The Western Apache Settlement System and Its Implications for the Prehistoric Early Mogollon Period

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The Western Apache Settlement System and Its Implications for the Prehistoric Early Mogollon Period

BY

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Abstract

Traditionally, the Early Mogollon settlement system has been assumed to be a sedentary, agricultural one. However, consideration of settlement pattern and ethnographic data suggests that it is equally plausible that the Early Mogollon settlement system was a semisedentary, mixed subsistence settlement system. The Western Apache settlement system is proposed as a potential analog for the Early Mogollon period.

First, ethnographic data on Western Apache social organization, subsistence, and scheduling are examined in order to delineate the Western Apache settlement system and then develop a model of it. Then, the Early Mogollon settlement system is examined; and a model based on the Western Apache settlement system is proposed.

Table of Contents

List of Tables

List of Figures

List of Maps

Chapter 1

Introduction

This thesis grows out of a long interest in the prehistoric Early Mogollon settlement system. Initially, I was interested in explaining the settlement pattern shift between the Early Pithouse period and the Late Pithouse period as documented by LeBlanc (1978, 1980, 1983) for the Mimbres Valley and as supported for west-central and southwestern New Mexico by Bluhm (1960), Danson (1957), and Martin and Plog (1973).

The location of Early Pithouse period sites on high, relatively isolated locations along stream valleys suggested to me an emphasis on maximizing access to a variety of resources rather than simply the placement of sites in defensive locations as suggested by LeBlanc and Martin and Plog. Basically, Early Pithouse period sites appear to have been placed in microecotonal situations between the riparian flood plain and an upland zone. The shift in site locations with the beginning of the Late Pithouse period to lower terrace locales suggested an increase

in the dependence on agriculture with an intensification of sedentism and the need to facilitate access to arable flood plain land. This interpretation implies that the shift in site location between these two periods was a result of a change in settlement systems, from a semisedentary, mixed subsistence settlement system to a more sedentary and agricultural one, rather than a reduction in defensive needs.

This line of thought results in the need to consider the forms of settlement systems present during the Early Mogollon period. In addition, if the Early Pithouse period was characterized by a semisedentary, mixed subsistence settlement system, how would such a settlement system exploit its environment, and what would be its specific form? These considerations resulted in an examination of the Western Apache as a potential analog for the Early Pithouse period settlement system.

Traditionally, the presence of a complex of ceramics, cultivars, and pithouse architecture, that marks the development of Early Mogollon culture out of an Archaic Cochise culture base, has been interpreted to indicate a change in settlement systems from a nomadic, hunting and gathering system to a sedentary, agriculturally dependent system (e.g., Haury 1962; Jennings 1956; LeBlanc 1980, 1982a, 1983; Martin and Plog 1973; Reed 1964). Although there have been observations to the contrary (Bluhm 1960; Martin 1940:35, 1943; Martin and Rinaldo 1947:316-317), only recently has this view been specifically challenged (Pool 1980; Rice 1975, 1980a, 1980b).

Broadly, these challenges see the Early Mogollon period, or at least part of it, as being characterized by a nomadic or semi-sedentary, mixed hunting-gathering-agricultural settlement system, transitional between the Cochise settlement system and a later sedentary, agriculturally dependent settlement system. Because the Western Apache inhabit a similar environment and part of the same range as the Early Mogollon and because there are similarities in subsistence systems, the Western Apache settlement system provides an model of this hypothesized transitional settlement system.

1.0 GOALS

There are two basic goals of this thesis. The first is to synthesize available ethnographic information on the Western Apache in order to delineate and develop a model for it (Chapters 2-6). The second goal is to examine the nature of the prehistoric Early Mogollon settlement system and use the model developed for the Western Apache settlement system as an analog to conceptualize the form of the Early Pithouse period settlement system (Chapter 7). Since the Western Apache are increasingly being used to model various aspects of the Early Mogollon (e.g., LeBlanc (1982a) for agricultural systems and Rice (1980b) for the settlement system), the model developed for the Western Apache should be useful in and of itself. Additionally, this synthesis is useful to the beginning stages of a developing Western Apache archaeology.

The Western Apache settlement system is delineated for the period from A.D. 1850 to A.D. 1875, the period just before the establishment of the reservation system. Ethnographic data is drawn primarily from Goodwin (1935, 1937, 1942) and Buskirk (1949), who directly observed the Western Apache and collected information from informants who lived during this period.

2.0 DEFINITION OF THE TERM "SETTLEMENT SYSTEM"

The term settlement system is used extensively throughout this thesis. Therefore, it is appropriate to define it here. Settlement system is defined as the systemic context (ff. Schiffer 1976) which produced the empirically observable settlement pattern. I consider it to consist of the subsistence subsystem, relevant aspects of social organization which spatially and temporally organize human groups to meet their resource needs, and the scheduling of activities which interfaces these two subsystems.

3.0 HISTORICAL BACKGROUND

The exact date of Apachean entry into the American Southwest is controversial. However, Apacheans appear to have entered the Southwest around A.D. 1550 in two movements from the Plains of New Mexico and Texas, one to the north resulting in the Navaho and the Jicarilla Apache and a second to the south resulting in the Mescalero Apache, Chiricahua Apache, and the Western Apache (Basso 1983:463-465; Schroeder 1974a,

1974b, 1974c; Wilcox 1981). On the Plains, Apachean groups appear to have been seasonal nomads, dependent on the dog for transport, and without agriculture or ceramics. They hunted bison, deer, antelope, and small game; collected wild plant foods; and served as middle men in trade between the Rio Grande Pueblos and the sedentary Plains agriculturalists. These groups lived in small, scattered encampments composed of extended families, which periodically detached themselves from the encampment for subsistence activities. Around A.D. 1600 the southern Apachean extension moved west of the Rio Grande and, by the A.D. 1620s, was well established in west-central New Mexico at the headwaters of the Gila River (Apache de Xila (Schroeder 1974a)). These groups continued hunting, although not bison, and gathering but also added agriculture and raiding to their subsistence system. Raiding as well as hunting and gathering were aided by the acquisition of the horse. The addition of agriculture shifted the economic cycle from year-round nomadism to one with periods of sedentary residence near farm sites. From the early 1600s through the mid 1700s, the Apache de Xila expanded into a large territory in southern New Mexico and Southeastern Arizona. Populations concentrated around the various mountain ranges in this area (e.g., Burro, Mogollon, and other mountain ranges along the Gila and San Francisco Rivers; the Chiricahua Mountains, and mountain ranges along the present Mexican-United States border).

Contrary to Western Apache clan origin myths which state that the Western Apache moved into their traditional territory from the Little Colorado River region to the north, the Western Apache appear to

have developed from the westward expansion of the Apache de Xila during the late 17th century into the middle reaches of the Gila River in Arizona and then north and south. The main cause for this expansion appears to have been the loss of raiding targets in the Rio Grande valley due to the Pueblo Revolt in the 1680s-1690s and the gain of new raiding targets to the southwest as Jesuit missions expanded into northern Sonora and southern Arizona. Groups of Apache de Xila established home bases along the Gila River closer to these new raiding targets. These groups then differentiated from the Apache de Xila, who were later known as the Chiricahua Apache, to become the Western Apache.

Chapter 2

The Environment of the Western Apache

1.0 PHYSIOGRAPHIC REGIONS

The Western Apache territory is characterized by great topographic variability (Basso 1969:11; Indian Claims Commission 1974:395). The terrain ranges from rugged, well-watered mountains with maximum elevations of nearly 12,000 feet to desert valleys less than 2500 feet above sea level. This variability results in a large diversity of widely distributed resources. Historically, much of this territory, extending from the Mogollon Rim to the Salt and Gila Rivers, was a barrier to travel and provided a refuge area into which groups dispersed and hid (Aschmann 1974:237). In general, the Western Apache territory consists of two physiographic regions, the southern part of the Colorado Plateau Province and the Basin and Range Province , which are separated by a loosely defined Transitional Region (following Aschmann 1974) (Map

1).

1.1 Colorado Plateau Province

The southern part of the Colorado Plateau is high, relatively relief-free, and moderately dissected. The southern edge of the Plateau, the Mogollon Rim, ranges from 6700 to 7500 feet in elevation and slopes abruptly to the south and gently to the north. Obsequent streams flow rapidly down to the south from the Mogollon Rim. Requisent streams flow north from the edge with a fairly gentle gradient cutting only a few canyons. Despite relatively heavy precipitation, permanent surface water is present only in the larger streams and the small lakes which dot the landscape. Seepage through porous limestone bedrock contributes to this paucity of surface water.

In east-central Arizona the White Mountain Volcanic Area overlies the Colorado Plateau and the Mogollon Rim. Formed by a broad, gently sloping dome, which consists of ash and lava, and rising to over 10,000 feet, this subregion is a circular area about 45 miles in diameter. Cinder cones, 500 to 1,000 feet above the surrounding terrain, dot the area. The south and southwest sides of the area grade into the Transitional Region. These sides are cut by Bonito Creek and tributaries of the Salt, Black, and White Rivers, all of which are perennial streams forming deep V-shaped valleys. A large percentage of the White Mountain Apache farm sites were and still are located along these streams.

1.2 Basin And Range Province

Located south of the Gila River and the middle Salt River and west of Tonto Creek, this region is characterized by distinct mountain ranges separated by broad structural basins. The basin floor elevations vary between 2500 to 3000 feet above sea level along the Salt and Gila River and 4000 to 5000 feet to the south and east. The mountain ranges rise to 3000-7000 feet above the basin floors throughout the region.

The mountain ranges (Mazatzal, Mescal, Santa Teresa, Galliuro, Pinaleno/Graham, Winchester, Tanque Verde, Rincon, and Santa Catalina Mountains) were produced by block faulting. Most of them have maximum crest elevations of 7000-8000 feet. The Pinaleno/Graham Mountains are exceptional with a maximum elevation of 10,717 feet. Mountain slopes throughout the region are steep and heavily dissected with relatively little level land on the interfluves and in the canyons.

The basins are characterized by thick alluvial deposits that coalesce to form bajadas. These basin deposits have been cut by meandering streams that created numerous terraces and extensive flood plains. The basins are elongated in shape and 10-15 miles wide. The bajadas are five to 10 miles wide with gradual slopes that break sharply at the range fronts 1000-1500 feet above the stream channels. Only intermittent streams flow across the bajada surfaces, and because the surfaces are porous, the only permanent water sources in the basins are springs at the mountain fronts and, possibly, streams at the basin bottoms.

1.3 Transitional Region

The northern boundary of the Transitional Region is marked by the Mogollon Rim and the southwestern and southern slopes of the White Mountains. The western boundary extends for fifty miles south of the Mogollon Rim along the western edge of the Sierra Ancha Mountains to the Salt River. The southern boundary extends roughly along the Salt River east to Canyon Creek, south to near the Gila River, and then east just south of the Gila Mountains to near the New Mexico border. This region is marked by large differences in elevation from less than 2500 feet to over 6500 feet. It is characterized by severely eroded valleys with sharp ridges and plateau remnants forming an extremely broken and rugged terrain. The heavily dissected, steep, rough slopes in the north give way to severely dissected plateau remnants with deep canyons in the south. Local relief is great, and differences between valley bottoms and interfluves range up to 1000-2000 feet.

2.0 CLIMATE

The climate of the Western Apache territory is predominantly a dry one in which evapotranspiration exceeds precipitation (Trewartha 1943:357; 1961:8). The southern part of this territory is generally characterized by a subtropical desert regime (BWh) bordered by a subtropical steppe climate (BSh) to the north and east (Trewartha 1943:372; 1961:8). An Highlands regime (H) characterizes the mountainous area of the Mogollon Rim and the White Mountains in between the

preceding two regimes (Trewartha 1961:8).

Despite these generally uniform climatic features, temperature and precipitation averages vary locally and regionally, as well as with elevation (Aschmann 1974:249). Basically, the general climatic features of the region are exaggerated by elevational differences (Aschmann 1974:249). With increasing elevation, temperatures become cooler and precipitation greater. Additionally, the relationship between moisture-bearing winds and local and regional topographic features disturbs precipitation patterns in some areas (Tuan, et al. 1973:34; Turnage and Mallery 1941:8).

The annual distribution of precipitation is bimodal with a large rainy period in the late summer (July and August) and a smaller one in the winter (November through March) (Aschmann 1974:252). In contrast, spring is marked by a pronounced moisture deficit and fall by a less pronounced one (Aschmann 1974:252). Generally, 40 to 60 percent of the annual precipitation falls during the late summer maximum (Trewartha 1961:274).

Summer precipitation comes in the form of intense, local, short duration thunderstorms resulting from the movement of a moist, unstable, upper atmosphere air mass into the region from the Gulf of Mexico (Aschmann 1974:253). Strong, vertical, up draft convections over mountainous terrain, which result from heating, orographic uplift, and the convergence of air on the windward side of mountains, disturb this unstable, moist air causing thunderstorms to form (Aschmann 1974:253; Sellers and Hill 1974:12-14). Occasionally, summer precipitation comes

from late summer low pressure systems originating in the Pacific Ocean or the Gulf of California in the form of tropical depressions, tropical storms, or hurricanes (Sellers and Hill 1974:14).

In contrast, winter precipitation generally comes in the form of widespread, light-to-moderate rainfall that lasts for several days (Aschmann 1974:253). This precipitation results from the intrusion of large-scale cyclonic storms from the Pacific Ocean moving south of their normal storm track with general air convergence and slow up-slope movement (Aschmann 1974:253; Sellers and Hill 1974:14). Unusual conditions need to be present for these Pacific winter storms to intrude into this region; these conditions only occur once in every six years, but once they occur, several storms usually follow one another in rapid succession over the course of a week (Sellers and Hill 1974:14-16). As a result, summer precipitation occurs with less temporal randomness than winter precipitation (Tuan, et al. 1973:50).

Depending on elevation and location, annual precipitation in the Western Apache territory ranges from less than 10 inches at lower elevations to more than 25 inches at higher elevations (Sellers and Hill 1974:8; Goodwin and Basso 1971:13) (Table 2.1). For example, Safford at 2900 feet and Ft. Thomas at 2680 feet in the Basin and Range Province have a mean annual precipitation of 8.4 inches and 9.0 inches, respectively (National Oceanic and Atmospheric Administration (NOAA) 1980). The Mt. Lemmon Inn at 7780 feet in the Basin and Range Province has a mean annual precipitation of 26.8 inches, Maverick at 7800 feet in the White Mountains on the Colorado Plateau receives an average of 27.9

Table 2.1 Precipitation (Sellers and Hill 1974)

SITE	ELEVATION (IN FEET)	MEAN ANNUAL PRECIPITATION	RANGE OF ANNUAL PRECIPITATION
BASIN AND RANGE PROVINCE			
Roosevelt 1WNW	2205	14.1"	6.9" to 28.5"
Safford	2900	8.4"	5.0" to 17.4"
Gisela	2900	16.9"	7.9" to 30.6"
Klondyke 3SE	3610	14.2"	7.6" to 21.6"
Oracle 2SE	4540	18.9"	10.5" to 28.0"
Payson R.S.	4848	20.3"	11.5" to 31.0"
Fort Grant	4875	12.5"	6.5" to 23.0"
Mt. Turnbull	5600	11.3"	5.6" to 23.5"
Mt. Lemmon Inn	7780	26.8"	20.6" to 40.2"
TRANSITIONAL REGION			
Salt River	3608	15.5"	8.8" to 18.9"
Natural Bridges	4607	23.4"	10.4" to 39.4"
Cibecue	4905	17.6"	9.3" to 28.2"
Sierra Ancha	5100	24.7"	13.1" to 42.1"
Eagle Creek	5100	15.4"	7.8" to 25.4"
Forestdale	6100	19.3"	10.6" to 29.8"
Tonto Creek Fish Hatchery	6280	32.2"	17.2" to 49.1"
Young	6520	25.3"	14.9" to 32.2"
COLORADO PLATEAU PROVINCE			
Snowflake	5642	11.3"	3.8" to 18.7"
Showlow	6400	15.3"	9.8" to 23.4"
Chevelon R.S.	7002	18.2"	11.8" to 26.8"
Springerville	7060	11.3"	5.8" to 20.2"
McNary	7320	24.9"	10.7" to 40.6"
Maverick	7800	27.9"	16.3" to 41.1"
Greer	8490	24.0"	18.8" to 30.6"

inches, and Young at 6500 feet in the Transition Region receives an average of 25.3 inches (NOAA 1980).

Because of local and regional topography and the relationship of locales to the major weather systems, annual precipitation is not strictly correlated with elevation. For example, the Tonto Creek area is one of the wettest sections in the state of Arizona, relative to elevation (Sellers and Hill 1974). Also, locales on the slopes of or in high mountains, in deep and narrow canyons, or immediately leeward to higher terrain receive increased amounts of precipitation (Turnage and Mallory 1941:27-28). The leeward sides of high mountains are in a rain-shadow and receive less precipitation (Turnage and Mallory 1941:12).

A significant variability in annual and seasonal precipitation results in a random succession of wet and dry years (Aschmann 1974:254; Tuan, et al. 1973:59). Although Klondyke 3SE has a mean annual precipitation of 14.2 inches, annual precipitation there varied from 7.6 inches in 1960 to 21.6 inches in 1972. Because crops need approximately 16 inches of annual precipitation in order to grow without irrigation, this variability results in even the highest and wettest Western Apache dry farm sites being subjected to failure from inadequate precipitation (Aschmann 1974:254). In general, crops grown below 5000 feet in elevation need irrigation in more than half the years of cultivation, and even with crops grown above 5000 feet, irrigation is desirable (Aschmann 1974:254).

Table 2.2 Temperature (Sellers and Hill 1974)

SITE	ELEVATION (IN FEET)	RANGE OF MEAN MAXIMUM DAILY TEMPERATURE (degrees F)	RANGE OF MEAN MINIMUM DAILY TEMPERATURE (degrees F)	MEAN ANNUAL TEMPERATURE (degrees F)	MEAN LENGTH OF GROWING SEASON (1)
		BASIN AND RANGE PROVINCE			
Roosevelt 1WNW	2205	58.9-102.1	37.0-75.9	68.1	315 Days
San Carlos Res.	2532	58.4-99.8	32.6-73.2	65.5	257 Days
San Carlos	2643	61.8-101.2	27.2-67.7	63.3	201 Days
Safford	2900	60.1-99.7	29.7-70.2	64.3	235 Days
Globe	3550	57.0-98.7	29.5-66.7	61.9	214 Days
Oracle 2SE	4540	57.7-93.2	34.3-67.3	62.2	216 Days
Fort Grant	4875	55.5-92.3	32.0-65.2	61.5	223 Days
Mt. Lemmon Inn	7780	48.2-77.4	22.5-51.5	49.7	-
		TRANSITION REGION			
Natural Bridges	4607	53.3-91.5	28.8-62.9	58.1	-
Payson	4913	53.1-92.5	23.7-58.5	55.6	164 Days
Sierra Ancha	5100	54.0-92.3	31.1-63.9	59.6	211 Days
White River	5280	52.7-91.5	22.0-58.9	55.5	173 Days
Forestdale	6100	46.3-86.8	15.3-50.1	48.5	111 Days
		COLORADO PLATEAU PROVINCE			
Snowflake	5642	47.9-89.7	16.4-55.6	51.6	133 Days
Heber R.S.	6590	46.1-84.7	14.7-51.6	48.2	105 Days
Chevelon R.S.	7002	43.3-82.8	17.3-53.6	48.2	128 Days
McNary	7320	44.3-80.5	16.0-49.1	46.5	108 Days
Maverick	7800	45.8-77.1	6.7-43.0	42.3	41 Days
Alpine	8050	45.8-78.6	10.4-44.1	43.6	61 Days

(1) NOAA 1974

While the regional climate is basically temperate, there are considerable seasonal and diurnal temperature differences, as well as a few days of notably cold and hot temperatures (Aschmann 1974:251). Temperatures vary regionally from near zero at higher elevations in the winter to well above 100 degrees Fahrenheit at lower elevations in the summer (Goodwin and Basso 1971:13) (Table 2.2). Above 6500 feet in elevation, especially on the Colorado Plateau, winters are long and severe while summers are short and mild (Aschmann 1974:251) . At the Mt. Lemmon Inn at 7780 feet, the mean daily maximum temperatures range from 77.4 degrees Fahrenheit (F) in June to 48.2 degrees F in February; and the mean daily minimum temperatures range from 51.5 degrees F in July to 22.5 degrees F in February (Sellers and Hill 1974). At Maverick in the White Mountains on the Colorado Plateau, mean maximum daily temperatures range from 77.1 degrees Fahrenheit in July to 45.8 degrees F in January; and mean daily minimum temperatures range from 43.0 degrees F in July to 6.7 degrees F in January (Sellers and Hill 1974). Below 5000 feet, winters are mild and summers are hot with high (more than 95 degrees Fahrenheit) daily maximum temperatures for at least five months of the year (Aschmann 1974:251; Sellers and Hill 1974:22). At Roosevelt 1WNW at 2205 feet in elevation, the mean daily maximum temperatures range from 102.1 degrees Fahrenheit in July to 58.9 degrees F in January; and the mean daily minimum temperatures range from 75.9 degrees F in July to 37.0 degrees F in January (Sellers and Hill 1974). Daily temperature ranges are great throughout the region, sometimes as great as 50 to 60

degrees Fahrenheit (NOAA 1980:33,36).

The length of the frost-free period, or growing season, ranges from less than 150 days at high elevations to nearly a year at lower elevations (NOAA 1980:37) (Table 2.2). At 5000 feet just below the Mogollon Rim, the frost free period averages around 150 days (Aschmann 1974:254). In the Basin and Range Province the frost-free period ranges from 315 days at Roosevelt 1WNW at 2205 feet to 201 days at San Carlos at 2643 feet (NOAA 1974). In the Transitional Region it ranges from 211 days at Sierra Ancha at 5100 feet to 111 days at Forestdale at 6100 feet (NOAA 1974). In the Colorado Plateau Province, it ranges from 133 days at Snowflake at 5642 feet to 41 days at Maverick at 7800 feet (NOAA 1974). As the length of the frost-free period decreases with increasing elevation, the variability in the length of the period increases (Tuan, et al. 1974:80).

3.0 ECOLOGICAL ZONES

The topographic relief of the Western Apache territory and concomitant climatic variations produce a large amount of ecological variability (Table 2.3). This variability can be summarized by describing the floral associations found in this area (this discussion follows Aschmann (1974) except where noted).

Steppe grasslands are located in the Little Colorado River area on the Colorado Plateau. The grassland zone consists primarily of the plains grassland biome found in the Upper Sonoran life zone (Brown 1982:Fig. 2, 115-121). This area was only occasionally utilized for

Table 2.3 Ecological Zones

ASCHMANN'S ZONES (Aschmann 1974)	LIFE ZONES (Brown 1982)	BIOMES (Brown 1982)
Steppe Grasslands	Upper Sonoran	Plains Grassland
Coniferous Forest	Transition	Montane Conifer Forest
	Canadian	
	Hudsonian	Subalpine Conifer Forest
	Arctic-Alpine	Subalpine Grassland
Pinyon-Juniper Woodland	Upper Sonoran	Great Basin Conifer Woodland
Encinal-Pinyon Woodland	Upper Sonoran	Madrean Evergreen Woodland Great Basin Conifer Woodland Interior Chaparral Plains Grassland (Inclusions) Semidesert Grassland (Inclusions)
Encinal Woodland	Upper Sonoran	Madrean Evergreen Woodland Great Basin Conifer Woodland Interior Chaparral
Desert Brush and Grasslands	Upper Sonoran	Semidesert Grassland Chihuahuan Desertscrub (Inclusions)
	Lower Sonoran	Sonoran Desertscrub, Arizona Upland Division
Gallery Forests		Montane Riparian Deciduous Forest Interior Riparian Deciduous Forest and Woodland Sonoran Riparian Deciduous Forest and Woodland

hunting by the Western Apache.

