

CHAPTER 1.

Introduction

Malpai Borderlands Ecosystem Study Area

The Malpai Borderlands study area is in those portions of southeastern Arizona and southwestern New Mexico that have been biogeographically described as the Madrean Archipelago (DeBano and others 1994: 580). The area covers approximately 1,600 square miles of the Basin and Range Physiographic Province south of the Rocky Mountains and north of the Sierra Madre Occidental (fig 1.1). Arbitrarily bounded on the south by the international border with Mexico, it includes large sections of the San Bernardino, San Luis, Animas, and Playas Valleys.

Low elevations range from about 1,220 m (4,000 ft) in the San Bernardino Valley basins to 1,525 m (5,000 ft) in the Animas Valley and to 1,370 m (4,500 ft) in the Playas Valley. Highest elevations in the Animas and Peloncillo Mountains are over 2,240 m (8,000 ft). These elevation differences, combined with variation in climatic regime along the 120 km (75 miles) east-west width of the study area, create a region of considerable biological diversity; in fact, this is one of the most biologically diverse regions in North America (DeBano and others 1994: 580). Within the study area, lowlands are characterized by Sonoran Desert and thornscrub vegetation in the San Bernardino Valley in the west, by Plains Grassland in the centrally positioned Animas Valley, and by Chihuahuan desertscrub and grassland in the Playas Valley (Brown and Lowe 1980). Mountain ranges support oak and pine-oak woodlands, pine forests, and spruce-fir forests on the highest peaks.

Rainfall is highly correlated with elevation. Between 250 and 350 mm (9.75 and 13.65 inches) falls on valley floors and over 500 mm (19.50 inches) on the mountain

crests. These patterns become increasingly summer-dominant as they move eastward across the study area. Hydrologically, sustained surface water is patchy, occurring in cienega locations on valley floors and spring localities at the edges and in the mountain masses. Interior drainage in the San Luis and Playas Valleys create large ephemeral lakes.

Because of this biological diversity and because of intense historic human impacts on the landscape, Federal and State land management agencies and local landowners are exploring use of the Malpai Borderlands as a natural laboratory to develop a comprehensive program of ecosystem management. Proposed and ongoing research to support this management program includes long-term studies of the ecosystem from population, community, and landscape perspectives and a focus on interactions between grasses and woody plants in relation to soils, climate, and human disturbance. From the onset, program research has emphasized invasion of woody plants into grassland environments and a resulting loss of ecosystem diversity.

The invasion of woody plants is variously attributed to drought, overgrazing by livestock, and the suppression of fire. Restoration of a “natural role” for fire, with prescribed burns and changes in wildfire suppression practices, is seen as an appropriate management technique to counter invasion trends (Allen 1994: 386–388). The role of fire and its long-term effectiveness in ecosystem management practices are a particular focus of Malpai Borderlands research goals.

The purpose of this present book is twofold: first, to synthesize existing archaeological information about the Borderlands to provide a long-term background of changing prehistoric environment due to climate and human impacts, including the use and suppression of fire; and

