quartzite, and was practiced by the ancient hunter-gatherers (Holliday 1995; Hartwell 1978; Wilkins 1994). With these practices, it became possible to accessable raw materials.

The 4Mc pluvial and multilamination episodes that occurred (Figure 2.5). These episodes are responsible for the testing of the archaeological record. The concentration of sediments in a presence of megafaunal die-off periods.

Diagnostically, components at the Ryan site are characterized by the grinding of the bison antlers to show heavy wear.
are produced from Edwards Formation chert, which outcrops 200 km to the southwest. Caching is a common occurrence on the Plains throughout time and was practiced during Paleoindian times (Frison 1991; Mallouf 1994; Tunnell 1978; Wiseman et al. 1994). Although caching might be related to ritual practices, it more likely reflected organizational choices in the efficient use of accessible raw materials.

The 4Moore-Neal site, located 7 km west of Lubbock (Figure 2.1), is a multicomponent occupation that lies on a rise between two playa basins (Figure 2.5). The site originally was exposed during repeated intensive plowing episodes that uncovered a number of artifacts. Surface collecting and limited testing of the plow zone was conducted (Matthews 1995; Mitchell Moore, personal communication 1995) and revealed the presence of two distinct artifact concentrations. Work in Area 2 in the western portion of the site exposed the presence of occupations ranging from the Paleoindian to the Late Archaic periods.

Diagnostics indicate the presence of at least two different Paleoindian components at the site. A heavily reworked lanceolate produced from chalcedony is technologically characteristic of Plainview (Knudson 1983) and exhibits heavy grinding of the base and edges as well as extensive basal thinning. The artifact shows heavy lateral resharpening and use wear characterized by the presence
of overlapping flake scars covering the initial production scars. The reworking of the point and subsequent use wear suggest that the tool was reused for butchering.

Two other projectile points are technologically characteristic of the First-view complex (Wheat 1972), dating to 8600 B.P. in the area (Johnson 1987). One point is manufactured from Edwards Formation chert and exhibits some lateral grinding. Use wear indicates that the tool also was used during butchering. The second projectile point is in two plow-damaged sections. It is produced from a nonindigenous ferrous-rich siltstone. Edge reworking is present in the form of flake scars overlapping the original flaked surface.

The presence of projectile points used as butchering tools is common during the Paleoindian period on the Southern High Plains and generally associated with kill-butchering activities (Johnson and Holliday 1987:107). Data from the Moore-Neal site emphasize the fact that such activities also occurred during Paleoindian times in proximity to playa basins.

In a compilation of Texas state archaeological site forms for three counties adjacent to Lubbock (Buchanan 1995a–c), and of Hester's (1975) work on the Southern High Plains, we found that more than 70 percent of the Paleoindian sites are located near playa or salina lakes (Figure 2.6). Of these, more than 60 percent are called kill sites, usually associated with butchering activities. The Moore-Neal site (Holliday 1985) and two other sites, two documents from Plainview and others, are identified by Hester (1975). The Archaeofauna

The Archaeofauna

A warming trend and the climatic dryness of the late Holocene caused the springs dried up, and the climate became more arid. The stability of the wetland systems from wetlands and playas decreased in amount, due to blowing sand conditions.

An Early Archaic projectile point found in activity areas within the San Jon Site suggests the possibility of a Late Archaic period occupation. This period is dated to the late Archaic period (8500 B.P.). The Early Archaic period is characterized by the use of chipped stone tools, such as the San Jon projectile point.
percent are campsites and 30 percent are kill sites with associated butchering activities. The Poverty Hill site in Hockley County is a possible Clovis-age kill site (Holliday 1997b; Holliday and Johnson 1983). Of the Paleoindian playa sites, two document Folsom-age occupations, and the remaining ones relate to Plainview-age activities. Six Folsom-age campsites and one bison kill identified by Hester are situated near playa lakes.

The Archaic Evidence

A warming and drying trend intensified during the Early Archaic (Holliday 1995a, b), with effective moisture reduced 30 percent compared with modern conditions (Mock and Bartlein 1995). As the water table dropped, most springs dried up (Meltzer 1995) and perennial streams in draws gradually ceased flowing, except in restricted lower reaches (Johnson and Holliday 1987). The stability of the water table in playas was affected, transforming the basins from wetlands to aggrading marshes. The warming trend led to an increase in blowing sand and accelerated the filling of playas (Holliday et al. 1996).