The coniferous forest zone , primarily characterized by Ponderosa pine, aspen, and firs , is located along and just below the Mogollon Rim and generally on the White Mountains on the Colorado Plateau Province. It is also found at higher elevations in the Transitional Region, and above 6500 feet in ranges extending over 7000 feet in the Basin and Range Province. Ponderosa pine characterizes the lower part of the zone while firs and aspen characterize the higher elevations. Deciduous trees, especially oaks, are present in isolated groups. The coniferous forest zone consists of the montane conifer forest biome, which is found in the Transition and Canadian life zones; the subalpine conifer biome, which is found in the Hudsonian life zone; and small areas of the subalpine grassland biome, mainly in the White Mountains, which is found in the Arctic-Alpine life zone (Brown 1982:Fig. 2, 40-46,109-111). This zone is generally poor in plant foods but was utilized for hunting by the Western Apache, particularly for deer, elk, wild turkey, and bear (Basso 1969:11). Additionally, a large percentage of the Cibecue band farm sites were and still are located along streams in this zone.

The pinyon-juniper woodland zone is located on the Colorado Plateau between the coniferous forest zone and the steppe grassland zone. This zone consists of the Great Basin conifer woodland biome, which is found in the Upper Sonoran life zone (Brown 1982:Fig. 2, 52-57). A number of edible plant foods and game animals which were

hunted and collected by the Western Apache during the fall are present. Conflict with the Navaho from the north during the 19th century limited the use of this area.

The encinal-pinyon woodland zone is located below the coniferous forest zone in the Transitional Region between 6500 feet and 5000 feet. It is characterized by mixed stands of live oaks, several pinyon pines, and several junipers, which form a low and often open woodland. This zone consists predominantly of the Madrean evergreen woodland biome with various mixtures of the interior chaparral biome, the Great Basin conifer woodland biome, and areas of the plains grassland and the semidesert grassland biomes, all of which are found in the Upper Sonoran life zone (Brown 1982:Fig. 2, 52-65,95-99,115-131). As with the pinyon-juniper woodland zone, it is rich with storable plant foods, including acorns, juniper berries, pinyon nuts, and, at lower elevations, agave (mescal). Also, game resources are rich, even higher in density than in the coniferous forest zone, but are often hard to obtain due to the brushy cover. Because of the rich game resources, this zone was frequently used for hunting, especially around and near farm sites.

The encinal woodland zone in the Basin and Range Province is similar to the the encinal-pinyon zone, except that pinyon pine is found only in a few locations, and is principally located on the slopes of mountain ranges in the Basin and Range Province between 4500 feet and 6500-7000 feet. This zone is characterized by a mixture of the Madrean evergreen woodland biome and interior chaparral biome with areas of

Great Basin conifer woodland biome, which are all found in the Upper Sonoran life zone (Brown 1982:Fig. 2, 52-65,95-99). Agave (mescal) is located in the lower part of this zone.

The desert shrub/scrub zone is located at lower elevations in the Transitional Region, predominantly in the form of grasses and larger desert shrubs, and on the terraces and bajadas within the basins of the Basin and Range Province. The lower basin areas along the stream terraces in the Basin and Range Province are covered by desert scrub consisting of paloverde, shrub mesquite, saguaro and other cacti, creosotebush, and saltbush. The bajada surfaces and lower elevations of the Transitional Region are covered by a fairly dense cover of tobosa grass, black grama and other perennial bunch grasses, as well as sotols, beargrass, agaves, and yuccas. The upper bajada surfaces are covered by large desert shrubs. This zone is characterized by the Arizona upland division of the Sonoran desertscrub biome at lower elevations in the basins, peripheral areas of Chihuahuan desert scrub biome at lower elevations, and the semidesert grassland biome at higher elevations; the Sonoran desertscrub biome is found in the Lower Sonoran life zone while the Chihuahuan desertscrub biome and the semidesert grassland biome are found in the Upper sonoran life zone (Brown 1982:Fig. 2, 123-131,169-222). Agave (mescal), which was an important part of the Western Apache diet, is often present in this zone in the Transitional Region and on upper bajada surfaces in the Basin and Range Province.

Gallery forests line the bottoms of streams, canyons, and valleys in the Transitional Region and Colorado Plateau Province and

bordered stream channels in the Basin and Range Province. Mesquite, cottonwoods, and willow at lower elevations grade into aspens and other deciduous trees at higher elevations as the Sonoran riparian deciduous forest and woodland grade into the interior riparian deciduous forest and woodland and then into the montane riparian deciduous forest (Brown 1982:223-287).

The Transitional Region was the primary focus of Western Apache subsistence. The Colorado Plateau was primarily utilized seasonally for hunting and gathering. Although both the Basin and Range and the Transitional Region have a wide variety of ecological zones, the Basin and Range was generally unproductive for the Western Apache subsistence system. However, the San Carlos subtribal group was located entirely within the Basin and Range Province in contrast to the other Western Apache subtribal groups. Mesquite beans were collected from thickets bordering basin streams, and agave (mescal) was collected from the upper bajada surfaces of the desert shrub zone and the lower part of the encinal zone on mountain slopes. Additionally, pinyon nuts were collected from areas in the encinal zone where they were present. Although the Western Apache did not have the technology to generally irrigate along the major streams, they could irrigate farms along some of the minor streams (e.g., Tonto Creek, Pinal Creek, Aravaipa Creek, and the San Carlos River).

4.0 SUMMARY

The territory of the Western Apache is characterized by a large degree of topographical and ecological diversity that results in a wide range of widely separated subsistence resources. As is shown later, these resources were obtained by almost continuous movement between the environments over the course of the annual cycle.

Although the environmental conditions greatly influenced the hunting and gathering cycle, the major impact of the environment was on agriculture. Agriculture was practiced; however, because of climatic factors, it was generally precarious without the use of simple irrigation. The major agricultural problem was to insure adequate moisture throughout the growing season. In the spring and early summer when the cultivars were germinating and beginning growth, there was a rainfall deficit. Also, annual precipitation varied significantly and randomly between years. In conjunction with the generally very low amount of annual precipitation, these factors presented severe problems. Though precipitation increases with increases in elevation, temperature and length of growing season decreases while the variability of these factors increase. As a result, the length of growing season is either inadequate for agriculture or it is too variable to insure the security of production. Also, even precipitation at the higher elevations is variable enough that agricultural production is risky. Therefore, dry farming is generally too risky, and simple flood plain irrigation agriculture is required in order to minimize the risk of crop failure.

Chapter 3

The Social System of the Western Apache

The Western Apache were grouped into a series of territorial units of differing sizes and organization. In descending order of size, these units were subtribal groups, bands, and local groups (Goodwin 1942:6,97). However, the basic unit of social and economic organization was the extended family cluster, sets of which usually formed local groups (Goodwin 1942:123). A formal organization of matrilineal clans cross-cut these units linking the society together (Goodwin 1942:6).

While the Western Apache did not name themselves as a group, they recognized similarities among themselves and felt they were one people in contrast to the related Athapascan Chiricahua and Navaho (Goodwin 1942:9,11). There was no organized warfare or raiding between subtribal groups as there was with the Chiricahua and Navaho (Goodwin 1942:9). Also, several subtribal groups were friendly and would unite in times of conflict and difficulties (Goodwin 1942:11).

1.0 THE SUBTRIBAL GROUP AND BAND

Goodwin (1942:2) grouped the Western Apache into five named subtribal groups: the White Mountain, the Cibecue, the San Carlos, the Southern Tonto, and the Northern Tonto (Table 3.1 and Map 2). However, the Northern Tonto consisted of a mixture of intermixed and intermarried Yavapai and did not appear to occupy their territory before the 1860s or 1870s (Goodwin 1942:60; Schroeder 1974c:490). These factors bring into question the existence of the Northern Tonto as an actual group of Western Apache; , and for this reason, they are not considered in further discussion nor on any of the maps. In general, there was a significant variation among the subtribal groups in terms of population size, territory size, use of the horse, and dependence on agriculture (Basso 1983:463); for example, population size ranged between 800 to 1500 (Goodwin 1942:60) (Table 3.1). Each subtribal group had its own territory and resisted the encroachment without permission of members of other subtribal groups into their territory (Goodwin 1942:55). While there was no warfare between them, conflict was not unknown; and horse theft was present (Basso 1969:11; Goodwin 1942:57). Subtribal groups were largely endogamous; however, in contrast to limited mixing and intermarriage between subtribal groups, frequent visits, intermarriage, and numerous clan and blood ties characterized intrasubtribal group relations (Basso 1969:11; Goodwin 1942:10).

Each subtribal group was divided into two to four named bands and in one case (the Southern Tonto) one band and six semibands (Goodwin 1942:10-11) (Fig. 3.1 and Map 2). In contrast to bands, semibands were

Table 3.1 Subtribal Group and Band Names with Population Estimates (Goodwin 1935:55, 1942:2,60)

SUBTRIBAL GROUP	POPULATION ESTIMATE	BANDS
White Mountain	1400-1500	Eastern White Mountain Western White Mountain
Cibecue	1000	Carrizo Cibecue Proper Canyon Creek
San Carlos	900	Pinal Aravaipa San Carlos Proper Apache Peaks
Southern Tonto	900	Mazatzal First-Sixth Semibands
Northern Tonto (mixed with Yavaipa)	800 (450 Apache)	Mormon Lake Fossil Creek Bald Mountain Oak Creek

unnamed amorphous divisions with vaguely distinguished territories formed by groupings of clans which felt themselves related and distinct from other clans (Goodwin 1942:35,37-8). The band was based on interactions resulting from features of the annual cycle which brought neighboring local groups together over the course of the year (Kaut 1974:60). These features were mescal gathering and routes of movement which channeled local groups together and brought them in close contact during the winter. Basically, each valley or set of connected valleys formed the core of a band's territory. The members of a band were closely associated and the only closer ties were clan ties, blood ties, and affinal ties (Goodwin 1942:10). Although bands tended to be endogamous, a significant amount of band exogamy, as well as visiting, tied the subtribal group together (Goodwin 1942:10; Kaut 1974:61). Each band had its own territory for hunting and gathering, which contained the farms of the band's local groups (Goodwin 1942:9). While the encroachment of members of other subtribal groups were resisted, members of bands within the same subtribal group could hunt and gather with permission during times of hardship, but not farm, in the territory of other bands (Goodwin 1942:9-10).

The subtribal group was not a functioning socio-political or socio-economic unit but was simply a classifactory unit, distinguished from other subtribal groups by slight differences in dialect and culture (Goodwin 1942:10-11; Kaut 1974:62). The band also was not the primary locus of socio-political or socio-economic activities and also tended to

be primarily a classifactory unit. Within Western Apache society, the primary functional units were local groups, extended family clusters, and clans (Goodwin 1942:11). However, each band often had a band "chief" and "council" of local group "chiefs" and "subchiefs" which loosely coordinated band affairs (e.g., raiding, training boys in raiding and hunting, ceremonial activities, and security) and settled disputes (Kaut 1974:61). Still, these functions were primarily based on clan ties rather than the spatial ties implied in the concept of band.

The territory of each subtribal group and band contained a wide variety of land types and ecological zones. The size of the territory and the population density appears to have been a function of the distribution and concentration of the ecological zones and their resources within the territory (following Goodwin 1942:60). Subtribal group and band territories ranged in size and distribution from large territories cross-cutting major physiographic zones (e.g., White Mountain and Cibecue) to small territories exploiting local elevational gradients (e.g., Southern Tonto). Subtribal groups and bands appear primarily to have been nested "resource holding units" (Basehart 1967; 1971), whose major expression is in the right of access of their members to the subsistence resources in the territory occupied by the unit and the denial of the right of access of those outside the group.

2.0 THE LOCAL GROUP

Each band was composed of several named local groups, that were the basic units of socio-political organization (Basso 1970b:14; Goodwin

1942:257). Social, governmental, and religious activities centered on the local group (Basso 1983:470). The local group was usually composed of two to ten extended family clusters (gota) which frequently camped together and interacted with one another (Basso 1970a:5; Goodwin 1935:57; 1942:146; Kaut 1957:14). Local groups ranged in size between 35 and 200 individuals (Basso 1983:470). Basically, the local group was the set of extended family clusters which were attached to a farm site or set of farm sites and lived together in one camp or several, separate extended family cluster camps (Goodwin 1937:400, 1942:127,130; Kaut 1974:57-58). The number of camps in the local group depended on the annual cycle and the degree of affiliation and segmentation of the developmental cycle of the local group (ff. Goodwin 1942; Kaut 1974). Only occasionally did the local group function as an economic unit when it moved between plant collecting areas (Goodwin 1942:158-159). Various families within the local group, however, cooperated in agricultural activities, in gathering and preparing wild plant foods, and in raiding and hunting (Kaut 1974:59). Local groups resisted encroachment of other local groups, including those within the band, on their farm sites (Goodwin 1942:10). The local group was based on a network of maternal and paternal clan, consanguinal, and affinal ties that affiliated the various households and extended family clusters as well as on territorial association and ties to farm sites (Goodwin 1942:149). In part, these social ties were established by a high degree of endogamy (Basso 1971a:14). In contrast to the subtribal group and band, this network of ties in the local group produced a high degree of

cohesiveness (Basso 1971a:14).

The local group was a fairly stable group throughout most of the year, but its composition varied over the course of years in response to population and resource fluctuations and social conflicts with their subsequent segmentation (Kaut 1974:59). Each local group followed a developmental cycle of growth and affiliation followed by segmentation in response to these factors. Segmented groups, often nuclear families or extended family clusters, either associated themselves with extended family clusters in other established local groups or formed new local groups in conjunction with other segmenting groups and developed unclaimed or unoccupied farm land (Kaut 1974:59).

The nucleus of each local group was generally formed by one to seven, usually two or three, unrelated nuclear matrilineal clan segments in the form of matrilocal extended family clusters, which frequently intermarried (Goodwin 1937:400). Usually, approximately three-fifths of the local group were members of these clan segments or lineages (Goodwin 1937:400). At least one, and occasionally two or three, of the nuclear clans were predominate in terms of size and, as a result, dominated the local group and its affairs (Goodwin 1937:400). The presence of unrelated nuclear clan segments within a local group and the general absence of related clans allowed for intermarriage and local group endogamy (Goodwin 1942:148). Non-nuclear clans were represented by individuals who married into the local group or who were affinal or consanguinal relatives to other local group members (Goodwin 1937:400).

Each local group was headed by a "chief" who directed collective activities. He arbitrated social problems, organized war and raiding parties, handled external relationships, led hunting and gathering parties, and directed farm projects (Goodwin 1942:178-180). In all large local groups and in some small local groups, the "chieftianship" tended to hereditarily remain in the same matrilineage of the dominant nuclear clan (Goodwin 1942:169). "Chiefs" were formally selected on the basis of their prestige, good example, and, to some extent, their ceremonial knowledge (Goodwin 1935:57, 1942:168). They were generally outstanding family headmen selected from the proven subchiefs of the nuclear clans of the local group and usually controlled powerful medicine (Goodwin 1942:43,173). Generally, their control was limited to their local groups (Goodwin 1937:400). In addition to the "chief", the governance of local groups involved other leaders: "subchiefs", war "chiefs", shamans, ditch bosses, and women chiefs. These leaders were informally selected on the basis of their experience, ability, knowledge, personal characteristics, wealth, and kinship ties (Buskirk 1949:18; Kaut 1957:42-3).

2.1 The Home Locality

Each local group had an area within the band territory that it considered to be its home locality and to which it had close ties (Goodwin 1942:149). Generally, the home locality was determined by a local group's farm site(s) and consisted of the area for three to eight miles in radius around the farm site(s) (Goodwin 1942:149). Although

farm sites were the focus of the home locality, home locality camps tended to be located some distance away from the farm sites during the 19th century, often on hilltops and mountains adjacent to the valley, because of the danger of attack by the U.S. Army (Buskirk 1949:34; Goodwin 1942:158). The local group had exclusive rights to the farm sites and hunting and gathering areas within the home locality area (Goodwin 1942:130). In contrast, band territory beyond home locality territories was unrestrictedly open for hunting and gathering by all band members (Basso 1970a:5; Goodwin 1942:149). Despite seasonal residence elsewhere, the members of the local group felt a real tie to their home locality and usually returned there a number of times over the course of a year (Goodwin 1942:130,160). In general, the home locality was the favored location where the nucleus of the local group was usually found (Basso 1983:493).

The home locality was the focus of the settlement system with most of the wild plant foods being transported there for storage for use during the winter and the largest and most permanent wickiups being built there (Goodwin 1942:160). During the spring, summer, and fall, the local group would camp at the farm site, while planting or harvesting, or in other areas of the home locality when the entire local group was not gathering elsewhere (Goodwin 1942:654). During the winter, the local group might stay in the home locality drifting around the area camping in one camp or in scattered extended family cluster camps; in other cases, the entire local group or some of its extended family clusters might move to lower elevation areas (Goodwin 1942:158,654). Home

locality camps were frequently located at specific locations, which were continually reused (Goodwin 1942:561-676).

3.0 THE EXTENDED FAMILY CLUSTER

The extended family cluster was the basic socio-economic and residential unit among the Western Apache (Goodwin 1935:57). It consisted of several, usually three to eight, matrilocal nuclear families which were affiliated to the extended family cluster by blood, affinal, clan, and economic ties (Basso 1970a:5, 1970b:14; Goodwin 1942:123). Although matrilocal residence was the predominate pattern, it was not compulsory (Goodwin 1942:127). Individuals and nuclear families were free to choose residence where they wished, including different local groups (Buskirk 1949:18). As a result, virilocal residence was not uncommon (Goodwin 1942:208). Still, as a result of the predominate matrilocal residence pattern, the core of the extended family cluster was generally a set of matrilineally related females, the minimal matrilineage of a clan, with their husbands and children (Goodwin 1942:127,138,208; Kaut 1957:39,56). Married sons and grandsons, affinal relatives, other consanguinal relatives, and even unrelated individuals were also present in some extended family clusters (Goodwin 1942:127,138). Typically, the extended family cluster was composed of a an older nuclear couple, their unmarried children, their married daughters and their husbands and unmarried children, and perhaps their married granddaughters and their families (Goodwin 1942:127). While the extended family cluster cooperated economically and socially, each

constituent nuclear family had its own brush dwelling (wickiup), ate at its own fire, and made its own tools and utensils (Goodwin 1942:128). Some of the larger family clusters functioned independently of local groups (Goodwin 1942:651).

As with the local group, the extended family cluster followed a developmental cycle of affiliation and segmentation, of fusion and fission (Kaut 1974:56-58). Each marriage resulted in the enlargement of an extended family cluster or the creation of a new one. Social conflict or the death of family heads presented a potential situation of fission.

The extended family cluster was the focus of daily activities, especially agricultural, gathering, and hunting activities (Kaut 1957:14,53). The women of the family cluster formed wild plant gathering expeditions (Goodwin 1942:28). Two to three of the nuclear families often shared a single farm at a farm site (Goodwin 1942:128). The men often hunted in groups of two to three with the meat being shared by the entire family cluster (Goodwin 1942:128). Unlike the nuclear family, the extended family cluster often functioned as a self-sufficient unit independent of the local group for extended periods, even for most of the year (Goodwin 1942:130). Extended family clusters commonly separated from the local group for short periods during the winter, for food-gathering expeditions, and for farming (Goodwin 1942:130). They then returned to the home locality and local group after finishing the trip or task (Goodwin 1942:130). Nuclear families usually did not function separately from the extended family cluster, but they would sometimes detach themselves and take up residence with another extended

family cluster or leave for a period of time to farm, join mixed food collecting parties, collect wild plants on their own, or make extended visits to other local groups (Goodwin 1942:123,125). When the extended family clusters of a local group camped together, they tended to merge with one another, making it difficult to distinguish one from the other (Goodwin 1942:146). Each extended family cluster was led by a headman and his wife or, in some cases, a headwoman, who directed and advised daily economic and social activities (Goodwin 1942:130-1). As a result of the predominate matrilocal residence pattern, the headman was usually an older male who had married a female of the matrilineage of the extended family cluster and was, as result, the head of the nuclear family at the core of the matrilineage (Goodwin 1942:131).

4.0 THE CLAN

Although the other social units were spatially localized, the matrilineal clan system cross cut them and established a network of relationships joining these social units together (Basso 1969:13; 1970b:14; Goodwin 1942:98). The clan system extended kinship relations within subtribal groups and even between subtribal groups by extending the lineage structure and the benefits of kinship obligations beyond the extended family cluster and the local group (Goodwin 1942:9; Basso 1971a:15; Kaut 1957:39). Although the members of a clan considered themselves to be 'relatives' that descended from the group that established the clan origin farm site, clans were not generally concentrated at any one farm site (Goodwin 1942:97,163; Kaut

1957:31,82). The clan segments were usually present in a number of local groups, in more than one band, and in some cases in several subtribal groups (Goodwin 1942:163; Kaut 1957:31). The clans were characterized by strict exogamy and by reciprocal obligations of mutual aid and revenge (Goodwin 1942:97-8).

The sixty named clans were organized into three unnamed phratries that cross cut subtribal group boundaries uniting the Western Apache into one system (Kaut 1957:39,49). This phratry system was the closest approach to tribal organization present among the Western Apache (Kaut 1957:41). Each phratry operated independently with its own system of marriage restrictions and of obligations forming exogamous corporate groups that operated primarily in ceremonies and warfare (Kaut 1957:48,55). Rather than subtribal groups or bands, phratries formed the maximal units of corporate action (Kaut 1957:81).

The clan was not a formal political unit, did not have officers, nor did it own property (Goodwin 1942:97). However, the clan system formed an extensive and intricate network of obligations and relationships cross cutting territorial units and regulating relations between local groups, locally and interregionally (Basso 1970a:9; Buskirk 1949:18; Goodwin 1935:58; Kaut 1957:39,47). The clan system functioned as a classifactory system by placing individual and familial affiliations on the basis of clan membership (Goodwin 1942:121). It also regulated marriage (Kaut 1957:39). Although property was owned by individuals, farm sites, in contrast to farms, were thought to be clan controlled (Goodwin 1942:406). As a result of clan relationships within

and between local groups, local groups were interrelated and could cooperate in corporate enterprises (e.g., formation of war, raiding, and hunting parties as well as the performance of the girl's puberty ceremony) on the basis of clan ties rather than isolated locality ties (Kaut 1957:41,82). Most importantly, clan relationships arbitrated serious social problems (e.g., injury, rape, murder, etc.) by establishing a blood feud between the clan of the persons wronged and the clan of the offender, if a settlement was not arbitrated by the local group "chiefs" or clan "chiefs" of the parties involved (Goodwin 1937:402).

Each clan had a clan "chief" who was the local group "chief" selected from the matrilineage of the dominant nuclear clan of the local group in which the position hereditarily resided (Goodwin 1942:169). Clan members owed allegiance to the clan "chief" as well as to their own local group "chief", especially in times of war, feud, and other cooperative ventures (Goodwin 1942:177). Although other clan members were local group 'chiefs' and the clan 'chief' had no special prerogatives, the clan 'chief' was the most influential chief within the clan; and he inherited special medicine songs and ceremonies which belonged to the clan and upon which clan members felt their welfare was dependent (Goodwin 1942:171; Kaut 1957:44).

The phratry-clan system was a dynamic epiphenomenum that resulted from the interaction between relatively stable and fundamental socio-structural principles and an ever changing ecological and demographic pattern (Kaut 1974:46-47). This system provided a stable

means for extended family clusters and local groups to establish new relationships in the midst of continuous flux, as residence changed in response to changing ecological factors and social conflict (Kaut 1974:47). The principles of simple matrilocal relationships, uxorilocal residence norms, and the lineality of extended family clusters, based on the identification with and inheritance of agricultural sites and hunting and gathering resources, tied extended family clusters within and outside local groups together by establishing boundaries of exogamy and a network of reciprocal obligations (Kaut 1974:48,59).

