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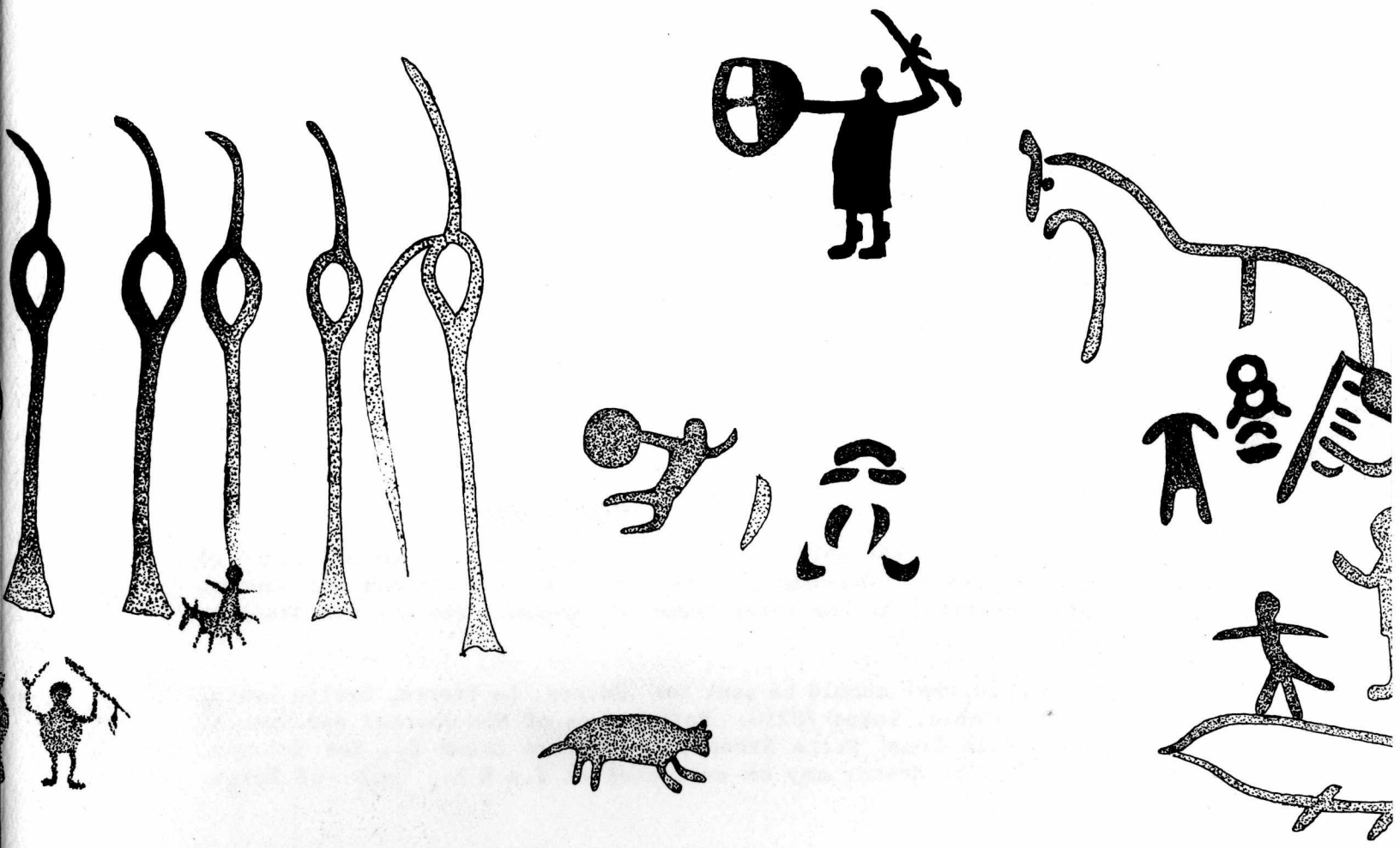

JOURNAL OF THE SOUTHERN TEXAS ARCHAEOLOGICAL ASSOCIATION

VOLUME 18, No. 2
April, 1991

LA TIERRA

QUARTERLY JOURNAL OF THE SOUTHERN TEXAS ARCHAEOLOGICAL ASSOCIATION

Volume 18, No. 2 — Evelyn Lewis
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About the Cover: Richard McReynolds has reproduced a panel of rock art found at Meyer Springs, West Texas. Reproduction is from copy in Kirkland and Newcomb (1967), here used courtesy of the Texas Memorial Museum. See article starting on page 5.

Manuscripts for the Journal should be sent to: Editor, *La Tierra*, Evelyn Lewis, 9219 Lasater, San Antonio, Texas 78250. Past issues of the Journal and Special Publications available from: Bette Street, 6592 Kings Crown E., San Antonio, Texas 78233. Dr. T. R. Hester may be contacted at T.A.R.L., Univ. of Texas, Austin TX 78712.

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NOTES ON SOUTH TEXAS ARCHAEOLOGY: 1991-2

The Plainview Points from the St. Mary's Hall Site, South Central Texas*

Thomas R. Hester

In 1977, the author carried out excavations at site 41BX228, the St. Mary's Hall site in Bexar County, south central Texas. Earlier excavations had been conducted at the site by the Southern Texas Archaeological Association. The site yielded a discrete Plainview occupation, buried beneath Archaic and Late Prehistoric deposits. Two brief reports have been published (Hester 1978, 1979), providing basic information on the excavations, but a final report has not yet appeared. In the course of the preparation of the final volume, two excellent papers have been written on the Plainview artifacts. One by Dennis Knepper (ms.) deals with Plainview lithic technology at the site and the other, by Margaret Greco (ms.) describes the projectile points from the Plainview and overlying Late Paleoindian and Early Archaic occupations.

Given the delay in the final report, brief descriptions of the Plainview projectile points, and more importantly, technical illustrations of the specimens, are published here for comparative purposes. Here there is space to note only the Plainview specimens; two Angostura bases and a Golondrina fragment were found stratigraphically above the Plainview occupation.

Ten artifacts identifed as Plainview points, or fragments thereof, were excavated at St. Mary's Hall (Figures 1, 2). The basal fragments are made of tan, brown and gray cherts, moderately to heavily patinated. Two have been thermal fractured, and two have had subsequent reworking after they were broken. One of these (Fig. 2,b) has been alternately beveled on both lateral edges and these edges are heavily worn, suggesting that this specimen served as a knife rather than (or in addition to) being a projectile point (Figure 2,c has been similarly reworked along one lateral edge). Basal thinning ranges from long, vertical flakes to arc-shaped removals.

The two medial fragments are also patinated, and one has been heavily burned. Diagonal parallel flakes are seen on one specimen (Figure 1,f), a pattern also observable on several other points in this assemblage (e.g., Figure 1, b-e). Length and width data are highly variable, due to breakage and thermal fracture. Maximum thickness data may be of some use for comparisons: three are 5 mm thick, four are 6 mm thick; two are 7 mm, and one, 8 mm.

The St. Mary's Hall specimens are perhaps best described in terms of their form and their context as "campsite" Plainviews -- discarded after breakage during the hunt (and sometimes apparently tossed into hearths). However, it should be pointed out that local cherts were being exploited for the manufacture of new (replacement?) projectile points. A fairly complete reduction sequence, from "blanks" through "preform" stages is present in the assemblage, described in detail by Knepper (ms.). A parallel-sided bifacial Clear Fork tool, and two unifaces, one complete and one bit fragment, were also in the assemblage (Knepper ms.). The Clear Fork biface (Turner and Hester 1985: 205-208) is very similar

[* **NOTE:** This is a slightly revised version of a paper published in *Current Research in the Pleistocene* (CRP), Vol. 7, 1990. Since many STAA members worked at this site, and since the CRP journal is not widely seen among the membership, I felt it would be of interest in the "Notes on South Texas Archaeology" Series. In addition, the illustrations are reproduced here at full scale, while those in CRP 7 were very much reduced. TRH]

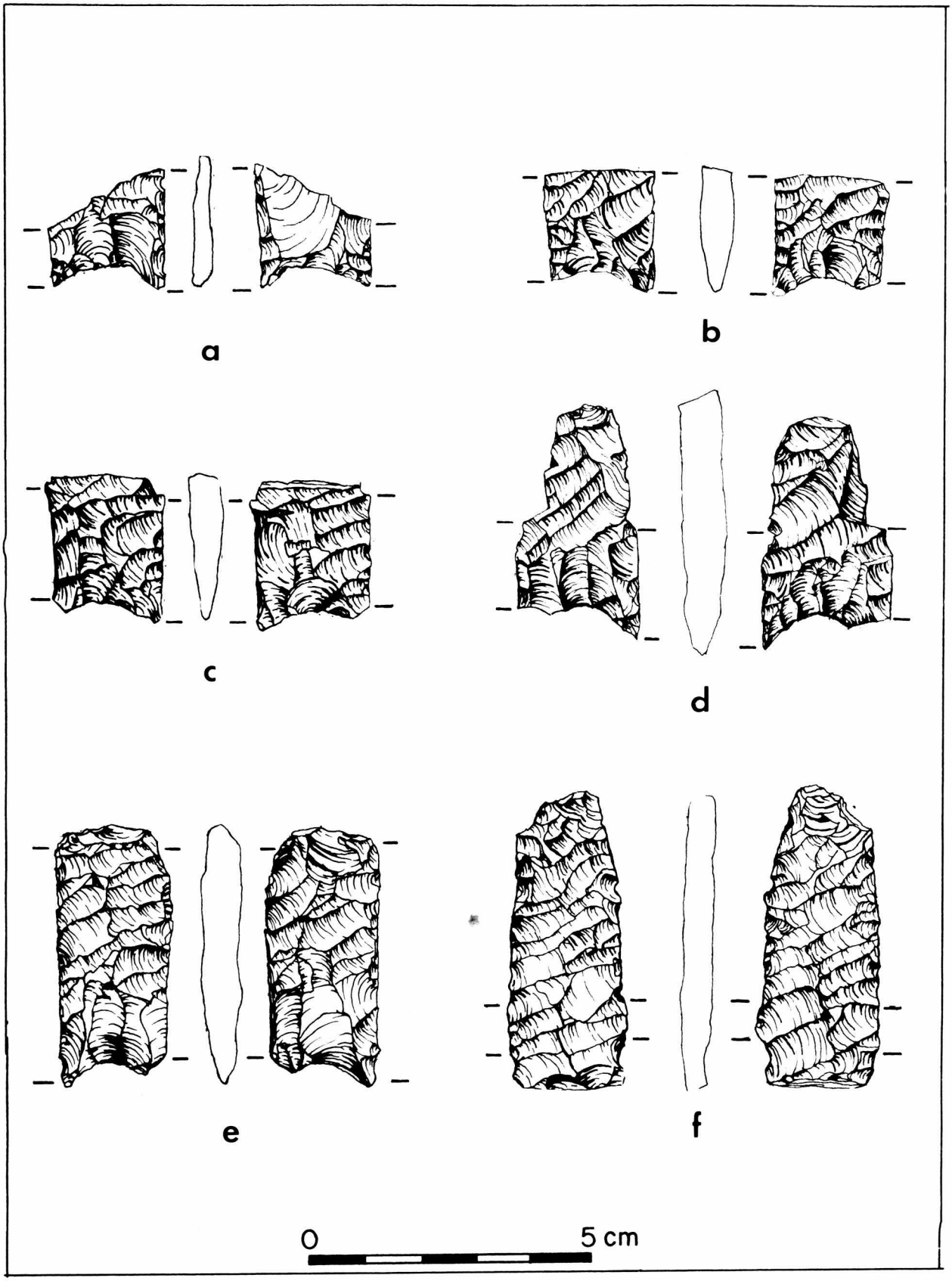

Figure 1. Plainview Points from St. Mary's Hall (41BX228), Texas. Drawings by Margaret Greco.

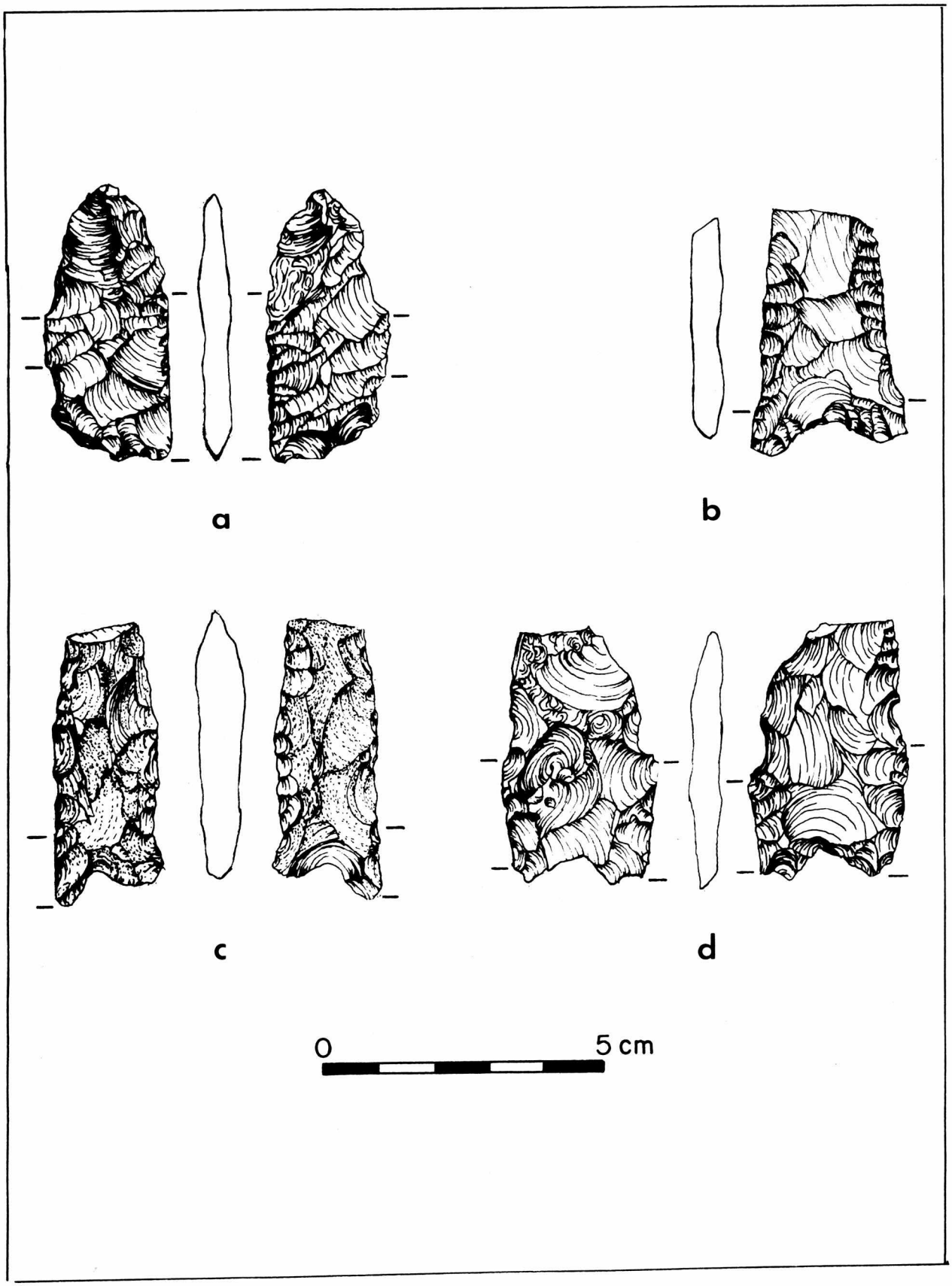

Figure 2. Plainview Points from St. Mary's Hall (41BX228), Texas. (Specimen b is alternately beveled, with worn edges and may have been used as a knife.) Drawings by Margaret Greco.

to one recovered at Baker Cave, Val Verde County, Texas, radiocarbon dated at 9000 BP (Hester 1983). No direct dates are presently available for the St. Mary's Hall Plainview sample. The points are very similar to those from Bonfire Shelter, found in a bison kill context dated at about 10,200 BP by Dibble (1970). Bonfire is about 300 km west of St. Mary's Hall. A very small charcoal sample from St. Mary's Hall was subjected to accelerator mass spectrometry (AMS) assay, but the date was very late [970 q 60 BP; CAMS 265] and obviously represents intrusive materials.

ACKNOWLEDGMENTS

This paper results from research done under a University Research Institute (University of Texas at Austin) grant awarded to the author for 1988-1989. Dr. Jay Davis and the Lawrence Livermore Laboratory, and Dr. David Loyd of Angelo State University, carried out the AMS assay.

References Cited

Dibble, D. S.
1970 On the Significance of Additional Radiocarbon Dates from Bonfire Shelter, Texas. *Plains Anthropologist* 15(50):251-254.