An Early Archaic component is documented at San Jon in two different activity areas within the late Quaternary basin (Figure 2.3). Radiometric data
secured on charcoal from one of the occupation surfaces associated with stratum 2 position this occupation at about 8000 B.P., before the complete desiccation of the basin. Testing of the occupation indicates activities related to retooling. Testing of the second activity area suggests metate production and plant procurement.

The Wolfforth site (SPAS-LU-10), located 3 km west of Lubbock (Figure 2.1), occupies the southwestern edge of a small playa that seasonally holds water (Figure 2.7). A surface survey at the site recovered a large number of stone tools dating from the Middle Archaic to the Protohistoric periods (Brown 1999a). Point types include Williams, Bulverde, Marshall, Ellis, and Elam, and based on these diagnostics, the main occupation relates to the Middle to Late Archaic (5000 to 2500 B.P.). In addition, stone tools recovered from the site include preforms, scrapers, and spokeshaves. The majority of stone tools are produced from Edwards Formation chert, the closest source of which is 200 km to the south.

The preponderance of chronologically diagnostic projectile point styles common to central Texas found at the Wolfforth site, as well as the use of Edwards Formation chert in the collection, indicates that small groups included the playa in their occupation for a period of time. The variety of activities including resource procurement.

The Wolfforth site is located in the High Plains region of central Texas, associated with a playa

Of the 37 activity areas observed at the Wolfforth site, 26 are associated with small playa lakes. These activity areas, with multiple activities, indicate the diversity of occupations of people living in the High Plains region.
The use of Edmonson points at the site of Eden was limited,
and the complete lack of bone points makes it likely that they
were being manufactured at the site. With the use of El Paso
points, which are more common, the site shows a greater variety
of materials, including bone and stone. These variations may
be related to changes in the local environment or to the
use of different tools for different purposes.

A number of stone tools were found at the site, including
knapping stones and cores. These tools were likely used for
manufacturing other stone tools and for general utility.

However, the most interesting find at the site was a large
number of stone tools that were found in the refuse area
outside the main structures. These tools were likely being
used for a variety of purposes, including woodworking and
metalworking.

The site also contained a number of other artifacts, including
pottery fragments and bones. These artifacts provide additional
evidence for the activities that took place at the site.

In summary, the site of Eden is an important one for
understanding the prehistoric occupation of the Southern
High Plains. The variety of tools and artifacts found at the
site suggest a complex society with a variety of activities,
including manufacturing, woodworking, and metalworking.

Figure 26. Histogram of selected archaeological sites by time period in the Southern High Plains. Data from Buchanan, 1994.4.
Figure 2.7. Location of the Wolfforth site, Hockley County, Texas. Source: USGS Quadrangles, 7.5 Minute Series, Wolfforth, Texas, 1985.

water and probably none year-round. More than 50 percent of the occupations were concentrated around draws, and more than 60 percent of the campsites were situated in these settings.

**The Late Holocene Evidence**

After 4500 B.P., a more moderate climate prevailed on the Southern High Plains and levels of moisture increased (Johnson 1987; Holliday 1995a, b). Though not as plentiful as during the early Holocene, playas, with their seasonal freshwater, reemerged as important features on the landscape, and occupations around them increased. Although late Holocene playa sites are common (Brown 1999a, b; Hughes and Speer 1981; Matthews 1995; Schroeder and Rader 1995; Watts 1936), few have been excavated.

The Pantex site (41CZ66), located 50 km northeast of Amarillo, Texas (Figure 2.1), is found at the northwestern edge of Pantex Lake (Hughes and Speer 1981) (Figure 2.8). Testing (Johnson and Gutierrez 1997; Winchell and Largent 1994) indicates multicomponent, well-stratified occupations with diagnostics spanning the Late Archaic to the Historic period. The Ceramic through Historic periods are represented by discrete occupation events within stratified deposits; the Late Archaic occupations in the late Holocene are those that included multicomponent occupations. The ceramic component of the Late Archaic site includes about 1200 B.P. ceramics.