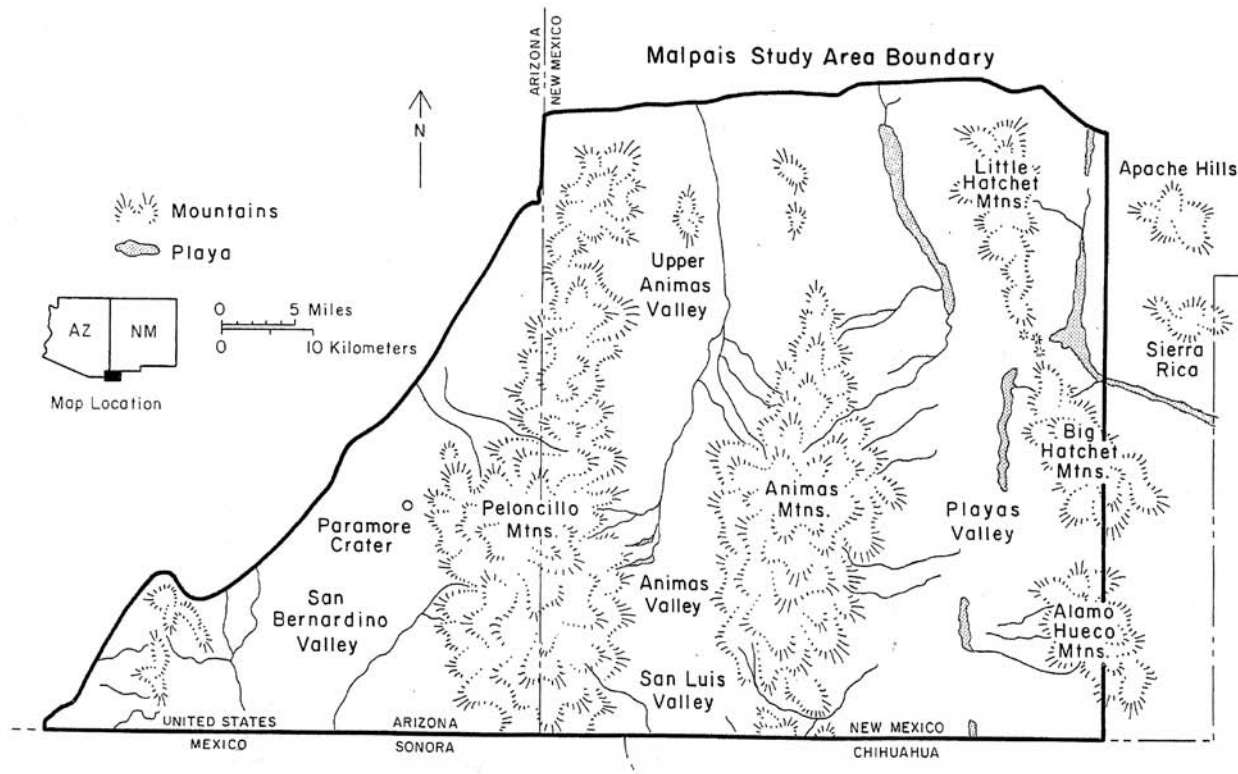


Figure 1.1. Major geographic features of the Malpai Borderlands study area.

second, to develop a plan for continuing investigation of these phenomena.

Borderlands Archaeological Context

The archaeological manifestations of the Malpai Borderlands study area are intermediate between the homelands of several better defined and relatively well-studied archaeological cultures. 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 styles. Thereafter, archaeological cultures in a broadly Mogollon tradition are represented by Salado and Casas Grandes spheres, to the north and south, respectively.

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 (DeAtley 1980), interaction spheres, 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 based on better understood cultural systems in other regional sectors.

Local typological, chronological, and cultural sequences are poorly developed for the Malpai Borderlands. Instead, archaeologists typically have projected established schemes from adjacent cultures. Borderlands research invariably has been designed to address Casas Grandes, Mimbres, or Salado issues, and there has never been a sustained, intensive investigative focus on locally generated problems. Because the study area has not had significant pressures from urban or agricultural development with direct Federal and State involvement, cultural resource management investigations have been limited to a few surveys, and high-quality, large-scale excavation programs have not been undertaken.

Goals for This Overview

Four objectives for this overview were defined by the Coronado National Forest and the authors. First, we were to assemble and organize existing site information for the Malpai Borderlands study area. Second, a synthesis of study area culture history and ecology was to place local

developments in a regional context and to serve as an annotated bibliography to facilitate future investigations. Third, a model of prehistoric human impacts from the particular perspective of fire ecology was to be constructed to frame questions for future research. Finally, a series of recommendations and stages of investigation were to be identified to direct future archaeological research by the Coronado National Forest and the Rocky Mountain Research Station, USDA Forest Service.