Greco, M.
ms. St. Mary's Hall and the Plainview Assemblage: Description and Comparison. Manuscript on file with the author.

Hester, T. R.
1978 *Early Human Occupations in South Central and Southwestern Texas: Preliminary Papers on the Baker Cave and St. Mary's Hall Sites.* Center for Archaeological Research, The University of Texas at San Antonio.

Hester, T. R.
1979 Early Populations in Prehistoric Texas. *Archaeology* 32(6):26-33.

Hester, T. R.
1983 Late Paleo-Indian Occupations at Baker Cave, Southwestern Texas. *Bulletin of the Texas Archeological Society* 53:101-119.

Knepper, D.
ms. A Behavioral Model of the Late Paleo-Indian Lithic Industry at St. Mary's Hall. Manuscript on file with the author.

Turner, E. S. and T. R. Hester
1985 *Stone Artifacts of Texas Indians.* Texas Monthly Press, Austin.

SHIELDS AND SHIELD BEARERS IN THE ROCK ART OF THE MIDDLE RIO GRANDE

Solveig A. Turpin

ABSTRACT

Shield Shelter, 41VV1088, is the 16th historic pictograph recorded in the Lower Pecos River region. Twenty-seven horseshoes are contained within a circle that is in turn framed by paired undulating lines. Two interpretations are suggested. The pictograph may literally illustrate the capture of a herd of horses. Alternatively, the shield design may have astronomical implications wherein the 27 crescents represent a lunar cycle. This and other shield designs in the Lower Pecos can be categorized in two types. The undecorated shields are usually part of a narrative and serve to inform the viewer about the characters or action. The more complex shields are more symbolic, bearing designs that were probably of ritual importance.

BACKGROUND

In 1989, the Texas Archeological Society field school surveyed approximately 17,000 acres of the Devils River State Natural Area, a recent acquisition of the Texas Parks and Wildlife Department on the Devils River approximately 30 miles above its confluence with the Rio Grande and Amistad Reservoir (Figure 1). Among the 270 sites located during this survey was one pictograph of probable Plains origin, a shield design composed of crescentic motifs. The recording of Shield Shelter, 41VV1088, brings the total of historic rock art sites in the region to 16 and adds another dimension to the repertoire of the historic Native American artists.

THE SITE

The Shield pictograph is in a small shelter, under the rim and near the head of a small canyon about 1.5 miles above Dolan Springs, a primary source of the flow of the Devils River. The rockshelter is only about 3 meters wide and 5 meters deep, its shallow cultural deposit composed only of burned rock and flint flakes. Covering most of the ceiling is a circle, one meter in diameter, framed by two parallel undulating lines (Figure 2). Inside the circle are 27 crescents; perhaps as many as three more have been destroyed by exfoliation. The entire design was painted in red ochre, probably from a crouching position as the ceiling is only 1.5 meters above the floor.

DISCUSSION

Two possible interpretations of the Shield site are suggested by its design elements and their composition. First, the horseshoes are an ideogram which may stand for the animal, the animal and its rider, a trail, direction of travel, or an activity involving horses (Keyser 1987). Hoofprints appear in two other Lower Pecos historic rock art sites (41VV343, 41TE330); in both, they are part of an action narrative, illustrating the passage of horses (Turpin 1989a: Fig. 18-9). The age and origin of the Shield Shelter pictograph are derived from the horseshoe motif but the lack of supporting details renders the intent of the design ambiguous. It is possible that the successful capture of a herd of horses is commemorated or envisioned by the author of the design (Conner 1989).

A second way of looking at the shield design is from an astronomical perspective. Ten years of research and examination of over 200 rock art sites in the Lower Pecos region have failed to produce, in my mind, any clear-cut

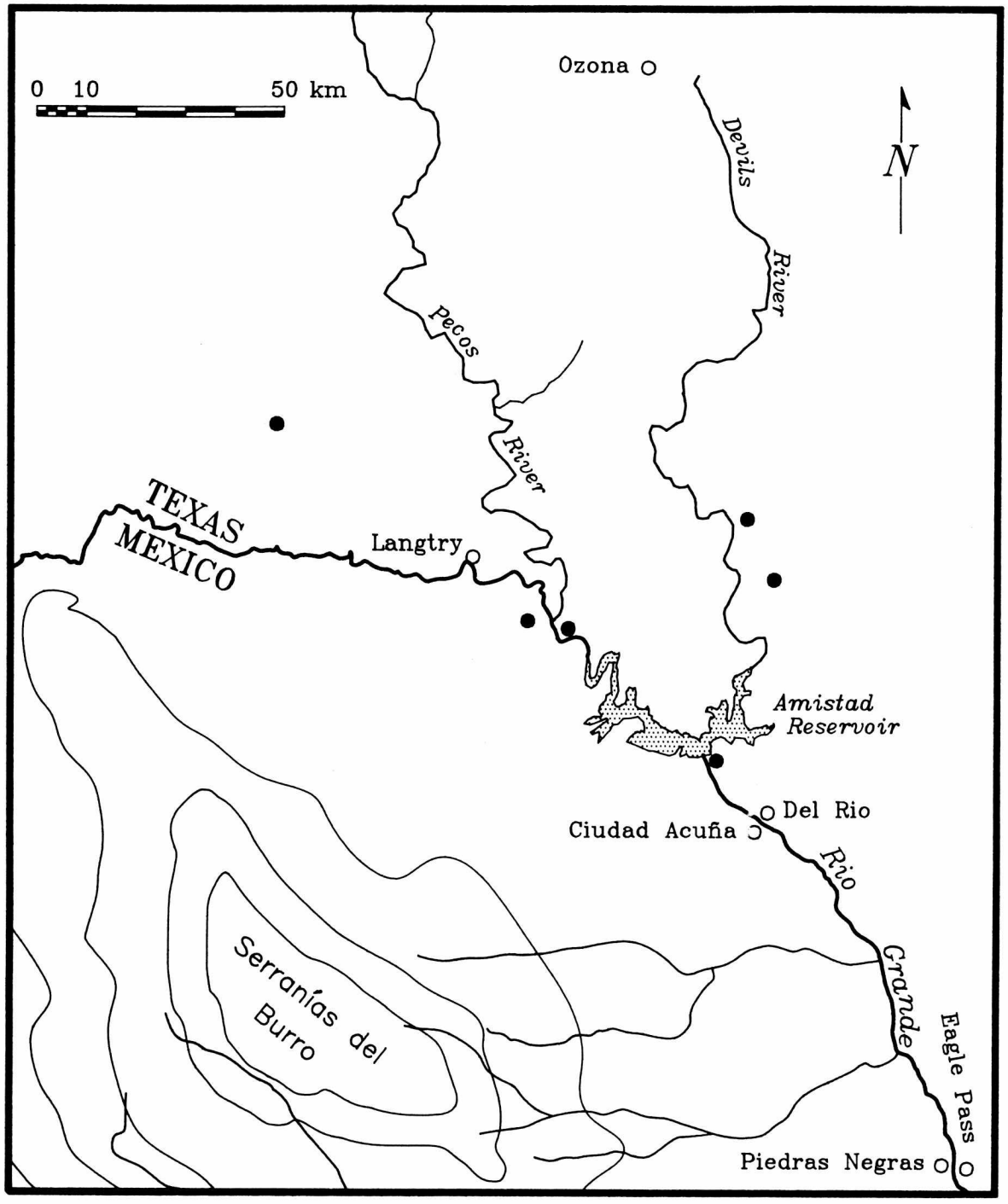

Figure 1. Site distribution map, Lower Pecos region.

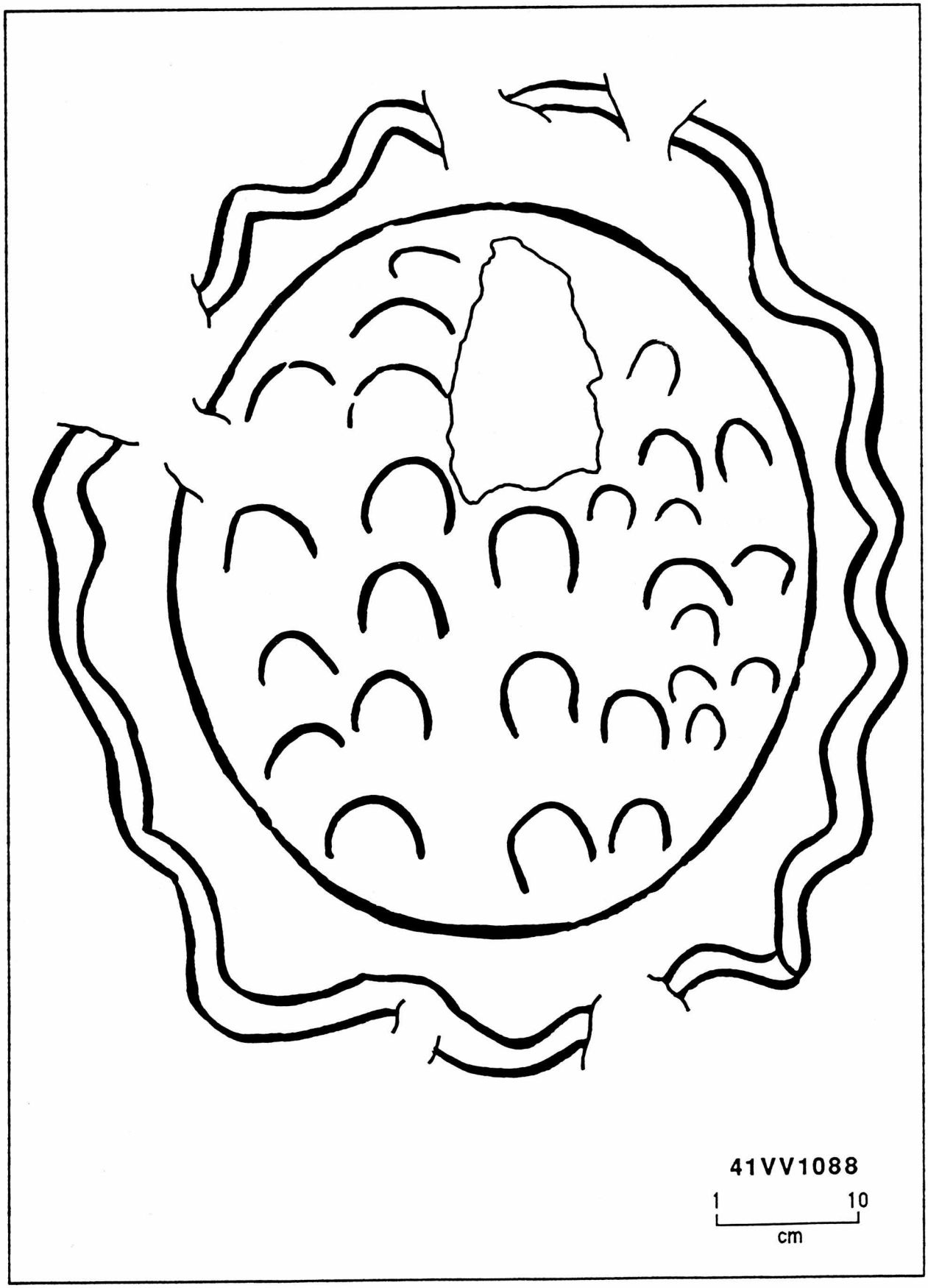

Figure 2. Shield pictograph at 41VV1088. Drawn by Ed Aiken.

examples of astronomical events in the pictographs. Here, however, it is obvious that the artist was forced to reduce the size and spacing between motifs in order to get them all inside the circle, implying that a specific quantity was wanted. The number, 27 to 30 depending upon how many were lost to spalling, approximates the lunar cycle. The horseshoe designs, especially those that are crowded into the right hemisphere, can also be construed as crescent moons, contained within a circular sun or full moon. The composition of the shield pictograph may be a case, such as those described by Keyser (1987:54), where "objects take additional meaning from their placement in relation to one another." The two interpretations are not mutually exclusive and it is not unreasonable to assume that this pictograph had both literal and symbolic meanings.

Although the Lower Pecos River region is well known for its diverse and elaborate Native American art, shields and shield bearers are rare, appearing in only six of the over 200 known pictograph sites.[1] The datable examples all postdate Spanish contact in the sixteenth century, and few are as elaborate as the design at 41VV1088. Two sites, 41TE19, Meyers Springs, and 41VV666, Bailando Shelter, hold scenes where shields are suspended over or adjacent to lines of dancing figures (Turpin 1986; 1989a). One of two shields at Bailando Shelter is betasseled; the other is divided into thirds by a "peace" symbol or Y-design

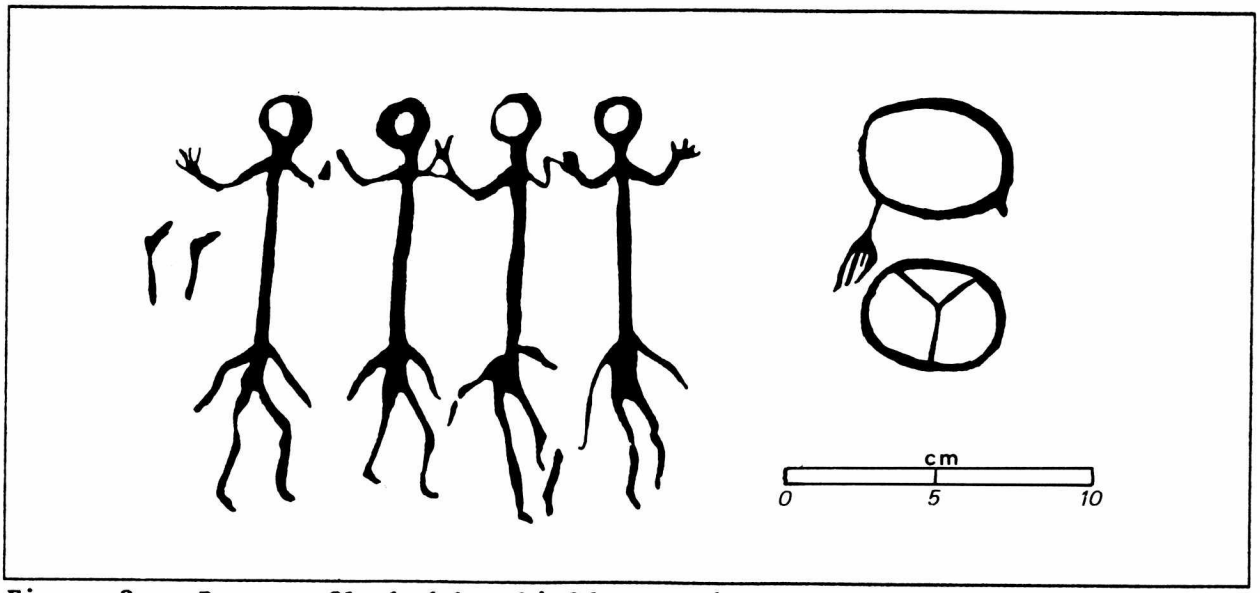

Figure 3. Dancers flanked by shields at Bailando Shelter, 41VV666. Drawn by Abbie Treece.

(Figure 3). In another vignette at Meyers Springs, a warrior is shown in profile, his shield forming a half-moon in front of him (Figure 4: see also Kirkland and Newcomb 1967: Plate 75). Another figure, painted in an entirely different style, holds a bow in one hand and a shield with a thunderbird design in the other. A fourth scene at Meyers Springs is composed of a central mounted warrior wearing a horned headdress and accompanied by foot soldiers who appear to be bearing undecorated circular shields (Figure 4; see also Kirkland and Newcomb 1967: Plate 75; Turpin 1989: Figure 18-10). Other less detailed figures are associated with circular or semi-circular objects which are logically best explained as shields (Kirkland and Newcomb 1967: Plates 71,72,78) Meyers Springs is also replete with free-standing circular designs which may represent shields. Two are bull's-eyes; two are divided into quarters by Y or triangular designs,

[1]Gebhard (1965) and Jackson (1938) discussed figures which they perceived to be shields or shield bearers in the Archaic Pecos River style pictographs. Their interpretation is not relevant to the historic period panels described here.

