

AN ANALYSIS OF THE CERAMICS OF THE GUADALUPE MOUNTAINS NATIONAL PARK

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ABSTRACT

The pottery sherds collected by the Texas Archaeological Society Field School from the Guadalupe Mountains National Park are identified and classified. The sherds are tabulated by site and sites are assigned a date span through the use of ceramic cross-dating. Ceramic attributes are examined with the purpose of identifying the occupants and isolating possible settlement patterns; the latter being attempted by using various site groupings. An hypothesis is proposed that places a Jornada-Mogollon occupation in the Guadalupe Mountains National Park between A.D. 850 and A.D. 1350.

INTRODUCTION

More than 3,000 sherds of pottery were recovered by personnel of the Texas Archaeological Society (TAS) Field School during their Guadalupe Mountains National Park (GMNP) survey in June of 1970. The sherds were tentatively identified by John Runyan of Hobbs, New Mexico in the field laboratory and all but the very smallest were cataloged with the site number from which they were collected. Bags were marked with site numbers and the sherds from the appropriated site were placed inside. A sampling of sherds was selected at random and a temper analysis was performed in the field environment. The sample was then examined in detail, field identification refined and the sherds classified.

The purpose of this report is to tabulate by site the sherds of each pottery type represented in the collection and to group the sites in an attempt to identify any settlement or living patterns. Additionally, ceramic cross-dating is used in assigning a date span to each ceramic bearing site. A description of the modified sherds found within the park is included; a general discussion of ceramics follows, and the report concludes with a short summary.

The report is oriented toward, and emphasizes, the Jornada Branch of the Mogollon (Jornada-Mogollon District as defined by Lehmer (1948). Jornada-Mogollon was also the predominant pottery group identified in the GMNP collection and represented 70% of the total ceramics. The sample collected was considered to be representative of the areas surveyed but not necessarily representative of the park ceramics as a whole (Shafer 1970). The use of the terms GMNP, GMNP area and GMNP region in this report pertains to those portions of the

GMNP surveyed by the TAS Field School. The survey was conducted primarily on the western and southern flanks of the central Guadalupe massif.

CONSIDERATIONS

Identification refinement and classification of the pottery sherds brought to light certain analytical problems, notably the generally small size of the sherds and weathering of their surfaces. All sherds were collected from the surface, and weathering had caused a deterioration of surfaces, a chalky appearance of slips and obliterated designs. Both size and weathering rendered positive identification very difficult and the determination of design elements and motifs often impossible. Sherd size was also an important factor in differentiating olla (jug) from bowl sherds, a distinction which had an impact on the analysis of the ceramics.

Identification difficulties created a genuine quandary when distinguishing *El Paso* or *Jornada Brown* from *El Paso Polychrome*. Both *El Paso Brown* (Lehmer 1948) and *Jornada Brown* (Mera 1943) were considered ancestral to *El Paso Polychrome* (Stallings 1931), and sherds of *El Paso Polychrome* that did not display painting were often impossible to distinguish from either of the brown wares. The existence of *El Paso* and *Jornada Red on Brown* and *Black on Brown* (Lehmer 1948; Gerald n.d.), types intermediate between *El Paso* and *Jornada Brown* and *El Paso Polychrome*, added to the identification difficulty.

The above variables were considered before an interpretation was made of a site that contained appreciable amounts of the two *Brown* wares, *El Paso Polychrome* and types generally associated with the aforementioned three. Such mixed pottery situations were frequently encountered during the GMNP survey, and a distinction between the brown wares and polychrome was significant in establishing a relative placement for the ceramically heterogeneous sites.

Finally, not all the observed sherds were collected from sites where ceramics were found. Within large sites all recovered sherds were obtained from an arbitrarily designated area in an attempt to diminish a collecting bias. Sherd collecting in other than the large sites was accomplished solely in a random manner and no attempt was made to recover all the sherds.

SITE GROUPING

Grouping sites by different criteria can be valuable in attempts to discern settlement patterns, since such patterns will often display a

distribution relative to a great number of variables. Three criteria were selected in an attempt to isolate any such patterns within the GMNP: chronological ordering of ceramic types; life zones; and spatial and topographical grouping (see Table 1). This latter group is subdivided in Table 1 to establish the relationship of each site to selected terrain features as well as the relationship of each site to the other sites. These two subdivisions are presented in Table 1 as "terrain category" and "spatial group."

Those sites that contained pottery were plotted on the United States Geological Survey map (1933 edition) of Guadalupe Peak, Texas, with a scale of 1:62,500 and a contour interval of 50 feet. A color code was used to distinguish site size based upon the number of sherds collected from a site. The relative size of sites was arbitrarily established as follows: small, less than 25 sherds; medium, 25 through 75 sherds; large, more than 75 sherds. Of the 59 GMNP sites with ceramic association, ten had an excess of 75 sherds, 16 contained from 25-75 sherds and 33 were in the "small" category. Five of the identified sites were not plotted on the map; all were situated in Culberson County beyond the range of the map and two of the five were located south of the principal survey area in the Delaware Mountains region.

CHRONOLOGICAL ORDERING

Pottery types identified in the GMNP ceramic collection were as follows: *Alma Plain* (Haury 1936); *Jornada Brown* (Mera 1943); *El Paso Brown* (Lehmer 1948); *South Pecos Brown* (Jelinek 1967); *Middle Pecos Micaceous Brown* (Jelinek 1967); *Roswell Brown* (Jelinek 1967); *McKenzie Brown* (Jelinek 1967); *Playas Red* (Ceramic Conference 1969); *San Andres Red on Terra Cotta* (McCluney 1962); *Three Rivers Red on Terra Cotta* (Cosgrove and Cosgrove 1932); *Lincoln Black on Red* (Mera and Stallings 1931); *Mimbres Black on White* (Hawley 1950); *Chupadero Black on White* (Mera 1931); *Crosby Black on Gray* (Jelinek 1967); *Casas Grandes Rubbed Scored* (Ceramic Conference 1969); *El Paso Polychrome* (Stallings 1931); *Ramos Polychrome* (Ceramic Conference 1969); *St. John's Polychrome* (Hawley 1950); and *Escondido Polychrome* (Ceramic Conference 1969). Many sherds of Casas Grandes or Chihuahua ware were not positively identified as to specific type. Red on brown variants of *Middle Pecos Micaceous*, *South Pecos* and *Roswell* pottery (Jelinek 1967) were identified, as were red on brown and textured (incised, corrugated, scored, etc.) variants of *El Paso* and *Jornada* ware (Lehmer 1948; Gerald n.d.).

The chronological ordering of the GMNP ceramics was based on a

TABLE 1 SITE GROUPINGS

Site Designation									
	HZ29	HZ32	HZ33	HZ36	HZ39	HZ40	HZ41	HZ43	HZ44
Life Zone	L	L	L	L	L	L	L	L	L
Pottery Phase	E	E	L	L	E	L	I	E	L
Terrain Category	A	A	H	H	A	A	A	A	F
Spatial Group	3	1	3	3	3	3	3	3	2
Remark Number									1
	HZ64	HZ65	HZ66	HZ67	HZ68	HZ70	HZ71	HZ72	HZ73
Life Zone	L	L	L	L	L	L	L	L	L
Pottery Phase	I	E	E	L	L	I	I	I	I
Terrain Category	A	A	A	F	F	F	F	F	F
Spatial Group	1	1	2	2	2	2	2	2	2
Remark Number					1,2				
	CU47	CU55	CU56	CU61	CU70	CU73	CU75	CU84	CU85
Life Zone	U	U	L	L	L	U	L	U	L
Pottery Phase	E	E	E	E	E	E	I	E	L
Terrain Category	A	C	A	A	C	A	A	C	A
Spatial Group	I	I	4	4	4	I	4	4	4
Remark Number							3		

Remarks: 1. near alluvial fan; 2. multi-component; 3. western portion of the valley; 4. northern extreme of the survey area. NOTE: the prefix "41" was eliminated from the site designations.