5.0 SUMMARY

The social organization of the Western Apache was based on territorial and kinship ties. The subtribal group and band were territorial-classifactory units which primarily functioned as nested 'resource holding units' for the members born or marrying into them. The local group, which formed around a farm site or set of farm sites, was the primary socio-political unit. The area around the farm site was the home locality for the local group. The primary socio-economic unit was the extended family cluster, which tended to operate independently of the local group and other extended family clusters.

The phratry-clan system cross cut these other social units and provided a network which tied them together within the subtribal group and, to some extent, between subtribal groups. The tendency for the position of clan "chief" to be inherited within matrilineages provides unexpected complexity for such a non-sedentary culture.

Chapter 4

The Subsistence System of the Western Apache

The Western Apache subsistence system was based on a mixed diet of meat, cultivars, and a wide variety of wild plant foods derived by hunting large and small game animals, collecting wild plants, cultivation, and raiding/trading for livestock and cultivars (Buskirk 1949:387; Goodwin 1935:61). While subsistence was largely based on hunting and gathering, agriculture played a major role in the subsistence system and was in some cases equal in importance in some cases (Buskirk 1949:19; Kaut 1957:14). Diet varied with the season and between social units, but for families of the White Mountain bands with average-sized farms prior to the disruption by U.S. military activities (circa 1860s-1870s), it generally consisted of equal proportions of cultivars (20-25 per cent), wild plant foods (35-40 per cent), and meat (35-40 per cent) (Aschmann 1974:255; Goodwin 1935:61; 1942:354-5). Agriculture was of considerable importance for the Southern Tonto and San Carlos subtribal groups and was of greatest importance for the

Cibecue and White Mountain subtribal groups (Buskirk 1949:425). The proportions of wild plant foods and cultivars in the diet varied with the season, crop productivity, precipitation, and the success of raiding (Aschmann 1974:255; Buskirk 1949:279).

The major factors affecting the subsistence system were the great ecological diversity with a wide spatial and elevational distribution of resources and the differential temporal maturation of plant resources (Aschmann 1974:238; Buskirk 1949:428). Wild plants were seasonally available from April through November, especially July through November, although mescal (agave) was available throughout the year (Aschmann 1974:206; Goodwin 1935:62). The spatial and temporal characteristics of resources and significant dependence on them resulted in a seminomadic annual cycle (Aschmann 1974:248). Constant movement of people through and residence in several ecological zones was essential in order to take advantage of the nearly continuous availability of plants maturing at staggered intervals throughout the growing season (Aschmann 1974:238,248; Buskirk 1949:285,429). Consequently, the Western Apache did not establish permanent residences and were almost constantly on the move except for short periods during the spring and fall when they were planting and harvesting at farm sites (Basso 1969:11; 1970a:3). Although agriculture never replaced hunting and gathering as the dominant modes of subsistence, its presence did establish an economic cycle which contrasted with a purely hunting and gathering one because there were sedentary periods at the farm sites in the home localities (Basso 1983:465).

The territory of each band contained a wide variety of ecological zones, usually ranging from the coniferous forest zone to the desert shrub/scrub zone (Aschmann 1974:248). Each local group utilized as wide a variety of resources as possible through the annual cycle within the band territory and, sometimes, outside of the band territory (Goodwin 1935:63; Indian Claims Commission 1974:409). Each local group followed a seasonal schedule exploiting resources at specific locales during specific seasons (Aschmann 1974:248). While the Western Apache followed a general subsistence pattern and scheduling, specific resource utilization and scheduling varied between subtribal groups, bands, and even local groups, depending on the resource distribution of the subtribal group and band territories and the needs and desires of the local groups. As a result of partial dependence on cultivation and the general lack of subsistence resources during the winter, the Western Apache essentially had a logistical subsistence system (Binford 1980) in which resources were gathered in different areas of their range and were transported to the home locality and/or winter camp grounds for later consumption (Buskirk 1949:295-296; Goodwin 1942:160). While pack horses were available and were used, travel was generally on foot and resources were carried in burden baskets (Goodwin 1942:285).

Storage was absolutely critical to survival during the winter and into the summer (Aschmann 1974:199; Buskirk 1949:295-296). Items which were collected, transported, and stored for later use included cultivars, wild plant seeds, mescal (agave), acorns, juniper berries, cacti and yucca fruit, and pinyon nuts (Aschmann 1974:255; Buskirk

1949:295-296; Indian Claims Commission 1974:405). These items were stored in ground caches, rock shelter/cave caches, tree caches, and wickiups (Buskirk 1949:295-296). Each family generally had five to 10 variously-sized caches, some filled with cultivars and others with wild food products, which were scattered in a number of hidden locations (Buskirk 1949:295).

1.0 THE GATHERING PROCUREMENT SYSTEM

The Western Apache collected a wide variety of succulents, cacti fruit, nuts, seeds, and berries. In the order of their importance in the diet of the White Mountain and Cibecue Apache according to Buskirk (1949:287-348), these were as follows:

1. Mescal (Agave parryi, A. palmeri, A. couesii)
2. Acorns from Gambel's oak (Quercus gambelii), Emory's oak (Q. emoryi), scrub oak (Q. undulata, Q. arizonicus), and other oaks
3. Sunflower seeds (Helianthus spp.)
4. Other seeds, nuts, and succulents
   a. pinyon nuts (Pinus edulis and P. monophylla)
   b. juniper berries (Juniperus spp.)
   c. sotol butts, stalks, flowers and seeds (Dasylirion spp.) (only used as an alternative to mescal)
   d. walnuts (Juglans spp.)
   e. mesquite beans (Prosopis juliflora)

f. saguaro fruit and seeds (Carnegia gigentea)

g. other cacti fruit and seeds including prickly pear (Opuntia spp.), cholla (Opuntia spp.), a small multiple barrel cactus, and Echinocereus wislizeni

h. Spanish bayonet yucca fruit (Yucca baccata)

i. yucca blossoms and stalk (Yucca elata)

5. Various roots, greens, seeds, and berries

a. bear grass butts, fruit, seeds, flowers, and young stalks (Nolina microcarpa)

b. miscellaneous seeds (grama grass (Bouteloua gracilis), Eriocoma cuspidata, drop seed grass (Sporobolus strictus), Ericompes rigens, devil's claw (Matynia spp.)

c. berries and fruits (Rhus trilobata, wild grapes (Vitis arizonicus), wild plum (Prunus spp.), wild cherries (Prunus virginiana), wild strawberry (Frageria spp.), manzanita flowers and fruit (Arctostaphylus pungens), and Canotia holocantha berries

d. greens including pigweed (Amaranthus spp.), Indian spinach/Lambsquarter (Chenopodium leptophylum and C. incanum), and Rocky Mountain bee plant (Cleome serrulata)

e. miscellaneous plants (the inner bark of pine trees (Pinus spp.), fungi (Maize smut and mushrooms), wild

onions (Allium spp.), wild tomatoes (Lycopersicum spp. ?), wild hyacinth bulbs, and tule tips, bulbs, and bases (Typha spp.)

Staple foods for the White Mountain, Cibecue, and Southern Tonto subtribal groups were mescal, acorns, pinyon nuts, juniper berries, Spanish bayonet yucca/datil fruit, sunflower seeds, prickly pear fruit, mesquite beans, and saguaro fruit (Goodwin 1935:62). Mescal was the most important wild plant food in terms of volume and dependability, and acorns were second in importance only to mescal (Buskirk 1949:307,354). Mesquite beans were an highly esteemed wild plant food but were considered to be of secondary importance in the diet (Buskirk 1949:312). Saguaro fruit was relatively unimportant (Buskirk 1949:316). For the San Carlos subtribal group, mesquite beans and saguaro fruit were as important as or more important than acorns (Buskirk 1949:355).

The importance of mescal was not only a function of its general availability and volume but also because it was available throughout the year in contrast to other plant foods which were only available during specific periods of the growing season (Goodwin 1935:62). Mescal was utilized to fill in periods when other foods were not available (Buskirk 1949:297). While mescal was available throughout the year and from a wide range of elevations, it was best during certain times of the year, especially spring when it started sprouting (Goodwin 1935:62, 1942:156). The Western Apache generally preferred species from lower elevations south of the Salt River (Buskirk 1949:297; Goodwin 1935:62, 1942:156).

Wild plant gathering parties rarely consisted of the whole local group moving together as a unit (Goodwin 1942:283). Generally, they were formed by individual nuclear families, extended family clusters, or several separate nuclear families, commonly from the same local group, making trips lasting 10 days to a month or more and usually under the direction of chief, subchief, or headman (Buskirk 1949:283; Goodwin 1935:62; 1942:149,159). The composition of the gathering party was usually based on consanguinal, affinal, or clan ties, although it was not unknown for unrelated families to join or form parties (Buskirk 1949:283; Goodwin 1942:159). While pack horses were used to transport collected foods, they were also transported in burden baskets back to the home locality or winter camping local (Buskirk 1949:285). Men spent most of their time during gathering expeditions hunting while the women and girls collected (Griffin, et al. 1971:70). In contrast to other gathering, mescal gathering required a cooperative effort to dig a roasting pit and roasting the agave crowns (Buskirk 1949:298-300).

Lower elevation harvest expeditions for mescal, saguaro, and mesquite beans were small (five to eight women and families) and generally short (10 to 14 days) (Buskirk 1949:283,297). In contrast, mid-summer acorn harvest expeditions being nearer to the home locality were larger, sometimes the entire local group, and lasted for a month or more (Buskirk 1949:283).

2.0 THE HUNTING PROCUREMENT SYSTEM

In addition to wild plants, game animals formed a major part of the diet of the Western Apache (Buskirk 1949:279). In terms of the order of importance of meat products from hunting and raiding in the diet, deer was the most important source of meat followed by other large game, small game, and raiding (Burros, horses, and cattle) (Buskirk 1949:280). Deer and small game were the most dependable sources of meat, and small game was frequently more important than the other large game animals, especially elk, mountain sheep, antelope, and bear, which were not a dependable source of meat and were not as regularly hunted (Buskirk 1949:224-245,280).

Large game animals hunted by the Western Apache included mule deer (Odocoileus hemionus), white-tailed deer (O. virginianus), small Mexican deer (O. h. canus), antelope (Antilocapra americana), elk (Cervus merriami), mountain sheep (Ovis canadensis), mountain lion (Felis concolor), bobcat (Lynx rufus), wolf (Canis lupus), coyote (Canis latrans), bear (Ursus spp.), and javelina (Tayussu tejuca) (Buskirk 1949:220-230). Mountain lion and bobcat were only eaten by the White Mountain subtribal group while wolf and coyote were only eaten by the Cibecue subtribal group (Buskirk 1949:228). Bear could only be hunted by religious practitioners with "bear power" (Buskirk 1949:230).

Small game animals hunted by the Western Apache included cotton-tail rabbits (Sylvilagus spp.), woodrats (Neotoma spp.), tree squirrels (Sciurus spp.), jackrabbits (Lepus spp.), prairie dogs (Cynomys ludovivianus), ground squirrels (Cittellus spp.), field mice

(Microtus spp.), porcupine (Erethizon epixanthum), beaver (Castor canadensis), raccoon (Procyon lotor), badger (Taxidea taxus), and several birds and eggs including turkey (Meleagris gallopavo), doves, quail, pigeons, geese, and ducks (Buskirk 1949:234-243). Cottontail rabbits and woodrats were highly esteemed, and tree squirrels were systematically hunted by boys (Buskirk 1949:234-336). Jackrabbits were not esteemed because their meat was tough, and prairie dog and ground squirrel were only eaten during periods of scarcity (Buskirk 1949:234-236).

While the Western Apache did utilize a large number of animals they did not utilize all the available fauna. Carnivores were generally only sporadically eaten; certain predatory and water fowl (eagles, hawks, buzzards, cranes, crows, owls, and blue jays) were not eaten; and the Western Apache ignored or avoided reptiles, fish, and insects (Buskirk 1949:281)

Adult men hunted large game, primarily using bow and arrow, and generally in groups of two to five individuals, although hunting groups ranged up to 20 individuals (Buskirk 1949:197; Goodwin 1935:61; Griffin, et al. 1971:70). Hunting parties were usually formed by a man's own relatives and associates from his natal camp rather than his wife's camp and were usually recruited from within his local group or band and his clan (Kaut 1974:56). In contrast, small game was regularly hunted and trapped only by adolescent males; adult males hunted small game only incidentally or when encountered while hunting large game (Griffin, et al. 1970:70). Adult hunters were expected to share their kill with their

extended family cluster, relatives, neighbors, and, especially, the poor (Buskirk 1949:261). Hunting was primarily undertaken by adult men, and this activity took most of their time (Goodwin 1935:61).

Generally throughout the year, hunting was sporadic, unorganized, and desultory and was based from farm sites, other home locality sites, and gathering camps (Buskirk 1949:158,224-225). Hunting intensified during two principal seasons: in the late spring between the planting of cultivars and the maturation of the first wild plant crops in July and in the fall through winter (Goodwin 1935:61). The late fall through winter period was the primary hunting season (Buskirk 1949:279). Men could safely leave their families for extended periods without conflicting with gathering activities and could obtain prime meat and hides (Goodwin 1935:61). Animals were one of the few subsistence resources available during the winter (Goodwin 1935:61). During the fall and winter, large hunting parties of adult and adolescent males went on extended hunting trips into the timbered mountains (Indian Claims Commission 1974:403). Although hunting occurred throughout their range, favored hunting areas included the area around the home locality, the Natanes Rim, timbered mountainous areas within the Transitional Region and Basin and Rage Province, and, occasionally, areas north of the Mogollon Rim (Buskirk 1949:198; Indian Claims Commission 1974:403) (see Appendix A for specific locations mentioned in the literature).

3.0 THE RAIDING PROCUREMENT SYSTEM

Raiding was undertaken to steal material goods, especially livestock (Basso 1971a:16). In contrast, warfare was undertaken to avenge the death of a Western Apache (Basso 1971a:16). The main motive of raiding was to secure supplies for consumption and trading to supplement and augment subsistence needs during periods of shortages (Basso 1971a:16; Getty 1963:6,8). The Western Apache raided eastern and northern Sonora, Chihuahua, and southern Arizona with limited forays against surrounding groups such as the Navaho, Yavapai, Pima, and Papago for livestock (horses, mules, sheep, and goats), cereal grains, cloth and clothing, blankets, metal, and occasionally firearms, saddles, bridles, leather, and cowhide (Basso 1971a:19, 1983:466; Getty 1963:6; Griffin, et al. 1971:70; Schroeder 1974c:554). It was not unusual for a raiding party to be gone for 70 to 80 days (Goodwin 1942:93). When the meat supply was low, a raid was suggested; and, generally, an experienced man, a war chief, organized a raiding party of volunteers (Basso 1971a:16). The raiding party consisted of five to 15 men from a local group or several adjacent local groups (Basso 1971a:16; Griffin, et al. 1971:70). Usually, the raiding party was formed by a man's own relatives and associates from his natal camp and members of his local group, band, and/or clan (Kaut 1974:56).

4.0 THE AGRICULTURAL PROCUREMENT SYSTEM

Agriculture was reported among Apachean groups in western New Mexico as early as the 1620s as well as a number of times during the eighteenth century by Spanish exploration and military expeditions (Buskirk 1949:182-185; Schroeder 1974a:293; 1974b:64,66,81). Since the Western Apache appear to have moved into their present territory after this time, these dates suggest that the Western Apache were agricultural when they first settled in their present territory or at least shortly thereafter. Although agriculture was not as important as hunting and gathering were prior to the establishment of reservations, it still played an important role in the subsistence system (Buskirk 1949:188,190).

The territory of bands and local groups varied in agricultural potential relative to the Western Apache agricultural technology, and the importance of agriculture in the bands and local groups varied directly with this potential (Buskirk 1949:31). Many local groups of the Southern Tonto and San Carlos bands did not cultivate while sixty percent of the White Mountain subtribal group and eighty percent of the Cibecue subtribal group did cultivate (Buskirk 1949:188). The amount of cultivation varied substantially between local groups within the same band and between families within the same local group (Buskirk 1949:188-189).

The proportion of cultivars in the diet varied with the amount of agriculture practiced by the local group and with changing environmental conditions from year to year as well as from season to

season (Buskirk 1949:189). For White Mountain and Cibecue families with average-sized farms, Buskirk (1949:189) and Goodwin (1935:61) have estimated that 20 to 25 percent of their diet was cultivars, primarily maize. However, they also noted that the proportion of the diet comprised of cultivars varied from 10 to 30 percent between local groups and extended family clusters of the Cibecue subtribal group.

Agriculture did not require continual occupation at farm sites since only periods of planting and harvesting required residence (Buskirk 1949:191). As a result the Western Apache left their fields unattended for long periods of time (Buskirk 1949:191). However, farm sites were considered to be the focus of the settlement system as home sites or headquarters (Buskirk 1949:190; Goodwin 1942:160). Generally, each local group was associated with a farm site; and most bands had at least one farm site where most of the local groups spent approximately half the year (Aschmann 1974:255; Goodwin 1942:150).

Ethnographically known aboriginal crops include maize (Zea mays), which was the main crop and staple cultivar; tepary beans (Phaseolus acutifolius var. latifolius), small kidney beans (P. vulgaris), and other beans; squash (Cucurbita moschata or C. pepo); and sunflowers (Helianthus spp.) (Buskirk 1949:106-148). Also, devil's claw (Martynia louisiana), sunflowers, Indian spinach/lambsquarter (Chenopodium leptophylum or C. incanum watson) were encouraged by tossing seeds near camps in sandy places, in washes, or beside streams (Buskirk 1949:163,173,425). Additionally, grass and seed patches were encouraged by burning them, which insured a better crop of seeds

(Buskirk 1949:242). As these cultivars are characterized by easy storability, except for squash of which only the seeds are storable, and by a concentrated nutritional value, cultivation added to the economic security and independence of those groups that practiced it (Buskirk 1949:190; Griffin, et al. 1971:70).

Each farm site usually had several farms, each consisting of one or more plots. Fields were generally long and narrow due to their location adjacent to streams for irrigation; for example, a large field at Canyon Creek in the 1940s was 220 yards long and 10 to 15 yards wide (Buskirk 1949:32). Although field size is hard to estimate, most early observers described most fields as small; and Goodwin (referenced in Buskirk 1949:59) described the fields he observed as both "tiny" and "small" (Buskirk 1949:59). Generally, each family cultivated plots which were a half acre or less in size (usually ranging from 1/20 to 3/4 acres) and owned four to six plots of which two to four plots were cultivated at any one time; one-tenth acre to three acres were cultivated by a single family (Buskirk 1949:59-60). Often, related individuals or families or families in an extended family cluster owned several plots (up to five to six) in a common field (Buskirk 1949:57). Buskirk (1949:62) estimated yields of about 5000 ears of maize per acre.

Because of the rugged terrain, the scarcity of water, and the simple agricultural technology based on the digging stick and stone ax, farm sites were selected on the basis of the basis of the levelness of the terrain, the availability of moisture, and the sparseness of vegetation (Buskirk 1949:30). In general, moisture was provided by

simple irrigation, run off diversion, direct precipitation, or by planting in areas with moist soil (Buskirk 1949:67-73). Due to the variability and unreliability of precipitation and the small amounts of spring rainfall as well as the significant effort required to construct run-off diversion features, most Western Apache agricultural fields were irrigated (Buskirk 1949:67). Therefore, most fields were selected for their accessibility to surface water and were generally located on grama grass-covered bottom lands adjacent to streams or near springs, where vegetation was sparse and shallow ditches were easily dug to the fields (Buskirk 1949:32,67). Fields were also located adjacent to springs or on wet seeps, which provided moist soil, and in areas receiving runoff diverted from hill slopes or dammed arroyos (Buskirk 1949:32). Only a few farm sites were located at a sufficiently high elevation to receive enough direct precipitation for dry farming (Buskirk 1949:32). Although soils were not a primary consideration in field selection, black soils which were not too sandy were preferred to red clay soils or extremely sandy soils (Buskirk 1949:32).

The ownership, construction, and maintenance of the simple irrigation system was communal with the participating field owners being responsible for these activities (Buskirk 1949:68-70; Goodwin 1942:374). In some locales a 'ditch boss' notified the field owners when ditch or dam construction or maintenance was necessary, supervised the work, and apportioned irrigation water. Sometimes short brush, gravel, and earth diversion weirs were constructed in the stream beds to divert water into irrigation ditches. Irrigation ditches were usually short and shallow,

usually serving five to 15 families, although the longest observed ditch, on Cedar Creek, was two miles long and served 30 families. Head and lateral gates were constructed by weighting beargrass and grama grass with rocks. Maintenance consisted of clearing the ditches of sediments and vegetation, burning vegetation along the ditch at the beginning of the planting season, and keeping the ditch clear during the growing season. The fields were irrigated from the ditches by flooding the fields without ditching them. Fields were leveled after initial and subsequent irrigations by moving soil from high points into standing water.

In addition to irrigation cultivation, plots were planted in areas with soil moistened naturally from rivers, streams, springs, or seeps (Buskirk 1949:74). Also, runoff was diverted from slopes to fields by small dikes of earth and stones or by ditches or from arroyos to fields by small weirs, especially in the Bear Springs area (Buskirk 1949:74). Finally, some dry farming was practiced at higher elevations where precipitation was higher and more reliable, especially in the Forestdale area (Buskirk 1949:33,73; Goodwin 1935:63).

Although individual farm sites were said to be owned by a nuclear clan or, occasionally, by several nuclear clan segments, actual ownership of farm plots resided in individuals, either male or in female; in several individuals; or in families (Buskirk 1949:45; Goodwin 1942:150). Separate farms owned by members of an extended family cluster were generally located at the same farm site but were also located at several scattered farm sites in some cases (Buskirk 1949:45-46).

Individuals with affinal, consanguinal, or clan ties joining another local group were given or loaned land or developed land without consultation with the local group chief (Buskirk 1949:45,48; Goodwin 1937:402). Individuals without these ties would not ordinarily be able to own land at a farm site and were only loaned land, after consultation with the local group chief, for temporary use (Goodwin 1937:402).

In local groups with farm sites, those individuals who did not own farms still had access to agricultural products from pay for helping 'wealthy' families during field preparation, planting, and harvesting (Buskirk 1949:77,86). In some cases wealthy individuals would hire laborers to help with extra work, but they were also obligated to accept the services of poorer individuals upon their request (Buskirk 1949:85).

The agricultural activities practiced by the Western Apache are described below following Buskirk (1949:36,41-166,654,673), Goodwin (1935:61-63, 1942:331, 1973:44-45), and Griffin, et al. (1971:70):

> 1. Field Preparation and Planting: Sometime during the period from March through May and sometimes extending into July, sizable groups of adults and children cleared fields, constructed and maintained the irrigation systems, and planted the fields. The groups usually consisted of the extended family cluster and often included consanguinal and affinal relatives and neighbors. These activities generally lasted for a month.
>
> Field preparation consisted of clearing the fields with ax, digging stick, and fire; removing roots and small stones;

breaking the soil with digging sticks; soaking the field with irrigation water; and weeding the field. Large stones were left in place.

Maize was planted sometime from April to May, and a second crop of 65 day fast-maturing maize might be planted a month or so later. Beans were planted at the same time as maize or two weeks later in the same fields as the maize and/or squash or sometimes in separate fields. Squash were planted at the same time as maize in the same or separate fields. Usually only five to 10 squash were planted. Sunflowers were planted without prior field preparation in separate plots or along irrigation ditches.

Standard practice was to completely plant a field in one day with the cooperation of a group which planted several fields in rotation. Sometimes several parties at the same farm site would be planting different fields at the same time.

2. Cultivation: When the maize was six to 18 inches high, the crops were irrigated and weeded by the women, elderly, and adolescents. After this, the fields were weeded and irrigated as needed, generally every two or three weeks during the growing period. When the success of the crop was assured, after two or three irrigations or after a good rain and when the maize was high enough, the local group would leave the farm site for other camps in the home locality; and small groups would leave to exploit resources outside the home

locality. Individuals would return to the farm site or some of the elderly, disabled, captives, and children would stay at the farm site to cultivate the crops and protect the fields from animals.