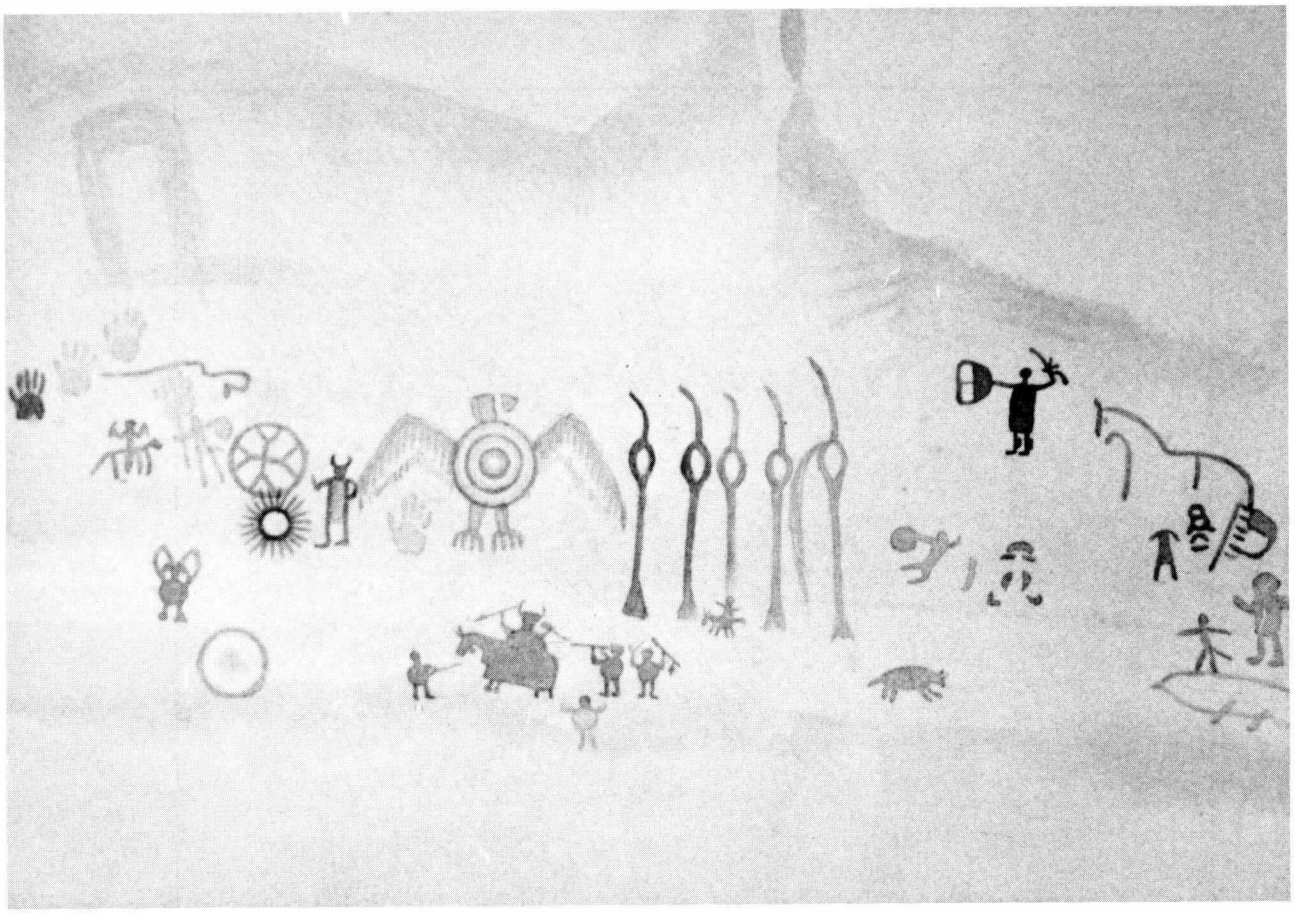

Figure 4. Various shield designs at Meyers Springs, 41TE19. (Kirkland's copy reproduced courtesy of the Texas Memorial Museum.)

(Figure 4); and at least three resemble sunbursts. The most unusual is a red bull's-eye superimposed on a yellow bird whose head, wings and feet extend from behind the shield (Figure 4; see also Kirkland and Newcomb 1967: Plate 75).

Arroyo de los Indios, an historic pictograph recorded about 15 km south of the Rio Grande (Turpin 1988), is the fourth site in this region where shields are depicted. As previously illustrated in Plains Anthropologist, several unmounted warriors holding undecorated shields face attacking riders (Turpin 1988: Figures 3, 4).

The fifth site with recognizable shield designs is 41VV327, the Hussie Miers site, reported in detail in *Plains Anthropologist* (Turpin 1989b). There, one of the identifying characteristics of the central character is his shield which is ornamented with from two to four horizontal bars.

The final site which may hold a shield-bearing figure is Fate Bell Annex, 41VV73, one of the major sites in Seminole Canyon State Historical Park. A single solid red figure with upraised arms and bent legs (Figure 5) is painted low on the shelter wall beneath panels of much greater antiquity (Kirkland and Newcomb 1967: Plate 11.3; Shafer 1986:165; Turpin 1982: Figure 6b). The circular "body" may be intended to portray a dancer's clothing but the majority of the interpretations describe it as a shield (Gebhard 1965; Turpin 1982). The recency of this figure is evident in its position just above the modern shelter floor and superimposed on the scars left by older and higher occupational levels, since removed by vandals and erosion. Gebhard (1965:40), in his study of superimposition and style, considered this shield bearer to be intrusive, painted during the

very latest phases of prehistory. This figure is unlike any other human depictions in any of the Lower Pecos styles, making it more difficult to determine if it is historic or prehistoric in age.

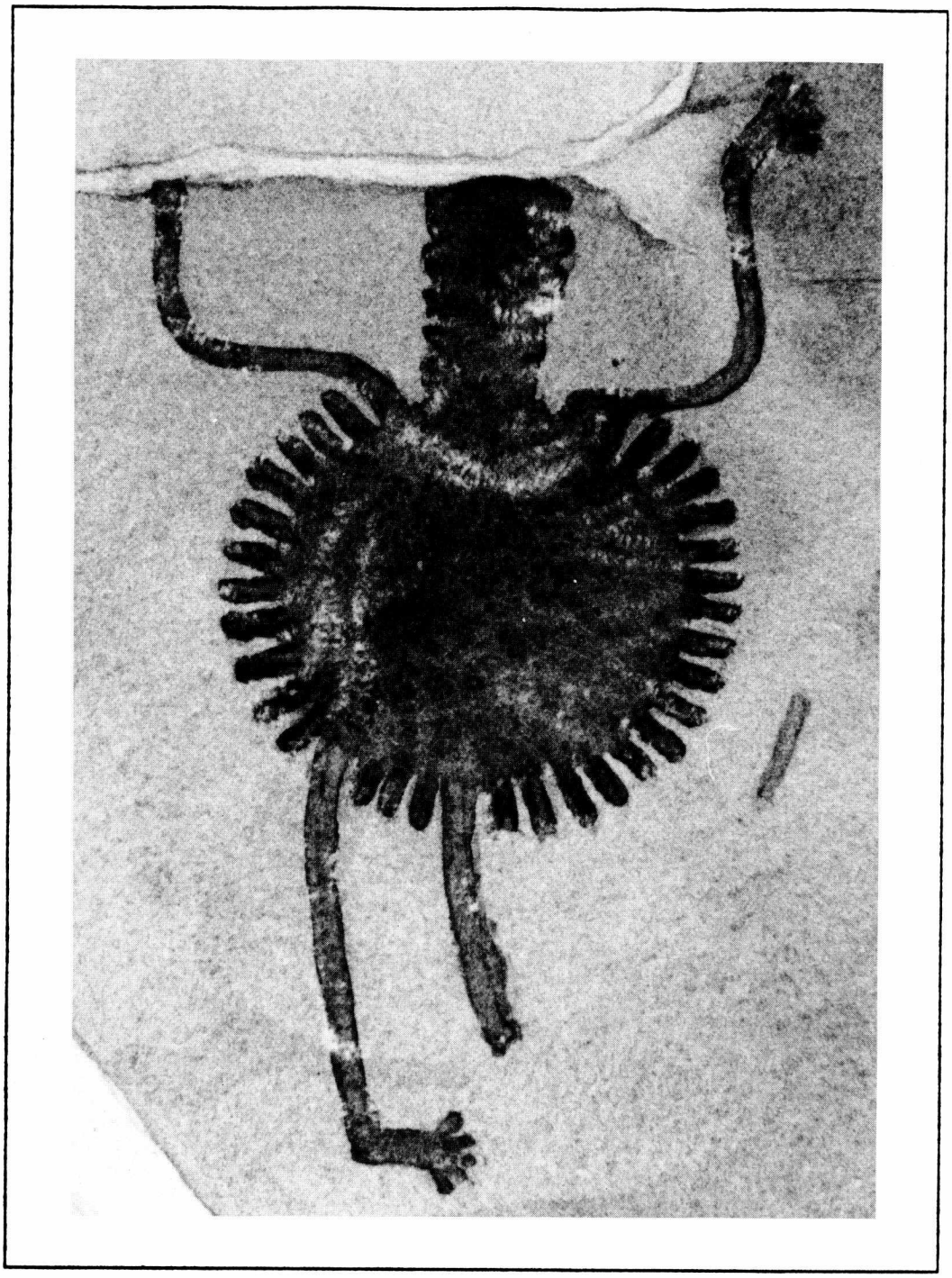

Figure 5. Possible shield dancer at Fate Bell Annex, 41VV873. (Kirkland's copy reproduced courtesy of the Texas Memorial Museum.)

One of the most notable characteristics of the historic rock art in the Lower Pecos is its variety, especially stylistically (Turpin 1989a). One near constant, however, is the narrative quality conveyed by the active juxtaposition of humans, animals, and objects. The majority of the panels depict real or

glorified events or experiences. The Shield site adds a new dimension in variability through its static and solitary design, unassociated with any human figures or activity. The location of this small rockshelter also differs from the dominant pattern where a distinct preference for dependable water holes and grassy flats is expressed. Shield Shelter is remote from water, overlooking a broad canyon indistinguishable from the hundreds of other minor tributaries that dissect this upland landscape.

In composite, the shields and shield bearers of Lower Pecos iconography can be divided into two types. In the first, the shield is part of a narrative and serves to inform the viewer by identifying warrior, battle, or perhaps war dance. In three of the six sites, shields are closely aligned to dancers, perhaps adding ritual behavior to the types of activities signified by these designs (Figures 3, 4). The signifier shields are usually the simplest, bearing only minimal decoration.

The more ornate designs found at the Shield Site and Meyers Springs suggest far more subtle and complicated meanings underlying their complexity. At least three of the shield designs at Meyers Springs are closely associated with birds or "thunderbirds" (Figure 4; see also Kirkland and Newcomb 1967: Plates 74, 75, 78), animals intimately associated with shamanism and ritual. When the Shield site was first discovered, I sent a copy of the design to Stuart Conner, well-known expert on Northern Plains rock art, hoping he would recognize it as a Plains shield design. In his reply, he commented that he suspected that much of "what was painted on shields was vision, or at least magic" (Conner 1989), making them, perhaps, personal talismans. This seems a most logical explanation for 41VV1088 and the other complex shield designs seen in Lower Pecos rock art but, here on the periphery of the Plains art styles, our sample is too small to go beyond speculation. This hypothesis is best tested in the artistic homeland of the northern Plains.

ACKNOWLEDGEMENTS

The Texas Archeological Society field school and specifically Sue Gross and her "F1" team deserve the credit for finding and recording 41VV1088, Shield Shelter. The Texas Parks and Wildlife Department jointly sponsored the field school which was authorized by Texas Antiquities Permit 758, Ed Aiken of the Texas Historical Commission, Office of the State Archeologist, drew the shield design in the field and prepared the illustration used here. Abbie Treece produced the line drawing of the dancers of Bailando Shelter. Dan Julien generated the site location map. The Texas Memorial Museum granted permission to reproduce Forrest Kirkland's water color copies; Herb Eling made the photographic plates. Finally, Stuart Conner's contribution to this analysis is gratefully acknowledged.

References Cited

Conner, Stuart
1989 Letter to Solveig Turpin commenting on the Shield Shelter pictograph, dated October 20, 1989, in author's possession.

Gebhard, David B.
1965 *Prehistoric Rock Paintings of the Seminole Canyon Area, Val Verde County, Texas.* Report to the National Park Service, University of California at Santa Barbara.

Jackson, A.T.
1938 Picture-Writing of Texas Indians. *Anthropological Papers, Vol. II and Bureau of Research in the Social Sciences Study No. 27, The University of Texas at Austin.*

Keyser, James
1987 A Lexicon for Historic Plains Indian Art: Increasing Interpretive Potential. *Plains Anthropologist* 32(115):43-72.

Kirkland, Forrest and W.W. Newcomb, Jr.
1967 *The Rock Art of Texas.* University of Texas Press, Austin.

Shafer, Harry J.
1986 *Ancient Texans.* Texas Monthly Press, Austin.

Turpin, Solveig A.
1982 Seminole Canyon: The Art and the Archeology. *Texas Archeological Survey Research Report 83*, The University of Texas at Austin.

1986 Bailando Shelter and Meyers Springs: Iconographic Parallels. *La Tierra* 13(1):5-8.

1988 Arroyo de los Indios: A Historic Pictograph Site in Northern Coahuila. *Plains Anthropologist* 33(120):279-284.

1989a The Iconography of Contact: Spanish Influences on the Rock Art of the Middle Rio Grande. In: *Columbian Consequences, Volume I: Archaeological and Historical Perspectives on the Spanish Borderlands West.* Edited by David Hurst Thomas. Smithsonian Institution Press, Washington, D.C.

1989b The End of the Trail: An 1870s Plains Combat Autobiography in South west Texas. *Plains Anthropologist* 34(124):105-11.

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E R R A T A, VOL. 18, No. 1

Your editor regrets the occurrence of two errors in *La Tierra*, Vol. 18, No. 1, January issue. Figure 3 on page 11 of C. K. Chandler's "Marine Shell Artifacts from Bexar and Medina Counties, Texas" should read as follows (you may want to photocopy the caption below and paste over your copy):

Figure 3. Conch shell artifacts from Bexar and Medina Counties, Texas. A,A', D,D', conch pendants from 41BX502; B,B', conch columella bead from 41ME43; C,C', conch columella bead from 41ME42; E,E', *olivella* shell tinkler from Olmos Basin.

On page 20 showing a chart (Table 1), Optimum Sample Weights, in Jeff Huebner's "Radiocarbon" report, the third column (Accelerator) under Approximate Weights should read "milligrams."

Please correct your copy for future reference.

TOWARD A CHRONOLOGY OF ADAPTIVE CHANGE DURING THE ARCHAIC OF THE TEXAS COASTAL BEND AREA

Robert A. Ricklis and Kim A. Cox

ABSTRACT

Recently acquired radiocarbon age data are discussed in terms of their implications for defining a chronology of adaptive change during some 6,500 years of Archaic occupation of the Coastal Bend area. It is noted that the available radiocarbon ages of shell midden sites cluster during periods of sea level stillstand, suggesting that estuarine sedimentation during these time intervals produced coastal environments suitable for human exploitation. The archaeological evidence also suggests that coastal resource exploitation intensified after ca. 3000 B.P., with the establishment of modern sea level, and that fishing became an intensive subsistence activity after ca. 2000 B.P. While it is recognized that much more data are needed, it is suggested that the evidence points to a coevolution between a changing coastal environment and human adaptation to that environment.

TOWARD A CHRONOLOGY OF HUMAN ADAPTIVE CHANGE

This paper proposes a chronological model for the Coastal Bend area that places primary emphasis upon basic changes in human ecology as opposed to artifact types. Rather than focusing on time periods as defined by changes in projectile points or other artifact classes, we suggest an emphasis on a direct approach to the study of fundamental change in prehistoric human behavioral patterns. This article is an initial attempt in that direction, stressing possible correlations between periods of human exploitation of shoreline zones and the evolution of the coastal environment during the past 7,500 years.

BACKGROUND: EARLY CHRONOLOGY BUILDING IN THE AREA

As early as the 1930s, E. B. Sayles (1935) postulated a gross chronology for the Texas coast involving a prepottery "Oso Phase," followed by a ceramic "Rockport Phase." Beginning in the late 1940s, T. N. Campbell of the University of Texas began a series of studies of previously excavated and surface-collected materials from the area (Campbell 1947, 1952, 1956, 1958). Campbell's work confirmed the existence of both preceramic and ceramic cultural expressions in the area and provided, for the first time, detailed descriptions of the material culture remains.

Based upon his analyses of materials from the Johnson and Kent-Crane sites on Copano Bay, Campbell (1947, 1952) defined an Archaic Aransas Focus, marked by the presence of various dart point forms and a suite of shell tools consisting of conch shell adzes, conch columella awls and gouges, perforated oyster shells, edge-flaked sunray venus clamshells and conch hammers. The large quantities of shellfish remains at these sites, along with bones of fish and deer, indicated a significant Archaic subsistence pattern based on coastal resources, as well as the procurement of terrestrial fauna.

