

CHAPTER 7.

An Archaeological Research Design for the Malpai Borderlands

Borderlands Archaeological Context_____

Archaeological cultures of the Malpai Borderlands study area are intermediate between the homelands of several better defined and relatively well-studied prehispanic manifestations. To the northwest, the Hohokam represent a persistent cultural expression throughout ceramic times. To the north and northeast, before A.D. 1200, the Mimbres culture created dominant ceramic styles. Thereafter, the Salado and Casas Grandes spheres to the north and south respectively represent archaeological cultures in a broadly Mogollon tradition.

Located between some of the more dramatic developments in Southwest prehistory, the Malpai Borderlands have played a key role in regional synthesis and the development of interpretive constructs about frontiers (De Atley 1980), interaction spheres (Douglas 1995; P. Fish and Fish 1999; Skibo and others 2002), political dominance (Di Peso 1974; Wilcox 1995), and short-term sedentism with cycles of abandonment and migration (Nelson and Anyon 1996; Nelson and LeBlanc 1986). These regional models and related constructs necessarily incorporate fragmentary data from the Borderlands and reflect perspectives on better understood cultural systems in other regional sectors.

Local typological, chronological, and cultural sequences are poorly developed. Instead, archaeologists typically have projected established schemes from adjacent culture areas. Malpai Borderlands research invariably has been designed to address Casas Grandes, Mimbres, or Salado issues; there has never been a sustained, intensive investigative focus on locally generated

problems. Because the study area has not had significant urban or agricultural development with direct Federal and State involvement, cultural resource management investigations have been limited to a few surveys. High-quality, large-scale excavations are lacking. As a result, any comprehensive attempt to understand past human-land relationships must be grounded in long-term interdisciplinary research that initially focuses on basic data collection.

Phase 1: Spanish and Mexican Archival Study_____

This phase of research has been initiated. Thomas Sheridan and Diana Hadley have been contracted to review original Spanish and Mexican archives for ecological and culture history information pertinent to the Malpai Borderlands. Colonial and Mexican period archives are believed to contain information regarding phenomena such as drought, flooding, human use of fire, Apache land use, and early ranching and farming activities. A brief overview of their work (Hadley and others 1999) has been published and a complete report should be available in the near future.

Phase 2: Malpai Borderlands Conference/Workshop_____

One aspect of the second phase of research has also been completed. A short conference (2 to 3 days) was called to acquaint all parties conducting research in the

Malpai Borderlands with the work of others. A wide range of natural and social scientists, including archaeologists and historians, reported on investigations conducted in conjunction with the Gray Ranch and governmental agencies, and on independent research interests (Gottfried and others 1999). A second week-long workshop or conference should be called once Malpai Borderlands archaeological investigations are resumed and should include scholars interested in dendrochronological studies, palynology, a wide range of studies on the existing environment, packrat midden analyses, and the Gray Ranch mapping project.

This workshop should initiate an interdisciplinary examination of prehistoric and historic environmental change in the Borderlands and should draft a proposal for support of research to one of several potential funding agencies. For example, the broad range of well-qualified researchers involved in Borderlands investigations could develop a compelling proposal to any number of the National Science Foundation competitions, particularly those pertaining to global climate change. A small group of six to 10 principal investigators could write such a proposal during the final 3 days of the conference in this workshop format.

Phase 3: Survey of Existing Artifact and Field Record Collections

An initial stage should consist of a concentrated effort to obtain valuable knowledge about the study area residing in the collections and recollections of amateurs. Extensive Arizona experience suggests that this effort is particularly crucial for compiling information on Paleoindian through Middle Archaic as well as historic time periods. A reference collection and graphics could be used to aid the recollection and identification of stylistically diagnostic artifacts. Amateurs could provide locations of features such as small springs and caves, in addition to sites. Field visits in the company of amateurs will be an important part of this phase. In this regard, the systematic and accurately located collections by Jeff Shauger of the Gray Ranch are particularly important and comprehensive.