3. Harvest: Crops were harvested sometime between late August and November. The timing of the harvest was determined by crop maturation, convenience, and the timing of first frost, although the Western Apache generally tried to harvest before the first frost. It generally took a month to harvest the crops. At least among the White Mountain Apache, usually small groups harvested the crops.

4. Seed Selection: Seeds for future crops were selected at harvest. They were selected for the number and size of ears, the tallness of the stalks, and, occasionally, for early maturation. Seeds were stored on the cob in ground caches for up to two or more years against the loss of a crop, but seeds more than a year old were not used if younger seed was available.

5. Storage: After harvesting, drying, and stripping, maize and beans were transported back to the home locality camp; and at least half of the crop was stored in the home locality for use the next year, while the rest was consumed or was transported to the winter camp for consumption. While squash seeds were stored for consumption and planting, squash flesh

was never stored for long periods and was usually consumed by December.

Each family or extended family cluster attempted to store enough cultivars to last until the next harvest. Maize was stored in wickiups in the home locality, ground caches, tree caches, cave and rock shelter caches, and caches in rocks below ledges or bluffs in several areas in the home locality and perhaps near winter camps. Beans were stored in ground caches and cave and rock shelter caches. Pumpkin seeds were stored in ground caches. Crops from different years were stored in separate caches.

6. Fallowing: Western Apache informants have stated that fields were 'rested'. They stated that about half of the fields owned by a family were 'rested' each year so that each field was generally 'rested' a year for every two to three years of cultivation. However, Murdock (1981:124-125) has stated that the Western Apache followed a long fallow in which new fields were cleared each year, were used for one or two years, and were then allowed to revert to bush or forest.

5.0 SUMMARY

The Western Apache subsistence system was based on a mixture of hunting, gathering, raiding, and agriculture. The territory each band utilized cross cut a variety of ecological zones, either in terms of a

local, elevational scale (e.g., the Southern Tonto bands) or on a more regional scale (e.g., the White Mountain bands). Hunting and gathering provided the majority of the diet, although agriculture played a major role. Raiding supplemented the other subsistence activities.

Gathering focused on the collection of mescal (agave), acorns, pinyon nuts, juniper berries, and, to some extent, cacti and mesquite beans. Gathering parties were usually small and worked independently of one another. Although horses were utilized for transportation, much of the wild plant foods were transported on foot.

Hunting primarily focused on deer and small game. Adult males hunted deer and other large game while adolescent males focused on hunting small game. Although hunting occurred throughout the year, it intensified during the late spring and early summer and during the late fall and winter.

Agriculture varied in importance between subtribal groups, between local groups, and even within local groups. Up to an estimated 25 percent of the diet was provided by agricultural products. The main crops were maize and beans. Because of environmental factors, simple irrigation was almost always practiced. Although agriculture was a major component of the subsistence system, fields were largely abandoned between planting and harvesting.

Chapter 5

Subsistence Scheduling Patterns of the Western Apache

The various Western Apache subsistence activities were scheduled during specific periods of the year at particular locations. This spatial and temporal patterning can be discussed in terms of four seasonal sets. These sets are merely analytical units and do not necessarily reflect the way in which the Western Apache designated their seasons.

1.0 NOVEMBER/DECEMBER TO MARCH/APRIL (WINTER)

Winters were spent either in the home locality or at lower elevations south of the Salt and Gila Rivers (Buskirk 1949:298; Goodwin 1935:63, 1942:158; Griffin, et al. 1971:69). In the home locality, the extended family clusters of the local group camped together in one camp or camped in separate, scattered camps (Goodwin 1942:158). In other cases, the entire local group, some of the extended family clusters, or

even nuclear families moved to lower elevations for two to six months in order to escape cold weather and to be nearer raiding targets (Buskirk 1949:199; Goodwin 1935:63, 1942:158). Usually, there was a great deal of movement between local groups and bands during this period since this was a favorite time for visiting relatives and acquaintances in other locales and for raiding (Goodwin 1942:158).

The majority of the Canyon Creek, Cibecue, and Western White Mountain bands normally spent four to six months wintering in non-home locality areas (Buskirk 1949:199). Their non-home locality winter camp areas were south of the Black and Salt Rivers in the Salt and Gila River valleys, on the slopes of the valleys on either side of these rivers, and on the lower slopes of mountains in mescal areas (Goodwin 1942:158; Kaut 1957:46). The San Carlos subtribal group resided in this area. Favorite winter camp areas of the other subtribal groups were at the foot of the Natanes Rim, in the Gila Range, along the lower elevations of the Salt and Gila Rivers (especially at the juncture of the San Carlos and Gila Rivers, at the 'Wheat Fields' on Pinal Creek near Globe, and in the Roosevelt Dam area), and on the lower slopes of the Graham/Pinaleno, Santa Teresa, and Turnbull Mountains (Basso 1970a:3; Buskirk 1949:199,286,298; Goodwin 1942:158; Kaut 1957:4,46) (Map 3 and Appendix A). Camps were established in different locations each year because the mescal (agave) had been depleted in the camp areas of previous winters (Buskirk 1949:286). The groups moved to better grounds within the winter camp areas approximately every fifteen days (Buskirk 1949:288). The non-home locality winter camps were temporary habitations

with the only structures being ramadas and/or brush wind breaks, which were built as inclement weather approached (Buskirk 1949:289).

Subsistence resources were low during the winter so subsistence activities were less intensive than in other seasons; practically the only subsistence activities were hunting and raiding, possibly supplemented by mescal gathering (Basso 1983:469; Buskirk 1949:200,288-289; Getty 1963:6; Goodwin 1942:158). As in the late fall, large all-male hunting parties continued making extended hunting trips to timbered mountainous areas, primarily to hunt deer, while their families stayed in the winter camps (Buskirk 1949:406; Getty 1963:6) (Map 3 and Appendix A). Boys also hunted small game around the winter camp area (Basso 1983:469). Winter was the main period of raiding, which supplemented hunting and stored resources (Basso 1971a:16, 1983:469). If non-home locality winter camp areas were utilized, mescal was gathered on first arrival in the winter camping area and then again just prior to returning to the farm sites and home localities in the spring (Buskirk 1949:288). If the initial winter supply of mescal was too small to last through the winter, additional supplies were gathered during the course of the winter (Buskirk 1949:298). Otherwise, the Western Apache were dependent on stored resources (Aschmann 1974:199).

2.0 MARCH/APRIL THROUGH JUNE (SPRING)

This period was characterized by three main subsistence activities: mescal gathering, agriculture, as well as hunting and miscellaneous gathering. The annual gathering cycle began with the

collection of mescal in the early spring (March-May), usually in April (Buskirk 1949:208). Because it was sprouting, this was the best time for gathering mescal (Buskirk 1949:298). The Western Apache preferred mescal from lower elevations south of the Gila River (Buskirk 1949:297). If the local group, extended family cluster, or nuclear family wintered in non-home localities, mescal was gathered before leaving for the home locality farm sites (Buskirk 1949:298). But if they wintered in the home locality, small, independent parties made short (10 to 14 day) trips to the mescal areas for collection and preparation (Buskirk 1949:298). In either case, enough mescal to last through the summer until the following winter was gathered, prepared, and transported to the home locality (Buskirk 1949:298). While mescal grew throughout the range of the Western Apache, it was most abundant on the lower slopes of Mescal Mountain, along the southern slopes of the Natanes Rim, around Cedar Creek, between Cibecue Creek and Canyon Creek, in localities between the Salt and Gila Rivers, and in localities south of the Gila River (Aschmann 1974:258; Buskirk 1949:297; Goodwin 1942:156; Indian Claims Commission 1974:404) (Map 3 and Appendix A).

Local groups usually returned to their farm sites sometime between February and May, usually in March or April (Basso 1969:11, 1983:468; Buskirk 1949:41,99). The local group chief would advise his followers when to make the move, and families trickled back to the farm sites over a seven to 10 day period (Goodwin 1942:156). The farm sites of the White Mountain and Cibecue subtribal groups were generally located along streams in the mountainous, broken, upland Transition

Region south of the Mogollon Rim and were located at elevations ranging from 4500 feet to 6000 feet (Basso 1969:11; Griffin, et al. 1971:69-70). The farm sites of the San Carlos subtribal group and some of the farm sites of the Southern Tonto subtribal group were located at generally lower elevations along streams in basins in the Basin and Range Zone (Map 4 and Appendix B).

Crops were planted between March and July but were usually planted in April at the higher elevations, so they could mature before winter frosts, and in May and June at the lower elevations (Buskirk 1949:41-2,106-107). Families which owned farms stayed at the farm sites until the maize was between six inches and three feet high, usually in late June and early July, when the success of the crops were assured and then left to hunt and gather (Goodwin 1942:156,674). This stay at the farm site usually lasted six weeks (Goodwin 1942:654). After assuring the success of the cultivars but before the maturation of the major summer wild plant crops, members of the local group tended to stay in the home locality at camps away from the farm sites and return to the farm sites as needed to irrigate and cultivate the cultivars (Goodwin 1942:654). In some cases, however, the elderly, disabled, and young were left at the farm sites to tend the crops, while everyone else was busy hunting and gathering (Basso 1983:468-469; Goodwin 1942:513,654).

During the time between mescal gathering and the maturation of the principal summer wild plant crops, the Western Apache subsisted on stored foods as well as the exploitation of available wild plant foods and game animals. When not cultivating or camped in ~the primary home

locality camp, they tended to move about the home locality and surrounding band territory in extended family clusters hunting and gathering. They returned to the primary home locality camp between these hunting and gathering excursions. Bear grass (Nolina microcarpa) stalks, butts, fruits, seeds, and flowers; berries (possibly squawbush (Rhus trilobata)), which grew everywhere but were larger and more abundant at elevations above 5000 feet; and tule (Typha spp.) bulbs, shoot tips, and stem bases were exploited, especially in May and June (Buskirk 1949:326,347-348,388). Stored food supplies were low, and wild plant foods were not generally available during the late spring, especially between planting and the maturation of the principal summer wild plant crops in July (Buskirk 1949:200). Therefore, this period was a principal period for hunting; and as a result, men were especially active (Buskirk 1949:200; Goodwin 1935:61).

3.0 JULY THROUGH AUGUST (SUMMER)

During this season, the Western Apache moved about their home localities and surrounding band territories hunting and gathering subsistence resources for storage, as well as immediate consumption. The principal wild plant foods were succulents from lower elevations and acorns. Small parties returned to the farm sites during this period to check on crops and see if green maize was available (Goodwin 1942:157). If green maize was available, it was gathered and transported to the wild plant food harvest camps (Goodwin 1942:157). During slack periods of the summer, quick spur-of-the-moment raids were organized against the

Navaho and Hopi and, in August, into Mexico in order to supplement resources (Basso 1971b:261; Kaut 1957:46-47).

In late June and early July, small gathering parties collected the fruit and seeds of saguaro, prickly pear, cholla, and other cacti as well as mescal, if needed, in short (10 to 14 day) trips to the low country of the Gila River and the lower San Pedro River (Basso 1969:11, 1983:469, 1970a:3; Buskirk 1949:316; Getty 1963:5; Goodwin 1942:159; Indian Claims Commission 1974:505) (Map 3 and Appendix A). These were not particularly important crops so only a small number of people participated in their harvest (Goodwin 1942:159).

From mid-July through August the Western Apache collected one of their most important wild food crops, acorns (Goodwin 1942:156). Acorns matured in late July in the White Mountains, in mid-August in the Mazatzal Mountains, and later in the Graham Mountains (Aschmann 1974:204). Almost every family participated in this harvest, which generally lasted four weeks or longer (Goodwin 1942:156-157). Often, extended family clusters and small mixed parties moved independently to the acorn gathering areas (Goodwin 1942:157). However, in some cases, the entire local group moved as a unit, under the direction of the local group chief, before separating into extended family cluster camps upon arrival (Goodwin 1942:157). When an adequate supply of acorns was gathered, the extended family clusters either returned in independent groups to the home localities or continued to stay in the harvest area until the next wild plant crop ripened (Goodwin 1942:157,159). The best collecting areas were in the highlands on either side of the Gila River,

in the foothills of the Graham/Pinaleno Mountains, in the area around Oracle on the north side of the Santa Catalina Mountains, on the south face of the Natanes Rim in the area from the Blue River to Arsenic Tubs, in the vicinity of the Eagle Creek farm sites, in the gap between the Graham/Pinaleno Mountains and the Santa Teresa Mountains, near Pleasant Valley, as well as along and south of the Black River (Aschmann 1974:258; Buskirk 1949:308; Getty 1963:5; Goodwin 1942:157) (Map 3 and Appendix A).

Because the acorn harvest occurred near the home locality, long stays were possible (Goodwin 1942:159). Fairly large concentrations of people from the same and different local groups often formed adjacent camps, although members of different local groups formed separate camps (Goodwin 1942:159). For example, more than 75 families were reported to have camped in a two square mile area at Ash Flats, south of the Natanes Rim (Goodwin 1942:159). These concentrations provided a major locus for visiting and interaction between differing local groups (Goodwin 1942:159).

4.0 SEPTEMBER THROUGH NOVEMBER (FALL)

This season was characterized by a wide variety of subsistence activities which included the agricultural harvest, hunting, and various wild plant harvests. Subsistence resources from these activities provided much of the food stored for the low subsistence resource periods during the winter and into summer.

Mesquite beans ripened during late August in the lower elevations of the Salt, San Carlos, and Gila Rivers (Buskirk 1949:312; Getty 1963:5). However, they were harvested over a long period from late August through October by small, independent parties on short (10 to 14 days) trips (Buskirk 1949:312; Goodwin 1942:157,159) (Map 3 and Appendix A). Although mesquite beans were esteemed, they were not an important source of food so there was no concerted harvest movement to harvest them (Buskirk 1949:312; Goodwin 1942:157). Also, the fruit of Spanish bayonet, which ripened in early September, was collected (Buskirk 1949:223-4; Goodwin 1942:62).

Cultivars ripened during the period from September through November (Buskirk 1949:42). If not already present, the extended family clusters returned to the farm sites where they stayed until the crops were harvested and stored (Goodwin 1942:157). Hunting and gathering activities were suspended during the harvest period (Basso 1983:469). The fall agricultural harvest usually lasted for a month, normally sometime in September through mid-October, although it might be delayed until October to November and might last longer than a month (Buskirk 1949:115,286; Goodwin 1935:63; 1973:45). Maize usually ripened in late August and September, but harvesting might be delayed until October or November (Buskirk 1949:42-45). Although maize was sometimes harvested as it matured, in other cases it was harvested all at once whether all the ears were mature or not (Buskirk 1949:115). Squash matured from early fall to November and was generally harvested in October (Buskirk 1949:42,151). Beans were harvested at the same time as maize and

generally produced small amounts (less than or equal to 50 pounds) (Buskirk 1949:145,147). Sunflower seeds were harvested as they ripened in September and October (Buskirk 1949:166). At least half the crop was stored in the home locality for future consumption during the course of the year, and the remainder was transported to the non-home locality winter camps or was consumed in the home locality over the winter (Buskirk 1949:120).

The fall, particularly October and November, was a principal time for hunting, especially deer and antelope, since the hunting was at its best, meat and hides were prime, and men could leave their families safely at farm sites or other home locality sites (Basso 1983:409; Goodwin 1935:61). In contrast to spring and summer hunting but like winter hunting, large all-male hunting parties hunted mountainous, timbered areas under the leadership of a headman, subchief, or chief for four to 10 days (Goodwin 1935:61, 1942:157). However, these parties were not usually very far from their families (Goodwin 1935:61) (Map 3 and Appendix A).

During the late fall, October through December, large harvest parties, sometimes whole local groups, harvested large quantities of pinyon nuts and juniper berries in the home locality and other areas (Basso 1983:469; Buskirk 1949:330,334; Goodwin 1942:157). Often, women and children collected pinyon nuts and juniper berries while the men hunted (Basso 1983:469). Good gathering areas included the Colorado Plateau Province (only occasionally utilized); intermediate and high elevations along and north of the Natanes Rim; the slopes of the

Graham/Pinaleno, Mazatzal, White, and Blue Mountains; and the areas around the Cedar Creek, White River, and Eagle Creek farm sites (Aschmann 1974:258;Basso 1971b:31; Buskirk 1949:330,334; Goodwin 1942:157; Indian Claims Commission 1974:405) (Map 3 and Appendix A). Juniper trees consistently produce berries each year, but pinyon pine stands bear fruit heavily only one year in every four and as a result are not a dependable source of food unless an extensive area is available for gathering (Aschmann 1974:205).

Sunflower seeds and cholla fruit and seeds were also collected during this season (Buskirk 1949:320-321,328). The last gathering activity of the fall, if the extended family cluster wintered in the home locality, was collecting mescal for winter consumption (Buskirk 1949:298). But, if the extended family cluster wintered at lower elevations, mescal was gathered and prepared upon arrival in the non-home locality winter camping areas (Buskirk 1949:298).

5.0 SUMMARY

The Western Apache followed as annual subsistence cycle that alternated between the home locality and farm sites, hunting and gathering areas, and, in some cases, non-home locality winter camp areas (Fig. 5.1). During the winter, groups either wintered in the home locality or in non-home locality winter camps; and major subsistence activities were hunting and raiding. With the beginning of spring, mescal (agave) was gathered; and agricultural crops were planted. After these activities, hunting and gathering activities moved groups around

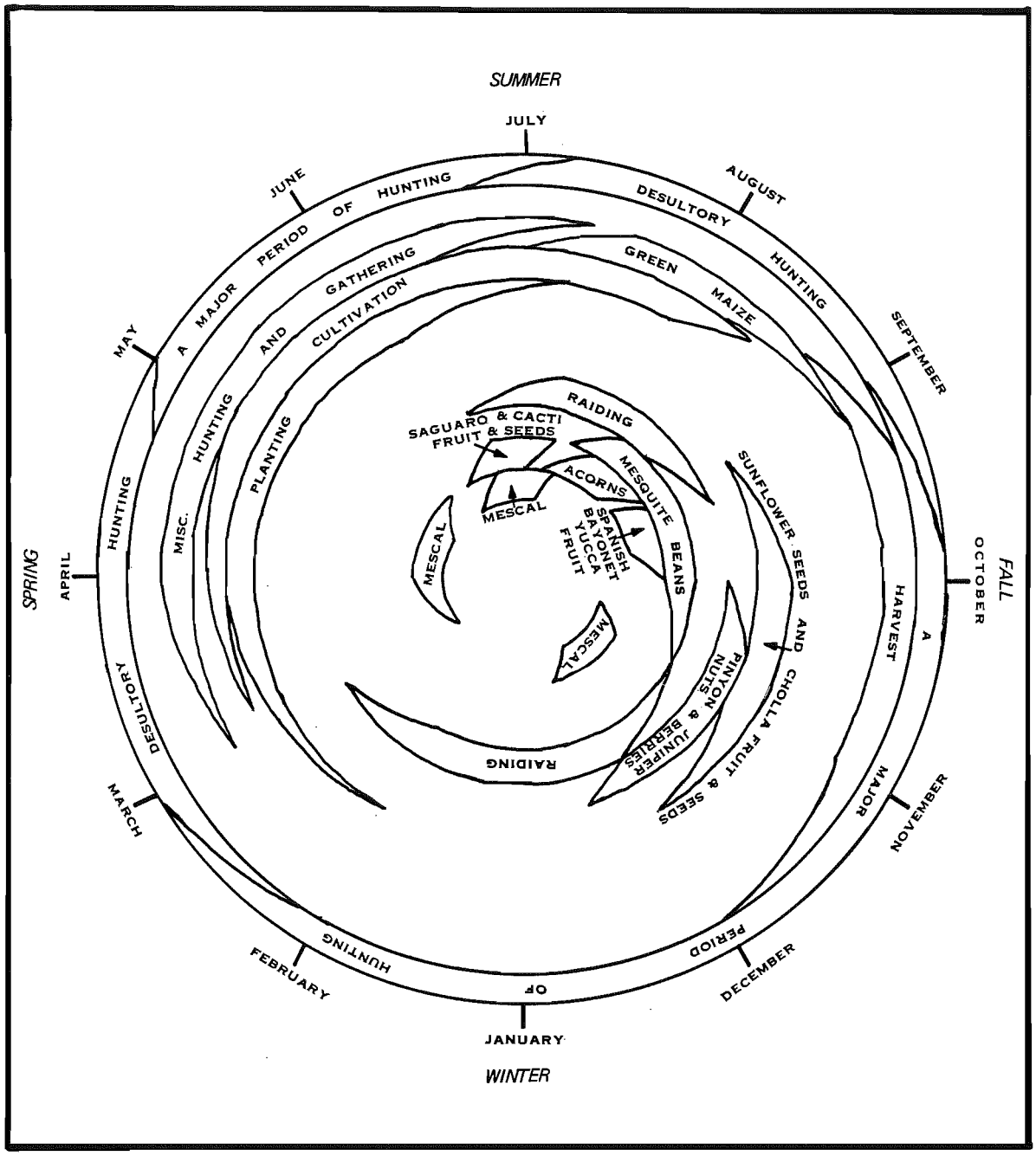

Figure 5.1 Subsistence Activity Scheduling

the home locality and band territory. Summer gathering activities reached a peak with the acorn harvest. In the fall, groups returned to the home locality and farm sites to harvest agricultural crops. Then, large, all-male hunting parties hunted timbered, mountainous areas, primarily for deer; and large parties collected pinyon nuts and juniper berries. Mescal was gathered in the late fall by groups staying in the home locality for the winter and was gathered by groups wintering in non-home locality winter camps as they entered the winter camp areas. With the end of the fall, the annual cycle continued into another winter.

Chapter 6

The Western Apache Settlement System Model

1.0 MODEL

A descriptive model of the Western Apache settlement system during the mid-19th century, synthesizing the data on environment, social organization, subsistence, and scheduling presented in Chapters 2 through 5, can now be developed. This model is presented in Figure 6.1. As with any model, this one is a simple abstraction of a complex reality. For example, it assumes participation in the agricultural subsistence subsystem, although this subsystem was not uniformly participated in at any level of social organization. To include all potential variability would defeat the purpose of developing the model.

This settlement system model represents the Western Apache settlement system at approximately 1850 to 1875. The model is based on information provided ethnographers during the 1930s by informants who lived through the mid-19th century as well as on studies conducted since then.