The Hogue site (37VH15), located on the Nueces River floodplain near the agricultural field, Texas (Figure 2.9), is a Late Holocene archaeological site (Figure 2.9). Two occupation phases are evident: a lower phase containing 1200 B.P. ceramics on the playa and a middle phase with 1000 B.P. ceramics and 600 B.P. ceramics and the formation of a watercourse dam. The surface artifact assemblage is composed of recent artifacts. The soil at the site is a Tulia Clay, typically a loam dominated by silt and sand, with features in the Holocene deposits disrupted by post-Holocene pedogenetic and oxidational processes. The Tulia Clay is a tamarisk, channel, and desaturation (Sundaic) soil developed over an ancient saline playa level within the Holocene deposits.

Core 93-2, collected from the Hogue site, indicates a sequence of stratified deposits with exposed recent soils and other deposits with Hogue Clay. However, the Hogue Clay is not as well-stratified as the Tulia Clay. The exposure occurs between 15 and 10 years old, and the Hogue Clay surface was not affected by ancient playa. The Tulia Clay soils were more useful as a long-term record of the history of the site.
deposits; the Late Archaic is known only by surface materials. Bison processing that included marrow extraction occurred at least during the early Ceramic, about 1200 B.P. (Johnson and Gutierrez 1997).

The Hogue site (41TY2), located approximately 6.5 km north of Brownfield, Texas (Figure 2.1) (Pope 1991), encompasses 0.1 ha (0.25 acres) of an agricultural field and is situated along the eastern margin of a small playa (Figure 2.9). Two geologic cores (93-1 and 93-2), one taken from the center of the playa and one taken from the playa margin, provide information about the formation of the playa (Baxevanis et al. 1997:347–348). Core 93–1 is composed of recent sediment washed down from the uplands overlying Randall Clay, typically associated with playa basins. The presence of redoximorphic features in the Randall Clay is associated with wetness and indicates a reduction and oxidation of iron and manganese compounds after saturation and desaturation (Soil Survey Staff 1994). These features indicate that the water level within the playa has fluctuated over an extended period of time.

Core 93–2, taken from the playa margin 31 m east of the first core, again exposed recent sediment washed down from the uplands overlying Randall Clay. However, more variations in both units occurred. The three strata between 15 and 100 cm may be related to early slopewash episodes, indicated by
the irregular decrease in organic matter. Within the Randall Clay the pale gray clean sand indicated a possible buried eluvial horizon overlying an eluviated horizon with sand grains coating the ped faces. The pale gray clean sand and the eluviated horizon below probably were related to a prior soil-forming episode. The Randall Clay below the eluviated horizon may be related to an earlier deposition.

Limited testing (Baxevanis et al. 1997) has detected at least two occupations. The diagnostic lithics indicate a relationship with occupations at the western edge of central Texas, and the pottery underscores a relationship with the Río Grande pueblos (Baxevanis et al. 1997:359). Two glazes overlap in time during the Protohistoric period. Radiometric dating of sediments below the plow zone corroborate this situation (600 ± 40 B.P.). An older occupation is documented with the presence of diagnostic projectile points dating to the early Ceramic period (600–100 B.P.) and a radiocarbon date of 1214 ± 93 B.P. Thus the Hogue site appears to be a good example of concentrated and repeated short-term occupations of the same specific playa setting.

The Perry site (41LU75), located about 6.4 km northwest of Lubbock (Figure 2.1), is found on a rise overlooking two playas covering an area of 10,000 m² (Figure 2.10). Based on surface survey and minimal testing, diagnostics range from the Late Prehistoric period. However, the site was not occupied in the eastern part of the site. The presence of relatively few artifacts used principally for hunting.

Recent archaeology in Terry County and for the larger area indicates that the site was occupied in the Protohistoric period and that occupations probably occurred in a continuous pattern. Artifacts were found at the southern end of the site, which extends over an area extending south of the site. The occupation location is comparable to that found during the Protohistoric period (600–100 B.P.). The occupation supports the presence of multiple occupations during this period.

Of the 90 artifacts collected at the site, dating to the last two centuries, some 40 were found at the Protohistoric occupation.
Clay the pale \( \text{gray clean sand} \) or soil-forming 

related to an occupation.

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Lubbock (Figure 

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range from the Late Ceramic to the Protohistoric period (Brown 1999a). However, the site was occupied primarily during the Late Ceramic period, as Area 1 in the eastern portion of the site contains a representative lithic assemblage. The presence of pottery, manos, and metates indicate that the location was used principally as a campsite, probably over an extended period of time.