Post-Archaic materials from the area were subsumed by Campbell under the rubric of the Neoamerican (Late Prehistoric) Rockport Focus, a manifestation identified on the basis of several arrowpoint types and a regionally distinctive, sandy paste, Rockport ware pottery commonly coated and/or decorated with natural asphaltum (Campbell 1952, 1956, 1958; Suhm et al. 1954).

Campbell's chronology was, by necessity, a relative one, since the relevant excavations were all conducted prior to the advent of radiocarbon dating. The first absolute dates for the region were provided by Dee Ann Story's 1967

excavation at the Ingleside Cove Site (41SP43) on the northeastern shore of Corpus Christi Bay (Story 1968). Here, Story found a dense Archaic shell midden overlain by a stratum producing later ceramic and lithic materials assignable to the Rockport Focus. One charcoal and three scallop shell samples from this level were submitted for ^{14}C assay, yielding a set of dates clustering at ca. A.D. 1100-1230. These dates were uncorrected, a point to which we will return further on. Since all of the dated samples came from the Archaic shell stratum, Story believed that a very late appearance of ceramics and the bow and arrow was indicated for the region, perhaps as late as ca. A.D. 1250 (ibid.)

For nearly two decades, the four dates from Ingleside Cove were the only absolute ages for cultural material from the Coastal Bend. Despite the dearth of dated components, J. E. Corbin (1974) published a relative chronology for the area based on matrix and seriation analyses of projectile point forms. Corbin's analysis highlighted internal chronological variability in dart point forms within the Aransas Focus. Concluding that this indicated that the Aransas Focus represented a long (though undefined) period, Corbin suggested the substitution of the term "Complex" for "Focus." It was suggested that, since a focus represented, by definition, a discrete time period (see McKern 1939), and "Aransas Complex" would better fit the evidence from the Coastal Bend area. For the Late Prehistoric Rockport Focus (in Corbin's terminology, the Rockport Culture), the several arrowpoint types were placed in a chronological sequence, with the Fresno and Scallorn types supplanted by the later Perdiz type.

Generally speaking, this was the status of Coastal Bend archaeological chronology as of about 1985 (cf. Shafer and Bond 1985; Steele and Mokry 1985). Two broad periods, the Archaic Aransas Focus or Complex and the Late Prehistoric Rockport Focus or Culture, had been defined, and some evidence for change in projectile point types put forth.

RECENTLY ACQUIRED CHRONOLOGICAL DATA

During the past five years, the list of radiocarbon dates has been sufficiently expanded that an update of the evidence is in order. Although a great deal more information must be obtained, it is possible at this time to place the dated archaeological components within a general temporal framework, and to develop a preliminary model of change in adaptive patterns for the area. The discussion which follows reviews the radiocarbon data, considers the assayed samples in terms of material cultural associations, and examines the dated components within a larger environmental context with an eye to understanding the relation between site location, subsistence patterns, and long-term evolution of the coastal environment. All previously unpublished ^{14}C ages and ^{13}C correction factors have been obtained from the University of Texas Radiocarbon Laboratory (S. Valastro, personal communication). Dendrochronological calibrations have been made by the authors using the 1987 Radiocarbon Calibration Program, Quaternary Isotope Lab, University of Washington. The radiocarbon data are shown, with correction factors, in Table 1. (All dates discussed here are plotted on the chronological chart, Figure 3.)

For the sake of clarity, the recently recovered data is presented here according to broad cultural-ecological time periods. These time frames form a preliminary working model of environmental and cultural change. The reasoning underlying these temporal divisions will be discussed in the final sections of this paper.

THE EARLY ARCHAIC: HUMAN ADAPTATION TO THE EARLY AND MID-HOLOCENE COASTLINES, CA. 7500-4600 B.P.

Several site components have recently been dated to between 7500 and 4600 B.P. Without exception, these can be described as shell middens, in that they consist of thin but dense accumulations of marine/estuarine shells of various

TABLE 1. Radiocarbon Data from the Coastal Bend Area

No.	Site	Assay No.	Assayed material	Raw 14C Age B.P.	Age B.P. corrected for 13C*	Age B.P. corrected for dendro., with max. range at 1 sigma of error**
			41RF21: Late Prehistoric Rockport Phase bison processing site			
1.	41RF21	Tx-6126	charcoal	750+/-100	--	683 (742-660)
2.	41RF21	Tx-6125	bison bone	450+/-70	790+/-70	698 (768-675)
3.	41RF21	Tx-6127	bison bone	390+/-130	760+/-130	685 (790-576)
			41SP43: Feature, 1967 excavation (Story)			
4.	41SP43	Tx-520	charcoal	780+/-40	--	691 (725-680)
			41SP120: Late Archaic shell stratum			
5.	41SP120	Tx-6387	charcoal	950+/-110	--	915 (970-730)
6.	41SP120	Tx-6920	charcoal	950+/-80	--	915 (943-751)
7.	41SP120	Tx-6925	whelk	580+/-70	980+/-70	926 (960-793)
8.	41SP120	Tx-6919	scallop	630+/-70	1020+/-70	938 (982-915)
9.	41SP120	Tx-6639	charcoal	1030+/-130	--	943 (1060-790)
10.	41SP120	Tx-6926	quahog	610+/-70	1030+/-70	943 (990-919)
11.	41SP120	Tx-6924	oyster	760+/-50	1160+/-50	1064 (1161-996)
			41SP43: Late Archaic shell midden (corrected from Story 1968)			
12.	41SP43	Tx-522	scallop	710+/-40	1110+/-40*	900, 902, 953 (1062-970)
13	41SP43	Tx-521	scallop	820+/-50	1220+/-50*	1165 (1235-1067)
14.	41SP43	Tx-523	scallop	820+/-50	1220+/-50*	1165 (1235-1067)
			41SP43: Late Archaic shell midden (1987 excavation)			
15.	41SP43	Tx-5892	scallop	1180+/-70	1580+/-70*	1509 (1546-1395)
16.	41SP43	Tx-6062	quahog	1230+/-60	1650+/-60	1545 (1682-1514)
17.	41SP43	Tx-5893	quahog	1260+/-70	1660+/-70*	1552 (1689-1515)
18.	41SP43	Tx-5891	quahog	1450+/-70	1850+/-70*	1816 (1873-1711)
			41AS3 (Kent-Crane): Corrected from Cox and Smith 1989			
19.	41AS3	Tx-5664	quahog	2210+/-60	2610+/-60*	2752 (2773-2740)
			41NU46: Corrected from Smith (n.d.)			
20.	41NU46	Tx-5300	charcoal	2800+/-70	--	2925, 2914, 2882 (2985-2845)
21.	41NU46	Tx-5302	charcoal	2880+/-90	--	2993 (3204-2875)
22.	41NU46	Tx-5301	charcoal	2750+/-320	--	2854 (3337-2469)
			41SP120: Lowest occupation level			
23.	41SP120	Tx-6948	quahog	2445+/-80	2890+/-80	3006 (3157-2948)
			41SP154: Midden on Beaumont surface			
24.	41SP154	Tx-6881	scallop	3770+/-50	4210+/-70	4829, 4747, 4731 (4859-4614)

TABLE 1 - page 2 (Radiocarbon Data from the Coastal Bend Area)

			41SP15: Midden on eroded Beaumont surface			
25.	41SP15	Tx-6963	scallop	4030+/-70	4430+/-70	5040, 5014, 4992 (5257-4875)
			41NU184: Shell cluster on Archaic living surface			
26.	41NU184	Tx-5303	R. flex.	4390+/-70	4790+/-70*	5575, 5517, 5489 (5633-5336)
			41NU221 (McKinzie Site): Midden on eroded Beaumont surface			
27.	41NU221	Tx-5265	R. flex.	4410+/-90	4810+/-90*	5582, 5501, 5498 (5647-5336)
28.	41NU221	Tx-5263	R. flex.	4450+/-90	4850+/-90*	5594 (5724-5474)
29.	41NU221	Tx-5264	R. flex.	4630+/-90	5030+/-90*	5851, 5832, 5761, 5741, 5739 (5919-5654)
			41SP153: Midden on eroded Beaumont surface			
30.	41SP153	Tx-7024	scallop	6180+/-120	6550+/-120	7431 (7509-7299)

* Asterisks indicate that 13C correction factor is estimated at +400 years, based on consistent correction factor obtained on shell samples assayed for 13C (all shell sample 13C corrections shown above without asterisks).

** All Dendrochronological calibrations run on an IBM-compatible personal computer using 1987 Radiocarbon Calibration Program, Quaternary Isotope Lab, University of Washington.

species. Data from some components have been presented elsewhere (Ricklis 1988, 1990; Ricklis and Gunter 1986); reports on others are currently in preparation. For the present purposes, only the salient chronological and contextual data need be summarized for each component, as follows:

1. Site 41SP153. This shell midden is situated near the north shore of Nueces Bay (Figure 1). The site is presently transected by a deep artificial drainage ditch which has revealed a midden stratum 5-10 cm thick extending along both sides of the ditch for at least 50 meters. There are actually two major shell strata here, one within a Holocene silt/clay loam soil, about 20 cm below the surface, the other at the unconformable contact between the Holocene soil and the eroded surface of the underlying Pleistocene Beaumont clay Formation, approximately 70 cm below the surface. It is the latter, deeper shell midden stratum which is of concern here.

The site was examined by the authors on several occasions during the summer of 1990. No excavations were conducted, but the stratigraphic profile was clear, and the presence of a discrete shell midden resting directly on Pleistocene clay at the base of a Holocene soil was considered to be significant. This stratum consisted of an overwhelming preponderance of oyster shells (*Crassostrea virginica*). Also present among the densely packed oyster was a scattering of bay scallop (*Argopectin irradians*). A sample of scallop shells was extracted for radiocarbon assay (for reasons to be discussed below, these shells are believed to produce reliable radiocarbon age results). Corrected for the ^{13}C fraction and for dendrochronological calibration (see Table 1), the one sigma age range on this sample is 7509-7299 B.P.

Only a single artifact was recovered during extraction of the scallop sample. This is a complete specimen of an edge-flaked sunray venus (*Macrocallista nimbosa*) clamshell tool (Figure 2, A), found securely embedded in the midden matrix.

2. The McKinzie Site (41NU221). The findings at this site have been reported in detail elsewhere (Ricklis 1988). This is a stratified, multicomponent site; the component of interest here is the discrete basal shell midden. As at 41SP153, this was a thin but dense deposit of shell lying at the unconformable contact between an eroded Pleistocene Beaumont surface and an overlying Holocene fine sand/silt/clay loam. The majority of shells in the stratum were of the brackish water, estuarine species *Rangia flexuosa*, though oyster shells were also present. Thirty-two marine fish otoliths were recovered from this midden, representing catfish, trout, redfish, croaker and black drum. Excavation in this stratum produced lithic debitage and four dart points. All of the lithics were in apparently undisturbed context within the midden (Ricklis 1988:41-42). Three of the points are unstemmed (one each of the Catan and Tortugas types and one Catan-like point). The fourth is a Bell point (Figure 2, D), a type placed by Prewitt (1985) in the Central Texas chronology at between ca. 6100 and 5100 B.P. A second, heavily reworked Bell point (Figure 2, E) was later found eroding out of the same shell stratum. Three samples of *Rangia flexuosa* shell, with an estimated correction for ^{13}C (400 years added, as discussed below) and dendrochronology, produce a clustered set of age ranges: 5919-5654 B.P., 5724-5474 B.P., and 5647-5336 B.P.

3. The Means Site (41NU184). This site was investigated by Ricklis and R. Gunter, and has been reported elsewhere (Ricklis and Gunter 1986). Work here involved 24 contiguous one-meter squares, which resulted in the definition of an Archaic living floor and a post mold pattern representing a small structure. The excavation was near the edge of a dense *Rangia flexuosa* shell midden. Most of the midden was within a plowed field just beyond the excavation area. Plowing had revealed a profusion of *Rangia flexuosa* shells over an elliptical area of approximately 2,000 square meters. Numerous lithic artifacts have been collected

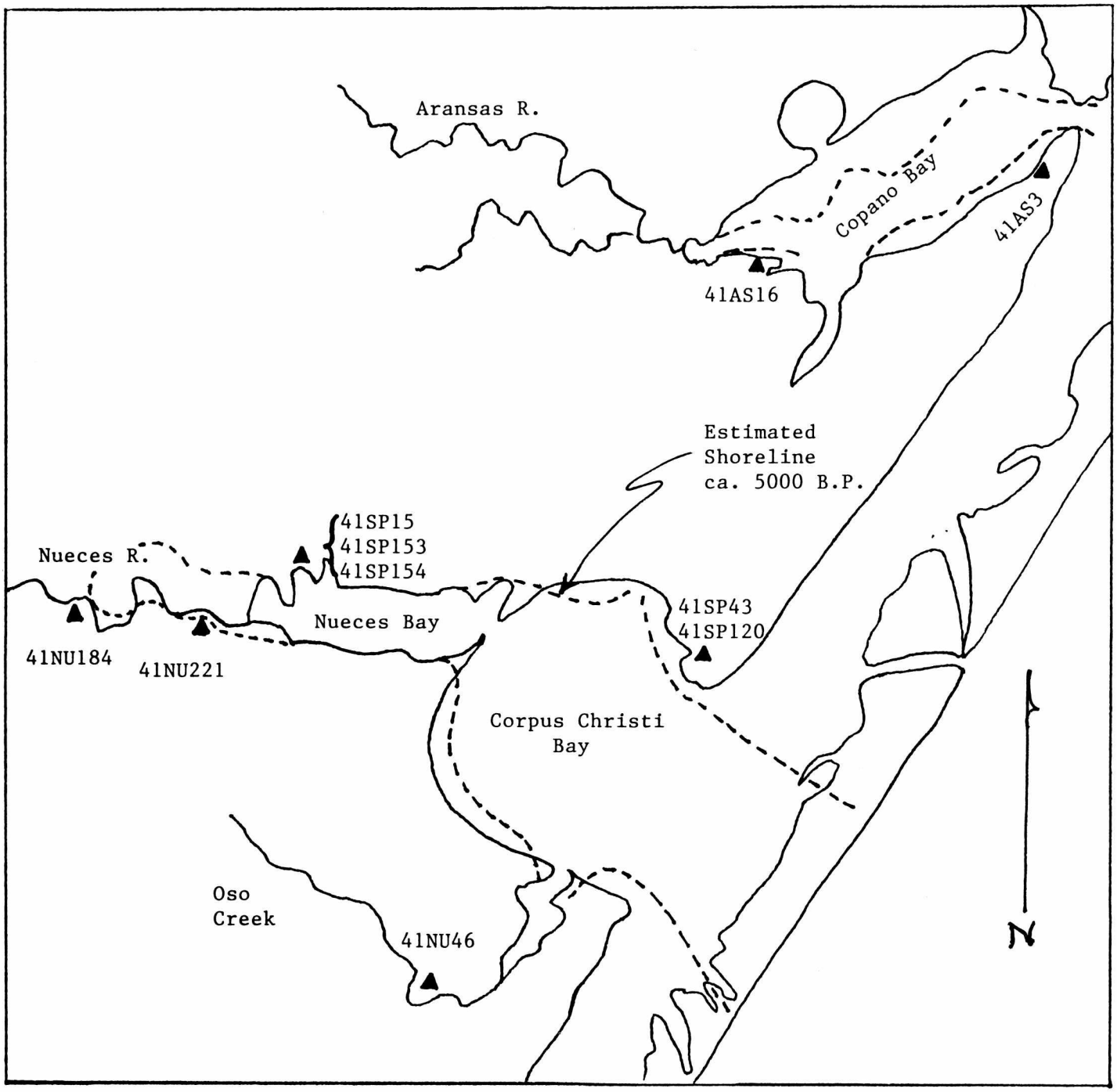

Figure 1. Map showing locations of Archaic sites discussed in text. Dashed lines indicate inferred mid-Holocene bay shorelines, based on correlation of data in Brown et al. (1976) and Wright (1980).