Project Methodology

Introduction to Study Area Archaeology

We gained insight into the archaeology and environment of the Malpai Borderlands study area through a 3-day field trip in January 1996 led by Thomas O’Laughlin of the Jornada Anthropological Research Association, John Douglas of the Department of Anthropology at the University of Montana, and John Carpenter of the Department of Anthropology at the University of Arizona. The first day was devoted to the Animas Valley with stops at an early ceramic site, Maddocks Ruin, Cloverdale Ruin, and Paleoindian and Archaic sites along Cloverdale Creek and at the edge of the Cloverdale Playa. We visited Joyce Well and Culberson Ruin on the second day and then visited a large Animas-phase pueblo in the Carretas Basin in Chihuahua. The third day was devoted to Boss Ranch and other sites in the San Bernardino Valley.

Paul and Suzanne Fish made additional visits to the study area in spring 1995 to gain additional familiarity with the environment. Extended discussion with others knowledgeable about Malpai Borderlands archaeology included Curtis Schaafsma, Paul Minnis, Stephen Lekson, Michael Foster, John Ravesloot, Michael Whalen, Jim Ayres, John Roney, Thomas Holcomb, and Diana Hadley. These reconnaissance visits and interchanges with area researchers provided insight and background to prepare us for writing this overview.

Project investigators returned to the study area two times in spring 1996. The first visit was an attempt to locate the ballcourt described by Roger Kelley (1963) and to conduct reconnaissance level survey around Box Canyon, the Cowboy site, and Clanton Draw. The ballcourt could not be located. The second visit was to archaeological sites located by Jeff Shauger, an employee of the Gray Ranch, and to examine collections made by him at these sites. Shauger has systematically recorded archaeological sites during the course of his survey of ranch facilities such as fencelines, roads, water tanks, and old homesteads. His archaeological efforts represent a valuable resource that we discovered only in April 1996,

and unfortunately could not integrate into this overview in any systematic manner.

Annotated Bibliography and Historical Overview

We first prepared an annotated bibliography of archaeological literature directly bearing on the Malpai Borderlands study area and submitted it to the Coronado National Forest as a separate resource for its use. Although the bibliography is not included as an overview chapter, a majority of the entries have been incorporated into text references for chapter 4.

John Madsen reviews study area history in chapter 5 and in appendix D. The review covers the colonial and Mexican periods of study area land use and exploration to about A.D. 1850. Later ethnographic resources that pertain to Apache use of the study area are also incorporated.

Records and Archival Compilations

During spring and summer 1995, site files and report archives were consulted at the Arizona State Museum (including the records of the Gila Pueblo), Amerind Foundation, Bureau of Land Management (San Simon and Las Cruces offices), University Museum at New Mexico State University, School for American Research, and the Museum of New Mexico. Site and survey locations were plotted on USGS 7.5-minute topographic maps. Copies of these maps have been provided to the Cultural Resource Management office of the Coronado National Forest and are also on file at the Site File Office at the Arizona State Museum.

A database was developed from assembled site records that includes information on location, elevation, culture, ownership, and architectural and artifactual characteristics. The database is appendix A of this report. An electronic version also has been provided to the Heritage Program office of the Coronado National Forest for future expansion. Agency and other institutional surveys are listed by topographic quad in appendix B, and appendix C displays a concordance between site numbers and names assigned to study area sites by different institutions and surveys. Those interested in consulting literature on the Malpai Borderlands in addition to those cited in this volume, please refer to the section entitled “Supplementary Malpai Borderlands References.”

General Land Office Survey maps and notes for the study area were obtained on microfilm from the Bureau of Land Management State Offices in Albuquerque, New Mexico, and Phoenix, Arizona. All relevant surveys date from the late 1890s to the early 1930s. Maps and

notes were reviewed for information on water sources, evidence of farming, and old roads and trails. These maps contain considerable information of historic value, such as homestead locations and mines. The microfilm copies of maps and notes have been placed in the Arizona State Museum library.