Recent archaeological survey and testing of three sites located in Terry County and found in proximity to two playa basins indicate repeated short-term usage of these settings by hunter-gatherer groups primarily during the Protohistoric period (Johnson 1995, 1997). The initial filling of the playas basins probably occurred during the middle Holocene (Johnson 1997:85). Site 41TY113, found at the southwestern margin of one of the playas (Figure 2.11), extends over an area exceeding 5,000 m² and is composed of northern and southern occupation loci. Diagnostics and radiocarbon dating place the occupation during the Protohistoric, extending into the aboriginal Historic period (500–100 B.P.). The distribution and types of materials recovered during testing suggest multiple short-term occupations by small hunting parties.

Of the 90 archaeological sites in the three-county area (Buchanan 1995a–c) dating to the late Holocene, including sites affiliated with the Ceramic period, the Protohistoric period, and the aboriginal Historic period, 21 are located
near playa or salina lakes (Figure 2.6). All these occupations are related to the practice of multiple activities, indicating the presence of possible campsites. During the Protohistoric period particularly, occupations found in proximity to playa basins appear to document short forays by local groups. In general, late Holocene occupations appear to be concentrated on the rim edges and in disassociated settings. However, the archaeological record indicates that playas remained significant in the land-use patterns of human groups occupying the Southern High Plains during the late Holocene, as reoccupation of these areas was in some cases intensive.

DISCUSSION

Though archaeological and geoarchaeological investigations began to concentrate on playas only in the 1990s, it appears that these basins were sought after from the initial occupation of the area up to and including the Historic period. Local human groups apparently focused part of their mobility patterns in relation to use of the playas.

In Paleoindian times playas were associated with a number of different site types, including kill sites, lithic production sites, and campsites. Paleoindian
residential mobility patterns might account for the common occurrence of campsites and kill sites in proximity to playas, as the two often are found in association. Therefore, playas may have been targeted by early hunter-gatherer groups during annual movements over the Southern High Plains landscape.

From Early Archaic through Late Archaic times a general decrease in playa use apparently took place. The decline in the number of Archaic sites associated with playas is related to the desiccation and filling of a large number of basins during this period. At the varying number of playas that retained water seasonally, attendant resources were exploited. The overall use of playas became more opportunistic and specifically oriented toward resource exploitation.

Archaeological data from the late Holocene indicate that playa use intensified during this period. Although occupations generally appear to be short-term forays by small groups, playas were revisited on a regular basis over an extended period of time. Domestic as well as resource exploitation activities are documented in proximity to playas, indicating a change in mobility patterns from the Archaic period.

Though a differential use of playas appears to occur through time, playas were reliable in providing seasonal if not year-round water and other resources. Analysis of topographic setting and directional location for playa sites has not been undertaken other than minimal data compilation for classification purposes (e.g., Buchanan 1995a–c). Occupation of playa sites varies considerably, from a single loci to a complete encircling and from the rim of the basin to some distance away from the rim (e.g., Buchanan 1995a–c; Hughes and Speer 1981).

Playas, now recognized as significant with regard to not only the physical landscape but human settlement strategies, have been neglected in past archaeological research designs. Little systematic survey work on the Southern High Plains has been done outside the draws until recently (e.g., Hughes and Speer 1981; Johnson 1994, 1995; Schroeder and Rader 1995). Archaeological research on the Southern High Plains has emphasized the importance of draws as topographic markers for the archaeological potential of an area (e.g., Hester 1975; Hester and Grady 1977). This preferential treatment of draws might be explained best by the fact that research on the Southern High Plains concentrated on defining Paleoindian occupations (e.g., Holliday 1997b). Draws are associated with a number of type sites (Clovis, Plainview, Lubbock Lake) that are well known for their stratigraphic record and related multiple occupations. Consequently, draws have been recognized as significant not because of their ecological potential but because of their association with prestigious sites. The two best-known playa sites (Miami and San Jon) were viewed as single-component sites that were not as spectacular as their counterparts found in draws.

Playas on the Southern High Plains represented islands that exhibited a variety of ecological settings with a rich diversity of resources. Aquatic resources were available for consumption, as were open-prairie species that sought these
areas for freshwater. Continuing studies relating the presence of playa basins to archaeological sites undoubtedly will in turn demonstrate the appeal these islands in the landscape had for human groups occupying the Southern High Plains.

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