In the most basic sense, the Western Apache settlement system was a seminomadic, mixed subsistence settlement system based on a combination of hunting, gathering, and agriculture. Because agricultural surpluses were minimal, the Western Apache tended to move continually

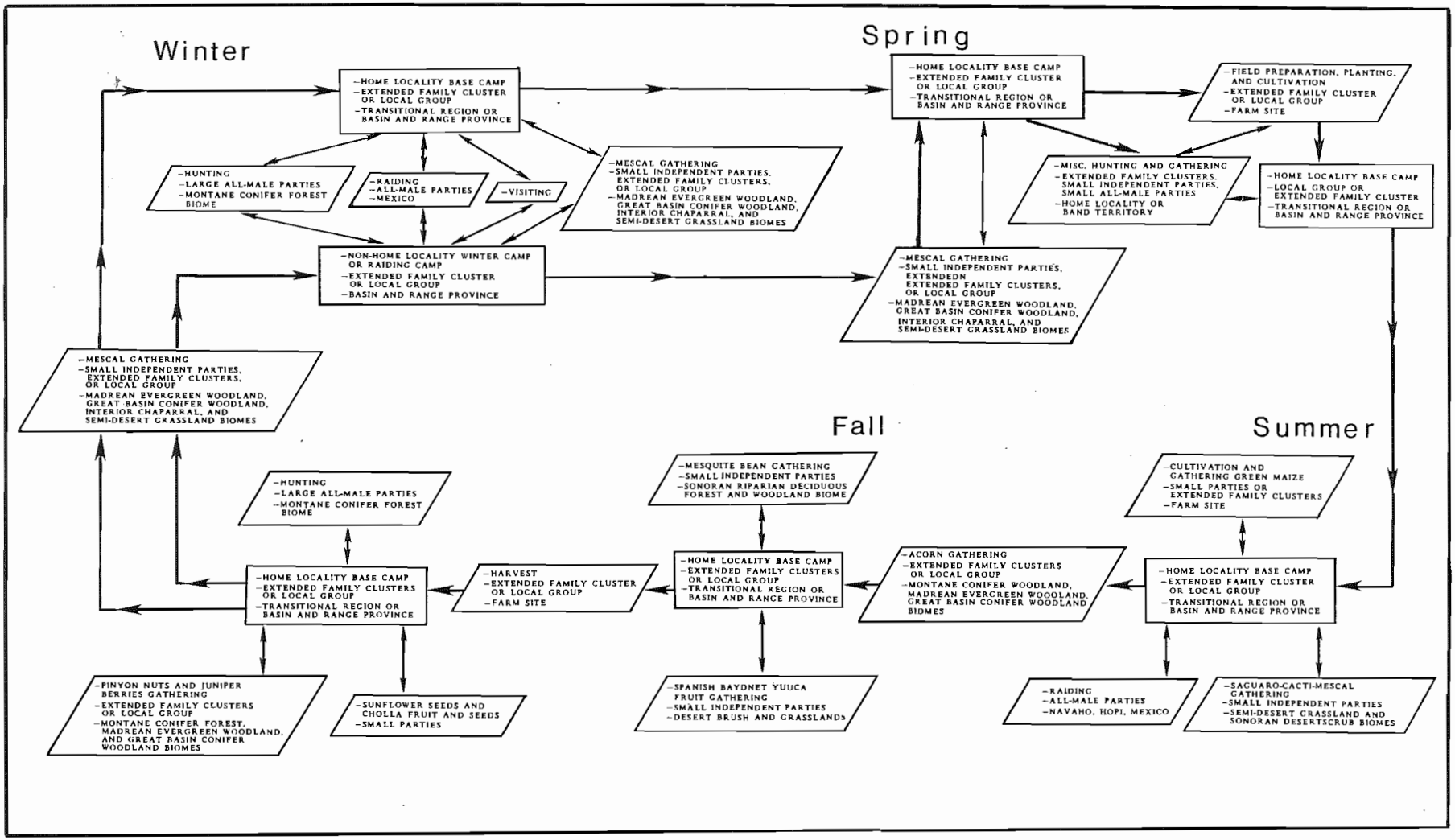

Figure 6.1 Model of the Western Apache Settlement System

through their range hunting and gathering available resources (Basso 1983:468). Yet, although the agricultural subsystem never replaced hunting and gathering as the dominant mode of subsistence, it did establish an economic cycle that contained periods of sedentary life in the home localities (Basso 1983:465). In addition to these periods, the Western Apache also returned to their home localities between hunting and gathering expeditions. Therefore, while there was considerable movement, the settlement system focused on the home locality and its farm sites. A considerable amount of time was spent there, especially in the spring and fall.

Because most subsistence resources were scarce during the winter, storage of cultivars and wild plant foods was critical for sustaining life through the winter (Aschmann 1974:199). This necessity produced something of a logistical hunting-gathering subsistence system (Binford 1980) in which subsistence resources were transported to the home localities and/or the non-home locality winter camps for winter consumption (Buskirk 1949:295-296; Goodwin 1942:160).

2.0 SITE TYPOLOGY

Implicit in the proposed model and the Western Apache data is a set of site types (Fig. 6.2). Although I do not specifically address the archaeological correlates of these site types, some discussion of them and their differences is useful here. Basically, site types are divided

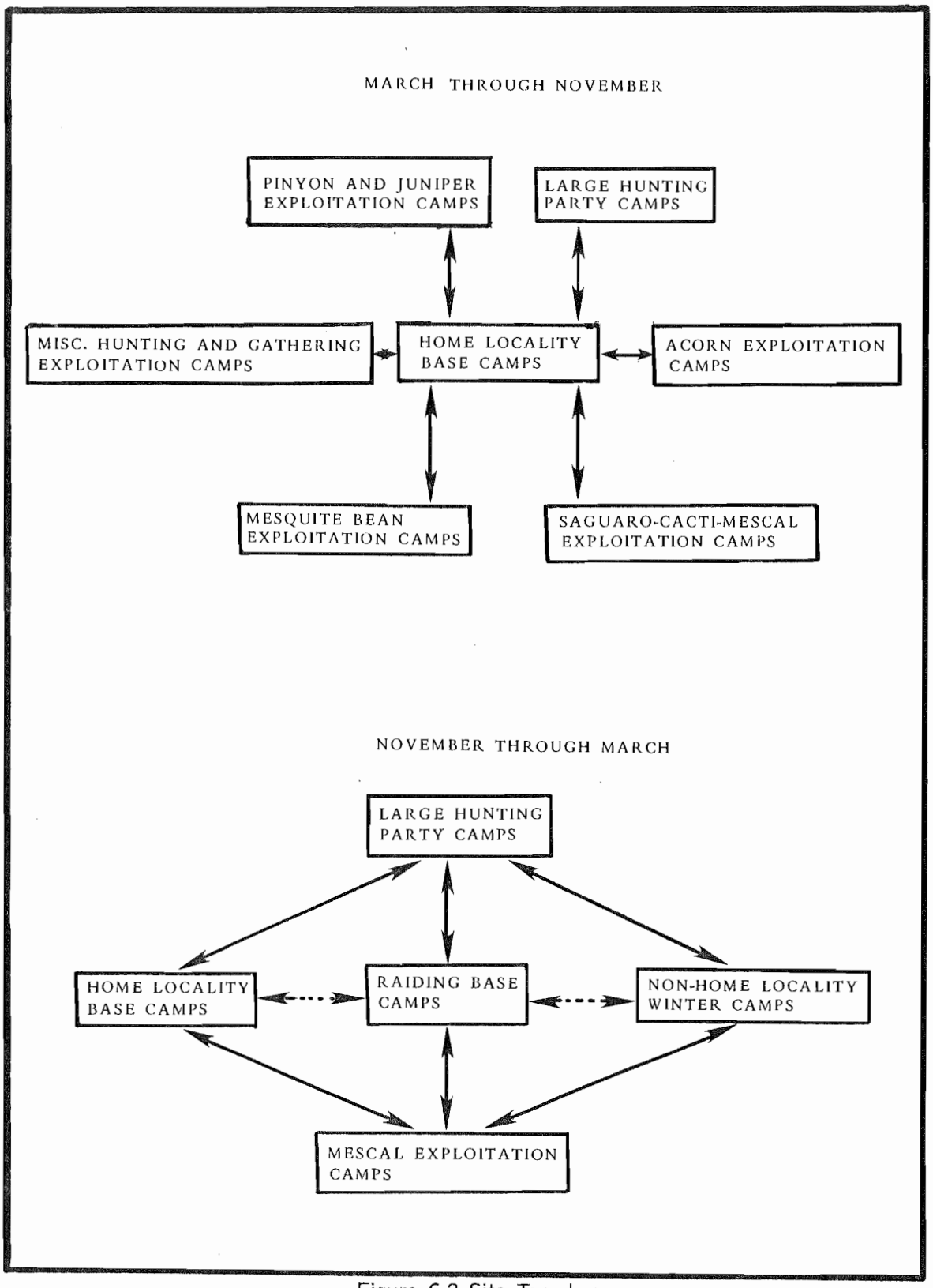

Figure 6.2 Site Typology

between home locality base camps, non-home locality winter habitation camps, seasonal exploitation habitation camps, temporary camps, and special activity exploitation sites.

The settlement system focused on the home locality base camp and, in some cases, the non-home locality winter camp area (Griffin, et al. 1971:69:70; Kaut 1974:59). The largest and most permanent wickiups characterized home locality base camps. Extended family clusters and, in some cases, entire local groups occupied home locality base camps, depending on the local group and its leadership and placement in the developmental sequence of the growth of local groups. In some cases, extended family clusters or entire local groups remained in the home locality for the winter. However, in other cases, especially the Cibecue, San Carlos, and Southern Tonto subtribal groups, nuclear families, extended family clusters, or the entire local group moved to non-home locality winter camps at lower elevations. Usually the non-home locality winter camps were short-term, frequently shifting camps. The only structures were temporary ramadas and brush wind-breaks which were constructed at or just before the onset of inclement weather.

Seasonal exploitation parties traveled from the home locality base camps. These parties, usually extended family clusters or small, mixed parties, established relatively short-term habitation camps in the areas to be exploited. Few or no habitation structures were constructed at these camps. When necessary, processing features, such as roasting pits, were present at mescal exploitation habitation camps. In contrast

to most seasonal exploitation camps, acorn gathering habitation camps were occupied for longer lengths of time and occurred in larger sizes and greater densities. Temporary camps were constructed for overnight stays while moving to and from other camps.

Special activity exploitation sites marked the actual locations of subsistence exploitation activities. These sites are characterized by the presence of discarded tools and organic remains resulting from the extraction of subsistence resources. In general, evidence of domestic, habitation activities is lacking.

Chapter 7

The Prehistoric Early Mogollon Settlement System

In light of the preceding model of the Western Apache settlement system, the form of Early Mogollon settlement systems, especially for the Early Pithouse period, is now considered. The discussion first outlines the existing data on Archaic and Early Mogollon settlement patterns and subsistence. Then, previous interpretations of Early Mogollon settlement systems are discussed. Finally, a new interpretation of the Early Mogollon Early Pithouse period settlement system based on the analog of the Western Apache settlement system is proposed. The general, but not exclusive, focus of the discussion is on west-central and southwestern New Mexico.

1.0 SETTLEMENT PATTERNS

1.1 The Archaic Period

Although a number of Cochise sites have been excavated and a few systematic surface surveys (Bluhm 1960; Sayles and Antevs 1941; Whalen 1975) have been conducted, little is actually known about regional Cochise settlement patterns. Cochise sites are located throughout the major ecological zones, but they are primarily known from the lower desert zones of south-central and southeastern Arizona (e.g.,

the San Pedro Valley and Ventana Cave) and southwestern New Mexico (e.g., the Deming Plain) as well as from the mountainous zones of west-central New Mexico (e.g., Bat Cave, Tularosa Cave, and the Wet Legget site) (Berman 1979:21; LeBlanc 1976, 1982:40; Mimbres Foundation 1978:10; Sayles 1945; Whalen 1975). Few archaic sites have been found between these two zones (LeBlanc 1976, 1982:40; Mimbres Foundation 1978:10).

In the San Pedro Valley, Cochise sites occur primarily in three types of areas (Whalen 1975): 1) on the flood plains adjacent to the San Pedro River, 2) along the edges of major terraces 20 to 40 feet above the river flood plains overlooking tributary streams approximately two to three miles from the flood plain sites, and 3) on the higher piedmont slopes four to six miles from the terrace sites at the mouths of canyons exiting from the mountains. In contrast to this pattern is the one in the mountainous Pine Lawn Valley of west-central New Mexico where Cochise sites tend to be located along streams on the higher slopes of the valley (Bluhm 1960). The articulation of the settlement patterns in these two cases with the regional settlement pattern is not clear. Clearly however, archaic Cochise sites are found in a wide variety of ecological zones and across a wide range of elevations in the form of 'open air' sites and rock shelter/cave sites.

Rock shelters are generally located in the ecotones between either the Lower Sonoran and Upper Sonoran life zones or the Upper Sonoran and Transition life zones at or near permanent or semi-permanent water (Berman 1979:19). In contrast many open air sites are on the

margins of playas and former lakes as well as frequently along springs and arroyos, especially in montane areas (Berman 1979:18). In general the Cochise adaptation utilized the Lower Sonoran life zone and the higher reaches of the Upper Sonoran life zone into the Transition life zone, with a strong emphasis on exploiting the Lower Sonoran zone where desert succulents and fauna were available the year-round (Shafer 1982:7).

Rock shelter sites have been subjected to more excavation than open air sites. However, open air sites were probably more numerous and probably played a more important role in the settlement system. Cochise sites can be functionally divided into base camps and specialized activity camps (Irwin-Williams 1979). Base camps are characterized by hearths, relatively large pits, and clusters of milling stones (Sayles and Antevs 1941; Windmiller 1973). Flimsy habitation structures were probably present, given the lack of data to the contrary (Woodbury and Zubrow 1979). Small, shallow pithouses with large internal storage pits were introduced by the end of this period (Martin and Rinaldo 1950a; Minnis 1980:85; Sayles 1945; Woodbury and Zubrow 1979). Generally, Cochise sites are small and were probably occupied by bands of approximately 25 individuals (Irwin-Williams 1979).

1.2 The Early Mogollon

1.2.1 The Early Pithouse Period

Early Pithouse period (Table 7.1) sites are generally located in or near the ecotone of the Upper Sonoran and Transition life zones (Anyon 1980:196; Berman 1979:31). Usually, the higher, mountain zones of the Transition life zone and the lower, desert zones of the Upper Sonoran life zone were not utilized for habitation (LeBlanc 1980:13,28,29, 1983:40,45,153). A few sites were located in the mountainous and desert areas along well-watered streams (Mimbres Foundation 1978:28). Basically, occupation focused on well-watered perennial streams and rivers, often the major rivers of the area and their larger tributaries, especially where the narrow flood plains widen (Accola 1981; LeBlanc 1983:40; Mimbres Foundation 1978:13). Although sites tended to be located over a wide range of elevation, most sites were located between 4500 feet to 6500 feet (LeBlanc 1983:40; Mimbres Foundation 1978:15).

This zone is generally envisioned to be optimal for a mixed subsistence economy occupation (Graybill 1975:17). Not only is it an area with a large potential for floral and faunal biomass, but it is also considered to be optimal for Mogollon agriculture (Graybill 1975:17; LeBlanc 1980:13, 1983:40,153). because it has relatively greater precipitation than the lower, more arid zones and a growing season longer than the higher, mountainous areas. The flood plains are considered to be optimal for agriculture because of the availability of water from high water tables and directly from the streams, either as flood water or by irrigation, and the availability of rich alluvial

Table 7.1 Chronology

COCHISE			3500 B.C.-300 B.C./A.D. 200
EARLY MOGOLLON			
	EARLY PITHOUSE PERIOD		
		CUMBRE-PINE LAWN PHASE	300 B.C./A.D. 200-A.D. 550
	LATE PITHOUSE PERIOD		
		GEORGETOWN PHASE	A.D. 550-A.D. 650
		SAN FRANCISCO PHASE	A.D. 650-A.D. 850
		THREE CIRCLE PHASE	A.D. 850-A.D. 1000
LATE MOGOLLON			
		MIMBRES PHASE	A.D. 1000-A.D. 1150
		OR	
		RESERVE PHASE	A.D. 1000-A.D. 1100
		TULAROSA PHASE	A.D. 1100-A.D. 1300

soils with high water-holding capacity. Additionally, the resources present in this zone could be supplemented with seasonally exploited resources from lower and higher zones.

Early Pithouse period sites are consistently located on high, steep-sided, relatively isolated locales (e.g., knolls, ridges, mesa edges, bluffs, and hills) along the edges of valleys and overlooking the adjacent valley flood plain (Anyon and LeBlanc 1980:254; Anyon, et al. 1981:210; Becket 1980:208; Berman 1979:30; Bluhm 1960:539; Danson 1957; LeBlanc 1980:120, 1983:45; LeBlanc and Whalen 1980:12; Martin and Plog 1973:182; Mimbres Foundation 1978:12,36; Rice 1980a:22; Shafer 1982:6; Stuart and Gauthier 1981:179; Wendorf 1956:23). These sites are located well-above both water and potential flood plain agricultural fields with elevations generally ranging from several hundred feet to just over nine hundred feet above the adjacent flood plain (Martin and Plog 1973:182; LeBlanc 1980:122,125, 1983:45). Access to these sites is difficult, and accordingly, they are often interpreted as being located for defensive purposes (Anyon, et al. 1981:210; Berman 1979:30; Bluhm 1960:539-541; Danson 1957:39; LeBlanc 1980:120; LeBlanc and Whalen 1980:12; Martin 1979:66; Martin, et al. 1950a:565). Indeed, some sites do have rock wall positioned across the most accessible entry route (Anyon, et al. 1981:210; Bluhm 1960:539-541; Martin 1979:65).

Despite some variation in site size and the presence of some larger sites (Bluhm 1960:539; Mimbres Foundation 1978:37; Rice 1975:65; Wendorf 1956:22), most Early Pithouse period sites are small, usually

less than ten "structures" per site (Bluhm 1960:539, Rice 1975:63; Stuart and Gauthier 1981:179; Wendorf 1956:22). Generally, site size ranged from one to fifty structures (Bluhm 1960:539; LeBlanc 1976:4; Mimbres Foundation 1978:36). Five surveys in the Mimbres and Upper Gila valleys yielded average estimated site sizes ranging from 2.8 to 13.4 depressions per site with a range of one to 41 depressions (Mimbres Foundation 1978:15). The contemporaneity of structure use and the length of site occupation is difficult to determine, so it is difficult to say if the larger sites resulted from larger population concentrations or if the larger sites were simply occupied over a longer period of time than the smaller sites (LeBlanc 1980:129). Most likely, the larger sites are the result of both longer site occupation and a social group developmental cycle which resulted in the increase and decrease in the size of the groups.

1.2.2 The Late Pithouse Period

The Late Pithouse period settlement pattern breaks sharply with the Early Pithouse period settlement pattern (LeBlanc 1980:124). Although Late Pithouse period sites are located in the same general area as the previous period, they are now located on lower, more accessible locales (e.g., terraces, low ridges, low benches, and flood plains) closer to the valley flood plains, usually the first terrace above the flood plains (Accola 1981:162; Anyon 1980:148,192; Becket 1980:208; Berman 1979:31; Bluhm 1960:540; LeBlanc and Whalen 1980:112; Shafer 1982:9; Stuart and Gauthier 1981:186-193; Wendorf 1956:23). They are

often within less than one kilometer of nearby Early Pithouse period sites (Anyon, et al. 1981:210; LeBlanc 1976:4). A few Late Pithouse period sites continue to be located on high land forms; however, most of these, although not all of them, are located in areas where lower locales were not available (Accola 1981:162; Anyon 1980:192; Berman 1979:31; Bluhm 1960:540; LeBlanc 1980:123-125; Mimbres Foundation 1978:18). Such a major shift in settlement location suggests a major adaptive shift (Anyon 1980:148).

The number and size of sites begins to increase with the San Francisco phase and dramatically increases with the Three Circle phase sites (Anyon 1980:149,164; Stuart and Gauthier 1981:149,164). Most of the larger sites are located along major streams in areas previously occupied (LeBlanc 1983:75). Concurrently with the expansion of the size and number of sites, the range of occupation expands into more marginal areas with mainly smaller villages, usually into moister but cooler mountainous areas but also into lower, arid desert areas, as well as up secondary drainages of previously occupied valleys (Anyon 1980:164; LeBlanc 1983:75,152; Mimbres Foundation 1978:17-20,37; Shafer 1982:9; Stuart and Gauthier 1981:193).

In general, site size appears to have increased in size throughout the Late Pithouse period relative to the Early Pithouse period (LeBlanc 1978:8; LeBlanc and Whalen 1980:112; Mimbres Foundation 1978:37; Stuart and Gauthier 1981:186-193). Most sites were still generally small, but site size range increased to over 100 structures per site (Bluhm 1960:540; Mimbres Foundation 1978:37; Stuart and

Gauthier 1981:186-193).

Basically, the number and size of sites as well as the diversity of site size, increased throughout the Late Pithouse period (Mimbres Foundation 1978:19-20). Clearly, population size and aggregation increased significantly, and occupation expanded into apparently marginal areas during the later part of the period, especially during the Three Circle phase (Anyon 1980:149; Mimbres Foundation 1978:38; Stuart and Gauthier 1981:194-195).

2.0 SUBSISTENCE

2.1 The Archaic Period

Archaic period Cochise groups exploited a wide variety of wild plants, animals, and small amounts of cultivars (Table 7.2). The characteristically large number of grinding implements found on Cochise sites suggests the importance of plant foods in comparison to animals; in fact, plant resources were probably a major, if not the major, subsistence resource for Cochise groups (Minnis 1980:84). Rather than specializing in a few plant resources, a large variety of plants appears to have been equally as important (Minnis 1980:84). By 2000 B.C. Cochise groups had developed a suitable technology and scheduling pattern to exploit storable floral resources, particularly pinyon nuts and acorns (Shafer 1982:5).

However, Cochise groups hunted a broad spectrum of fauna, including a number of species which were rarely present during the later

Table 7.2 Cochise Subsistence Resources

FAUNA (1)			
	LARGE MAMMALS	ARTIODACTYLA:	pronghorn antelope (Antilocapra americana), deer (Odocoileus spp.), mountain or bighorn sheep (Ovis canadensis), bison (Bison bison), elk (Cervus spp.)
		CARNIVORA:	bear (Ursus spp.), bobcat (Lynx rufus), wolf (Canis lupus), coyote (Canis latrans), dog (Canis familiaris), fox (Vulpes spp., Urocyon spp.), mountain lion (Felis concolor), ringtail (Bassariscus astutus), wildcat
	SMALL MAMMALS	LAGOMORPHA:	jackrabbit (Lepus spp.), cottontail rabbit (Sylvilagus spp.)
		RODENTIA:	squirrels (Cittellus spp., Spermophilus spp., Otospermophilus spp.), prairie dog (Cynomys spp.), pocket gopher (Thymomys spp.), gopher (Geomys spp.), beaver (Castor canadensis), woodrat (Neotoma spp.), muskrat (Ondatra zibethicus), rat (Rattus spp.), porcupine (Erethizon dorsatum)
	AVIFAUNA:		wild turkey (Meleagris gallopavo), duck (Anatidae spp.), eagle (Aquila spp.), jay (Corvid spp.), hawk (Buteo spp.), raven (Corvus spp.), falcon (Falco spp.)
	REPTILE/FISH/AMPHIBIANS:		toad (Bufo spp.), turtle
WILD FLORA (2)			
	NUTS:		walnut (Juglans major), pinyon (Pinus edulis), acorns (Quercus spp.)
	BERRIES:		juniper (Juniperus depeana, J. monosperma, Juniperus spp.), wolfberry (Lycium spp.)
	SEEDS AND/OR GREENS:		pigweed (Amaranthus spp., A. blitoides, A. hybrides, A. powellii), lambsquarter or goosefoot (Chenopodium spp.), sunflower (Helianthus spp.), grama grasses (Bouteloua gracilis, B. hirsuta), deergrass (Muhlenbergia rigens), muttongrass (Poa fendleriana, P. secunda), sacatons (Sporobolus airoides, S. wrightii), saltbush? (Atriplex canescens), seepweed? (Suadea spp.), cattail (Typha latifolia), primrose (Festuca spp.), Yucca spp.

Table 7.2 (continued)

	STALK/ROOT:	mescal (*Agave* spp.), *Yucca* spp., *Yucca baccata*, bulrush (*Scirpus* spp., *S. olneyi*, *S. validus*)
	CACTI:	prickly pear cactus (*Opuntia* spp.), cholla (*Opuntia* spp.)
CULTIVARS (3)		maize (*Zea mays*), squash (*Cucurbita pepo*), common or kidney beans (*Phaseolus vulgaris*)

(1) Berman 1979:106; Beckett 1980:201-202; Martin, et al. 1952:204, 1954:155

(2) Berman 1979:105; Beckett 1980:201; Dick 1965:89

(3) Berman 1979:22; Dick 1965:100; Minnis 1980:80-83; Winter 1974:5; Woodbury and Zubrow 1979:46-47

Early Mogollon period (e.g., reptiles, mountain sheep, civet cat, badger, fox, coyote, bobcat, and many birds) (Linskey 1975:255). Still, the focus of hunting was on deer (52 per cent of the meat consumed), antelope (11 per cent), mountain sheep (18 per cent), and small mammals (six to nine per cent), a category which was little used during the Early Mogollon period (Linskey 1975:255). Relative to the Early Mogollon, Cochise hunting patterns were characterized by a higher dependence on animals, except for the wild turkey, exclusively confined to the Canadian, Transition, or Lower Sonoran life zones (Linskey 1975:255). This pattern suggests a much broader use of ecological zones during Cochise times than during the Early Mogollon period (Linskey 1975:255).