A systematic review of existing museum collections from excavated archaeological sites in and near the Borderlands study area should be a secondary thrust of phase 3 investigations. It is likely that Museum of New Mexico and School for American Research collections from McCluney's (1965a, 1965b) and Lambert and Ambler's (1961) excavations, and Harvard's Peabody Museum collections from Kidder and others (1949) will

contain material valuable for dating and ecological study. It is also possible that there are collections at the Maxwell Museum and Museum of New Mexico which are poorly documented in the literature, such as materials from the University of New Mexico's expedition to the Culberson Ruin in the 1930s (Osborne and Hayes 1938)

Phase 4: Tree-Ring Studies Pertaining to Archaeology

Detailed recommendations from both the Fire Ecology and Archaeology Sections at the University of Arizona Tree Ring Laboratory were presented as appendices to the overview manuscript (Baisan and others 1997; Dean 1997). Specific projects include: (1) resample tree-ring sites in the Pinaleno Mountains where the longest chronology for the region has recently been developed; (2) extend chronologies that are currently limited to the mid-15th century from the Animas Mountains and Sierra Ajos Mountains; and (3) conduct an in-depth search of archival and historical documents that would augment ecological models proposed from tree-ring studies. These investigations will enhance our understanding of regional prehistory through effective integration of archaeological information and paleoecological data. Because modest costs are anticipated, we recommend giving these studies high priority. They should be undertaken prior to archaeological studies beyond the reconnaissance level.

Phase 5: Geoarchaeological Assessment

A geoarchaeologist should be employed to delineate geomorphic surfaces of relatively uniform age and to identify processes that are likely to obscure surface indications of archaeological remains. In cases of recognized burial, depths to materials of particular age should be approximated. The geoarchaeologist would also construct a geological perspective on environmental history to evaluate settlement trends and their effects on the environment. Likely locations to obtain environmental sequences such as packrat middens and pollen cores should be identified. A hydrological assessment should include agricultural potential of drainages and age of spring locations.

Phase 6: Reconnaissance Survey

A reconnaissance level survey should be designed to obtain particular types of land use and cultural information. Existing aerial photographs for the Borderlands

study area should be assembled and examined for their potential in revealing information on prehistoric land use, particularly modifications to the landscape resulting from past agriculture. Major village sites should be revisited with an eye toward identifying additional ballcourts.

Phase 7: Systematic Survey_____

A broad-scale, systematic survey should be conducted, based on prior stratification of the study area according to naturally and culturally relevant variables. Preliminary observation of settlement pattern suggests that concentrated ceramic era settlements on basin floors and mountain flanks should be subjected to large block or full-coverage examination. Mid-basin and upper elevation areas might be tied into these blocks through survey transects.

To efficiently sample preceramic and other less sedentary occupations including many of the historic period, survey blocks and transects may be designed around springs, playas and their associated high stand lakes, and other attractive features on the landscape. All exposed drainage profiles should be carefully examined, in addition to surface observations. In view of hierarchical tendencies in the late ceramic settlement patterns, block surveys should also be designed around large sites in areas of dense settlement and around focal villages containing ballcourts.

Phase 8: Studies in Holocene Environmental Change_____

Packrat Midden Studies

Packrat midden studies should be undertaken within the study area. Pollen and plant macrofossil studies of packrat middens have shown these deposits to be highly sensitive barometers of local environment. Reconnaissance during the present study confirms that numerous, well-preserved middens exist in grassland and higher elevation environments at a variety of locations in the study area. Current regional packrat studies are from higher elevation woodland environments, rather than valley floors. Middens located in present-day grasslands should be particularly valuable in testing previous models of post-Pleistocene invasions of shrubby plants into these lower elevation zones (Van Devender 1990).

Palynology

Pollen profiles at the Gray Ranch cienega and at cienegas adjacent to the study area (Davis n.d.) could be expanded to include other cienega or spring sequences.

Replication of sequences will provide insights into both changing climate and prehistoric human practices involving water and vegetation near the cienegas.

Both the palynological and packrat midden studies must be accompanied by large numbers of radiocarbon dates for chronological control. These dates, combined with specialized botanical studies, make such investigations expensive. Therefore, this research should follow the geoarchaeological assessments and the archaeological surveys, during which deposits for sampling can be identified. It may also be possible to better relate this environmental research to locations selected for detailed archaeological study at a later phase of investigation.

Phase 9: Problem-Oriented Excavations_____

Data for solving particular problems pertaining to chronology, subsistence, and human-induced environmental change ultimately must come from excavation of archaeological deposits.

Geomorphological Studies Related to Hydrology

Such studies include focused trenching to retrieve the environmental and culture histories of cienegas, streams, and playas. Near cienegas, geological histories, and terrestrial sequences of botanical samples to match core records could be obtained; trenches might also reveal damming or ditching for agricultural purposes. History and stratigraphy could also be explored in this manner for playas, important long-term resource zones in regional prehistory. The history of Borderland drainages is also an important element in understanding irrigation and floodwater farming.