Environmental Background

A survey of information of potential relevance in understanding Malpai Borderlands past and present environment was made by Guadalupe Sanchez de Carpenter and A.C. MacWilliams. Chapter 2 is a guide to published information directly pertaining to the study area and should be used as an annotated bibliography on subjects such as lithic resources, vegetation, soils, and studies of environmental change. It also provides discussion of environmental variability within and between study area valleys. Table 1.1 provides a list of common and scientific names for plants and animals used in this volume.

Finally, a major objective of this overview has been to explore possibilities of prehistoric human impacts to the environment, from the particular perspective of fire ecology (chapter 5). In view of the nature of available archaeological data, this study emphasizes the period of late prehistoric pueblos postdating A.D. 1200. Because both environmental and archaeological data are limited for the study area, the assessment draws heavily on ethnographic practices and interpolations from surrounding Southwestern regions. A model of impact specific to Malpai Borderlands vegetation and settlement patterns is presented in chapter 6.

Postscript and Acknowledgments_____

This report was prepared in 1997 as part of a contract between the University of Arizona and the Rocky Mountain Research Station, USDA Forest Service. It was revised only slightly before publication to accommodate important new findings and critical literature. With the exception of research by New Mexico State

University (Skibo and others 2002) in the “bootheel,” and reanalysis of past excavations (Douglas 2004; Skibo and others 2002), few new investigations have been conducted and published within the Malpai Borderlands study area. However, intensive investigations south of the international border have significantly changed our understanding of regional culture history. Changes in the original manuscript have been limited to only the most important of these findings.

Acknowledgments

Carl Edminster (Rocky Mountain Research Station, USDA Forest Service), Patricia Spoerl (Recreation and Lands Staff Officer, Coronado National Forest) and James MacDonald (Forest Archaeologist, Coronado National Forest), were constant sources of information, advice, editorial comment, and administrative support throughout the process of preparing this overview. Conversations with numerous colleagues helped refine our understanding of local prehistory and often led us to new sources of data; these individuals include Jim Ayres, John Carpenter, Jeffrey Dean, John Douglas, Patricia Gilman, Diana Hadley, Thomas Holcomb, Stephen Lekson, Paul Minnis, Thomas O’Laughlin, David Phillips, John Raveslout, John Roney, Curtis Schaafsma, and Michael Whalen. Curtiss Schaafsma particularly stands out for generously sharing his wealth of information and data on the bootheel section of the Borderlands. Archives and site files at the Amerind Foundation, Arizona Bureau of Land Management, New Mexico Bureau of Land Management, Arizona State Museum, Museum of New Mexico, Gray Ranch, and the New Mexico Bureau of Mines provided information important in the preparation of the overview. Ben Brown and Jeff Shauger of the Gray Ranch offered important information about study area archaeology and environment. John Douglas (University of Montana), William Gillespie (Coronado National Forest), and John Raveslout (Gila River Indian Community) supplied numerous suggestions in their peer review of the final draft manuscript.