Although apparently present for much of the Cochise period, cultivars were of minor economic importance, and only small amounts appear to have been produced (Berman 1979:22; Woodbury and Zubrow 1979:60). The chronological placement of the introduction of cultivars is currently questionable (Minnis 1980:78; Woodbury and Zubrow 1979:47). The earliest radiocarbon dates for maize at Bat Cave are around 3500 B.C. (Dick 1965:100); however, their associations and interpretations have been questioned (Minnis 1980:78; Woodbury and Zubrow 1979:47). The date of the introduction of maize into the southwest has been variously revised to 2500-2000 B.C. (Irwin-Williams 1979:41), 2300 B.C. (Minnis

1980:81), 2000 B.C. (Lipe 1978:337), and 1500 B.C. (Woodbury and Zubrow 1979:47). Squash was introduced at the same time as maize (Dick 1965:89,100; Lipe 1978:337; Minnis 1980:83). Although beans are usually thought to have been introduced later than maize and squash, between 1000 B.C. and 500 B.c. (Dick 1965:100; Minnis 1980:83), they may have been introduced at the same time (Minnis 1980:83).

Generally, Archaic cultivars, especially maize, are found at relatively high elevations, usually 5800 feet to 7000 feet (Minnis 1980:81). At these elevations precipitation is relatively greater, and areas of high water tables are more prevalent. Additionally, high elevations suffer less from prolonged droughts because of orographic effects. On the other hand, the short, highly variable growing season makes agricultural production insecure; and areas of suitable land are small and sparse. Still, as a supplemental resource planted in good locations, small amounts of cultivars could have been grown with little labor input prior to harvest, when production is assured (Minnis 1980:78).

As a result, agriculture was probably practiced in small, widely scattered fields in locales with loose, well-drained soils, an adequate growing season, and adequate moisture; the best locales would have been small canyons with alluvial soils (Woodbury and Zubrow 1979:51). Although the harvest would have been small, the fields could have been cursorily tended and abandoned for periods without substantial subsistence risk (Woodbury and Zubrow 1979:51). Likely low input, supplemental forms of agriculture during the Archaic period are

high-water table farming (Glassow 1980) and burn-plot farming (Sullivan 1982).

2.2 Early Mogollon

Early Mogollon groups also exploited a wide variety of cultivars, wild plants, and animals (Table 7.3). The actual emphasis of the exploitation of these resources is highly debatable. Although clearly a diversity of wild subsistence items was exploited, traditional thought holds subsistence to have been based on agriculture, which was supplemented by hunting and gathering (Dick 1965:90; LeBlanc 1983:76; Linskey 1975:247; Rice 1975:53). Others, however, have suggested that they were not very dependent on agriculture through at least some of this period (Pool 1980; Rice 1975:53; Stuart and Gauthier 1981:184). For instance, Martin (1940, 1943; Martin and Rinaldo 1947) has suggested that the artifact assemblage and subsistence remains from the Pine Lawn phase at the SU Site indicate a major emphasis on gathering, which was supplemented by hunting and agriculture.

While a number of plant species have been identified, especially from rock shelters and caves, the relative importance of these species to subsistence is difficult to determine. Because of their size and resistance to decay, pinyon nuts, juniper seeds, and walnuts are the most frequently found plant remains and are, therefore, perhaps over-represented.

Early Mogollon hunting primarily focused on deer, rabbit, and turkey (LeBlanc 1983:76; Rice 1980a:18; Stuart and Gauthier 1981:184).

Table 7.3 Early Mogollon Subsistence Resources

FAUNA (1)			
	LARGE MAMMALS	ARTIODACTYLA:	pronghorn antelope (Antilocapra americana), deer (Odocoileus spp.), mountain or bighorn sheep (Ovis canadensis), bison (Bison bison), elk (Cervus spp.)
		CARNIVORA:	bear (Ursus spp.), bobcat (Lynx rufus), wolf (Canis lupus), coyote (Canis latrans), dog (Canis familiaris), fox (Vulpes spp., Urocyon spp.), mountain lion (Felis concolor), raccoon (Procyon lotor), skunk (Mephitis spp.), badger (Taxidea taxus)
	SMALL MAMMALS	LAGOMORPHA:	jackrabbit (Lepus spp.), cottontail rabbit (Sylvilagus spp.)
		RODENTIA:	squirrels (Cittellus spp., Sciurus spp., Otospermophilus spp.), prairie dog (Cynomys spp.), pocket gopher (Thymomys spp.), gopher (Geomys spp.), woodrat (Neotoma spp.), muskrat (Ondatra zibethicus), rat (Rattus spp.), porcupine (Erethizon dorsatum), woodchuck (Marmotta spp.)
	AVIFAUNA:		wild turkey (Meleagris gallopavo), duck (Anus spp.), eagle (Aquila spp.), jay (Corvid spp.), hawk (Buteo spp.), raven (Corvus spp.), quail (Colinus spp.), Canadian goose (Branta canadensis), blue heron, Chrysaetos spp., crane (Grus spp.)
	REPTILE/FISH/AMPHIBIANS:		toad (Bufo spp.), turtle/tortoise, frog (Rana spp.), fish
WILD FLORA (2)			
	NUTS:		walnut (Juglans major), pinyon (Pinus edulis), acorns (Quercus spp.)
	BERRIES:		juniper (Juniperus depeana, J. monosperma, J. utahensis, Juniperus spp.), wolfberry (Lycium spp.), manzanita (Arctostaphylus spp.), Oregon/holly grape (Berberis ripens)
	SEEDS AND/OR GREENS:		pigweed (Amaranthus spp., A. blitoides, A. powellii), lambsquarter or goosefoot (Cycloma spp., Chenopodium spp.), sunflower (Helianthus spp.), grama grasses (Bouteloua gracilis, B. hirsuta), deergrass (Muhlenbergia rigens), muttongrass (Poa fendleriana), sacatons (Sporobolus airoides, S. wrightii), dropseed grass (Sporobolus contractus), Rocky Mountain beeweed (Cleome spp.), Indian rye grass (Oryzopsis hymendoides), junegrass (Koeleria cristata), mesquite beans (Prosopis spp.), horsetail (Equistema spp.), bear grass (Nolina microcarpa), saltbush? (Atripiex canescens), seepweed? (Suadea spp.), cattail (Typha latifolia), Yucca spp.

Table 7.3 (continued)

STALK/ROOT:	mescal (*Agave* spp.), *Yucca* spp., *Y. elata*, *Y. baccata*, bulrush (*Scirpus* spp., *S. olneyi*, *S. validus*)
CACTI:	prickly pear cactus (*Opuntia* spp.), cholla (*Opuntia* spp.), *Echinocereus triglochiatus*
CULTIVARS (3)	maize (*Zea mays*), squash (*Cucurbita pepo*), common or kidney beans (*Phaseolus vulgaris*), sunflower (*Helianthus* spp.), pigweed (*Amaranthus* spp.)

(1) Berman 1979:38-39; Cosgrove and Cosgrove 1932:5; Dick 1965:90; Graybill 1975:14; Haury 1936:6,52; Martin and Rinaldo 1950a:492, 1950b:350; Martin et al. 1952:204, 1954:155

(2) Dick 1965:89; Haury 1936:50; Martin and Plog 1973:188; Martin et al. 1952:478; Rice 1975:50-51;, 1980a:17

(3) Anyon 1980:196; Berman 1979:39; Graybill 1975:89; LeBlanc 1983:76; Martin and Plog 1973:188; Rice 1980a:18; Shafer 1982:10; Stuart and Gauthier 1981:184; Winter 1974:10

Deer/antelope and rabbits account for between 67 and 90 per cent of the meat as estimated from the bones found on sites examined by Linskey (1975:255).

While the relative emphasis on agriculture is debated, the concentration of Early Mogollon pithouse sites along the flood plains of large streams and rivers and the fact that the expansion of sites into other areas was relatively late in the sequence suggests that these flood plains provided optimal conditions for Early Mogollon agro-ecosystems. Presumably, the amount of precipitation and length of growing season, the deep alluvial soils, the relatively high water-table, as well as the availability of surface water from nearby streams, provided optimal conditions. Clearly, with increasing population density, agriculture would increase in importance; and agricultural production would intensify.

3.0 SETTLEMENT SYSTEMS

3.1 The Archaic Period

The sparse Archaic period Cochise population was probably organized into small, highly clustered but flexible, mobile hunting and gathering groups (Minnis 1980:74; Woodbury and Zubrow 1979:43). Essentially, Cochise groups utilized a hunting and gathering economy

based on an annual cycle which systematically exploited seasonal and spatial variations of resources (Woodbury and Zubrow 1979:47-48). These highly mobile groups seasonally moved through a series of camps in diverse ecological and elevational zones exploiting a wide variety of resources rather than focussing on a specific ecological zone (Berman 1979:21; Woodbury and Zubrow 1979:51). While agriculture was present, only minor amounts of cultivars were produced to supplement the largely hunting and gathering subsistence system (Woodbury and Zubrow 1979:43).

3.2 The Early Mogollon

3.2.1 Previous Interpretations

Traditionally, most researchers have considered the Early Mogollon settlement system to be sedentary and agricultural (Haury 1962; Jennings 1956; LeBlanc 1980, 1982, 1983; Martin and Plog 1973; Reed 1964). In recent years this interpretation has been challenged (Pool 1980; Rice 1975, 1980a, 1980b).

LeBlanc (1980, 1982, 1983) has the most developed argument for the traditional view of the Early Mogollon settlement system. Basically, he sees a pan-regional introduction of a ceramic-cultivar complex into the Mogollon area around A.D. 200 which marked an abrupt qualitative shift in settlement systems from a nomadic Archaic mode to a sedentary, agricultural one. This complex is characterized by 1) large deep pithouses with large, major roof supports; 2) large, bell-shaped, intramural and extramural storage pits and/or storage areas (annexes) attached to pithouses; 3) trough metates and two-handed oblong manos for

food processing; 4) a variety of forms of ceramics for cooking; 5) polished stone axes for land clearing; 6) the bow and arrow; and 7) possibly, but not necessarily, new forms of cultivars. The characteristics of this complex sharply contrast with those of the late Cochise/proto-Mogollon times which included: 1) shallow, basin-shaped pithouses without major roof supports; 2) presence of some storage pits but no structures designed as major storage facilities; 3) basin metates and one-hand circular manos; 4) no ceramics; and 5) no ground stone axes.

The postulated abrupt settlement system change to sedentary agriculture is seen as resulting from the adoption of a new technological complex which reduced the risk of subsistence failure, although increasing labor inputs, rather than resulting from increased population density or increased resource stress apparently required for the initial development of agriculture. Subsistence risk was reduced by mixing heavy dependence on agricultural production in a small area of large quantities of storable cultivars in good years with dependence on hunting and gathering an extensive undisturbed hinterland in bad years. This mixed subsistence strategy resulted in significant, but not total, dependence on agriculture. Hunting and gathering was used to supplement and back-stop agriculture. LeBlanc feels that, although cultivars were present during the Archaic period, they could not become important until the introduction of the ceramic-cultivar complex which increased efficiency and production to the point that the risk of subsistence failure was significantly reduced. Little change in the settlement

system occurred throughout the Early Mogollon, except for the shift in settlement location with the beginning of the Late Pithouse period. This settlement location change is seen as a response to changing social conditions which reduced tensions between groups.

Although a number of other researchers have suggested that at least part of the Early Mogollon period may not have been fully sedentary nor dependent on agriculture (Bluhm 1960; Martin 1940:35, 1943, 1979:65; Martin and Rinaldo 1947:316-317; Stuart and Gauthier 1981:185-186), only Rice (1975, 1980a, 1980b) has strongly asserted and developed an alternative position. He notes that the presence of cultivars, ceramics, and pithouse architecture does not necessarily imply sedentism nor full dependence on agriculture. In support Rice cites ethnographic evidence that permanent structures can be seasonally unoccupied and that the Western Apache, Havasupai, and Papago utilized ceramics and cultivars without substantial alteration of their "nomadic" hunting and gathering settlement systems. Additionally, cultivars and pithouse architecture are known to have been present during the late Archaic period without these traits being interpreted as implying sedentism or agricultural dependence. In fact, Mauldin (1983:47,64) has shown that 97 per cent of 61 ethnographic cases of groups utilizing pithouses for domestic architecture in the Ethnographic Atlas (Murdock 1967) seasonally abandoned the pithouses and that 78 per cent (52 cases) of the 61 ethnographic cases had little or no dependence on agriculture.

Rice interprets the Early Mogollon settlement system as being a seasonally nomadic, hunting and gathering system with limited

agriculture. The seasonal round primarily alternated between summer, high elevational habitation camps and winter, low elevation habitation camps, as well as between seasonally dispersed and nucleated groups. An extensive subsistence system exploited a wide variety of wild plants, animals, and cultivars in widely dispersed areas, resulting in widely distributed settlements. Hilltop and mesa sites were seasonally occupied during mild climatic conditions when subsistence resources were productive throughout the Early Mogollon period and not just during the Early Pithouse period. In contrast to LeBlanc, Rice sees no change in the settlement pattern during the Early Mogollon. Sedentism and significant dependence on agriculture did not develop until the Late Mogollon period. As previously noted, however, present settlement pattern and excavation data clearly suggest a settlement pattern shift between the Early Pithouse period and the Late Pithouse period. Thus, Rice's interpretation of the Early Mogollon settlement system is at least partially incorrect. The crux of determining the nature of Early Mogollon settlement systems appears to lie in examining the causes of this settlement pattern change.

3.2.2 A New Interpretation

LeBlanc's (1980:125-128) evaluation of possible explanations for Early Pithouse period site locations examined seven causes: 1) use of resources in the immediate site area, 2) view, 3) avoidance of other locales (e.g., agricultural fields), 4) drainage, 5) temperature, 6) ceremonial significance, and 7) defense. His evaluation convincingly

concluded that the only single viable hypothesis was that Early Pithouse period sites were located for defensive purposes. The shift of settlement location during the Late Pithouse period resulted from decreased defensive needs.

Although LeBlanc noted the possibility that Early Pithouse period sites may have been located to increase overall subsistence efficiency through resource mixing, he did not consider this possibility in his evaluation. Both Berman (1079:30-31) and Bluhm (1960:541) have observed that Early Pithouse period site locations appear to be related to the combined presence of water, cultivable land, and wild resources as well as a good view for locating game and identifying intruders. It is equally plausible, therefore, that Early Pithouse period site locations resulted from the use of a mixed subsistence settlement system and that the Late Pithouse period settlement location shift resulted from a shift in the settlement system to increased dependence on agriculture. Equally as plausible is that the Early Pithouse period settlement system was not fully sedentary, although the Late Pithouse period may have had increased sedentism.

The currently available archaeological data do not clearly indicate the form of the Early Mogollon settlement systems. In certain aspects, both Rice and LeBlanc appear to be correct. Clearly, the Early Pithouse period settlement system was not <u>necessarily</u> sedentary nor significantly dependent on agriculture. Also, the Early Pithouse period settlement locations suggest the possibility of a mixed subsistence settlement system. On the other hand, there were significant artifactual

and architectural changes from the Archaic period, which suggest significant changes in the settlement system.

Consideration of the previous discussion indicates that there is a need for a new interpretation of Early Mogollon settlement systems. Succinctly, the new interpretation is that a semi-sedentary, mixed hunting-gathering-agricultural settlement system characterized the Early Pithouse period and that a more agricultural and sedentary settlement system characterized the Late Pithouse period. More fully, Early Pithouse period pithouse sites served as the focus of storage and seasonal occupation. Settlement location on high locales at the margins of the valleys maximized access to both nearby agricultural fields and wild resources. A change in the settlement system resulted in a change in site location during the Late Pithouse period. Although a number of factors may have interacted to cause the settlement system change, the most probable is an increase in dependence on agriculture. Therefore, it is hypothesized that there was a change to a more agricultural and possibly more sedentary settlement system during the Late Pithouse period. Increased dependence on agriculture would change the subsistence mix and the amount of effort allocated to agriculture. Although the distances involved are small, the Late Pithouse period settlement location shift would have increased the amount of agricultural land in the catchment area, decreased the aggregate field access effort, and, thusly, increased efficiency and production. Additionally, the amount of agricultural land would have increases by relocating the sites within the valley segments. For example, my observation of the area and

examination of survey data suggest that sites appear to have shifted within the Alma valley segment of the San Francisco River valley from high locales at the ends of the valley segment to relatively lower locales along the middle of the segment. This shift in site location increased the total amount of flood plain within the site catchment.

The Western Apache settlement system provides a model (Fig. 6.1) of a seminomadic, mixed subsistence settlement system in the same general environment and area as the Early Mogollon. In conjunction with archaeological data, the Western Apache settlement system model suggests the form of the Early Pithouse period settlement system (Fig. 7.4). Such a hypothetical model is useful for facilitating the testing of the competing hypothesis of Early Mogollon settlement systems.

The major settlement system problem for the Western Apache, and presumably the Early Mogollon, was to provide subsistence during the low resource productivity period of the winter, through spring, and into the summer when the major wild plant resources begin to ripen. Although, wild food resources become increasingly available, the spring and early summer were probably a critical period of stress because the level of stored resources were lowered by winter consumption and resource productivity was still low. The continuous year-round availability of mescal provided a resource backup in case of low supplies or other subsistence failure.

In both cases, a mixed foraging and logistical (following Binford 1980) subsistence strategy would solve the problem. Logistically, food resources would be stored at central locations for

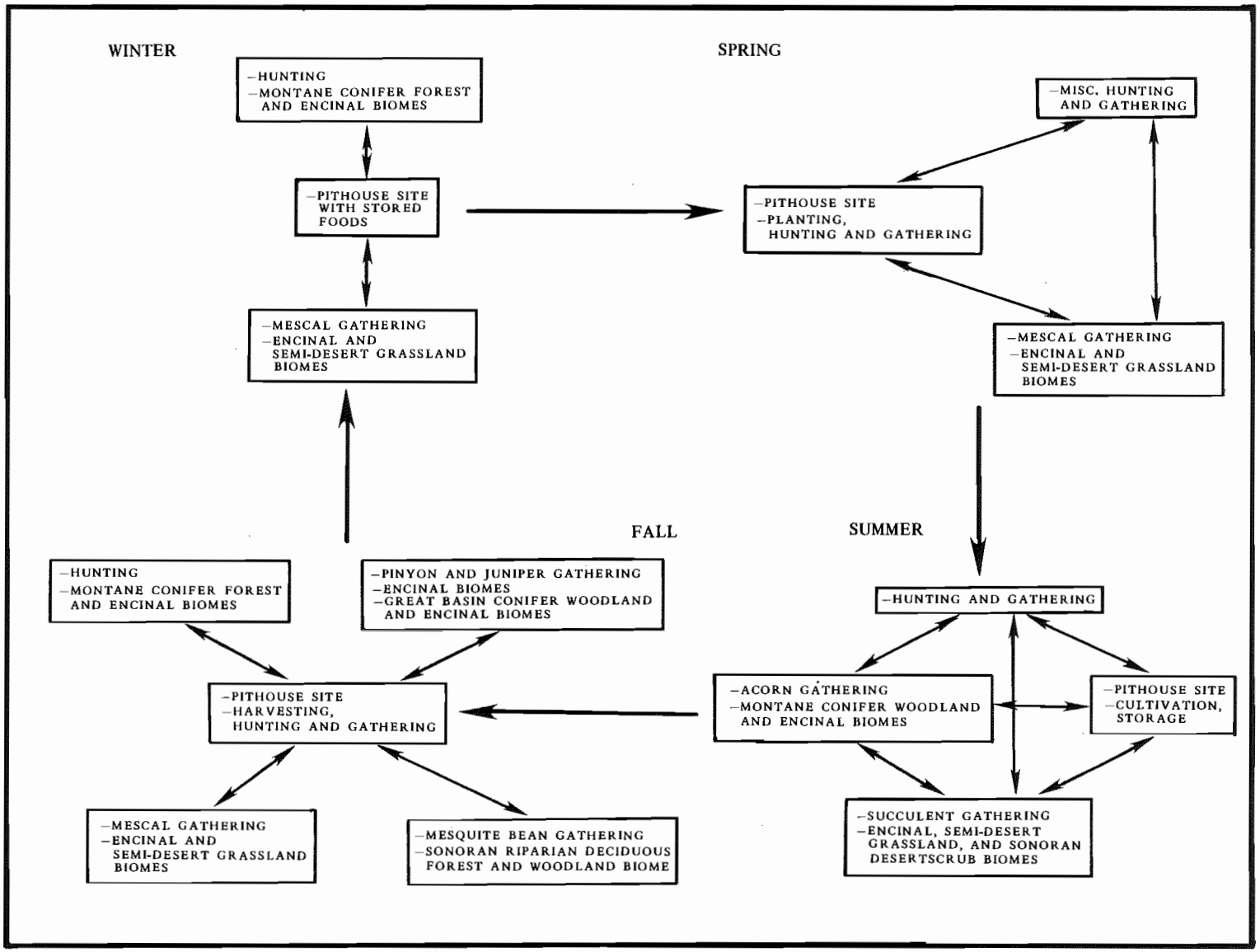

Figure 7.1 Early Pithouse Period Settlement System

winter through spring consumption and for variety in the diet during the rest of the year. To remove pressure on stored foods, dispersed groups could forage on wild resources as they became available in the spring through fall. Western Apache non-home locality winter camps illustrate an interesting combination of logistical and foraging behavior with the presence of food storage in the vicinity and foraging of mescal as needed.

Although the Early Pithouse period settlement system is generally hypothesized to closely resemble the Western Apache settlement system model, in reality the presence of fixed, permanent structure pithouse villages with storage features suggests a stronger commitment to a logistical storage subsistence strategy, at least for the winter, than the Western Apache. The absence of the horse for transportation, however, would have reduced the amount of subsistence resources transported as well as transportation efficiency. Additionally, the absence of the horse would also decrease the range of Early Mogollon exploitation and make raiding less economic. In contrast to the Western Apache, the absence of attacks by militarily overwhelming forces among Early Mogollon groups would allow the use of permanent structures, the combination of habitation sites with primary storage features, and increased agricultural production reliability.

Intuitively, Early Pithouse period groups would appear to have occupied the pithouse sites during the winter and would have subsisted primarily on stored resources and, to some extent, on hunting. Although

the immediate site catchment area was cultivated and exploited for wild resources during most of the year, the pithouse sites would be largely abandoned and intermittently occupied from the spring through the fall while groups exploited a wide range of wild plants and animals.

Mauldin's analysis (1983:44-85) of ethnographic domestic pithouse use shows a patterning of data in all 61 cases from the Ethnographic Atlas (Murdock 1967) which actually use pithouses. This patterning indicates three groups of cases based on similarities in general geographic location, subsistence base, season of pithouse occupation, population density, and community size. Two of these groups were agriculturally dependent (greater than, or equal to, 48 per cent of the diet), had high population density, and had a large community size (400 to 1000 individuals). These factors, especially agricultural requirements, appear to have resulted in permanent year around occupation (two cases) or to a spring through fall occupation (seven cases). The remaining group of 52 cases was characterized by little or no agricultural dependence, small community size (mean population of 85 individuals), and low population densities. Extensive land use by this group based on hunting, gathering, and/or fishing resulted in high mobility during the summer in order to exploit spatially and temporally discrete maturing resources. Therefore, pithouse villages were re-occupied during the winter. In general, the occupation pattern was for a portion of the population, the old, young, and infirm, to remain at the pithouse village throughout the year while the majority of the population abandoned the village during the summer with frequent trips

back to store subsistence resources for the winter. Known archaeological data suggest that the Early Pithouse period fit the characteristics of the winter village occupation pattern.