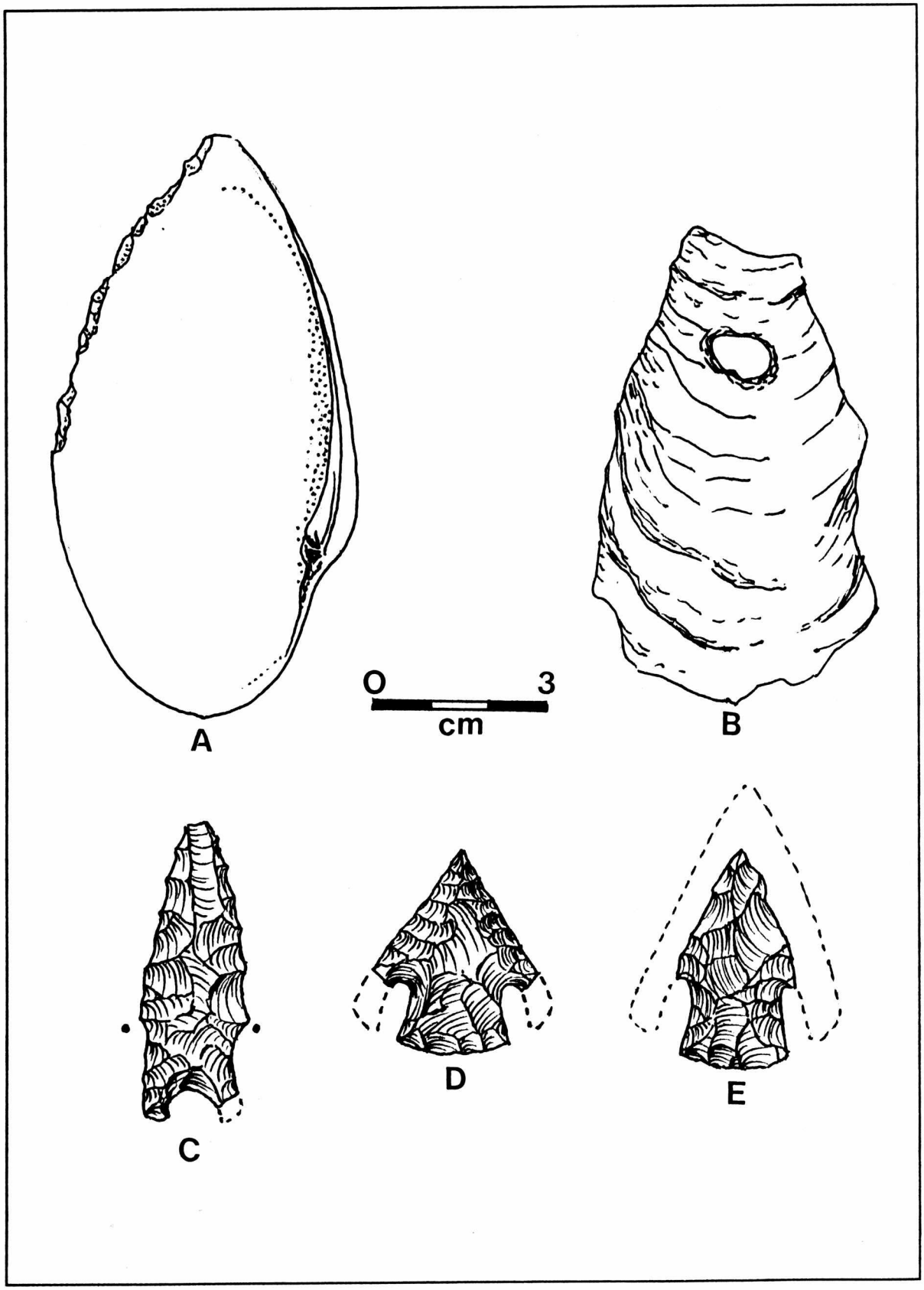

Figure 2. Artifacts from Early Archaic shell middens, Coastal Bend area. A, Edge-flaked sunray venus clamshell, 41SP153; B, Perforated oyster shell, 41SP154; C, Gower-like dart point, 41SP154; D, Bell dart point, 41NU221; E, Reworked Bell dart point, 41NU221.

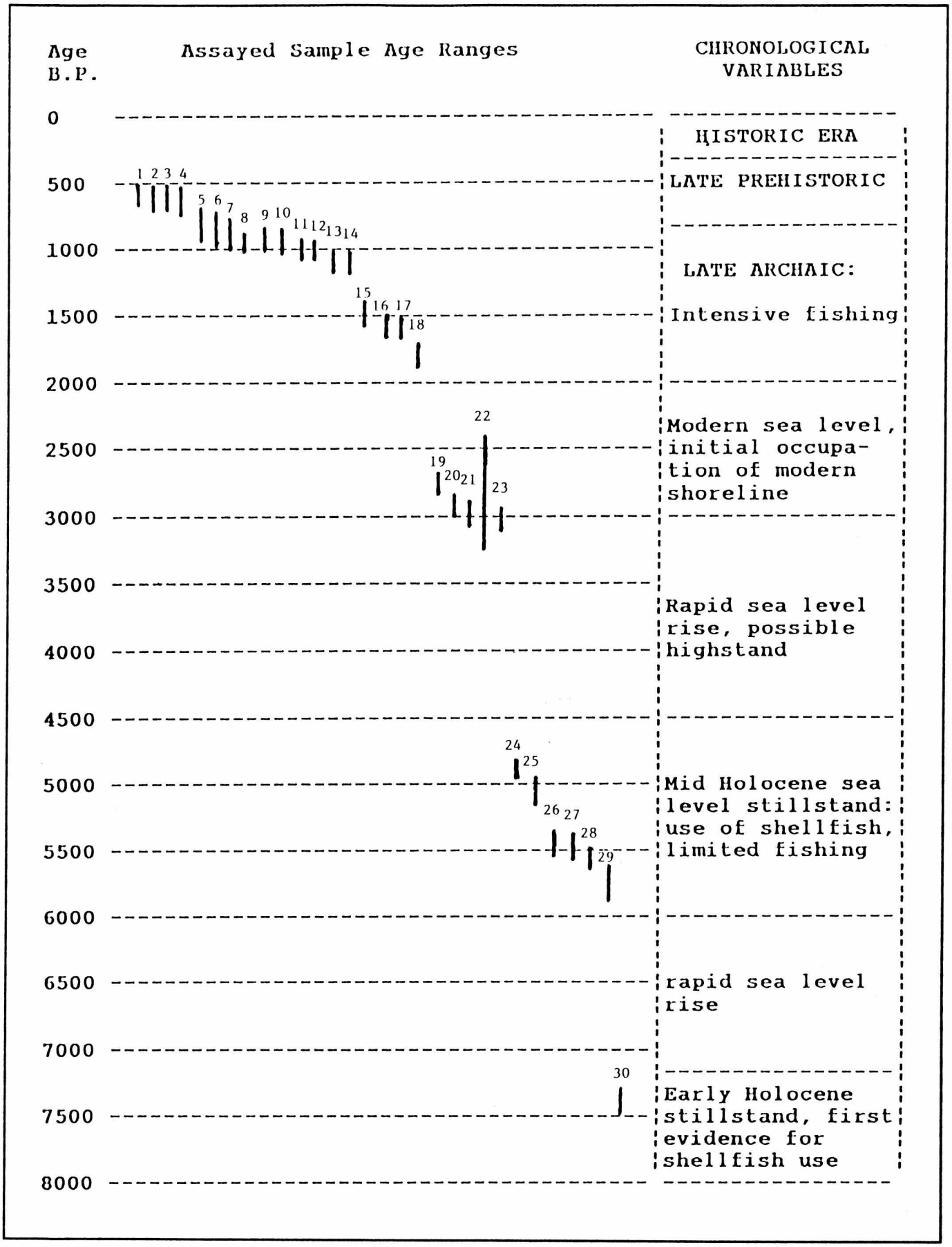

Figure 3. Chronological chart showing ^{14}C age ranges for sites in the Coastal Bend area.

by various individuals from this area, suggesting rather intensive use of the location. These artifacts include Early Stemmed and Early Triangular dart points and Clear Fork gouges (see Turner and Hester 1985). A discrete cluster of *Rangia flexuosa* shells was exposed on the excavated living surface, and was radiocarbon dated to 5080±70 B.P. (Ricklis and Gunter 1986). With the estimated 400 years for ^{13}C correction added (discussed below), this corrects dendrochronologically to an age range of 5633-5336 B.P.

4. Site 41SP15. This is another thin shell midden, located on high ground near the north shore of Nueces Bay (Figure 1). Again, the midden, which is clearly visible as an extensive stratum along the profile of an artificial barrow pit, rests at the unconformable contact between an eroded Beaumont clay surface and 40-50 cm of overlying Holocene silty clay loam soil. The shell stratum, made up of a mix of oyster and scallop, is about 8 cm thick and extends along the exposed profile for at least 30 meters. As at 41SP153, no excavations were carried out, but the discrete nature of the stratum, and the clear stratigraphy, justified the expenditure of funds for a radiocarbon assay on scallop shell. The same extraction procedures were used here as at 41SP153. No artifacts were found during extraction of the shell sample, and none were seen along the barrow pit wall or floor which could be attributed to this stratum. The scallop shell sample produced an age, corrected for both ^{13}C fraction and dendrochronology, of 5257-4875 B.P.

5. Site 41SP154. This site is also located on high ground near the north shore of Nueces Bay (Figure 1). It is visible as a discrete shell midden stratum, exposed in a soil profile created by modern earth removal. Again, the shell stratum is situated at the unconformable contact of an eroded Beaumont surface and some 30 cm of overlying Holocene silt/clay loam soil. Based on the exposed profile and local topography, it is estimated that this shell midden originally covered about 1,000 square meters.

Excavation was carried out by the authors and a volunteer crew during the summer of 1990. A 2 by 3-meter excavation block was opened, and the shell midden was exposed, photographed, and then removed with small hand tools. The overwhelming majority of the shells were of oyster, with scallop and *Rangia cuneata* shells present in small numbers. Several fragments of sunray venus shell were also recovered. As at the other early sites reported here, bone was absent, presumably due to decay. A single marine catfish otolith was found in the shell stratum.

Artifacts from this stratum consist of several dozen chert flakes, two perforated oyster shells, and a dart point. The point (Figure 2, C) resembles reported examples of the Gower type (Turner and Hester 1985:105), having the type's characteristically crude flaking, deeply concave base and stem edge grinding.

A sample of scallop shells was recovered for radiocarbon dating. The corrected age range (see Table 1) is 4859-4614 B.P.

LATER ARCHAIC SITES: HUMAN OCCUPATION OF THE MODERN SHORELINE

A series of radiocarbon assays on charcoal and various shell species provide a preliminary chronology for later Archaic occupation of the Coastal Band. These dates fall within the period from about 3000-1000 B.P.

1. The Tucker Site (41NU46). This site lies on and within a clay dune overlooking Oso Creek, near the southwest limits of the city of Corpus Christi. The site was tested in 1985 under the auspices of the Corpus Christi Museum (Smith n.d.).

Based upon the authors observations, made during the summer of 1989 (Ricklis, field notes), several key characteristics of the site can be briefly

noted here. The clay dune has been severely eroded, and this has exposed several strata showing evidence of occupation. Underlying some 50 cm of clay loam soil, the dune consists of finely laminated sands, silts and clays which represent discrete periods of accretion through eolian deposition. Within these eolian sediments, about 1.5 meters from the dune surface, has been exposed a thin stratum with cultural material. This is marked by the presence of scattered mammal and fish bones, bits of charcoal, scattered marine shell fragments and lenses of *Rabdotus* land snails and burned clay nodules, some of which bear basketry impressions.

During the 1985 excavations, in which the authors participated, most of the work focused on testing this lower stratum. Three hearth features were excavated at this level. Each yielded charcoal, producing samples (Smith n.d.) which yield age ranges, adjusted here for dendrochronology, of 3337-2469 B.P., 2985-2845 B.P. and 3204-2875 B.P. Since these dates all fall within the overlap of one standard deviation, they can be taken as essentially contemporaneous at ca. 3000 B.P., which is in accord with the field observation that all three hearths were within a single stratum traceable across much of the eroded part of the site (Ricklis, field notes; Smith n.d.). The excavations in and around the hearths produced small quantities of fish bone, marine fish otoliths, scattered deer bone, small mammal bones and edge-flaked sunray fragments.

2. The Kent-Crane Site (41AS3). This well-known site is an extensive shell midden containing profuse quantities of oyster shell. Other species, such as sunray venus, quahog (*Mercenaria campechensis*), lightning whelk (*Busycon perversum*) and scallop are also quite abundant. Recent testing here (Cox and Smith 1989) involved recovery of a sample of quahog shell for radiocarbon assay. This was taken from the base of the midden, and thus inferably dates the earliest occupation of the site, or at least that part of the site which was tested. The uncorrected age, as reported by Cox and Smith (ibid.:31), is 2210±60 B.P. For reasons discussed below, a ^{13}C correction factor of about 400 years is applied to this shell sample. In conjunction with dendrochronological adjustment, this yields a corrected age range of 2773-2740 B.P.

3. 41SP120. This site is part of an extensive occupational zone which extends for several hundred meters along the top of the bluff which overlooks Ingleside Cove, at the northeast edge of Corpus Christi Bay. Testing and excavations here have revealed a stratified deposit with both Archaic and Late Prehistoric components (Ricklis 1988, 1990). Field work involved a block of 12 contiguous one-meter-square units, all of which were excavated through Holocene sandy loam to, and in some cases, into, the underlying Pleistocene Ingleside facies of the Beaumont Formation.

Five strata were identified on the basis of archaeological and/or sedimentological observations (Ricklis 1990). These are, from top to bottom, as follows:

A. A rather thick (30-50 cm) Late Prehistoric midden which consisted of an organic-rich, dark brown sandy loam containing over 3,000 potsherds of Rockport ware, numerous arrowpoints and other Late Prehistoric lithics, shell and bone tools and ornaments, thousands of fish bones and otoliths, scattered deer and bison bone, and a variety of shellfish remains, mostly highly fragmented.

B. A discrete stratum of densely packed shell 15 to 20 cm thick. In contrast to the shell debris of the Late Prehistoric midden, many of the shells were unbroken. Field counts of umbos and columellae indicated that, numerically, shells were about four times as abundant per unit volume of excavated deposit as in the overlying Late Prehistoric midden. The major shell species were scallop, oyster, lightning whelk, quahog and

sunray venus. Fish bones were scattered throughout the stratum. Numerous artifacts were found, including four dart points (2 Catan, 2 Matamoros), two conch adzes, conch columella awls, lightning whelk hammers, edge-flaked sunray venus clamshells, bone awls, an engraved bone pin, tubular bone beads, and basketry-impressed asphaltum nodules. A few potsherds and the only three Fresno arrowpoints from the excavation were also found. Though it is possible the Fresno points were displaced from the overlying Late Prehistoric zone, the fact that they are the only examples of the type found strongly suggests that they were in fact associated with the shell stratum and represent a transition in material culture from the terminal Archaic into the Late Prehistoric.

C. Underlying the shell stratum was approximately 20 cm of midden deposit very similar in matrix characteristics to the Late Prehistoric midden. Again, the matrix was a dark brown, organically stained sandy loam containing numerous shell fragments but relatively few unbroken shells. Fish bones and otoliths were abundant, and deer bones were scattered throughout. Artifacts, however, were not abundant, consisting of only a small number of nondiagnostic chert tool fragments and debitage, a few fragments of edge-flaked sunray venus, and a whelk columella awl.

D. Below this midden was a light brown, fairly compact sand about 40-50 cm thick. The organic staining of superior zones was absent, and little in the way of cultural material was present. However, in the southeastern part of the excavation block, at a depth of 90-100 cm, was a thin lens of shells of quahog, scallop, lightning whelk and oyster. No fish or other vertebrate remains were found within this debris cluster (though 20 otoliths were found scattered within the 90-100 cm arbitrary level). Artifacts include a hammerstone, a chert flake, a columella awl, a possibly utilized Florida Horse conch columella, and a fragment of edge-utilized sunray venus shell.

E. The basal stratum consisted of the light tan clayey sand of the Pleistocene Ingleside facies, which was reached at a depth of 120-130 cm. No cultural materials can be associated with this geologic stratum.

Radiocarbon assays were run on materials from the dense shell stratum which directly underlay the upper Late Prehistoric midden, and on quahog shells from the discrete shell cluster in the light brown sand which overlay the basal clayey sand.

The quahog sample (Tx-6948) from the lower stratum yielded an age range of 3157-2948 B.P. (corrected for ^{13}C and dendrochronology; see Table 1).

Seven samples from the shell stratum were submitted for radiocarbon assay. Three of these were wood charcoal taken from well within particularly densely packed patches of shell, fish bone and artifacts. Four samples of shell (1 each of quahog, scallop, lightning whelk and oyster) were carefully selected from such a patch of densely packed debris, and in association with one of the charcoal samples (Tx-6920) and a Matamoros dart point. As may be seen in Table 1, all but one of the dates (with shells corrected for ^{13}C fraction), when dendrochronologically corrected, fall at ca. 950-900 B.P. The exception is the age obtained on the oyster shell sample (Tx-6924), which is slightly earlier, at 1064 B.P. (age range 1161-996 B.P.).