HZ45	HZ46	HZ47	HZ49	HZ50	HZ51	HZ52	HZ53	HZ56	HZ58	HZ60	HZ61
L	L	L	L	L	L	L	L	L	L	L	L
E	I	E	E	E	L	E	I	E	E	L	E
F	F	A	F	F	F	A	A	A	A	A	A
2	2	2	2	2	2	1	1	1	1	1	1
1	1					2	2				

HZ74	HZ77	HZ78	CU13	CU14	CU16	CU18	CU19	CU20	CU25	CU26	CU43
L	L	L	L	L	U	L	L	L	U	U	U
L	E	E	I	E	E	E	I	E	E	E	L
F	F	F	U	U	C	A	H	U	C	C	C
2	2	2	U	U	4	4	4	U	4	4	U
2	1	1					2				

CU90	CU93	CU98	CU99	CU108	CU109	RS 13	RS 18
L	L	U	U	L	L	L	L
E	L	E	I	E	L	E	I
A	A	C	C	A	A	U	U
4	4	I	I	4	4	U	U
	2,3	4	4	3			

KEY TO LINES:

line 1 — L-lower Sonoran, U-upper Sonoran

line 2 — E-early, I-intermediate, L-late

line 3 — F-flat, A-alluvial fan, C-canyon, H-hill, U-unknown

line 4 — I-isolated, U-unknown

correlation of the date spans presently accepted for each of the identified pottery types (Breternitz 1966; Hawley 1950; Ceramic Conference 1969). Pottery phases were formed as temporal divisions and their sequential placement was developed with the phases of the Jornada-Mogollon providing a guide. Lehmer (1948) perceived the Jornada-Mogollon as consisting of a northern and a southern sequence, each with a common opening phase (Hueco) and three subsequent phases. He identified, from early to late, the Capitan, Three Rivers and San Andres as the ensuing phases in the north, and in the south he established the Mesilla, Dona Ana and El Paso phases. Lehmer also delineated the provenience of the Jornada-Mogollon and assigned the Guadalupe Mountains, within which the Park is located, as the eastern boundary. Aten (1972) suggested, based upon his excavation at the Northgate Site in El Paso County, Texas, that Lehmer's phases are rough guesses requiring considerable improvement. In particular, he believes that Lehmer's definition of the Mesilla phase is weak and that it should have an earlier beginning date.

The Middle Pecos Valley ceramic sequence as defined by Jelinek (1967) was also considered in the GMNP ceramics ordering, but the GMNP sample more closely approximated the pottery of the Jornada-Mogollon. The Middle Pecos Valley sequence was separated into northern and southern areas similar to Lehmer's (1948) northern and southern sub-branches of the Jornada-Mogollon, but no boundaries as such were proposed for the Middle Pecos Valley sequence. It could be inferred that the Middle Pecos Valley region was bounded on the south by the area about and slightly down river of Roswell, New Mexico, and on the north by Ft. Summer, New Mexico. The eastern and western extremities were limited, with the exception of the Rio Hondo section, by the general confines of the Pecos River Valley. No portion of the Middle Pecos Valley could be spatially affiliated with the GMNP.

Three ceramic phases are defined for the GMNP: an **Early** with a date span of A.D. 850-1100, an **Intermediate** occurring from A.D. 1050 to A.D. 1250, and a **Late** ranging from A.D. 1200 to A.D. 1350. The pottery types that constituted the Early phase were *El Paso*, *Jornada*, *Middle Pecos Micaceous*, *South Pecos* and *Roswell Brown*, *Alma Plain*, *Mimbres Black on White* and *San Andres Red on Terra Cotta*. Red on brown variants of the *Brown* wares appeared occasionally but were never particularly common within the park. Later types such as *El Paso Polychrome*, *Chupadero Black on White*, *Three Rivers Red on Terra Cotta* and *Crosby Black on Gray* were observed in a very few early sites in decidedly small amounts, forecasting the subsequent Intermediate phase. The Early phase was characterized by a prepon-

derance of Brown wares and compared in time span to Lehmer's (1948) Capitan-Mesilla phase and the opening years of his Three Rivers-Dona Ana phase and to Jelinek's (1967) 18 Mile phase.

An approximate balance between plain and decorated wares was achieved during the Intermediate phase. *McKenzie Brown* was added to the inventory of brown wares of the previous phase while *El Paso Polychrome*, *Chupadero Black on White* and *Crosby Black on Gray* increased considerably in prominence. *Three Rivers Red on Terra Cotta*, which evolved from *San Andres Red on Terra Cotta* (McCluney 1962), did not occur in any quantity, nor did the latter in the Early phase. The Mogollon wares, *Alma Plain* and *Mimbres Black on White*, decreased in popularity from the preceding phase and eventually disappeared. *El Paso* and *Jornada Red on Brown* and textured variants, in addition to red on brown varieties of *Middle Pecos Micaceous*, *Roswell* and *South Pecos* wares, were present but not in appreciable quantities. The later stages of Lehmer's (1948) Three Rivers-Dona Ana phase and Jelinek's (1967) Mesita Negra phase related to the GMNP Intermediate phase.

The Late ceramic phase featured an influx of pottery from distant regions. Casas Grandes textured wares, *Playas Red*, *Ramos Polychrome* and *Escondido Polychrome* entered from the Mexican state of Chihuahua (Ceramic Conference 1969) while *St. John's Polychrome* arrived from New Mexico (Hawley 1950). All these pottery types were probably introduced through the El Paso area Jornada-Mogollon. The Casas Grandes and *Playas Red* textured wares did not replace *El Paso* or *Jornada* textured pottery and were not a major factor in the GMNP. Brown wares were less prominent than in the Intermediate phase; decorated pottery dominated the Late phase. Jelinek's (1967) McKenzie phases and Lehmer's (1948) closing El Paso-San Andres phase were compatible with the last ceramic phase of the GMNP with one notable exception: plain wares did not practically cease to exist as Lehmer (1948) suggested for the Jornada-Mogollon, but simply decreased in abundance from the Early through the Late phases. Jelinek (1967) observed a similar reduction in prominence of plain wares in the Middle Pecos Valley but also noted an increase in one later variety, *McKenzie Brown*.

Unfortunately, the allocation of a site to one of the ceramic phases was not always a simple task. Continued occupation, repeated reoccupation (creating a multi-component site) or sherd scattering caused a condition whereby a particular site could be simultaneously placed in two of the three phases. Such a situation was characteristic of some of the GMNP sites and the solution in most cases was to place the site in question in the phase indicated by the latest pottery type rep-

TABLE 2 DISTRIBUTION OF SHERDS BY TYPE AND SITE

Site Designation and Number of Sherds Per Site

	HZ29	HZ32	HZ33	HZ36	HZ39	HZ40	HZ41	HZ43	HZ44	HZ45	HZ46	HZ47
<i>Jornada Brown</i>		5	11		36	2	5	10	6	33	11	4
<i>El Paso Brown</i>		4			18		4	8	9	24	11	1
<i>South Pecos Brown</i>		2			13		2	2		8	5	
<i>Middle Pecos Micaceous Brown</i>					1			1		5	4	
<i>Roswell Brown</i>			4				2				3	
<i>McKenzie Brown</i>			5			9	3		3		4	
<i>Alma Plain</i>					2							
<i>Red on Terra Cotta</i>										2		
<i>Chupadero Black on White</i>			1				8		3		3	
<i>Mimbres Black on White</i>	1									4		
<i>Crosby Black on Gray</i>			1									
<i>El Paso Polychrome</i>		4	8	10		21		1	18			
<i>Other</i>			2			1		2	1	4		
<i>Remark Number</i>			1		2			3	4	5		