Subsistence pressures on Early Pithouse period resource stores during the spring and early summer probably resulted in extensive foraging of available resources, primarily through hunting and gathering mescal and greens. Only mescal would have been collected for storage at this time. The hypothesized foraging nature of mescal gathering would have provided a period of major interaction of groups. In contrast, the Western Apache collected mescal mainly for storage for later consumption and with small, independently working parties. In addition agricultural fields near pithouse villages would have been prepared and planted during the spring and intermittently cultivated during the spring and summer. As with the Western Apache, agriculture was probably based on simple irrigation of flood plain plots.

Subsistence pressures on Early Pithouse period groups would have decreased during the summer as plant resources increasingly began to mature. Foraging and intermittent cultivation of agricultural fields would have continued, but collection of resources for storage for the winter would have begun in earnest only with the maturation and collection of acorns. As with the Western Apache, acorn gathering would have provided a major period for inter-group interaction.

Subsistence stress would have been minimal and storage maximal during the fall when a number of plant and cultivar resources would have been available and game was in peak condition with maximum weights and

prime hides. Pithouse sites would have been occupied for harvesting crops, and hunting and gathering wild resources, especially deer, pinyon nuts, walnuts, and juniper berries, in the site catchment area. Additionally, expeditions would have hunted mountainous areas and collected pinyon nuts, juniper berries, and mescal in other areas.

3.2.3 The Social Organization Of The Early Mogollon

Although characteristics of social organization are an important part of the settlement system, this aspect has not been included in the previous discussion of Early Mogollon settlement systems because it is difficult to determine archaeologically. Knowledge of Early Mogollon social organization is often little more than speculation. However, because of the importance of this topic in the discussion of settlement systems, I will examine the Early Mogollon social organization, although mostly in a speculative manner.

Previous research (Pool 1980) on Early Mogollon social organization based on the examination of pithouse structure area and habitation unit size suggests that the basic habitation unit, and possibly the basic unit of production and consumption, was the nuclear family. The nuclear family may be considered to generally have been the basic unit of habitation and consumption for the Western Apache, although the basic unit of production and storage was usually the extended family cluster.

Early Pithouse period sites are generally small. On a more speculative level, by way of analogy with the Western Apache, the small

size of sites suggests that the basic camp unit was an extended family. However, if all or many of the structures at the larger Early Pithouse period sites were occupied at the same time, a more complex level of organization may have been present.

Also, sites appear to be clustered around valley segments in a manner similar to Western Apache local groups around farm sites. Intuitively, such clusters of contemporaneous sites would appear to have interacted, perhaps forming semi-endogamous "local groups". If this were the case then the contrast between larger and smaller Early Pithouse period sites could have resulted from the cyclical aggregation and dispersal of extended families in the "local group" in a manner similar to the developmental cycle of Western Apache local groups (Kaut 1974).

To carry speculation to an extreme, Early Pithouse period "local groups" may have interacted together to form "bands". The similarities and differences we see archaeologically as "Branches" (McGregor 1965:6,67) may be based on these "bands".

4.0 SUMMARY

Although there is substantial data on subsistence and settlement patterns during the Early Mogollon, these data do not indicate the form of settlement systems present during this period. Traditionally, many researchers have argued that the combined presence of cultivars, ceramics, and pithouses indicates that a sedentary, agricultural settlement system was present throughout the Early Mogollon period. Following Rice (1975, 1980a, 1980b), I suggest that the presence

of cultivars, ceramics, and pithouses does not necessarily indicate sedentism nor dependence on agriculture. It is just as likely that at least the Early Pithouse period was characterized by a semi-sedentary, mixed hunting-gathering-agricultural settlement system which was transitional between an Archaic period nomadic, hunting and gathering settlement system and the more sedentary Late Pithouse period, agricultural settlement system. Such a hypothesis accounts for the Early Pithouse period to Late Pithouse period settlement pattern shift. If the Early Pithouse period settlement system was as proposed, the Western Apache settlement system provides an analog for considering the specific form of the Early Pithouse period settlement system.

Chapter 8

Summary and Conclusions

The Early Mogollon period has traditionally been interpreted as having been characterized by a sedentary, agricultural settlement system. Definite changes in settlement patterns, an increase in permanent architecture, and the addition of ceramics to the cultural repertoire at the transition from the Archaic Cochise period to the Early Mogollon period indicate definite changes in the settlement system. However, ethnographic evidence suggests that the presence of cultivars, ceramics, and permanent architecture does not necessarily imply being either sedentary or dependent on agriculture. In the absence of substantial evidence of hostilities or tensions requiring a defensive location for habitation sites, the Early Pithouse period settlement pattern suggests these sites were located in an "ecotonal" situation and that there was an emphasis on a mix of subsistence activities. If true, these factors imply that the Early Pithouse period settlement system may have been semisedentary and based on mixed hunting, gathering, and

agriculture, rather than the traditionally assumed sedentary, agricultural settlement system.

However, if this is the case, how would such a settlement system actually function? The Western Apache, during the 1850s-1870s prior to their removal to reservations, provide an example of a seminomadic, mixed hunting-gathering-agricultural settlement system in the same general area as Early Mogollon groups. As such, an examination of the Western Apache settlement system might provide an approximate analog for the Early Pithouse period settlement system.

A high degree of topographical and ecological diversity characterized the Western Apache territory and facilitated much spatial and temporal variability in the distribution of wild subsistence resources. The Western Apache exploited these diverse resources with an almost continuous movement of gathering parties, extended family clusters, and local groups between exploitation areas, the home locality, and non-home locality winter camp areas. Additionally, climatic factors required simple irrigation to insure the success of their modest agricultural efforts.

The basic socio-economic unit was the extended family cluster which usually consisted of a set of matrilineally related and matrilocal nuclear families. Each extended family cluster usually acted independently in economic activities. Although the members of the extended family cluster camped together and cooperated in subsistence production and storage activities, each nuclear family prepared and consumed food independently and had its own shelter.

In contrast, the local group, usually consisting of a number of extended family clusters but occasionally consisting of a single large extended family cluster, formed the basic socio-political unit. Essentially, the local group was formed by the interaction of extended family clusters around farm sites. Each local group was led by a local group 'chief'.

Each local group had a home locality which usually focused on its farm site(s). Generally, the home locality included the area three to eight miles in radius around the farm site(s). The home locality was exclusively used by the local group for hunting, gathering, and agriculture. This area also provided a base from which hunting and gathering departed and to which they returned with collected resources. Although the farm site(s) provided the focus of the home locality, usually the only time spent there was for planting and harvesting. Because of the danger of attack by Spanish, Mexican, and U.S. military forces, most of the time in the home locality was spent away from the farm site(s).

The band and the subtribal group formed successive levels of spatial social organization. These social units, however, were mainly territorial, functioning as nested resource holding units which controlled access to territorially defined resources.

The matrilineal phratry-clan system cross cut the spatially defined social units of local group, band, and subtribal group and provided a network which united these social units and the extended family clusters together. This system provided the basis for corporate

action and the arbitration of serious social problems and conflicts within and between local groups and other social units.

Subsistence was generally based on approximately equal proportions of meat, wild plant foods, and cultivars provided by hunting, gathering, agriculture, and raiding. Despite the relatively significant proportion of agriculture to the diet, hunting and gathering were the dominant modes of production. The settlement system was structured to take advantage of the spatial and temporal distribution of wild resources.

Although the Western Apache collected a wide variety of wild plants, they were primarily dependent on mescal (agave), acorns, pinyon nuts, juniper berries, cacti and yucca fruit, mesquite beans, sunflower seeds, and walnuts. Of these, the most important wild plant foods were mescal and acorns. Wild plant foods were generally collected by small parties of women from extended family clusters.

Deer and small game were the most important and most dependable sources of meat. Usually, small parties of men, normally blood relatives or close associates, hunted large game while adolescent males hunted small game.

Raiding was generally undertaken to supplement subsistence needs during periods of low productivity and shortages, especially during the winter months.

Agriculture was based on the cultivation of maize, beans, squash, and sunflower seeds, as well as a number of introduced European species not discussed here. Maize was the main and staple cultivar.

Farm sites and fields were selected for their access to water and their ease of clearance. Because simple irrigation was the common practice, fields were generally placed on flood plains where diversion weirs and canals could easily be constructed. In a few cases, fields were placed near springs for irrigation; in areas where the soil was constantly moistened from springs, seeps, or streams; and in areas where runoff was provided by hill slopes or by water diversion features on slopes or in arroyos. Only a very few fields were dry farmed, receiving water only from direct precipitation.

Bécause productivity was low during the winter and spring months, storage was a necessity. Stores were cached by the extended family cluster in a number of different places, including pits, rock shelters, trees, and wickiups, in the home locality and non-home locality winter camp areas.

The scheduling of these subsistence activities can be organized into four seasons. During the winter, hunting, raiding, and mescal gathering were the only subsistence activities. Heavy dependence was made on stored resources. Nuclear families, extended family clusters, and, even, entire local groups either wintered in the home locality or in non-home locality winter camp areas at lower elevations along the Salt and Gila Rivers. Mescal was gathered at two major times during the course of the year, at the beginning of winter and at the beginning of spring. Groups which stayed in the home locality for the winter gathered mescal in the late fall, but groups which wintered in non-home locality winter camp areas gathered mescal upon arrival in these areas. At the

end of winter, groups staying in non-home locality winter camp areas gathered mescal just before their return to the home locality. However, groups which stayed in the home locality for the winter made a special trip to mescal areas in the early spring.

During the spring months, mescal gathering and agriculture were the primary subsistence activities. Mescal was gathered during the early spring by groups which wintered in he home locality. Groups then returned to the farm sites to prepare the fields and plant crops. After ensuring the success of the crops, the local group left the farm site(s); and extended family clusters and other parties continued hunting and gathering the scant resources in the home locality and in other areas. Because plant production was still low, there was still a significant dependence on stored resources.

With the beginning of the maturation of wild plant foods in the summer, subsistence was primarily dependent on collected foods. Surpluses became available for storage for the next year. The primary subsistence activities were the collection of cacti fruit, mesquite beans, and mescal at lower elevations; the sporadic cultivation of crops; and the collection of acorns. In terms of volume, acorn collecting was the most important subsistence activity during this season.

The fall was characterized by harvesting cultivars, hunting deer, and collecting pinyon nuts, juniper berries, and, in some cases, mescal. Subsistence was based on actual production, and a surplus was produced for storage.

Although a considerable amount of movement over the course of the year characterized the Western Apache settlement system, this system focused on the home locality and its farm site(s). A relatively substantial portion of the year was spent in the home locality, especially in the spring, fall, and, in some cases, the winter. Not only did agricultural activities occur here, but the home locality also served, at least in part, as a logistical base for hunting and gathering activities.

The ethnographic data and the model presented in Chapter 6 and Figure 6.1 imply a variety of site types. These are: (1) primary habitation camps in the home locality, (2) secondary exploitation and non-home locality winter habitation camps, (3) exploitation loci, and (4) transitory camps between the home locality habitation camps, non-home locality winter habitation camps, and exploitation habitation camps.

With two qualifications, the Western Apache settlement system model was adapted to the archaeological data in order to provide an analog for the Early Pithouse period settlement system. First, the presence of permanent villages indicates that these sites served as the focus of the settlement system rather than a diffuse home locality as with the Western Apache. Second, the absence of the horse suggests the range of exploitation was less, smaller amounts of resources were transported, raiding was not present or was less important, and hunting and gathering activities were more foraging than logistical in comparison to he Western Apache.

The model of the Early Pithouse period settlement system that develops from adapting the Western Apache model to the archaeological data and conditions is as follows. The pithouse site and surrounding area essentially functioned as the Western Apache home locality, except that occupation was more focused on the pithouse site. The same range of subsistence activities occurred. The pithouse villages were occupied during the winter, and for agricultural activities in the spring and fall but were largely vacated during the spring, summer, and fall when agricultural activities were not required. Small segments of the village may have remained at the pithouse village in order to cultivate and protect crops while the large majority of the population abandoned the site. These seasonal migrations were probably more foraging than logistical in nature, especially during the spring and early summer when plant production and stored resources were low. However, hunting and gathering activities in the summer and fall produced enough of a surplus to be transported to the pithouse villages for later consumption.

As with the Western Apache, the primary subsistence activities were hunting deer; agriculture; and collecting mescal (agave), acorns, pinyon nuts, juniper berries, cacti and yucca fruit, walnuts, sunflower seeds, and mesquite beans. Mescal provided a staple food which was available throughout the year when other resources were not producing or had failed.

Pithouse villages were probably occupied by groups ranging in size from an extended family to an entire "local group", in a manner similar to the Western Apache extended family cluster camps and local

group camps. Examination of Early Pithouse period structure areas suggests that the primary habitation unit was the nuclear family. The presence of interior storage pits suggests that the primary unit of storage and probably consumption was the nuclear family. However, the extended family may have been the basic unit of production, although there is no direct evidence for this inference. There is no evidence for the presence of a clan or phratry system during the Early Mogollon period; however, the utility of such a system in integrating the Western Apache and its presence in a group such as the Western Apache which is relatively low in social complexity suggest that clans may have developed as early as the Early Pithouse period.

The Western Apache settlement system implies several things for the Early Pithouse period settlement system. First, given the basic climatic similarities, simple irrigation was necessary to minimize the risk of agricultural production failure, even for groups not highly dependent upon agriculture. As a result, sites would be located along small streams. Second, in contrast to the hypothesizes of LeBlanc (1978, 1980, 1983) and Martin and Plog (1973), the mere presence of the differential use of agriculture does not necessarily imply that hostility or tension will result between 'farmers' and 'non-farmers'. Differences in the amount of agriculture practiced within the Western Apache and even within local groups ranged upward to 30 percent. However, I would suggest that tensions and hostilities largely appear to have resulted from the maintenance of band and subtribal group boundaries for hunting and gathering rather than differences in the

amount of agriculture. Agricultural products were circulated within social units and even between subtribal groups by exchange and "hiring out" agricultural labor. Lastly, a group's exploitation range needed to include a variety of biomes for hunting and gathering. These basic biomes are, generally: (1) the conifer forest biome in the Transition life zone; (2) the Great Basin conifer woodland biome, the encinal biomes, and the semidesert grassland biome in the Upper Sonoran life zone; and (3) the Sonoran desertscrub biome in the Lower Sonoran life zone. The extent of an annual range depended on the actual distribution and density of the biomes. In some cases, e.g. the Southern Tonto subtribal group, relatively local mountain-valley elevational gradients sufficed. In other cases, e.g. the White Mountain subtribal group, a large scale elevational gradient cross cutting physiographic zones from the Colorado Plateau Province to the Basin and Range Province was necessary.

This examination of the Western Apache settlement system and the form of Early Mogollon settlement systems leaves open many questions. Chief among these is the question of the actual form of Early Mogollon settlement systems. I have only hypothesized a model for the Early Pithouse period settlement system. I believe there are intriguing similarities between the Western Apache settlement system and what we know of the Early pithouse period. But, the proposed Early Pithouse period settlement system hypothesis has not been tested here because of the limits imposed by the paucity of currently available archaeological data and the scale of research required to gather this data.

An integrated regional approach utilizing an extensive series of surveys and excavations is necessary before we can determine the form of Early Mogollon settlement systems. This thesis and the proposed Early Pithouse period settlement system model is only a first step in such an approach. Clearly, the forms of settlement systems and the extent of annual exploitation ranges need to be hypothesized for the particular areas being considered. Then, survey and excavation can determine how well the distribution of different types of sites fit the proposed models.

Appendix A

Hunting and Gathering Loci and Seasonal Camp Sites of the Western Apache (A.D. 1850-1875)

The locations of the hunting and gathering loci and of the seasonal camps noted on Map 3 were determined from the descriptions and accompanying maps provided by Aschmann (1974), Basso (1970a), Buskirk (1949), Getty (1963), Goodwin (1942), Kaut (1957), and the Indian Claims Commission (1974). Using these descriptions and maps, the loci were plotted on a 1974 United States Geological Survey 1:500,000 scale state map of Arizona in order to provide a base map used to draft Map 3. The descriptions used to plot the loci are summarized below, except for several loci noted on the Indian Claims Commission (1974) Use and Occupation Map which were not mentioned in the other literature.

While these loci include the major locations utilized by the Western Apache prior to the establishment of reservations, neither the list below nor Map 3 should be considered to be a complete inventory. The primary ethnographers mainly worked with informants from a few or

only one sub-tribal group. Additionally, only Goodwin worked directly with informants who were living prior to the establishment of reservations. Also, the Southern Tonto sub-tribal group; the Apache Peaks, Aravaipa, and Pinal bands of the San Carlos sub-tribal group; and segments of the Canyon Creek band of the Cibecue subtribal group were removed from their home territories to reservations during the 1870s. These factors have resulted in biases in, and uneven knowledge of, the data. Finally, there was no rigid use of resource loci because of annual differences in production and the resultant flexibility of the Western Apache settlement system, so that each loci may not have been used each year and other areas were utilized as sufficient resources were available.

Gathering Loci

Mescal (M) was collected on the southern slopes and at the foot of the Natanes Rim, on Mt. Turnbull/Turnbull Mountain, on the Graham/Pinaleno Mountains, in Black River Canyon, on the Mescal Mountains, on the Apache Peaks, on the Santa Teresa Mountains, near the Winchester Mountains, and close to Cedar Creek (Aschmann 1974:258; Buskirk 1949:297; Goodwin 1942:13,16,18, 25,31,156; Indian Claims Commission 1974:404, Use and Occupation Map).

Acorns (A) were gathered on the south face and at the foot of the Natanes Rim, in the area between the Blue River and Arsenic Tubs, in the gap between the Graham/Pinaleno Mountains and the

Santa Teresa Mountains, in the vicinity of Oracle at the north end of the Santa Catalina Mountains, at the top of the Sierra Ancha Mountains, in Pleasant Valley near the Young Post Office, along and south of the Black River, and in the vicinity of the Eagle Creek farm sites (Aschmann 1974:258; Buskirk 1949:308; Goodwin 1942:16,28, 36,157; Indian Claims Commission 1974: Use and Occupation Map).

Pinyon Nuts and Juniper Berries (PJ and JP) were gathered north of the Natanes Rim, especially around the farm sites on Cedar Creek, White River, and Eagle Creek; on the Natanes Rim; in the White Mountains; in the Graham/Pinaleno Mountains; in the Mazatzal Mountains; north of the Mogollon Rim, especially in the Vernon and Bannon, Springerville, and Showlow and Snowflake regions; and in the Blue Range (Aschmann 1974:258; Goodwin 1942:12,15-16,18,157; Goodwin and Basso 1971:31; Indian Claims Commission 1974:405, Use and Occupation Map).

Saguaro and Cacti (SC) were collected in the low country of the Gila and San Pedro Valleys (Goodwin 1942:156; Indian Claims Commission 1974:Use and Occupation Map).

Mesquite Beans (MB) were collected in the lower elevations of the Gila, San Carlos, and San Pedro Rivers (Buskirk 1949:312; Getty 1963:5; Goodwin 1942:157; Indian Claims Commission 1974:Use and Occupation Map).

Hunting Loci

Hunting Loci (H) were located at the foot of the Mogollon Rim; north of the Mogollon Rim, such as the Springerville, Snowflake, Pinedale and Hebron, Long Valley, and Hay Lake areas; in the White Mountains; in the Sierra Ancha Mountains (at the crest); in the Pinal Mountains; in the Santa Catalina Mountains; in the Mazatzal Mountains (on the eastern slope); in the Mescal Mountains; in the Graham/Pinaleno Mountains; in the Santa Teresa Mountains; in the Rincon Mountains; in the Galliuro Mountains; in the Winchester Mountains; in the Tanque Verde Mountains; in the Hayes Mountains; in the Blue Range; on Mt. Turnbull/ Turnbull Mountain; on the Natanes Rim; in Carrizo Canyon; at the mouth of Canyon Creek; and in the area near Cedar Creek and Fort Apache (Buskirk 1949:220-1; Goodwin 1942:12-13,15-16,21, 23,25,31,36, 37,288; Indian Claims Commission 1974: Use and Occupation Map).

Seasonal Camps

Raiding Bases (R) were located in the Graham/Pinaleno Mountains, in the Winchester Mountains, in the Santa Catalina Mountains, on the southwest spur of the Santa Teresa Mountains, on Cobre Grande Mountain, on the southern end of the Galliuro Mountains, and on Mt. Turnbull/Turnbull Mountain (Aschmann 1974:258-9; Goodwin 1942:16,28).

Non-Home Locality Winter Camps (W) were located at the foot of the Natanes Rim and in sheltered spots near springs on Ash Flats; on

the lower slopes of the Graham/Pinaleno Mountains, the Santa Teresa Mountains, and Mt. Turnbull/Turnbull Mountain; in Carrizo Canyon; on the southern and southwestern slopes of the Pinal Mountains; in the lower elevations of the Salt and Gila Valleys, especially at the juncture of the San Carlos and Gila River and in the Roosevelt Dam area; and in the 'Wheat Fields' area on Pinal Creek near Globe (Basso 1970:3; Goodwin 1942:13,18,25,158; Kaut 1957:4,46).

Summer Camps (S) were located in the Sierra Ancha Mountains (on the crest), in the Pinal Mountains, in the Santa Catalina Mountains, in the Tanque Verde Mountains, and on the east Slope of the Mazatzal Mountains (Goodwin 1942:23,25,28,36).

Appendix B

The Location of Western Apache Farm Sites by Band (A.D. 1850-1875)

The locations of the farm sites noted on Map 4 are described below as drawn from the available literature provided by Aschmann (1974:Map 2), Buskirk (1949), Goodwin (1942), and the Indian Claims Commission (1974: Use and Occupation Map). From these descriptions and maps, the farm locations were then plotted on the 1974 U.S.G.S. 1:500,000 scale State of Arizona map. The farm site locations were plotted by reference to the geographic locations mentioned in the descriptions and accompanying maps and, if noted in the descriptions or from the maps, the distance from these locations. When the mentioned geographic locations were not on the 1:500,000 map, 1:250,000 scale maps were consulted; and the farm site locations were plotted on the larger scale (1:250,000) map first and were then transferred to the smaller scale map. The same limitations noted

in Appendix A for the hunting and gathering loci and seasonal camps also apply to farm site locations on Map 4 and in this appendix. Additionally, the farm sites of the White Mountain sub-tribal group were noted in more detail by Goodwin (1942:Map VII). The summarized locations for the farm sites drawn from the literature are listed below by band.

Each farm site description below has the same number used on Map 4. Numbers in parentheses below are those used by Goodwin (1942: Map VII and 653).

White Mountain Sub-tribal Group

Eastern White Mountain Band (Buskirk 1949:24-25; Goodwin 1942:12-13,653, Map VII) (Farm Sites 1-25)

The farm sites of the Eastern White Mountain band were located as follows:

1(12): on the East Fork of the White River at the mouth of Seven-Mile Canyon,

2(13): on the East Fork of the White River about two miles above Fort Apache,

3(14): on the East Fork of the White River at the present (1930s) location of the Lutheran school,

4(15): on the East Fork of the White River about three-quarters mile above Farm Site 3,

5(16): on the East Fork of the White River about three-fifths mile above Farm Site 4,

6(17): on the East Fork of the White River about three-fifths mile above Farm Site 5 and extending for about a mile upstream,

7(18): a small plot which was not used as a regular farm site about two to three miles above Farm Site 6 on the East Fork of the White River,

8(20): a small plot which was not used as a regular farm site approximately half way up Corn Creek off of Bonito Creek,

9(21): on Bonito Creek at confluence of a creek above the confluence with Corn Creek,

10(22): at the head of Bonito Creek near the mouth of Squaw Creek,

11(19): near the head of Turkey Creek,

12(6): near the head of the North Fork of the White River near the Mogollon Rim,

13(8): on the North Fork of the White River above Farm Site 14,

14(11): on the North Fork of the White River above the lower box canyon,

15(23): a small plot which was not used as a regular farm site near the head of the Black River, perhaps north of Eagle Creek,

16(24): on Eagle Creek just above the mouth of Willow Creek at Double Circle Ranch,

17(17): at Point of Pines,

18(25): a small plot which was not used as a regular farm site on lower Cienega Creek at Picket Post Corral,

19(26): at the head of Cienega Creek four miles above Farm Site 18,

20(28): a small plot which was not used as a regular farm site at the head of Sawmill Canyon,

21(33): a small plot which was not used as a regular farm site at Salt Springs opposite Bylas,

22(34): a small plot which was not used as a regular farm site at Goodwin Springs,

23(35): a small plot which was not used as a regular farm site at Indian Hot Springs along the Gila River,

24(36): one or two small plots which were not used as regular farm sites at springs along the north foot of the Pinaleno/Graham Mountains, and

25(37): either at the mouth of Bonita Creek or Eagle Creek.