Extractive Sites

Survey and excavation can be designed to characterize hunting and gathering locations through time. Detailed study will be needed to pinpoint the date of use, duration of use, and resources obtained. Densities of extractive sites by zones such as grassland, high elevation forest, and playa margins provide evidence for magnitudes of resource use and human presence.

Agricultural Sites

Study of these sites will include intensive survey and mapping to understand agricultural technology and productivity, dates of use, associated tool assemblages, and

field layout, including the location of ancillary facilities such as canals, ditches, roasting pits, and field houses. Excavations should target both constructed features and field sediments to retrieve botanical samples for reconstructing crop variety, weedy flora, and evidence for specific practices such as burning.

Residential Sites

Excavations at residential sites can be designed to recover dendrochronological specimens for dating and climatic reconstruction. Modern analog studies will be necessary to support this program. Additionally, construction timber identifications will indicate source and intensity of such wood use. Most Borderlands settlements fall in lower elevations that do not contain tree species suitable for tree-ring dating but are adjacent to higher mountain zones where such trees exist. Recent research in other desert locations such as the Tucson Basin (Dean and others 1996) and Casas Grandes (Dean and Ravesloot 1993) demonstrate the importance of timbers of high elevation species such as ponderosa pine, Douglas fir, and white fir in the construction of adobe buildings. Regular procurement of these species in construction suggests currently untapped potential for dendrochronological study in many desert locations, including the Borderlands.

Flotation and pollen samples are needed to indicate subsistence mixes of wild and later cultivated resources and the zonal emphasis and intensity of plant exploitation. These studies should also inform on natural environment, environmental change, and specifically human modifications of the environment. Weedy and successional floras are particularly relevant in these regards. Charcoal from fuel use is another way to monitor wood consumption and such issues as source areas and depletion.

Systematically recovered faunal samples are also critical to an evaluation of the zonal sources and relative mixes of animal resources. These studies may also inform on environmental change and resource pressures, as in the changes in lagomorph (jackrabbit, cottontail) species and reduction of artiodactyls (deer, antelope, and so forth) during extended occupations. Hunting patterns may be one of the better ways to monitor resource acquisition at a distance from residential sites, particularly at higher elevations.

Settlement Pattern Studies

Settlement pattern studies are the means for integrating all of the foregoing kinds of data. Occupational densities and relationships among site locations and resources

are needed to evaluate human impacts through time. In particular, it is important to assess the contemporaneity and degree of relatedness of sites in areas of clustered settlement to assess population size and environmental pressures. It is important, therefore, to investigate hierarchical relationships among sites and evidence for territorial integration. Based on detailed settlement pattern studies, including all of the foregoing site-level information, simulations can be made of land-use patterns, resource consumption, and environmental impacts for various periods of study area prehistory.

Recommendations for Priority Excavation

Caves or rockshelters with high potential for long sequences or chronologically critical intervals should be targeted. There is a need for information from stratified deposits for all segments of the prehistoric sequence, and these can be acquired as efficiently in few other ways. Existing information from cave localities was not acquired using rigorous techniques, and biological and chronological information was not previously emphasized.

Early villages are virtually unknown from Borderlands investigations. Sites beginning with villages of Late Archaic farmers, if located, and a variety of pre-Casas Grandes settlements in both the eastern and western sectors should be tested before selections are made for more detailed excavation.

Later ceramic settlements with compound architecture in the western study area should be emphasized. These sites have been neglected more than those with closer stylistic ties to Casas Grandes. At present, it is difficult to predict architectural layout or even to roughly estimate room numbers. Initial efforts should emphasize efficient outlining of walls as well as intensive excavations.

Locations of consistent, long-term attraction should be targeted to convincingly monitor environmental impacts. Holding location constant, biological materials from sequential occupations would offer insights into changing magnitudes and kinds of modification. At Slaughter Ranch, for instance, Archaic, early ceramic, and late ceramic occupations could be contrasted with the historic Colonial and territorial archaeology of the locale. Evidence for farming technologies during each of these intervals could be examined concurrently. Consequences of the transition from prehistoric to early historic land use would be of particular interest. In the eastern portion of the study area, another locale with chronologically varied prehistoric occupation might be in the vicinity of the cienega at Maddox Ranch.