The excellent agreement among the corrected ages from the shell stratum places occupation at ca. 950-900 B.P. (A.D. 1000-1050). This is significant on two counts. First, it provides a firm date for a very late Archaic assemblage consisting of small, unstemmed dart points and a suite of shell and bone tools. Second, the fact that both shell and charcoal provided virtually identical ages is highly significant in that it demonstrates that reliable results can be

obtained on marine shells, provided that corrections are made for the ^{13}C fraction. Of particular interest is the fact that no correction factor for a marine resevoir differential was required on these shells (that is, the shells, contrary to expectations, did not produce ages which are too old relative to charcoal). The only exception to this is the result obtained on the oyster sample, suggesting that this species may require a slight adjustment toward the present of about 100 years in the Coastal Bend area (marine reservoir corrections vary worldwide; see Stuiver et al. 1986).

On the basis of these nearly consistent results, we have assumed no marine reservoir correction for other shell samples reported here. While additional paired charcoal and shell samples are needed, the available data suggest that marine shells, with the apparent exception of oyster, will produce radiocarbon ages which are virtually indistinguishable from those of charcoal, once they are corrected for ^{13}C.

Also noteworthy is the fact that among the nine shell samples reported here for which ^{13}C correction factors were determined, all, without exception, require an adjustment which adds approximately 400 years to the raw ^{14}C age (see Table 1). The consistency in the correction factor for samples which span some 6,500 years strongly suggests that 400 years can be added to the raw ages for marine/estuarine shells in the Coastal Bend area. Thus we have tentatively added 400 years to the raw shell ages reported here for which no ^{13}C fraction data are available (see Table 1).

4. Ingleside Cove Site (41SP43). As noted previously, this site was tested by Dee Ann Story in 1967 (Story 1968). Further excavation was directed here by Ricklis in 1987 for the purposes of obtaining seasonality and subsistence data and additional radiocarbon dates (Ricklis 1990). The site lies on the bluff overlooking Ingleside Cove, about 100 meters north of 41SP120. Both sites are, in fact, parts of a single extensive zone of prehistoric occupation which has been artificially segmented by residential construction.

Both the 1967 and 1987 excavations were in the same area, and both revealed virtually identical stratigraphies. These consisted, from uppermost to lowest strata, of (a) a 20-30 cm-thick Late Prehistoric midden, (b) a 30-40 cm-thick Archaic shell midden stratum, (c) a light brown, compact sand, largely devoid of cultural material, about 20-30 cm thick, and (d) basal clayey sand of the Ingleside facies of the Beaumont Formation.

The reader is referred to Story (1968) for detailed descriptions of the 1967 findings. Four radiocarbon dates were obtained, three on scallop shell and one on charcoal. All samples were from the shell midden stratum, which was assigned to a terminal Archaic occupation. As originally published (Story 1968:40), the three uncorrected scallop dates were A.D. 1130±50, A.D. 1130±50 and A.D. 1240±40. The charcoal which came from a pit-like feature within the shell midden yielded an uncorrected date of A.D. 1170±80.

Because the four dates corresponded so closely, Story tentatively accepted contemporaneity of the scallop and charcoal samples. However, the data from 41SP120 and other sites discussed here strongly suggest that a 400-year ^{13}C correction factor should be applied to the scallop dates. If this is added to the original uncorrected ages, along with correction for dendrochronology, the following age ranges are obtained on the scallop samples: 1062-970 B.P., 1235-1067 B.P. and 1235-1067 B.P. These results leave the charcoal date (for which a ^{13}C correction would be negligible) some 250-350 years later than the shell dates. We cannot explain this; perhaps the feature from which the charcoal was obtained was intrusive into the shell deposit from the overlying Late Prehistoric zone.

Four shell samples were recovered for radiocarbon assay during the 1987 excavation (Ricklis 1990). All came from the shell midden stratum. When corrected for ^{13}C and dendrochronology (see Table 1), the age ranges are 1873-1711 B.P., 1689-1515 B.P., 1682-1514 B.P. and 1546-1395 B.P. The oldest of these

comes from quahog shells near the base of the stratum; the others are from the middle to upper parts. At first glance these seem incongruent with the younger ages for the same stratum obtained by correction of the 1967 scallop assays. However, close examination of the original 1967 field notes (on file at the Texas Archeological Research Laboratory, The University of Texas at Austin) revealed evidence of an internal microstratigraphy showing what appears to be overlapping of shell lenses within the stratum, with older (underlying) deposits closer to the bluff edge than younger (overlapping) ones. Since Story's test units were further from the bluff than the 1987 excavation, the younger dates make sense, assuming that midden formation was, in fact, time-transgressive, with more recent accumulation taking place along the back (inland) edges of older midden deposits.

Artifacts from the 1987 excavation associated with the shell stratum include shell tools (edge-flaked sunray venus, conch columella awls, perforated oysters, whelk hammers), bone tool fragments, chert debitage, asphaltum nodules and potsherds. Most of the pottery was Rockport ware, and its occurrence, mainly in the upper 10 cm of the stratum, suggests displacement from the overlying Late Prehistoric deposit. However, two large sherds from a single plain, sandy paste jar were found lying flat, embedded within densely packed and apparently undisturbed oyster and scallop shells in the middle of the stratum, suggesting the use of pottery, albeit uncommonly, in the Coastal Bend area by ca. A.D. 400-500, not long after its initial appearance on the Upper Texas Coast (see Aten 1983).

THE LATE PREHISTORIC PERIOD

Though our primary concern here is with the Archaic, it is relevant to mention three dates which appear to represent an early Late Prehistoric Rockport occupation of the region. These come from 41RF21, located on a branch of Copano Creek in Refugio County, about 35 km inland from the mainland coastline. A discrete and dense cluster of bison and deer bone, artifacts and wood charcoal was excavated here (Ricklis 1989). Two of the dates pertain to this feature, which contained sherds of Rockport pottery and Perdiz and Scallorn arrowpoints. One date is derived from a sample of wood charcoal taken from well within the thickest and densest part of the bone cluster. This sample produced a dendrochronologically corrected age range of 742-660 B.P. A sample of associated bison bone (apatite fraction), corrected for ^{13}C, yielded an age range of 768-675 B.P. A third sample, also of bison (apatite) bone from another part of the site, and also found in association with Rockport potsherds, yielded a corrected age range of 790-576 B.P. The intercept points of these ages (683, 698 and 685 B.P., respectively) suggests contemporaneous deposition in the late 1200s A.D. (see Table 1).

The close agreement in these ages points to an early expression of the coastal Late Prehistoric at ca. A.D. 1250-1300. This post-dates the very late Archaic shell stratum at 41SP120 by only about 250 years, suggesting that Story's (1968) postulation of a transition from Archaic to Late Prehistoric by ca. A.D. 1200 remains a useful working hypothesis. Further refinement of the chronology of the Archaic-Late Prehistoric transition must await additional data.

THE CHRONOLOGY OF ARCHAIC COASTAL ADAPTATION: A DISCUSSION OF THE EVIDENCE AND A PRELIMINARY MODEL OF CHANGE

The evidence for earliest human adaptation involving coastal resources in the Coastal Bend comes from 41SP153, where assayed scallop shells yielded an age of 7500 B.P. for a thin but dense midden comprised mainly of oysters. Other relatively early ages come from two other sites near the north shore of Nueces Bay (41SP15 and 41SP154) and from two sites a few kilometers upstream along the Nueces River (41NU184 and 41NU221). All fall in the period ca. 5900-4600 B.P. While few time-diagnostic artifacts have been found in direct and clear association with the middens, the two Bell points from the McKinzie Site (41NU221) are

in accord with the ages from that site (ca. 5900-5300 B.P.), since the type is placed at between 6100 and 5100 B.P. in Central Texas (Prewitt 1985). The Gower-like point from 41SP154 (ca. 5000-4700 B.P.) may represent reuse of an older item by the site's occupants, since the type's chronological placement in the Central Texas chronology (ibid.) apparently predates this site by at least 1,000 years.

The early age from 41SP153, at ca. 7500 B.P., as well as the temporal clustering of components between ca. 5900-4600 B.P., are of probable cultural-ecological significance in terms of a correlation between early human use of coastal resources and the pattern of Holocene sea level rise on the Texas coast. Though interpretations of available geologic data vary somewhat as to the patterns of post-Pleistocene sea level rise (see Figure 4), there is general agreement that an early Holocene rise attained a stillstand between ca. 9000 and 7500 B.P. (Frazier 1974; Brown et al. 1976). Around 7500 or 7000 B.P., the sea again began a relatively rapid rise, and reached a stillstand which lasted from ca. 6000/5500 to 4500 B.P. As sea level rose, it created long estuarine embayments on the Texas coast, as river valleys, deeply downcut during late glacial times, were inundated by Gulf waters (Brown et al. 1976).

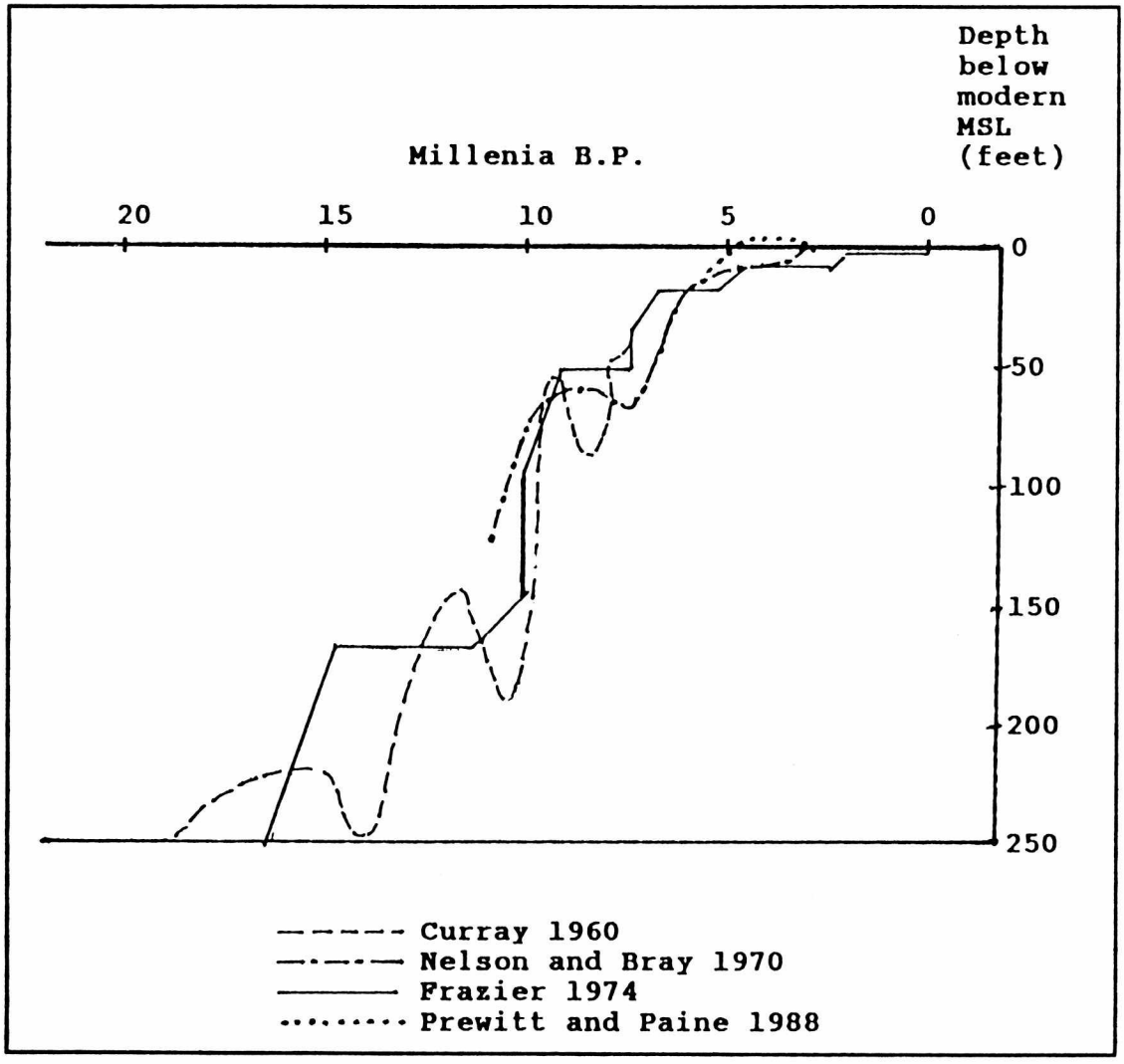

Figure 4. Proposed Late Pleistocene-Holocene sea level changes in the western Gulf of Mexico (after Brown et al. 1976 and Prewitt and Paine 1988).

The formation of shell middens, at the times indicated by the radiocarbon dates reported here, may reflect a direct correlation between human exploitation of estuarine resources and periods of stable sea level. The age of ca. 7500 B.P. from 41SP153 falls within the terminal range of the early Holocene stillstand, while the other relatively old ages, ranging from ca. 5900 to 4600 B.P. all correspond to the period of mid-Holocene stillstand, ca. 6000/5500 B.P.

In terms of human use of coastal resources, it was during periods of sea level stability that effective human exploitation of coastal resources would have been possible. When sea level was rising relatively rapidly, rates of sedimentation in the coastal estuaries might not have been great enough to create the broad, shallow bay systems which are optimal for the development of extensive shellfish beds, and for effective human access to those resources. With a relatively stable sea level, ongoing sedimentation of bay bottoms would have created near-shore environments characterized by shallow waters and high photosynthesis and a correspondingly high estuarine biomass suitable for human exploitation (cf. Perlman 1980; Widmer 1988).

Though by 7500 B.P. sea level was still about 50 feet below its present position (Frazier 1974; Brown et al. 1976), the Nueces valley, under present Nueces Bay, had been downcut as much as 100 feet during the late Pleistocene so that an early Holocene embayment would have been present. By the time of the mid-Holocene stillstand sea level had risen to within about 20 feet of its modern position, and the precursor of modern Nueces Bay extended as far inland as west of Calallen, Texas, in the vicinity of the Means Site (Brown ibid.). Thus both 41NU184 and 41NU221, as well as 41SP15 and 41SP154, would have been situated in bayshore environments ca. 6000-4500 B.P. (since that time sedimentation has caused the Nueces River delta to prograde some 15 km seaward to its present position).

It can be inferred, then, that the various dated sites along Nueces Bay and the lower Nueces River represent an early to mid-Holocene adaptation which included exploitation of a bayshore environment created by periods of sea level stability and attendant formation of estuarine shallows. It is noteworthy that the shell middens at the various sites dating to the mid-Holocene have produced species which reflect the kind of salinity gradient which would have characterized the bay water at that time. Lowest salinities would have existed toward the river-influenced area near the mouth of the Nueces River, while higher average salinities would have been found toward the sea, where tidal exchange with the open Gulf was greatest. Thus at the Means Site (41NU184), shells are of the brackish water clam, *Rangia flexuosa*. Moving seaward, the McKinzie Site (41NU221) yielded a preponderance of *Rangia flexuosa*, but the higher salinity oyster was also present (Ricklis 1988). Still farther seaward, at the essentially contemporaneous sites on the north shore of present Nueces Bay, oyster predominates, and the relatively high salinity bay scallop is also present (see Andrews 1977 for data on salinity ranges to which these species are adapted).

After ca. 4500 B.P., sea level again began to rise relatively rapidly, either continuously or in stepwise fashion with possible periods of stillstand (Frazier 1974; Brown et al. 1976), or even slight highstand (Prewitt and Paine 1988), approximating its present level by ca. 3000-2500 B.P. As modern sea level stabilized, sedimentation began to deposit the modern barrier islands and to create extensive shallow lagoons such as Laguna Madre and Redfish and Aransas Bays (Brown et al. 1976). These lagoonal areas, and the shallow margins of Copano and Corpus Christi Bays, by this time at their present positions, provided broad areas ideal for extensive shellfish beds, as well as low energy shallows ideally suited as spawning and nursery grounds for fish. These extensive shallows would have been optimal areas for human exploitation of shellfish and fish resources.

Thus it may be significant that the oldest ages obtained for large sites on Copano and Corpus Christi bays fall at ca. 3000-2500 B.P., just that period when sea level stabilized along the modern bayshores (as at Ingleside Cove and

the Kent-Crane Site). Site 41NU46, presently overlooking Oso Creek, may also have been in a bayshore location at this time, since the broad mud flats which are around the site today likely reflect late Holocene sedimentation, prior to which the Oso Creek valley, also downcut during the late Pleistocene, may have been inundated by estuarine waters.