	HZ49	HZ50	HZ51	HZ52	HZ53	HZ56	HZ58	HZ60	HZ61	HZ64	HZ65	HZ66
<i>Jornada Brown</i>	26	62		147	43		3	4	10	58	1	2
<i>El Paso Brown</i>	26	17	5	15			23	7	5	13		
<i>South Pecos Brown</i>	10			19					26	11	1	2
<i>Middle Pecos Micaceous Brown</i>			1		5				5			
<i>Roswell Brown</i>	1			4		5			9			
<i>McKenzie Brown</i>									14			
<i>Alma Plain</i>								5		3		
<i>Red on Terra Cotta</i>												
<i>Chupadero Black on White</i>	33				1							
<i>Mimbres Black on White</i>	2											
<i>Crosby Black on Gray</i>									1	5		
<i>El Paso Polychrome</i>	85	4	1	2	10			31	2	12		
<i>Other</i>	1		5	3	5					4		
<i>Remark Number</i>	6		7	8	9					10		

TABLE 2 (Cont'd)
DISTRIBUTION OF SHERDS BY TYPE AND SITE

Site Designation and Number of Sherds Per Site

	HZ67	HZ68	HZ70	HZ71	HZ72	HZ73	HZ74	HZ77	HZ78	CU13	CU14	CU16	CU18
<i>Jornada Brown</i>	2	388	1	29	9	24	26	11	13	2	1		
<i>El Paso Brown</i>	5	176	7	37	3	16	6		10	6		2	1
<i>South Pecos Brown</i>		54	1	3	1	3	13	1	1	4		1	7
<i>Middle Pecos Micaceous Brown</i>	1	24		5		7	9		2				
<i>Roswell Brown</i>		21		4		6	5		6	2			
<i>McKenzie Brown</i>		8		3	4		5			3			
<i>Alma Plain</i>		7						1					
<i>Red on Terra Cotta</i>		48											
<i>Chupadero Black on White</i>		18	9	1		1	1		3	3			
<i>Mimbres Black on White</i>	6	20				13			13				
<i>Crosby Black on Gray</i>		12			2								
<i>El Paso Polychrome</i>		114	4	25	2	8	10	1		3			
<i>Other</i>	1	31		1		3	3		1	4			3
<i>Remark Number</i>	11	12	13	14		15	16		17	18			19

	CU19	CU20	CU25	CU26	CU43	CU47	CU55	CU56	CU61	CU70	CU73	CU75	CU84
<i>Jornada Brown</i>	55	1	2	1		2	1	3		8	3	2	
<i>El Paso Brown</i>	66		2			1			1	1		8	1
<i>South Pecos Brown</i>	13									4			1
<i>Middle Pecos Micaceous Brown</i>	4												
<i>Roswell Brown</i>	4												
<i>McKenzie Brown</i>													
<i>Alma Plain</i>													2
<i>Red on Terra Cotta</i>	4											6	
<i>Chupadero Black on White</i>	43												
<i>Mimbres Black on White</i>	4												
<i>Crosby Black on Gray</i>	15											1	
<i>El Paso Polychrome</i>	16											6	
<i>Other</i>	10				1								
<i>Remark Number</i>	20				21								

GUADALUPE CERAMICS

TABLE 2 (Cont'd)
DISTRIBUTION OF SHERDS BY TYPE AND SITE

	Site Designation and Number of Sherds Per Site								
	CU85	CU90	CU93	CU98	CU99	CU108	CU109	RS 13	RS 18
<i>Jornada Brown</i>		3	30	1	1	5	5	2	8
<i>El Paso Brown</i>	2					43			
<i>South Pecos Brown</i>		4	5		1				
<i>Middle Pecos Micaceous Brown</i>			4						
<i>Roswell Brown</i>					5				
<i>McKenzie Brown</i>			1					1	
<i>Alma Plain</i>			1				1		
<i>Red on Terra Cotta</i>									2
<i>Chupadero Black on White</i>									
<i>Mimbres Black on White</i>					3		58		
<i>Crosby Black on Gray</i>			4						10
<i>El Paso Polychrome</i>	5		10		3		1	8	
<i>Other</i>		1	24		25		26	27	
<i>Remark Number</i>		23							

REMARKS: 1. 1 sherd *Casas Grandes Rubbed Scored*, 1 sherd unidentified textured ware; 2. 1 sherd unidentified Chihuahua ware; 3. 2 sherds *Jornada Red on Brown*; 4. 1 sherd *Jornada Red on Brown*; 5. 4 sherds unidentified brown ware, *Red on Terra Cotta* is *Three Rivers* variety; 6. 1 unidentified jug handle, 31 *Chupadero* sherds form a partial vessel; 7. 3 sherds *Lincoln Black on Red*, 1 sherd *Playas Red* (tool gouged), 1 sherd unidentified plain ware (orange paste and slip); 8. 2 sherds *El Paso Red on Brown*, 1 sherd unidentified Chihuahua ware; 9. 2 sherds *Jornada Red on Brown*, 3 sherds *Playas Red* (unidentified variant); 10. 2 sherds *El Paso Incised* with red painting in incising, 2 sherds *Jornada Red on Brown*; 11. 1 sherd *Jornada Red on Brown*; 12. 5 sherds *Ramos Polychrome*, 12 sherds unidentified Chihuahua *Polychrome*, 14 sherds unidentified brown ware, *Red on Terra Cotta* is *Three Rivers* variety, includes 3 spindle whorls and 1 pendant of *Jornada Brown* and 1 pottery tool of *El Paso Polychrome*; 13. 3 *Chupadero* sherds had very heavy paint and lacked striations; 14. 1 sherd *El Paso* wide incised smoothed; 15. *Mimbres* sherds probably from 1 vessel, 3 sherds *Middle Pecos Micaceous Red on Brown*; 16. 2 sherds unidentified Chihuahua ware, 1 sherd *El Paso Incised*; 17. 1 sherd *Jornada* unpatterned incised; 18. 4 sherds unidentified smoothed gouged ware; 19. 3 sherds unidentified plain ware (orange paste and slip); 20. 3 sherds *Roswell Red on Brown*, 1 sherd *South Pecos Red on Brown*, 1 sherd *El Paso Red on Brown*, 2 sherds *Jornada Red on Brown*, 1 sherd *Jornada* smoothed corrugated, 3 sherds *Escondida(?) Polychrome*, includes 1 *El Paso Brown* and 1 *Mimbres Black on White* spindle whorls, *Red on Terra Cotta* is *Three Rivers* variety; 21. 1 sherd *St. John's Polychrome*; 22. *Red on Terra Cotta* is *San Andres* variety; 23. 1 sherd *Jornada Red on Brown*; 24. 1 sherd *Casas Grandes Scored*, 2 sherds unidentified Chihuahua ware, 7 sherds *Playas Red* (standard variant), *Red on Terra Cotta* is *San Andres* variety; 25. 3 sherds *South Pecos Brown* with red wash; 26. 1 sherd unidentified Chihuahua ware, *Red on Terra Cotta* is *Three Rivers* variety; 27. 8 sherds *Jornada Red on Brown*. NOTE: the prefix "41" was eliminated from the site designations.

resented in the site's ceramics. Such a method was patterned after Jelinek's (1967) treatment of sites in the Middle Pecos Valley; sherds within a site which were not compatible with the phase to which the site was assigned were termed "salvage" sherds of an earlier phase. Most sites with a minimum number of sherds did not lend themselves well to dating, and the establishment of a date span for such sites was tenuous at best. An overlapping of the dates for the Intermediate phase was intentionally incorporated to facilitate the accommodation of most of the multi-component sites discovered in the park. It was not intended to imply that if a site was included in a particular ceramic phase it was occupied throughout the span of years established for that phase, but rather that occupation took place during a period of time encompassed by the date span.