Western White Mountain Band (Buskirk 1949:25; Goodwin 1942:15,634,653; 1973:26) (Farm Sites 26-37)

The farm sites of the Western White Mountain band were located as follows:

26(1): at the mouth of Cedar Creek on lower Carrizo Creek as well as along lower Carrizo Creek,

27(2): at Cedar Creek crossing below the forks of Cedar

Creek,

28(3): at the forks of Cedar Creek,

29(4): on the west fork of Cedar Creek,

30(10): in the vicinity of Canyon Day below the forks of the White River some two miles below Fort Apache,

31(9)?: near Bear Springs,

32(7)?: at the southwest foot of Round Top Mountain,

34(29): a small plot which was not used as a regular farm site five miles northeast of Warm Springs on Ash Creek,

35(30): a small plot which was not used as a regular farm site at the head of Rocky Creek about six miles south of Chiricahua Butte,

36(31): a small plot which was not used as a regular farm site at Bear Canyon, and

37(32): a small plot which was not used as a regular farm site on Warm Springs at the mouth of Ash Creek.

Cibecue Sub-tribal Group

Carrizo Band (Buskirk 1949:25; Goodwin 1942:17; Indian Claims Commission 1974:403) (Farm Sites 38-39)

The farm sites of the Carrizo band are located as follows:

38: on Carrizo Creek from about six miles above the Cibecue road crossing upstream for approximately four miles and

39: at the head of Forestdale Creek.

Cibecue Band (Buskirk 1949:26; Goodwin 1942:21) (Farm Sites 40-43)

The farm sites of the Cibecue band were located as follows:

40: on both sides of Cibecue Creek from approximately four miles below the trading post at Cibecue up to the mouth of Salt Creek,

41: scattered patches along Salt Creek for approximately five miles from the mouth,

42: along upper Cibecue Creek up to White Springs, and

43: on Spring Creek, at one time to the confluence with Cibecue Creek.

Canyon Creek Band (Buskirk 1949:27; Goodwin 1942:22-3,28) (Farm Sites 44-52, 81)

The farm sites of the Canyon Creek band were located as follows:

44?: on Oak Creek,

45: on Gentry Canyon running into Canyon Creek,

46?: on Canyon Creek and just below the mouth of Last Fork Canyon,

47: on Cherry Creek at the east foot of the Sierra Ancha,

48: at Pleasant Valley on Cherry Creek near Young,

49: on Crouch Creek,

50?: at the head of Walnut Creek,

51: at Gledson Flats just north of the Salt River, and

52: on Blue House Mountain midway between Cibecue and Canyon Creeks.

Note: a few members of the Canyon Creek Band shared Farm Site 81 with the Pinal Band and Apache Peaks Band at the mouth of Coon Creek on the Salt River.

Southern Tonto Sub-tribal Group

Mazatzal Band (Goodwin 1942:36) (Farm Site 53)

The farm sites of the Mazatzal band were located as follows:

53: scattered plots along Tonto Creek from its mouth to the box canyon above the confluence with Gem (Gun?) Creek and adjoins the farms of the Pinal Band at the mouth of Tonto Creek.

First Semiband (Goodwin 1942:37) (Farm Site 54)

The farm sites of the First semiband were located as follows:

54: near the head of Greenback Creek west of Greenback Peak.

Second Semiband (Goodwin 1942:37) (Farm Sites 55-58)

The farm sites of the Second semiband were located as follows:

55: along Spring Creek,

56: at the confluence of Rye and Tonto Creeks,

57: at Gisela, and

58?: near Turkey Creek between Spring Creek and Gisela.

Third Semiband (Goodwin 1942:38) (Farm Sites 59-62)

The farm sites of the Third semiband were located as follows:

59: at Payson,

60?: in Round Valley,

61: in Green Valley, and

62?: in Star Valley.

Fourth Semiband (Goodwin 1942:37) (Farm Site 63)

The farm sites of the Fourth semiband were located as follows:

63?: at 'Blue Farms' on the north end of the Mazatzal Mountains.

Fifth Semiband (Goodwin 1942:39) (Farm Sites 64-71)

The farm sites of the Fifth semiband were located as follows:

64: near White Rock Mesa north of the East Verde River,

65: in Webber Canyon slightly north of the East Verde River,

66: on the East Verde River just below the Payson-Pine road,

67: on the East Verde River two miles above Farm Site 66,

68: at Pine,

69: on Pine Creek near the Natural Bridge,

70: at Strawberry, and

71?: on the south fork of Strawberry Creek.

Sixth Semiband (Goodwin 1942:40) (Farm Sites 72-77)

The farm sites of the Sixth semiband were located as follows:

72: on the East Verde River near the mouth of Pyeatt Gulch,

73: on the side of Promontory Butte,

74: just east of Promontory Butte,

75: in a canyon six miles north of the Young post office in Pleasant Valley,

76: one-quarter mile below Farm Site 75 in the same canyon,

and

77: near Christopher Mountain and Horse Mountain south of Promontory Butte.

San Carlos Sub-tribal Group

Pinal Band (Goodwin 1942:24,33) (Farm Sites 78-82)

The farm sites of the Pinal band were located as follows:

78: plots scattered for six miles along Pinal Creek in the 'Wheatfields' area, which were shared with the Apache Peaks Band,

79: at the confluence of Pinal Creek and the Salt River,

80: along the Salt River from the mouth of Pinal Creek to the mouth of Tonto Creek,

81: in Coon Creek Canyon running into the Salt River, which was shared with members of the Apache Peaks Band and a few members of the Canyon Creek Band, and

82: at the mouth of Dick Springs Canyon on the north bank of the Gila River, which was shared with the Pinal Band.

Aravaipa Band (Goodwin 1942:28) (Farm Sites 82-84)

The farm sites of the Aravaipa band were located as follows:

83: at the head of Aravaipa Canyon near Klondyke and

84: near the mouth of Aravaipa Canyon.

Note: shared Farm Site 82 with the Pinal Band.

San Carlos Band (Goodwin 1942:30) (Farm Site 85)

The farm sites of the San Carlos band were located as follows:

85: a few farms on the San Carlos River from Victor's Bluff upstream to just above the mouth of Seven Miles Wash, which was shared with the Apache Peaks Band.

Apache Peaks Band (Goodwin 1942:33) (Farm Sites 78, 82, and 85).

Note: The Apache Peaks Band did not exclusively own any farm sites but shared Farm Sites 78 and 82 with the Pinal Band and Farm Site 85 with the San Carlos Band.

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VITA

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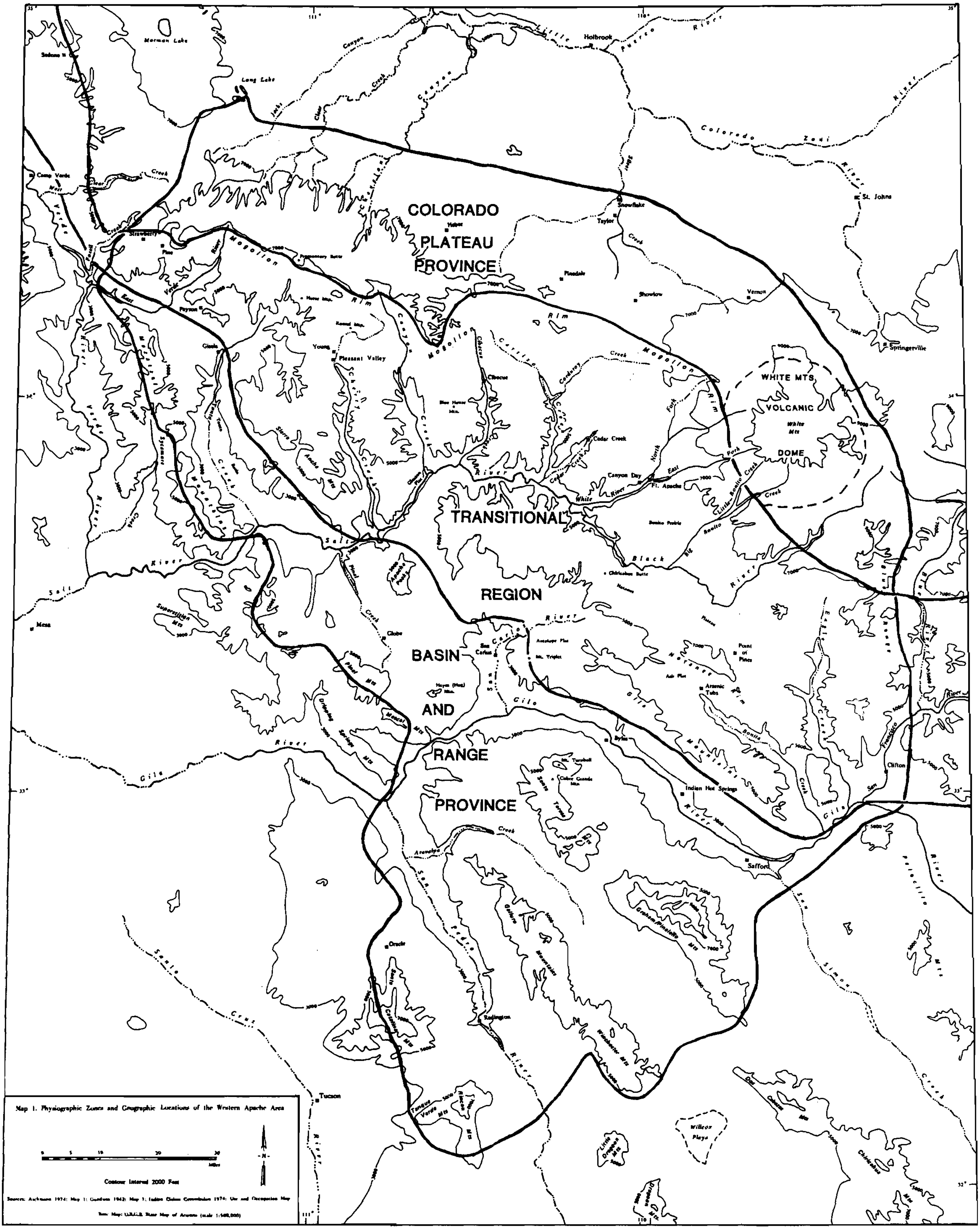
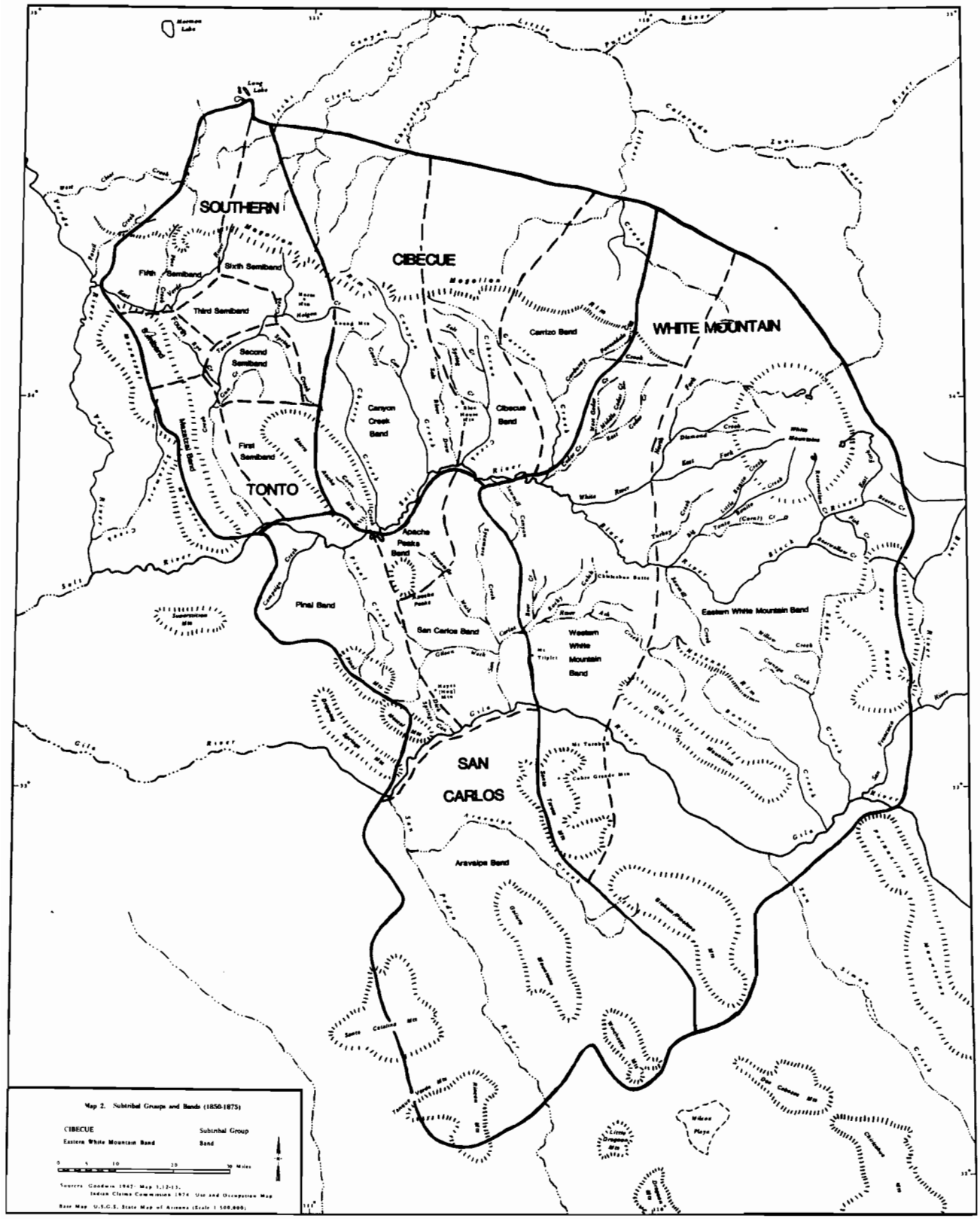


Map 1. Physiographic Zones and Geographic Locations of the Western Apache Area

Sources: Aschmann 1974: Map 1; Goodwin 1942: Map 1; Indian Claims Commission 1974: Use and Occupation Map

Base Map: U.S.G.S. State Map of Arizona (scale 1:500,000)



Map 2. Subtribal Groups and Bands (1850-1875)

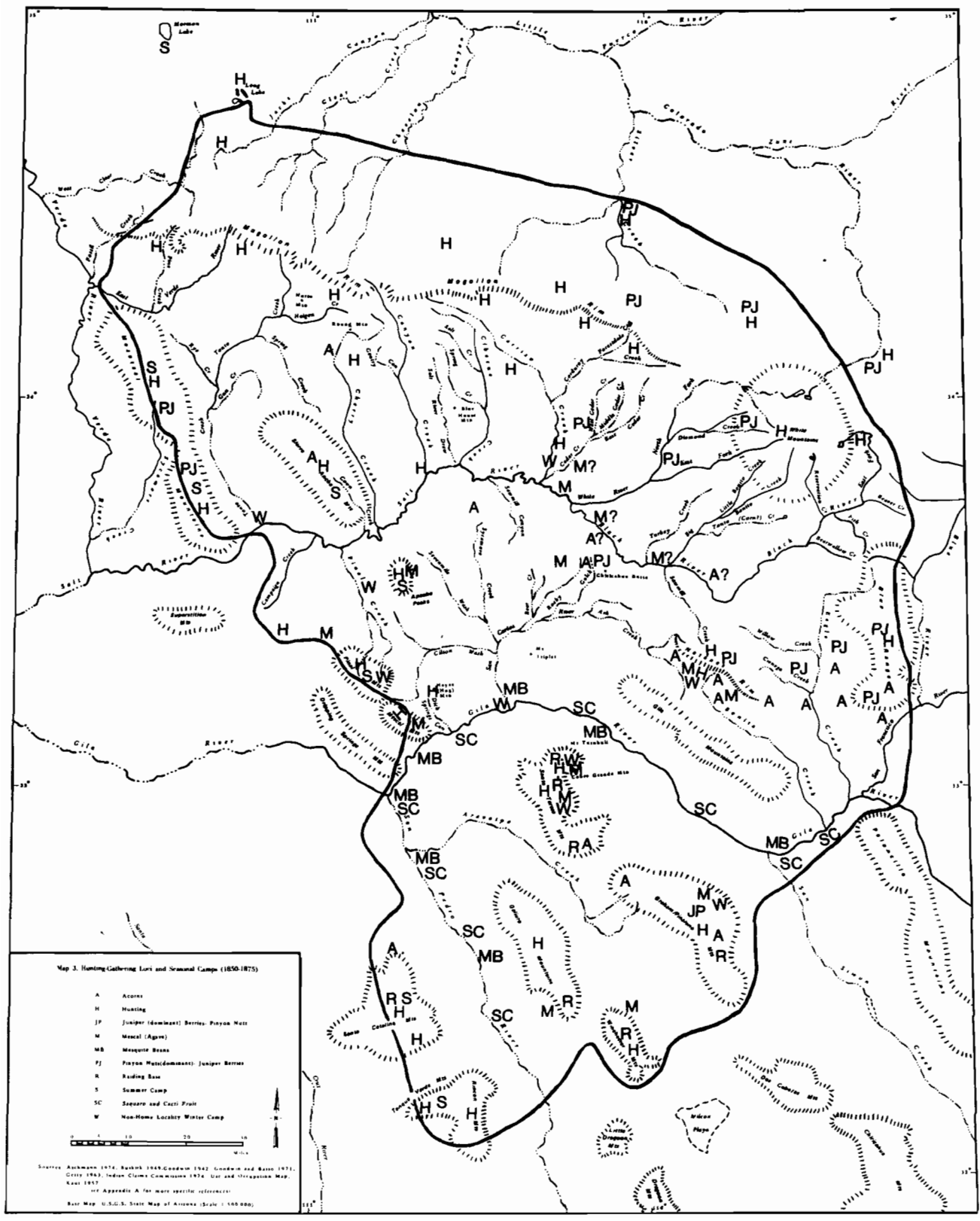
CIBECUE — Subtribal Group

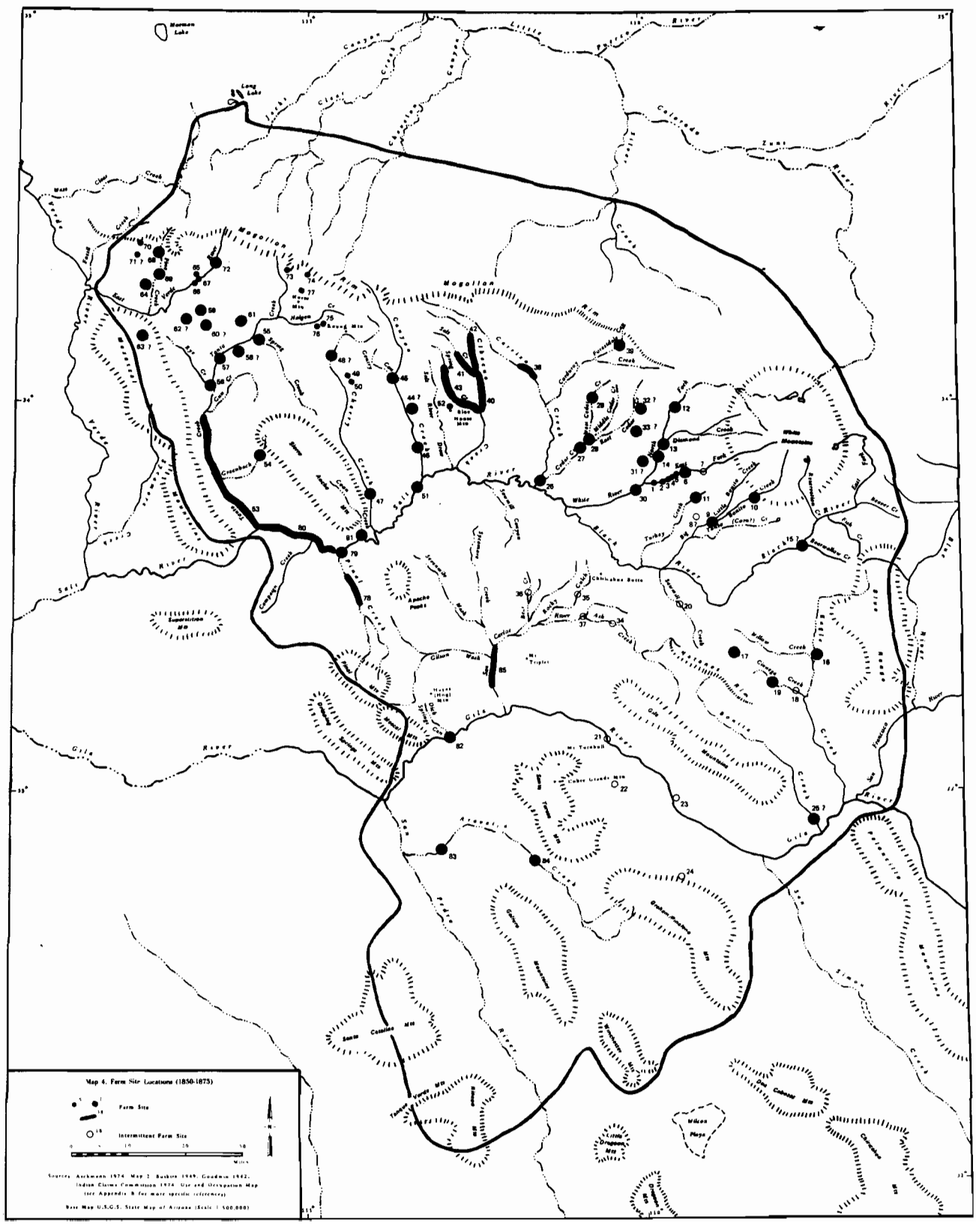
Eastern White Mountain Band — Band

0 5 10 20 30 Miles

Sources: Goodwin 1942: Map 1, 12-13; Indian Claims Commission 1974: Use and Occupation Map

Base Map: U.S.G.S. State Map of Arizona (Scale 1:500,000)


Map 3. Hunting-Gathering Loci and Seasonal Camps (1850-1875)
A Acorns
H Hunting
JP Juniper (dominant) Berries- Pinyon Nuts
M Mescal (Agave)
MB Mesquite Beans
PJ Pinyon Nuts(dominant)- Juniper Berries
R Residing Base
S Summer Camp
SC Saguaro and Cacti Fruit
W Non-Home Locality Winter Camp
Sources Aschmann 1974, Bartlett 1949, Goodwin 1942, Goodwin and Basso 1971, Getty 1963, Indian Claims Commission 1974, Use and Occupation Map, Kaut 1957
see Appendix A for more specific references
Base Map U.S.G.S. State Map of Arizona (Scale 1:500,000)


Map 4. Farm Site Locations (1850-1873)
Farm Site
Intermittent Farm Site
Miles
Sources: Ambrosen 1974, Map 2; Bashore 1949; Goodwin 1942; Indian Claims Commission 1974, Use and Occupation Map (see Appendix B for more specific references).
Base Map U.S.G.S. State Map of Arizona (Scale 1:500,000)