Table 1.1. List of common and scientific names used in this publication.^a

Common name	Scientific name
Acacia	<i>Acacia</i> sp.
Acorn	<i>Quercus</i> sp.
Agave	<i>Agave</i> sp.
Alligator juniper	<i>Juniperus deppeana</i>
alkali-sacaton grass	<i>Sporobolus wrightii</i>
Antelope (pronghorn)	<i>Antilocarpa americana</i>
Apache pine	<i>Pinus engelmannii</i>
Ash	<i>Fraxinus</i> sp.
Aspen	<i>Populus</i> sp.
Bean	<i>Phaseolus</i> sp.
Bear-grass	<i>Nolina</i> sp.
Blue grama	<i>Bouteloua gracilis</i>
Bobcat	<i>Lynx rufus</i>
Border pinyon ^b / Mexican pinyon	<i>Pinus discolor</i> ^b / <i>Pinus cembroides</i>
Bottle Gourd	<i>Lagenaria siceraria</i>
Bulrush	<i>Scirpus</i> sp.
Burro-weed	<i>Aplopappus tenuisecta</i>
California Partridge	<i>Callipepla californica</i>
Catclaw	<i>Acacia Greggii</i>
Cedar	<i>Juniperus</i> sp.
Chihuahua pine	<i>Pinus leiophylla</i> var. <i>chihuahuana</i>
Cholla	<i>Opuntia</i> sp.
Colorado chum	<i>Gila</i> cf. <i>robusta</i>
Corkbark fir	<i>Abies lasiocarpa</i> var. <i>arizonica</i>
Corn	<i>Zea mays</i>
Cottontail	<i>Sylvilagus</i> sp.
Cottonwood	<i>Populus</i> sp.
Coyote	<i>Canis latrans</i>
Creosote-bush	<i>Larrea tridentate</i>
Cucurbit	<i>Cucurbita</i> sp.
Deer	<i>Odocoileus</i> sp.
Dock	<i>Rumex</i> sp.
Dog	<i>Canis Familiaris</i>
Douglas-fir	<i>Pseudotsuga menziesii</i>
Emory oak	<i>Quercus Emoryi</i>
Engelmann spruce	<i>Picea Engelmanni</i>
Evergreen Oak	<i>Quercus</i> sp.
Fir	<i>Abies</i> sp.
Fox	<i>Vulpes</i> sp./ <i>Urocyon</i> sp.
Goat	<i>Capra hircus</i>
Grama grass	<i>Bouteloua gracilis</i> sp.
Gambel oak	<i>Quercus Gambelii</i>
Gray oak	<i>Quercus grisea</i>
Grizzly bear	<i>Ursus horribilis</i>
Hawk	Accipitridae
Heron	Ardeidae
Honey mesquite	<i>Prosopis juliflora</i>
Jackrabbit	<i>Lepus</i> sp.
Juniper	<i>Juniperus</i> sp.
Macaw	<i>Ara</i> sp.
Mammoth	<i>Mammuthus</i> sp.
Mescal	<i>Agave</i> sp.
Mesquite	<i>Prosopis</i> sp.
Mesquite grass	<i>Panicum obtusum</i>
Oak	<i>Quercus</i> sp.
Ocotillo	<i>Fouquieria splendens</i>

Table 1.1. Continued.

Common name	Scientific name
One-seed juniper	<i>Juniperus monosperma</i>
Owl	Strigiformes
Palmilla	<i>Yucca elata</i>
Panther (Mountain Lion)	<i>Felis concolor</i>
Pine	<i>Pinus</i> sp.
Pinyon pine	<i>Pinus</i> sp.
Ponderosa pine	<i>Pinus ponderosa</i>
Prickly pear	<i>Opuntia</i> sp.
Quaking Aspen	<i>Populus tremuloides</i>
Rabbit-brush	<i>Chrysothamnus</i> sp.
Rock Squirrel	<i>Spermophilus variegates</i>
Salt-bush	<i>Atriplex</i> sp.
Scarlet Macaw	<i>Ara macao</i>
Skunk	Mephitinae
Snakeweed	<i>Gutierrezia</i> sp.
Soap-weed	<i>Yucca</i> sp.
Sotol	<i>Dasylirion wheeleri</i>
Spruce	<i>Picea</i> sp.
Squawfish	<i>Ptychocheilus lucius</i>
Sycamore	<i>Platanus</i> sp.
Tar-bush	<i>Flourensia cernua</i>
Tiger salamander	<i>Ambystoma tigrinum</i>
Turkey	<i>Meleagris gallopavo</i>
Yucca	<i>Yucca</i> sp.
Walnut	<i>Juglans</i> sp.
White Pine	<i>Pinus strobiformis</i>
Willow	<i>Salix</i> sp.
Wolf	<i>Canis lupus</i>
Wolfberry	<i>Lycium</i> sp.
Wood rat (packrat??)	<i>Neotoma</i>

^aPlant Nomenclature according to Kearney and Peebles (1960) unless otherwise indicated.

^bBorder Pinyon (Bailey and Hawksworth 1983) was described and distinguished from *P. cembroides* (Mexican Pinyon) after publication of Kearney and Peebles' most recent edition (1960).