The accompanying chart (Table 2) graphically illustrates that the GMNP sherd sample was dominated (81%) by pottery types native to the two ceramic sequences previously mentioned: the Jornada-Mogollon (70%) as defined by Lehmer (1948) and the Middle Pecos Valley (11%) as outlined by Jelinek (1967).

LIFE ZONES

Four major life zones are represented in the GMNP: **Lower Sonoran**, **Upper Sonoran**, **Transition** and **Canadian** (Burns 1967). A well documented discussion of the flora and fauna of the life zones of the park is found in Burns (1967) and will not be detailed here. Ceramic bearing sites identified by the GMNP survey were located exclusively in the Lower and Upper Sonoran zones, and the majority (82%) were found in the lower division.

The Lower Sonoran is the most arid of the four zones in this relatively dry region. It incorporates the flat lands and a generous portion of the foothills of the Guadalupe Mountains. The Lower Sonoran terminates and the Upper Sonoran begins at four to five thousand feet, depending on the immediate topography. An arbitrary division of the two Sonoran zones was established at 4,500 feet to provide easier classification of the surveyed sites.

The Upper Sonoran zone extends to a seven or eight thousand feet altitude and encompasses most of the foothills and a large part of the mountains proper. The Transition zone is limited to the highest sections of the Guadalupe Mountains while the Canadian zone is severely restricted to the highest peaks in the southern portion of the range.

The western and southern slopes of the Guadalupe Mountains are more precipitous than the eastern or northern (Newell 1953) and the

range is bordered on the west by an immense playa or lake bed locally termed "Crow Flats". The lower elevations of the western slope are dominated by sand ridges which are generally oriented east to west. The majority of sites were found in these ridges. Evidence of occupancy in the Upper Sonoran was restricted to ceramically small sites, 80% of which were classified as early units. No pottery bearing sites were located in the Transition or Canadian zones.

SPATIAL AND TOPOGRAPHICAL DISTRIBUTION

An inspection of the map indicated an obvious spatial clustering of the majority of sites in four areas (Table 1). The first area was a scattering of sites near a major arroyo (intermittent stream) in the northwestern section of the surveyed region. Sites in this area ranged from small to large and were primarily early ceramic. The second area was adjacent to the large playa and the sites were generally distributed along a north-south line on the western edge of the survey area. It encompassed the greatest number of sites and seven of the ten large sites discovered during the survey. The group of seven large sites consisted of two Early, three Intermediate and two Late phase sites. However, within the entire second area, Early phase sites were more numerous than the Intermediate or Late category, but were not a majority. There was no particular imbalance of site size within the area since it contained seven each of large and small sites and four medium sites.

A third area, which included a prominent hill, was a collection of six sites south and east of the second area. It presented a fairly balanced spectrum of sites in terms of chronological phasing. The majority of sites were medium in size and the area contained no large sites.

The final area, which was the largest, combined the sites in a valley at the southern limit of the surveyed region. The area included sites that were predominantly Early ceramic (66%) and usually small in size (eleven of fifteen sites contained less than 25 sherds). The one large site in the valley was the second largest encountered during the survey and was categorized as Intermediate phase.

Six sites displayed no particular spatial relationship and were considered isolated. Although isolated, they were not eliminated from the overall analysis.

Four terrain features were selected for the final grouping method; a method that was complementary to the life zone treatment. The plotted location of each site that contained pottery was carefully inspected and each site placed in one of four terrain categories: (1)

alluvial fans; (2) flats; (3) hills; and (4) canyons (see Table 1). Sites were also examined for proximity to arroyos or springs but this terrain feature was not used as a basic criterion. Twenty-nine of the GMNP sites, a majority, were situated on alluvial fans. Fourteen sites were located on the flats and adjacent to the playa and yielded some of the largest ceramic samples. The remaining sites were found in canyons (9), on the slope of a hill (3) or were not plotted on the map (5).

Less than 33% of the sites could be associated with arroyos or springs. It was surprising that more sites were not associated with present water sources in this arid region; however, water may have been more abundant during prehistoric times, as suggested by Burns (1967) and Riches (1970). Additionally, Burns (personal communication) had information concerning a map dating from the Civil War period that pinpointed numerous springs in the sandy sections of the western section of the park; these springs no longer exist.

Canyon and hill sites comprised slightly more than 20% of the total ceramic sites. Canyon locations were observed exclusively in the southeastern portion of the surveyed area, with the exception of the two sites in the northern reaches that were classified as isolated. These latter sites, combined with two other isolated canyon sites, comprised approximately 45% of the canyon sites. Conversely, canyon sites, all of which were small in size, represented two-thirds of the isolated sites. All of the isolated sites were small and were basically Early ceramic. Two of the three hill sites were situated on two separate hills in the third "site proximity" area. The other hill site was located in the large southern valley and yielded a large ceramic sample.

An especially interesting distribution of sites, one that was relative to both size and proximity to a particular terrain feature, was that 70% of the large sites were situated in the flats adjacent to the large lake bed. Another revealing distribution pattern was the indiscriminate location of Early, Intermediate and Late phase sites throughout the surveyed area. Also, Early, Intermediate and Late sites displayed no apparent affinity to any terrain feature.

MODIFIED SHERDS

Very few ceramic tools and ornaments were discovered during the survey, and those recovered were from the two largest sites, 41HZ68 and 41CU19. There were five spindle whorls, three of *Jornada Brown* and one each of *El Paso Brown* and *Mimbres Black on White*. These five artifacts were small and crudely made, as contrasted with many spindle whorls from El Paso area Jornada-Mogollon sites (Lehmer 1948; Moore 1947; Moore and Wheat 1951; Phelps 1967).

Another pottery artifact, an *El Paso Polychrome* bowl rim modified by smoothing three sides (the fourth side was the vessel rim), was collected from 41HZ68. It is a curved artifact, rectangular in shape with rounded corners, and measured 7.5 centimeters in length, 3.3 centimeters in width and was a fairly uniform .6 centimeters in thickness. The object was possibly a scraper similar to those described by Lehmer (1948).

The final artifact, which appeared to be a pendant, was made of *Jornada Brown* and was also found in 41HZ68. The specimen was oval in shape with the suspension hole drilled from both sides. It was a relatively good piece of workmanship and measured 5.4 centimeters in length, 4.3 centimeters at the widest section and was uniformly .7 centimeters thick.

These few modified potsherds seemed meager in quantity considering the number of sites identified and the number of sherds collected in the GMNP. Their scarcity was even more noteworthy in view of the fact that survey teams most likely collected every modified potsherd encountered. These artifacts are not uncommon in *El Paso* area *Jornada-Mogollon* sites (Lehmer 1948; Moore 1947; Moore and Wheat 1951; Phelps 1967).

Jelinek (1967) made little mention of modified sherds or pottery tools in the Middle Pecos Valley, nor did Burns (1967) or Riches (1970) indicate the existence of many ceramic artifacts in the open sites of southeastern New Mexico.

GENERAL COMMENTS

The criteria that distinguish *El Paso Brown* from *Jornada Brown* and both from *El Paso Polychrome* has perplexed archaeologists for a number of years (Jelinek 1967; Jennings and Neuman 1940; Gerald n.d.; Riches 1970).