Based on available evidence, it appears that fishing intensified as a subsistence activity after ca. 2000 B.P. While fish remains are certainly present at earlier shell midden sites, they have so far been found in profusion only within late Archaic deposits. The excavations of the Early Archaic midden at McKinzie (Ricklis 1988) produced only 32 marine fish otoliths (reliable items for comparative purposes, due to their resistance to decay over time), while excavations at the approximately contemporaneous Means Site and 41SP154 yielded only two and one otolith, respectively. The 90-100 cm level of 41SP120, containing quahog shells dated to ca. 3000 B.C., produced only 20 otoliths (Ricklis 1990), while the recently tested lower levels at Kent-Crane produced only nine specimens (Cox and Smith 1989). In contrast, the Late Archaic shell stratum at 41SP43, dating to ca. 1500-1900 B.P. yielded 159 otoliths (Ricklis 1990) and the shell stratum at 41SP120, dated to ca. 950 B.P. produced 324 specimens (ibid. 1990). Similarly, at the Swan Lake Site (41AS16) on Copano Bay, fish remains were relatively abundant only in "Zone 4," estimated on the basis of typologies and stratigraphy to date to ca. 1000-2000 B.P. (Prewitt et al. 1987:72). Fishing continued as a significant shoreline subsistence activity during the Late Prehistoric: excavation of the 30-50 cm thick Late Prehistoric midden at 41SP120 produced 1,023 otoliths (Ricklis 1990).

An intensification of fishing at around 2000 B.P. has inferable environmental correlates. As sea level approximated its modern position ca. 3000-2500 B.P., the gradual formation of the barrier islands and sedimentation of bay/lagoon bottoms came to produce the mentioned extensive estuarine shallows. As optimal spawning, nursery and feeding areas for fish, these areas would have seen seasonal aggregations of fish populations, and thus would have been ideal for massive fish procurement.

SUMMARY

We have suggested here a preliminary model of adaptive continuity and change in the Coastal Bend area based on dated archaeological shell middens and inferable environmental correlates. The early Archaic shell middens pertain to time periods for which geologic evidence has suggested relatively stable sea level. It is probable that during such periods sedimentation rates would "catch up" with sea level, resulting in shallow estuarine environments of high photosynthesis and primary biological productivity, and a relatively high biomass that was readily exploitable by prehistoric human populations. Analogously, the earliest dates from modern shoreline sites fall around 3000-2500 B.P., just that time when sea level stabilized at its present position.

The early Archaic shell middens are thin, and fish remains are found only sporadically. These sites may represent only supplemental use of coastal resources. The presently available data suggest that it was only after the sea reached its modern position, and the barrier islands and present broad shallows became established, that exploitation of marine/estuarine resources intensified, leaving behind relatively thick shell middens, as at the Kent-Crane Site. The data from Ingleside Cove point to intensification of fishing by ca. 2000 B.P., with the emergence of an extensive, high-biomass estuary environment which permitted an increased emphasis on procurement of shoreline resources. A coevolutionary interrelationship between a changing coastal environment and patterns of human adaptation to that environment, is thus suggested by the currently available evidence. This is regarded as general and preliminary, and must be tested with additional information on chronology, Archaic subsistence patterns, and the evolution of the coastal environment.

While this review of the current data has emphasized broad patterns of environmental and adaptive change, it should be noted that there is intriguing evidence for long term *continuity* in certain basic technologies. An edge-flaked sunray venus clamshell was recovered from the 7500 B.P. shell stratum at 41SP153, and perforated oyster shells have been found at the mid-Holocene components at McKinzie and 41SP154. Both tool forms thus show remarkable time depth in the Coastal Bend area, since both are well documented for the late Archaic and Late Prehistoric periods (Campbell 1947, 1952, Ricklis 1990). Further excavation of chronologically discrete site components is required in order to define patterns of continuity and change in regional technologies. As the data base grows, it should ultimately be possible to correlate long-term development of technologies with patterns of evolving human ecology.

ACKNOWLEDGEMENTS

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References Cited

Andrews, J.
1977 *Shells and Shores of Texas.* The Elma Dill Russell Spencer Foundation Series, No. 5. The University of Texas Press, Austin and London.

Aten, L. E.
1983 *The Indians of the Upper Texas Coast.* Academic Press, New York.

Brown, L. F., L. Brewton, J. H. McGowen, T. J. Evans, W. L. Fisher and C. G. Groat
1976 *Environmental Atlas of the Texas Coastal Zone: Corpus Christi Area.* Bureau of Economic Geology, The University of Texas at Austin.

Campbell, T. N.
1947 The Johnson Site: Type Site of the Aransas Focus of the Texas Coast. *Bulletin of the Texas Archeological and Paleontological Society* 18:40-75.

1952 The Kent-Crane Site: A Shell Midden on the Texas Coast. *Bulletin of the Texas Archeological Society* 23:39-77.

1956 Archeological Materials from Five Islands in the Laguna Madre, Texas Coast. *Bulletin of the Texas Archeological Society* 27:7-46.

1958 Archeological Remains from the Live Oak Point Site, Aransas County. *Texas Journal of Science* 10(4):423-442.

Corbin, J. E.
1974 A Model for Cultural Succession for the Coastal Bend Area of Texas. *Bulletin of the Texas Archeological Society* 45:29-54.

Cox, K. A. and H. A. Smith
1989 Kent-Crane Revisited. *La Tierra* 15(3):24-38.

Frazier, D. E.
1974 *Depositional Episodes: Their Relationship to the Quaternary Framework in the Northwestern Portion of the Gulf Basin.* Bureau of Economic Geology, The University of Texas at Austin.

McKern, W. C.
1939 The Midwestern Taxonomic Method as an Aid to Archaeological Culture Study. *American Antiquity* 4:301-313.

Perlman, S.
1980 An Optimum Diet Model, Coastal Variability and Hunter-Gatherer Behavior. *Advances in Archeological Method and Theory*, Vol. 3. Academic Press.

Prewitt, E. R.
1985 From Circleville to Toyah: Comments on Central Texas Chronology. *Bulletin of the Texas Archeological Society* 54 (for 1983):201-238.

Prewitt, E. R., S. V. Lisk and M. A. Howard
1987 *National Register Assessments of the Swan Lake Site, 41AS16, on Copano Bay, Aransas County, Texas.* Prewitt and Associates, Reports of Investigations No. 56, Austin.

Prewitt, E. R. and J. G. Paine
1988 The Swan Lake Site (41AS16) on Copano Bay, Aransas County, Texas: Settlement, Subsistence and Sea Level. *Bulletin of the Texas Archeological Society* 58 (for 1987):147-174.

Ricklis, R. A.
1988 Archeological Investigations at the McKinzie Site (41NU221), Nueces County, Texas: Description and Contextual Interpretations. *Bulletin of the Texas Archeological Society* 58 (for 1987):1-76.

1989 Preliminary Observations on a Late Prehistoric Bison Processing Site (41RF21) on the Central Part of the Texas Coastal Plain. *Texas Archeology* 33(2):12-13.

1990 A Historical Cultural Ecology of the Karankawan Indians of the Central Texas Coast: A Case Study in the Roots of Adaptive Change. Ph.D. dissertation, The University of Texas at Austin.

Ricklis, R. A. and R. R. Gunter
1986 Archaeological Investigations at the Means Site (41NU184), Nueces County, Texas. *La Tierra* 13(1):15-32.

Sayles, E. B.
1935 *An Archaeological Survey of Texas.* Medallion Papers No. 17, Gila Pueblo, Globe, Arizona.

Shafer, H. J. and C. Bond
1985 An Archeological Review of the Central Texas Coast. *Bulletin of the Texas Archeological Society* 54 (for 1983):271-285.

Smith, H. A.
n.d. The Tucker Site: An Archaic Settlement on the Lower Texas Coast. Unpublished manuscript on file at the Corpus Christi Museum.

Steele, D. G. and E. R. Mokry, Jr.
1985 Archeological Investigations of Seven Prehistoric Sites Along Oso Creek, Nueces County, Texas. *Bulletin of the Texas Archeological Society* 54 (for 1983):287-308.

Story, D. A.
1968 *Archeological Investigations of Two Central Gulf Coast Sites.* State Building Commission Archeological Program, Report 13. Austin.

Stuiver, M., G. W. Pearson and T. F. Braziunas
1986 Radiocarbon Age Calibration of Marine Samples Back to 9000 Cal Yr B.P. *Radiocarbon* 28(2B):980-1021.

Suhm, D. A., A. Krieger and E. B. Jelks
1954 An Introductory Handbook of Texas Archeology. *Bulletin of the Texas Archeological Society* 25.

Turner, E. S. and T. R. Hester
1985 *Stone Artifacts of Texas Indians.* Texas Monthly Press, Austin.

Widmer, R. J.
1988 *The Evolution of the Calusa: A Nonagricultural Chiefdom on the Southwest Florida Coast.* The University of Alabama Press, Tuscaloosa and London.

Wright, S. S.
1980 Seismic Stratigraphy and Depositional History of Holocene Sediments on the Central Gulf Coast. M.S. thesis, The University of Texas at Austin.

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AN INCISED PEBBLE FROM VAL VERDE COUNTY, TEXAS

C. K. Chandler

ABSTRACT

An elaborately incised stone from a rockshelter in Val Verde County, Texas is described and illustrated. The incised design on this stone is one of the very few designs that finds parallels on painted pebbles in the Lower Pecos.

INTRODUCTION

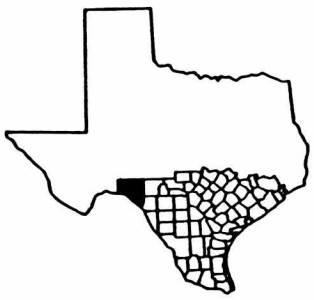
Painted pebbles have long been recognized as an important cultural trait along the Lower Pecos River and adjacent areas of the Rio Grande, and in part of the Big Bend region (Jackson 1938). However, carved, incised or engraved stones have rarely been mentioned in Texas archaeological literature.

The subject of painted pebbles has been addressed by a number of writers. Martin and Woolford (1932) were among the first to draw attention to the painted pebbles of the Big Bend. Davenport and Chelf (n.d.) examined several hundred and the greatest majority of these came from Val Verde County. A few specimens for their study were obtained from Terrell, Kinney, Edwards, Brewster and Llano Counties. These painted pebbles never show clear-cut pictures of anything such as game, fish or objects. The only definite representations are those of human beings or spiderwebs. Incised pebbles are not mentioned. They illustrate three painted pebbles from Val Verde County with spiderweb designs. While there is a great deal of similarity of these pebbles with the one incised pebble documented here (Figure 1), they are not in such detail as the incised one. Mock (1987) illustrates two specimens with spiderweb designs that are painted black. These are illustrated here (Figures 2 and 3) for comparison with the incised one. They are from Val Verde County.

Parsons (1986) studied the stylistic and chronological placement of painted pebbles and determined that the spiderweb design is the earliest known in the Lower Pecos sequence, dating from perhaps 6500 B.C. It is distinct technologically as well as stylistically, being painted with very fine lines. He places these in his Style 1 category of six styles established for both style and chronology.

ARTIFACT DESCRIPTION

This incised stone is a thin, nearly rectangular piece of reddish brown sedimentary siltstone. It has a greatly detailed spiderweb design covering one entire side. Part of this design extends on to one edge. The reverse has eight parallel zigzag lines running from end to end that are bordered along one side by two parallel straight lines that do not extend full length. The central core motif of the spiderweb design is near center at the widest end of the stone, and a series of parallel longitudinal lines extend from the core element to the opposite end. Additional straight lines radiate from the central core and these lines terminate at the edge of the stone. Evenly spaced concentric circles extend outward from the core element about two-thirds the length of the stone. There are a few intersecting transverse lines toward the small end of the stone away from the central core motif. The design shows exceptionally fine execution and appears to have been done with a finely pointed tool such as a tiny graver. There is no doubt that the artist had a definite design in mind as attested to by the uniformly spaced and



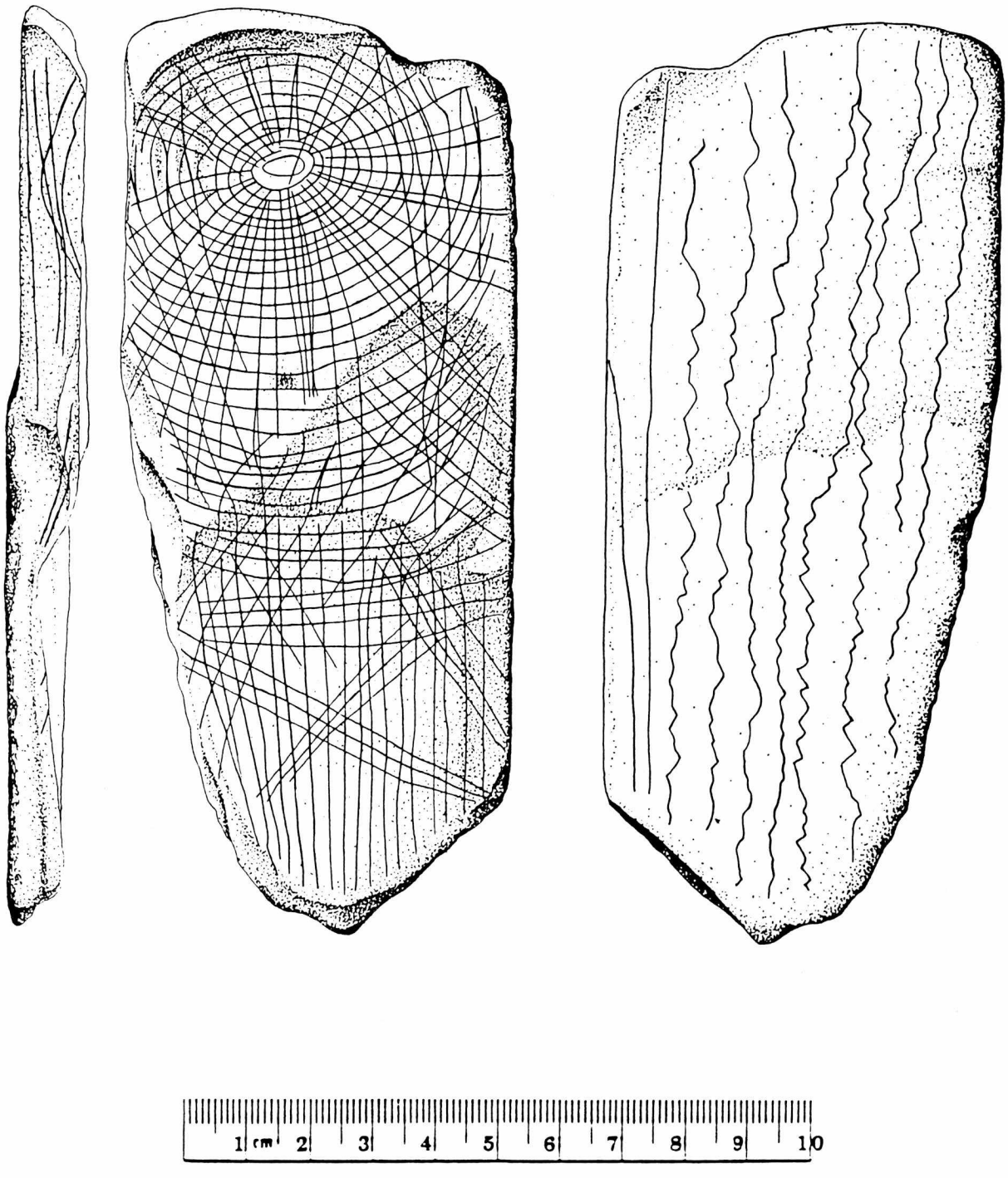


Figure 1. Incised pebble from Val Verde County. Steve Portillo collection. Drawing by Richard McReynolds.