Mera (1943) maintained that the dominant pottery of the Tularosa Basin and adjacent areas was *Jornada Brown*. Jelinek (1967) provided the best description of *Jornada Brown* using the type descriptions of Mera and Jennings, with minor modifications. Jelinek listed the major characteristics of the pottery as: paste — “tan to black”, frequent “black” core; temper — primarily feldspar with quartz and infrequent mica as secondary agents; finish — hand smoothed with frequent polish, infrequent tool smoothing, some temper protrusion; derivation — *Alma Plain*(?).

Lehmer (1948) agreed with Mera in that *Jornada Brown* dominated the northern *Jornada Branch* of the *Mogollon* (as Lehmer classified the archaeological materials) but maintained that *El Paso Brown*, a new

type, was characteristic of the southern two thirds of the Jornada-Mogollon domain. He likened both *Jornada* and *El Paso Brown* to a coarser form of *Alma Plain* and distinguished the former from the latter as generally being polished and having a finer tempering material.

Lehmer (1948) presented a formal description of *El Paso Brown* and asserted that the paste was soft, granular and friable, "light brown to black" in color with carbon streaks often present. The temper consisted of angular fragments of limestone and quartz of up to 1.5 millimeters in size. Prominence, size and profusion of temper was distinctive. Finish was characterized by a smooth matte with considerable variation in the degree of smoothing, and color varied from "buff to dark brown" with fire clouds common.

Others in the El Paso area noted that the color range of *Jornada Brown* paste and finish was greater than that of *El Paso Brown*, that carbon streaks and firing clouds were only occasionally found in *Jornada Brown* and that particle protrusion occurred infrequently. They also determined that the wall thickness of *Jornada Brown* was ordinarily thinner than that of *El Paso Brown* and that the latter was generally more restricted in rim treatment (Moore 1947; Brook 1966, 1967; Fritz 1969; Hedrick 1967; Phelps 1966, 1967, 1968b; Moore and Wheat 1951).

Jelinek (1967) did not recognize differences in *El Paso* and *Jornada Brown* and stated that the *Jornada Brown* identified in the Middle Pecos Valley "includes all of the relatively coarse-tempered brownware which was not assigned to one of the other types." He did list a coarse form as a variant of the basic *Jornada* type.

Similarly, Riches (1970), after researching most of the available written material, discussed the situation briefly and decided that *El Paso Brown* was a coarsened form of *Jornada Brown*. She did, as opposed to Jelinek, separate and tabulate the two in her pottery listings.

Burns (1967) did not speculate at length in the controversy but endorsed the proposition that *El Paso Brown* and *Jornada Brown* were two separate ceramic types. Neither Greer (1968) nor Corley (1965) addressed the problem, but both acknowledged each type in their pottery discussions.

Runyan (ms.), in an analysis of the sherds from the GMNP survey, noted that *El Paso Brown* contained large "white" temper particles (elements not specified) of as much as three millimeters in size and that the temper material protruded through the smooth finish of the sherds. It was determined that *Jornada Brown* temper particles were

usually smaller than those of *El Paso Brown* and were normally 1.5 millimeters or less in size. It was also found that *Jornada Brown* generally had a semi- to fairly good floated surface which was often polished.

Jornada Brown, in its native area, was apparently a northern manifestation of *El Paso Brown*, or vice versa, with differences in temper particle size, wall thickness, range in color of paste and finish and rim and surface treatment. The usual absence of temper protrusion in *Jornada Brown* may well have been due to a greater care exercised in finishing and to the smaller sized temper materials used. Both types occur together but less often in the more northern and southern *Jornada-Mogollon* sites. The dissimilarities of the two types might primarily have been a result of a difference in the available pottery making materials.

El Paso and *Jornada Brown* are considered ancestral to *El Paso Polychrome* (Lehmer 1948) and this was readily observed in the GMNP sample, since *El Paso Polychrome* sherds varied so greatly in appearance. The transition from brown to polychrome was evidenced in the *El Paso* area by the existence of *El Paso* and *Jornada Red on Brown* and *Black on Brown* (Gerald n.d.; Lehmer 1948). *El Paso Polychrome* was a widely distributed type that has been found in sites as far east as Garza County, Texas (Shedd 1968), in southwest New Mexico and southeast Arizona (Mills 1971, 1972), south into northern Chihuahua, Mexico (Phelps 1968a) and northward into central New Mexico (Stallings 1936). The most recently published dates for *El Paso Polychrome*, A.D. 1260-1295, were derived from archaeomagnetic samples taken from fire hearths in an *El Paso* site in the Hueco Basin (Brook 1970).

Characteristics such as temper materials, size, paste and finish were frequently duplicated in sherds of *El Paso Brown* and *El Paso Polychrome* and in *Jornada Brown* and *El Paso Polychrome* (Mera 1943; Lehmer 1948; Stallings 1931; Hawley 1950). *El Paso Polychrome*, which lacked decoration due to weathering or because of sherd size, was often extremely difficult to identify in the GMNP collection. Considerable care had to be exercised in differentiating *El Paso Polychrome* from either *El Paso* or *Jornada Brown*. Two characteristics, wall thickness and rim treatment, were used in lieu of (when decoration was missing), and in addition to, painted surfaces. In the former case *El Paso Polychrome* was usually thinner and in the latter instance it exhibited a wider range of rim forms (Stallings 1931; Alves 1931; Lehmer 1948; Mera 1943). The three pottery types, *El Paso* and *Jornada Brown* and *El Paso Polychrome*, were designated as indigenous to the *Jornada-Mogollon* by Lehmer (1948).

The great spatial and temporal distribution of *El Paso* and *Jornada* ware can probably be attributed to their function within the culture. The wide range of forms found in *El Paso* and *Jornada* ceramics (Lehmer 1948; Moore 1947; Gerald n.d.) suggests that *El Paso* and *Jornada* pottery was used in a variety of tasks, and therefore the two types endured for a considerable length of time. Also, since they were adaptable to so many functions, *El Paso* and *Jornada* ware could have been and were accepted in regions quite distant from their origin.

The most prevalent intrusives in El Paso area Jornada-Mogollon sites (Moore 1947; Brook 1965; Lehmer 1948) were *Playas Red* (this term was used, rather than *Playas Red Incised*, in accordance with the 1969 Ceramic Conference in Dragoon, Arizona; the conference actually updated rather than changed the *Playas Red* series originally recognized by Sayles [1936]), *Alma Plain*, *Mimbres Black on White*, *Chupadero Black on White*, *Lincoln Black on Red*, *Three Rivers Red on Terra Cotta* (to include the broadline variety which was classified as *San Andres Red on Terra Cotta* by McCluney), *Ramos Polychrome*, *Gila Polychrome* (Hawley 1950) and *Agua Fria Glaze* (Hawley 1950). Of the above ceramic types, only the latter two were not identified in the GMNP sherd sample. The two Chihuahua or Casas Grandes wares, *Escondido Polychrome* and *Casas Grandes Rubbed Scored*, that were found in the GMNP have not been reported from any Jornada-Mogollon sites. These two types might well have been present in the El Paso region but were misidentified since formal descriptions of *Escondido Polychrome* and *Casas Grandes Rubbed Scored* probably did not appear until 1970 (Ceramic Conference 1969).

A very significant aspect of the GMNP sherd sample was the fact that virtually 90% of the ceramics recovered were of wares either native to or common intrusives in the Jornada-Mogollon. It was quite interesting to note that 100% of the ceramic artifacts in the park collection were also so disposed.

Until recently many of the pottery types in the Middle Pecos Valley had not been descriptively typed, nor had the spatial and chronological relationships of all the Middle Pecos Valley ceramics been substantiated. Jelinek accomplished both tasks and published his findings in 1967. He identified and presented formal descriptions of six new pottery types from the Middle Pecos Valley: *Middle Pecos Micaceous Brown*, *McKenzie Brown*, *South Pecos Brown*, *Roswell Brown*, *Crosby Black on Gray* and *Middle Pecos Black on White*. Jelinek (1967) indicated that the new types were indigenous to the Middle Pecos Valley: *Middle Pecos Micaceous* and *McKenzie Brown* and *Middle Pecos Black on White* to a northern area and the remainder to a southern area centered about Roswell, New Mexico. He also

suggested that *South Pecos Brown* was native to a much larger region, perhaps as far south as the Texas-New Mexico border. All of these new pottery types, except the *Middle Pecos Black on White*, were a part of the GMNP survey sample.

Intrusives in the Middle Pecos Valley came from diverse regions but *Jornada Brown*, *Alma Plain*, *Chupadero Black on White* and *Red Mesa Black on White* were the most frequent (Jelinek 1967); of these only *Red Mesa Black on White* was missing in the GMNP sherd collection. *Jornada Brown* represented a very substantial portion of the intrusives in the Middle Pecos Valley, especially during the earliest phases, and was in fact the dominant pottery type in Jelinek's (1967) Early 18 Mile Phase. *Jornada-Mogollon* ceramic types provided the bulk of intrusives in the Middle Pecos Valley even though El Paso wares, considering the amount of *Jornada Brown* present, were conspicuous by their very limited occurrence. *Chupadero Black on White* was easily the most common reduced fire intrusive in the Middle Pecos Valley and the same situation was found to have existed in the GMNP. *Three Rivers* and *San Andres Red on Terra Cotta*, *Mimbres Black on White* and *St. John's Polychrome* were other intrusives common to both the Middle Pecos Valley and the GMNP. Numerical calculation determined that approximately 18% of the GMNP sherds represented ceramic types that were either native to or intrusive in the Middle Pecos Valley ceramic series.

The apparent lack of *Middle Pecos Black on White* in the park was worthy of note since it was the dominant pottery type in the two latest Middle Pecos Valley ceramic phases, excluding the intrusive *Chupadero Black on White* in the Post McKenzie phase (Jelinek 1967). *Middle Pecos Black on White* might have been present in the park but was inadvertently identified as *Crosby Black on Gray* and *Chupadero Black on White*. Presently, no Middle Pecos Valley ceramics have been conclusively identified in any of the El Paso area *Jornada-Mogollon* sites. Hedrick (1968) reported unknown brown ware sherds (Middle Pecos Valley derivation?) associated with *El Paso Brown* and *Polychrome* and *Chupadero Black on White* in the vicinity of Van Horn, Texas.

The valley of the Pecos River in the vicinity of Carlsbad, New Mexico, the eastern slopes of the Guadalupe Mountains and southeastern New Mexico were referred to as the Carlsbad District by Burns (1967). He and Riches (1970) conducted archaeological research in the region in an effort to define the local prehistoric assemblages and to establish cultural relationships between the district and other groups. They studied the available sources pertaining to the open

sites of the district and both made independent surveys within the area.

Riches (1970) reported that the pottery associated with the open sites indicated a relation to the Jornada-Mogollon. The ceramic types Riches identified were primarily *Jornada Brown*, *El Paso Brown*, *El Paso Polychrome*, *Chupadero Black on White* and *Three Rivers Red on Terra Cotta*. Her assemblage compared favorably with the GMNP sample but it did not include some of the pottery types consistently intrusive to the El Paso Jornada-Mogollon nor did it contain any identified Middle Pecos Valley wares.

Burns' (1967) sherd collection was even more closely associated with the El Paso Jornada-Mogollon since he discovered, in addition to the above ceramic types, Mexican (*Ramos Polychrome*, *Villa Ahumada Polychrome* and *Playas Red*) wares, *Alma Plain* and *St. John's Polychrome* in the open sites of the district. He concluded that the pottery of the Carlsbad District was basically Jornada-Mogollon. His ceramic collection was also very similar to that of the park and he, as Riches, did not have access to Jelinek's (1967) publication on the Middle Pecos Valley.

Neither Burns nor Riches found any evidence of Plains ceramics during their prospective surveys as had Greer (1968) during his work east of the Pecos River in the Carlsbad area. Vivian (1969) noted that Plains influence at Gran Quivira, a ruin approximately 250 kilometers west of the GMNP, was rather scanty and quite late in time. No ceramic evidence of Plains culture was discovered in the park during the survey but this does not preclude some form of contact between the peoples of the Plains and those of the GMNP.

Design elements were difficult and motifs almost impossible to identify considering the small size of most of the GMNP sherds and the weathering to which they had been exposed. The elements that were distinguishable did not differ from those noted for the various pottery types in other works (Lehmer 1948; Moore 1947; Ceramic Conference 1969; Hawley 1950; Alves 1931; Jelinek 1967; Gerald n.d.; Moore and Wheat 1951). This indicated that the patterns would likewise be similar. Vessel shapes, other than differentiating between ollas and bowls, could not be determined with any certainty. The great majority of the decorated sherds were found to be pieces of ollas. The undecorated sherds from which a determination could be made were also predominantly olla fragments. The existence of the salt beds on the western edge of the survey area offers a tentative explanation for the preponderance of olla sherds. Boiling large amounts of water for salt extraction could be better accomplished with ollas than with bowls since the bowls in the GMNP were apparently small; bowl

sherds in the GMNP collection were found to have been parts of small vessels. Further, neither Jelinek (1967) nor Lehmer (1948) identified large bowls in the Middle Pecos Valley or in the Jornada-Mogollon.

Rim sherds appeared infrequently in the GMNP collection, but a variety of rim forms was represented. A direct method was most common among the brown wares and some beveling was evident. The rim forms of the ceramic types in the GMNP sample were more varied but neither they nor the GMNP brown wares differed from previously noted forms for corresponding pottery types in other publications (Moore 1947; Moore and Wheat 1951; Lehmer 1948; Ceramic Conference 1969; Jelinek 1967; Gerald n.d.).

Temper materials observed in the GMNP sherds were basically the same as those elements listed by others for the represented ceramic types (Hawley 1950; Moore and Wheat 1951; Jelinek 1967; Lehmer 1948; Ceramic Conference 1969; Riches 1970). Tempering agents were readily available in the park since the Guadalupe Mountains are composed of Permian limestones (Newell 1953) and gypsum and quartz granules are abundant in the park dunes (Burns, personal communication). Other temper materials, such as mica and feldspar, might have been introduced into the park from outside areas (Burns, personal communication 1972). Deposits of the above mentioned temper agents were not located during the TAS survey (Runyan ms.), however, a discussion of the availability of tempering material becomes superfluous if all the GMNP ceramics are considered intrusive.

Approximately 30% of the collected sherds were decorated by painting or texturing, but it should be emphasized that some plain sherds might well have been fragments of decorated vessels. The percentage of painted and textured wares was greater in the Intermediate and greatest in the Late ceramic phase sites. This paralleled the relatively standard pattern of a decreasing prominence of plain wares observed by Lehmer (1948) in the Jornada-Mogollon and by Jelinek (1967) in the Middle Pecos Valley, with the *McKenzie Brown* modification in the latter area as previously noted. Painting was by far the prevalent method of decorating pottery, as there were actually few textured sherds in the park sample. This was in keeping with the treatment of pottery practiced by the El Paso area Jornada-Mogollon peoples (Lehmer 1948). They had no great amount of locally manufactured textured ware other than the occasional *El Paso* and *Jornada* textured pottery and a black smugged corrugated ware. The latter, none of which was discovered in the GMNP, was usually found in the western-most El Paso area Jornada-Mogollon sites and was attributed to the Mimbres peoples (Moore 1947; Lehmer 1948). Previously re-

ported *El Paso* and *Jornada* textured sherds usually composed less than one percent of the total ceramics (Lehmer 1948).