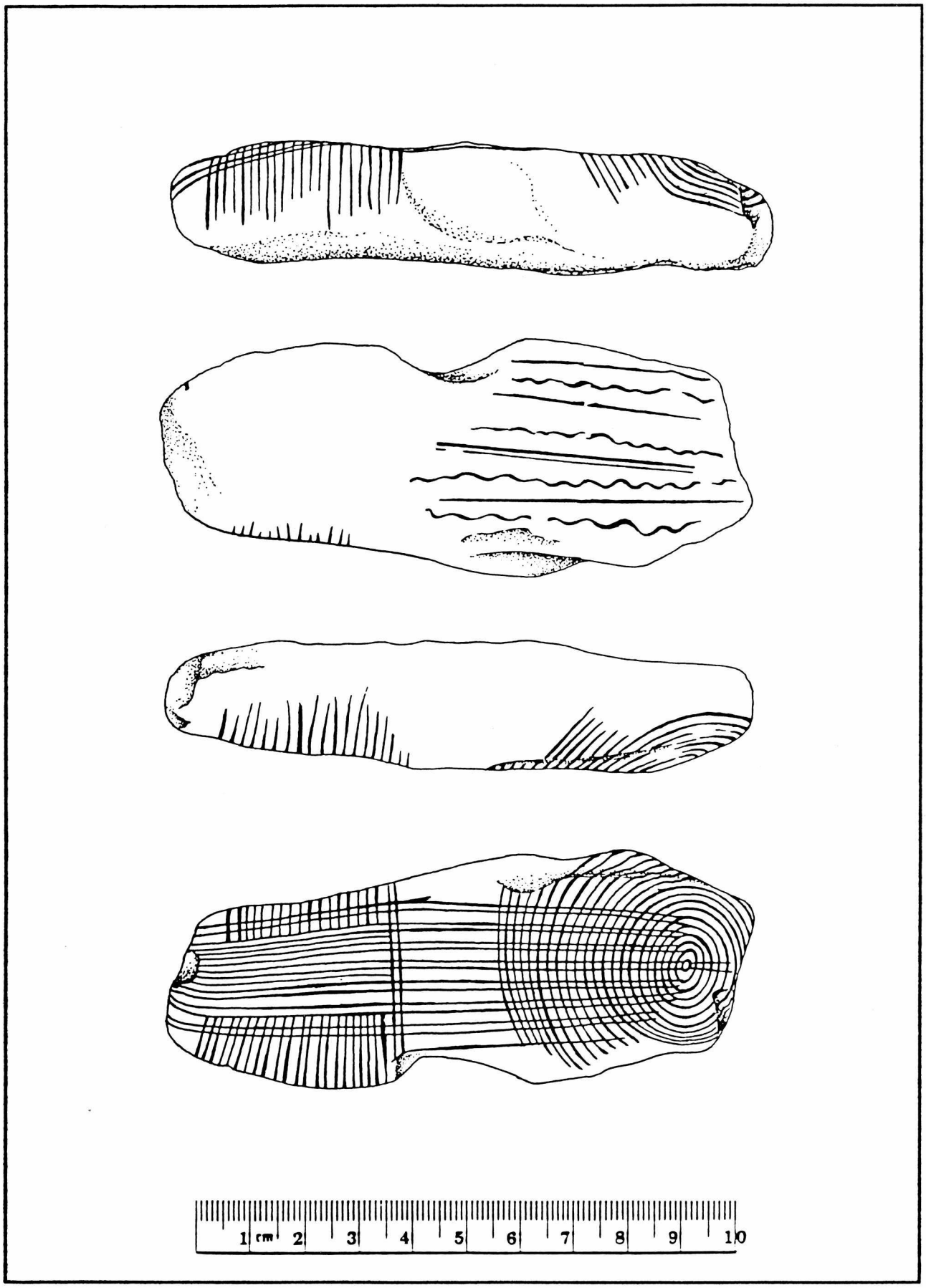


Figure 2. Spiderweb painted pebble found in Val Verde County. Drawing by Richard McReynolds.

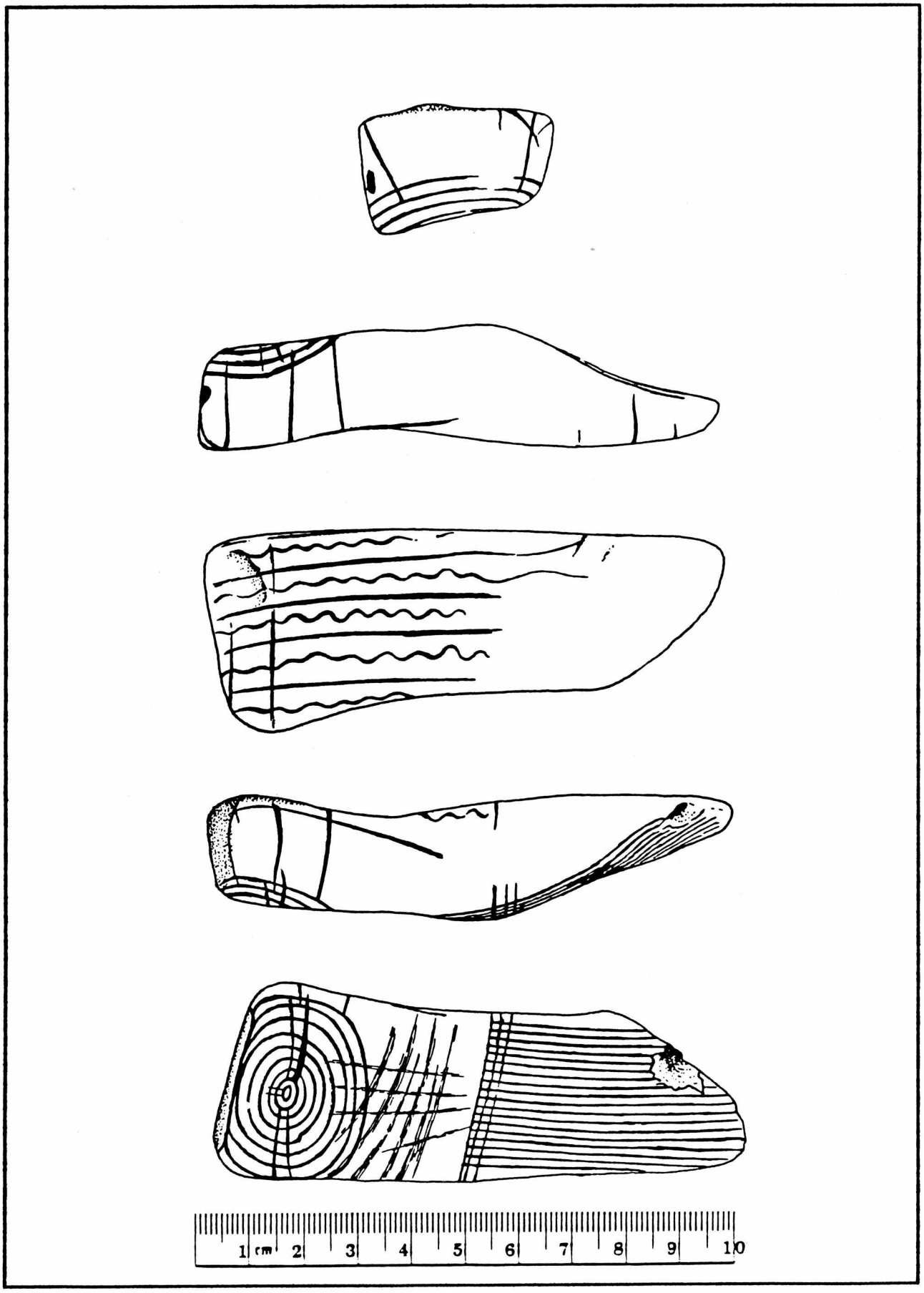


Figure 3. Spiderweb painted pebble found in Val Verde County. Drawing by Richard McReynolds.

balanced lines that speak of the confidence and certainty of what the finished design would look like.

The edges of the stone are rounded and polished and most of the flat areas are also polished. This edge rounding and polish appears to be from extensive handling and rubbing. Under magnification longitudinal striations are visible over most surfaces indicating they were ground and smoothed in preparation for the incising. The artifact is 14.4 cm long, 6 cm wide and 8 to 11 mm thick.

It was recovered in an uncontrolled excavation of a cave/rockshelter near Langtry, Val Verde County in 1986 by Steve Portillo. It is said to have been recovered at a depth of 8 to 9 feet. The depth at which this artifact was found establishes it as chronologically very early, though its actual age cannot be established.

DISCUSSION

In her studies of painted pebbles and other forms of portable rock art, Mock (1987) has the following to say about spiders and spiderweb designs:

> "The spider is a prominent figure in the myths and legends of the Southwest and certain parts of the Plains and California, who is sometimes transformed into Spider Grandmother. By spinning ropes, Spider Grandmother was able to fasten the sky and earth together. Among the Plains Indians Spider Grandmother wove a magical spiderweb by which she was able to control and produce buffalo.
>
> "She was believed to be a purveyor of medicine among the Pueblo. Bowls in Hopi sites are found with web designs and many of the hoops used in games have spiderweb designs. The Sia believe that Spider Grandmother lived at a place called *Sipapu* under the lakes with other female deities. It is also of note that the spider in some areas of California was adept at conferring shamanistic powers and connected to basket-making and medicine. The spider as a female deity or helper was also interrelated with the concept of Earth Mother.
>
> "The concentric circles or spiral design around the core element is an ancient design with considerable time depth in the Americas. This design is noted in the pictographs at Rattlesnake Canyon (Kirkland and Newcomb 1967)."

There is a Spider Woman in Navajo mythology--a very important deity. Among other things, she is supposed to have taught the women to weave. There is a giant monolith at Canyon de Chelly in Arizona called Spider Rock that is over 800 feet high. Spider Woman is said to make her home on top of Spider Rock and her powers are often invoked in the teaching of Navajo children.

The Cherokee of the southeastern United States have an interesting myth about the spider which links this form with the origin of fire:

> "The myth relates how the water spider among all living things brought back the first fire to man. In this story the thunders sent their lightning and placed fire into the bottom of a hollow sycamore tree growing on an island. After all other creatures had tried and failed to bring the fire from the island, the water spider spinned a thread from her body, wove it into a small bowl, and attached it to her back. She then swam across to the island, placed a coal of fire into her bowl, and crossed back to the shore. She then gave man the first fire. Since the spider representation is often combined with the cross motif, it is thought that the spider symbolizes fire" (Walthall 1977).

References Cited

Davenport, J. Walker and Carl Chelf
n.d. Painted Pebbles from the Lower Pecos and Big Bend Regions of Texas. *Witte Memorial Museum, Bulletin V.*

Jackson, A. T.
1938 Picture Writing of Texas Indians. *University of Texas Publication No. 3809.*

Kirkland, Forrest and W. W. Newcomb, Jr.
1967 *The Rock Art of Texas Indians.* The University of Texas Press, Austin and London.

Martin, George C. and Sam W. Woolford
1932 Painted Pebbles of the Big Bend. *Bulletin of the Texas Archaeological and Paleontological Society 4.*

Mock, Shirley B.
1987 The Painted Pebbles of the Lower Pecos: A Study of Medium, Form and Content. Unpublished M.A. thesis, The University of Texas at San Antonio.

Parsons, Mark L.
1986 Painted Pebbles, Style and Chronology. In: *Ancient Texans: Rock Art and Lifeways Along the Lower Pecos* by Harry Shafer. Texas Monthly Press, for Witte Museum.

Walthall, John A.
1977 *Moundville: An Introduction to the Archaeology of a Mississippian Chiefdom.* Alabama Museum of Natural History, The University of Alabama.

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A PROBABLE ABORIGINAL GUNFLINT FROM SITE 41LK293 IN LIVE OAK COUNTY, TEXAS

William E. Moore

ABSTRACT

A probable aboriginal gunflint from Live Oak County, Texas, is described and discussed.

DISCUSSION

In May of 1990 I was driving through South Texas. As I approached Little Gamble Creek where it crosses State Highway 59 just outside the town of George West, I observed a sandy ridge parallel to the creek on its west bank that appeared to be a good location for a prehistoric site. After talking with the landowner, I obtained permission to walk over the area. I did not see any cultural materials on the north side of the highway in the vicinity of her house. After crossing the road, however, I found a site containing numerous flakes and some bifaces on the surface. The site was found to extend over a sandy ridge that lies between Little Gamble Creek to the east and an unnamed tributary of the Nueces River to the west. The size of the site was not determined but debitage appeared to be present over an area of 1,200 by 2,000 feet. The site area occupies a prominent landform which commands an excellent view of the Nueces River and its floodplain to the west. Mesquite, short brush, and cactus was the main type of vegetation at the time of my visit. Erosion, animal burrows, and unpaved roads combined to make for excellent ground surface visibility.

No shovel testing or other subsurface investigations were conducted. I walked over most of the site looking for diagnostic artifacts or features that might help classify it according to age or function. Only one artifact, a gunflint (Figure 1), was noted that seemed worthy of collection. Since I was not sure if it was actually a gunflint, it was collected for identification. A check of site records at the Texas Archeological Research Laboratory (TARL) in Austin, Texas revealed this site had not been recorded. A site form was completed and the area received the trinomial 41LK293.

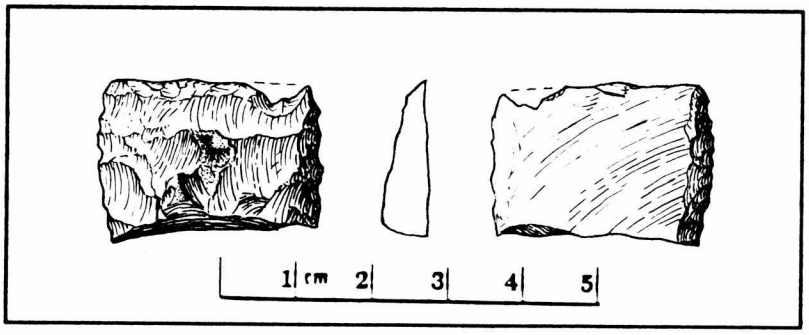

Figure 1. A probable aboriginal gunflint from 41LK293. Drawing by Frank Weir, Texas Highway Dept.

I showed the specimen to Nancy Kenmotsu of the Texas Historical Commission who identified it as a gunflint. She examined it with a microscope and discovered that it has powder burns on both faces. Since it is made from what appears to be native chert it was probably locally made, presumably by Indians. It does not have the appearance of one made by Europeans for

trade or sale, as commercial gunflints are much more symmetrical. Gunflints were cheap and not usually made by soldiers. Approximately fifteen rounds could be discharged with one flint.

Locally manufactured gunflints are not commonly reported in archaeological sites. Two reasons are offered as an explanation: first, Indians began using European gunflints when obtainable, therefore, this category of artifact may be very rare over much of the state; second, some aboriginal gunflints may not be documented in early collections. Some specimens, believed to be bifaces, may actually be gunflints and were not labeled as such by some researchers.

Site 41LK293 is located a short distance from Fort Merrill, created to protect the frontier from Indians. This military post, on the right bank of the Nueces River in Live Oak County at the point where the road from San Antonio to Corpus Christi crossed the river, was established in March 1850 by Captain S. M. Plummer, with Companies H and K of the 1st Infantry from Fort Brown. Companies I and E of the Rifle Regiment were the regular garrison until April 26, 1853. It was abandoned on December 1, 1855.

The presence of a probable aboriginal gunflint at a site in close proximity to Fort Merrill may indicate the presence of a site occupied by one of the historic Indian groups of the region. The gunflint discussed in this article is curated at the Texas Archeological Research Laboratory (TARL) in Austin, Texas.

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A NOTE FROM YOUR EDITOR

The Center for Archaeological Research, in 1974, was a joint effort in concept proposed by Dr. T. R. Hester, considered and approved by Dr. Peter T. Flawn, President of the University of Texas at San Antonio, and Dr. R. E. W. Adams, Dean of Humanities and Social Sciences. Dr. Hester was appointed Director of the research facility and in mid 1975 Jack Eaton joined the CAR and was very instrumental in its growth.

The B.A. program in Anthropology was effected when the UTSA campus went fully undergraduate in late 1975. Subsequently the opportunity to enter the Masters program resulted from the combined efforts of Dr. Thomas C. Greaves, Division Director at the time and Drs. Joel Gunn, R. E. W. Adams, Maria Luisa Urdaneta and T. R. Hester.

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Evelyn Lewis

AUTHORS

C. K. CHANDLER, current Secretary and also Documentation Chairman of STAA, is a retired railroad management official and engineering consultant with an insatiable interest in Texas archaeology. He is Past President of the Texas Archeological Society and a member of the Coastal Bend Archeological Society. C. K. was the 1985 Robert F. Heizer Award winner for his extensive work in south Texas archaeology (see Vol. 13, No. 1). Also, in 1985, he recorded more archaeological sites with the Texas Archeological Research Laboratory than any other individual. C. K. is a valued contributor of manuscripts to *La Tierra* and the *Bulletin of the Texas Archeological Society*, covering such varied subjects as metal points, rock art, and hearthfield sites in Terrell County. He has been honored by being named a TAS Fellow, and was also appointed as a steward for the Office of the State Archeologist. The Chandlers reside in northern San Antonio.

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THE SOUTHERN TEXAS ARCHAEOLOGICAL ASSOCIATION

The Southern Texas Archaeological Association brings together persons interested in the prehistory of south-central and southern Texas. The organization has several major objectives: To further communication among avocational and professional archaeologists working in the region; To develop a coordinated program of site survey and site documentation; To preserve the archaeological record of the region through a concerted effort to reach all persons interested in the prehistory of the region; To initiate problem-oriented research activities which will help us to better understand the prehistoric inhabitants of this area; To conduct emergency surveys or salvage archaeology where it is necessary because of imminent site destruction; To publish a quarterly journal, newsletters, and special publications to meet the needs of the membership; To assist those desiring to learn proper archaeological field and laboratory techniques; and To develop a library for members' use of all the published material dealing with southern Texas.

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