Jelinek (1967) listed only *Roswell Corrugated* and *McKenzie Incised*, both variants of their respective types, as textured wares native to the Middle Pecos Valley. Neither were abundant in the Middle Pecos Valley and both were absent in the park. *Roswell Corrugated*, *McKenzie Incised*, *Pitoche Rubbed-ribbed* and *Jornada Corrugated* appeared for the first time in quantity during the latest phases in the Middle Pecos Valley (Jelinek 1967), but only the latter was present in the GMNP. Red decoration, primarily lines and wash, seemed to have occurred more frequently on Middle Pecos Valley brown wares than on *El Paso* or *Jornada Brown* (Gerald n.d.; Jelinek 1967; Lehmer 1948). Such a condition was also found to exist in the park.

Runyan (ms.) speculated that salt extraction was a late development in the GMNP but present evidence indicates otherwise. Early, Intermediate and Late ceramic sites were scattered throughout the survey area. Seven (70%) of the sites classified as large were situated near the lake bed and of those, two are Early ceramic phase, three are Intermediate and two are Late ceramic phase. The remaining sites near the lake bed were varied in size and phase category. Early ceramic sites were in most cases small and relatively scattered while later sites tended to be geographically more closely allied. If the sites were occupied simultaneously, these conditions suggest a gathering of groups progressively closer to one another.

Sites containing certain pottery types were examined in relation to their gross geographical location within the park. Those pottery types considered critical in an attempt to establish any ceramic influx patterns were Mexican sherds, pottery types from eastern Arizona and western New Mexico, and the Rio Grande-northern New Mexico ceramics. No extraordinary spatial or temporal patterns were discovered, since neither the pottery types native to the Jornada-Mogollon nor these native to the Middle Pecos Valley were considered to be key indicators in the above instance. Had they been used, the obvious ceramic influx patterns would have been from the west and northeast throughout the time span of the occupation of the GMNP by ceramic possessing peoples.

Another pattern that developed, or rather was negatively derived, concerned the absence of defensively arranged sites and the small number of sites that could be considered as being defensively located. Although the hill sites might have offered some measure of security, the degree of safety that could have been obtained would have been marginal and questionable. Canyon sites, speculating that the inhabitants of the park were basically sedentary, would have invited

disaster rather than provided defense. This latter point is debatable but the very small size of canyon sites indicated that if they were indeed located for defense, only a minute portion of the total population received or was interested in safety. It could be argued that the western GMNP sites, those near the playa that could be considered contemporary, were arranged for mutual defensive support. But the theory that they were situated closely to one another to achieve a more responsive labor force seems more plausible.

Apparently the prehistoric inhabitants of the park preferred the lower altitudes for settlement; perhaps because of their relative flatness within the generally rugged terrain of the GMNP, their proximity to salt deposits, and the presence of sandy areas in which horticulture could be practiced (Bradfield 1971; Burns, personal communication). The few sites that were situated in the Upper Sonoran life zone were small and, as suggested by their diminutive size, temporary habitations.

The location of an overwhelming majority of sites on alluvial fans and flats also suggests a possible concentration for horticultural purposes. Nevertheless, actual evidence of such a subsistence pattern was extremely rare in the Guadalupe Mountains-Carlsbad District area and was defined solely from cave sites (Burns 1972; Riches 1970). Jelinek (1967) speculated that horticulture was practiced in the Middle Pecos Valley and Burns (personal communication), despite the lack of specific evidence, believed that corn farming was practiced in the Carlsbad and Crow Flats areas. The only evidence of corn within the Carlsbad district was discovered in a cave in the southern Guadalupe Mountains (Riches 1970).

It could be inferred from the large number of sites located on the fringes of the playa that the inhabitants of the GMNP exploited the presence of both resident and migrant birds. The lake probably contained sufficient permanent water during the prehistoric era (Burns, personal communication) to have provided an attractive habitat for bird life. The Crow Flats section is well within the limits of the central American flyway for migratory birds (Zim and Gabrielson 1966). The hunting of fowl was most likely a supplementary rather than the primary subsistence system of the prehistoric park inhabitants.

Strong ceramic evidence, particularly the fact that very nearly 90% of the GMNP sherds were of a Jornada-Mogollon type or types commonly intrusive to the Jornada-Mogollon, argues well for the extension of the Jornada-Mogollon into the GMNP survey area. Corley (1966) proposed an eastern extension of the Jornada-Mogollon of at least 150 miles. This later theory was supported by Burns (personal communication) but branded by Riches (1970) as being unjustifiable

on the basis of current evidence (Riches found no evidence of corn cultivation or sedentary villages in the open sites). Greer (1968) suggested a subdivision of the Jornada in the area east of the Guadalupe Mountains based upon pottery collected and the listed radiocarbon dates; he was mute concerning the actual mountain area but implied by omission that the Guadalupe Mountains were a part of the principal Jornada-Mogollon cultural district.

The apparent lack of Middle Pecos Black on White and the small amount of *McKenzie Brown* in the GMNP sample indicated a termination of contact with the Middle Pecos Valley during or shortly following Jelinek's (197) Early McKenzie phase (A.D. 1250). The restricted number of late pottery types and the absence of Gila Polychrome in the park implied a discontinuance of activity between the park inhabitants and the El Paso area Jornada-Mogollon during the middle years of Lehmer's (1948) El Paso-San Andres phase (A.D. 1200 to A.D. 1400). Both these conditions, coupled with the lack of Glaze wares in the GMNP, suggested that the abandonment of the park by the ceramic possessing peoples began sometime during the early- to mid-14th century.

The presence of *El Paso Brown*, *Jornada Brown*, *Middle Pecos Micaceous Brown* and *South Pecos Brown* in the GMNP collection reasonably confirmed an A.D. 850+ date for the inception of ceramics in the park. This date was determined by comparing and contrasting the opening ceramic phase of the Jornada-Mogollon (Lehmer 1948) with that of the Middle Pecos Valley (Jelinek 1967).

Based exclusively upon correlation of pottery types, the GMNP was occupied by ceramic using peoples during the period A.D. 850-1350. A possibility exists that the park was inhabited by pottery possessing peoples into the 16th century, since *Chupadero Black on White* remained in usage until that time (McGregor 1965); the remainder of the ceramic types represented in the GMNP sample had disappeared by the middle of the 14th century (Breternitz 1966; Hawley 1950; Ceramic Conference 1969). However, Breternitz (1966) revealed that the best trade period for *Chupadero Black on White* was the 14th century, and implied that the type persisted into the 16th century only in central New Mexico. Additionally, Vivian (1964) indicated that the latest *Chupadero Black on White*, or *Tabira Black on White* as he termed it, was quite restricted in areal distribution.

SUMMARY

Ceramic evidence indicates that the surveyed area of the GMNP was occupied during the period A.D. 850-1350 by people who were prob-

ably Jornada-Mogollon or by an unidentified group who depended largely upon the Jornada-Mogollon for their pottery and/or ceramic technology. Evidence of interaction with the Middle Pecos Valley peoples was also very apparent in the GMNP. The prehistoric occupants of the GMNP received some ceramics from great distances, judging from the assumed origin of some of the sherds recovered during the survey. A great volume of ceramic trade was evidently not conducted since sherds other than those of Jornada-Mogollon and Middle Pecos Valley derivation comprised only a fraction of the total park collection. There were no extraordinary ceramic trade patterns discernable.

There was suggestive evidence that a distinctive attraction of the GMNP region was the existence of vast and exploitable salt deposits. Whether the inhabitants took seasonal advantage of the salt potential or were permanent residents could not definitely be established. No evidence of a predisposition toward defense was discovered, and the GMNP inhabitants obviously preferred the lower altitudes and generally settled on the flats and alluvial fans.

How the residents sustained themselves remains a matter of conjecture. Using the Jornada-Mogollon as a model it is likely that hunting and gathering dominated the earlier stages of occupation and that horticulture, presupposing a relatively sedentary existence based upon the amount of ceramics present, supplemented by hunting and gathering, pre-empted the original life style. Neither a sedentary nor nomadic existence for the occupants of the GMNP is presently demonstrable, nor is horticulture as opposed to hunting and gathering manifested by the ceramic evidence.

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REFERENCES CITED

- Alves, E. E.
1931 Pottery of the El Paso Region. *Bulletin of the Texas Archeological and Paleontological Society*, Vol. 3, pp. 57-59.
- Aten, Lawrence E.
1972 Evaluation of the Cultural Resources of the Northgate Site, El Paso County, Texas. *Texas Archeological Salvage Project Research Report*, No. 5.
- Bradfield, Maitland
1971 The Changing Pattern of Hopi Agriculture. *Royal Anthropological Institute, Occasional Paper*, No. 30.
- Breternitz, David A.
1966 An Appraisal of Tree-Ring Dated Pottery in the Southwest. *Anthropological Papers of the University of Arizona*, No. 10.
- Brook, V. R.
1965 Cultural Traits of the Jornada Branch of the Mogollon. *Southeastern New Mexico and West Texas Symposium Papers, Bulletin No. I*, pp. 18-22.
1966 The McGregor Site. *The Artifact*, Vol. 5, No. 2, pp. 1-22.
1967 Adobe Steps of the El Paso Phase. *The Artifact*, Vol. 5, No. 1, pp. 37-58.
1970 Four Archaeo-Magnetic Dates from the Hot Well Site (EPAS-3). *The Artifact*, Vol. 8, No. 1, pp. 1-16.
- Burns, Barney T.
1967 The Archaeology of the Carlsbad District, Southeastern New Mexico. M.A. thesis on file in the Arizona State Museum Library.
- Ceramic Conference
1969 11th Ceramic Conference - Casas Grandes Pottery Types. The Amerind Foundation, Inc.
- Corley, John A.
1965 Proposed Eastern Extension of the Jornada Branch of the Mogollon. *Southeastern New Mexico and West Texas Symposium Papers, Bulletin No. 1*, pp. 30-36.
- Cosgrove, H. S. and C. B. Cosgrove
1932 The Swarts Ruin, A Typical Mimbres Site in Southwestern New Mexico. *Papers of the Peabody Museum of American Archaeology and Ethnology*, Vol. XV, No. 1.
- Fritz, Gordon L.
1969 Investigations at the Rancho El Espia Site, Northwestern Chihuahua. *Transactions of the Fifth Archeological Symposium for Southeastern New Mexico and Western Texas*, pp. 51-64.
- Gerald, Rex
n.d. Descriptions of Pottery Types of the El Paso Area. Manuscript on file in the El Paso Archaeological Society, Inc., Library.
- Greer, John W.
1968 Notes on Excavated Ring Midden Sites, 1963-1968. *Bulletin of the Texas Archeological Society*, Vol. 38, pp. 111-132.
- Haury, Emile W.
1936 The Mogollon Culture of Southwestern New Mexico. *Medallion Papers*, No. XX.

- Hawley, Florence
1950 Prehistoric Southwestern Pottery Types. *University of New Mexico Bulletin*, Vol. 1, No. 4.
- Hedrick, John A.
1968 Plateau Station Area Survey, *The Artifact*, Vol. 6, No. 1, pp. 1-16.
- Hedrick, Mrs. John A.
1967 Escondido Survey. *The Artifact*, Vol. 5, No. 2, pp. 19-24.
- Jelinek, Arthur J.
1967 A Prehistoric Sequence in the Middle Pecos Valley. *Museum of Anthropology, University of Michigan Anthropological Papers*, No. 31.
- Jennings, J. D. and George Neumann
1940 A Variation of Southwestern Pueblo Culture. *Laboratory of Anthropology, Technical Series, Bulletin* No. 10.
- Lehmer, Donald J.
1948 The Jornada Branch of the Mogollon. *University of Arizona Social Science Bulletin*, No. 17.
- McCluney, Eugene B.
1962 A New Name and Revised Description for a Mogollon Pottery Type from Southern New Mexico. *Southwestern Lore*, Vol. XXVII, No. 4, pp. 49-55.
- McGregor, John C.
1965 *Southwestern Archaeology*. University of Illinois Press, Urbana.
- Mera, Henry P.
1931 Chupadero Black on White. *Laboratory of Anthropology, Technical Series, Bulletin* No. 1.
1943 An Outline of Ceramic Developments in Southern and Southeastern New Mexico. *Laboratory of Anthropology, Technical Series, Bulletin* No. 2.
- Mills, Jack P. and Vera M.
1971 The Slaughter Ranch Site. *The Artifact*, Vol. 1, No. 3, pp. 23-44.
1972 The Dinwiddie Site. *The Artifact*, Vol. 10, No. 2, pp. 1-50.
- Moore, Mrs. Glen E.
1947 Twelve Room House Ruin. *Bulletin of the Texas Archeological and Paleontological Society*, Vol. 18, pp. 94-114.
- Moore, Mrs. Glen E. and Mrs. Joe Ben Wheat
1951 An Archeological Cache from Hueco Basin, Texas. *Bulletin of the Texas Archeological and Paleontological Society*, Vol. 22, pp. 144-163.
- Newell, N. O.
1953 *The Permian Reef Complex of the Guadalupe Mountains of Texas and New Mexico*. W. H. Freeman & Co., San Francisco.
- Phelps, Alan L.
1966 Cruciform, An Unusual Artifact of the El Paso Southwest. *El Paso Archaeological Society, Special Report*, No. 5.
1967 Six Stone Balls — A Cache. *The Artifact*, Vol. 5, No. 1, pp. 21-31.
1968a An Incised Stone Pendant and a Soto Projectile Point from Northwestern Chihuahua. *The Artifact*, Vol. 6, No. 3, pp. 16-22.
1968b A Recovery of Purslane Seeds in an Archaeological Context. *The Artifact*, Vol. 6, No. 4, pp. 1-9.

- Riches, Susan M.
1970 Archaeological Survey of the Eastern Guadalupe Mountains, New Mexico. M.A. thesis on file at the University of Wisconsin, Madison.
- Runyan, John W.
ms. Pottery Analysis Report for Texas Archeological Society. Manuscript on file at Texas A&M University Anthropological Laboratory, College Station.
- Sayles, E. B.
1936 Some Southwestern Pottery Types. *Medallion Papers*, Series V, No. XXI.
- Shafer, Harry J.
1970 A Preliminary Report of an Archeological Survey in the Guadalupe Mountains National Park by the Texas Archeological Society in June 1970. *Texas Archeology*, Vol. 14, No. 3, pp. 10-17.
- Shedd, Emmett
1968 A Probable Jornada Burial in Garza County, Texas. *Transactions of the Third Regional Archeological Symposium for Southeastern New Mexico and Western Texas*, pp. 12-20.
- Stallings, W. S., Jr.
1931 El Paso Polychrome. *Laboratory of Anthropology, Technical Series, Bulletin* No. 3.
1936 Dates from Gallo Canyon, East Central New Mexico. *Tree Ring Bulletin*, Vol. 3, No. 1.
- Vivian, Gordon
1964 Excavations in a 17th-Century Jumano Pueblo, Gran Quivira, New Mexico. *Archeological Research Series*, No. 8. National Park Service.
- Zim, Herbert S. and Ira N. Gabrielson
1956 *Birds*. Golden Press, New York.

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