

Lake Mead National
Recreation Area:
An Ethnographic Overview

Lake Mead National Recreation Area: An Ethnographic Overview

by David E. Ruppert
March 1976

The Western Archeological Center
National Park Service Tucson, Arizona

CONTENTS

Illustrations	iii
Tables	v
Acknowledgements	vii
Abstract	ix
Introduction	1
Overview objectives	4
The Mojave	6
Territory and environment	6
Early contacts	9
Subsistence	14
Relations with neighboring groups	23
The Chemehuevi and the Southern Paiute	27
Territory and Environment	27
Early contacts	34
Subsistence	37
Environmental manipulation	50
Social organization	51
The Hualapai	54
Territory and environment	54
Early contacts	56
Subsistence	57
Social organization	64
Lake Mead inter-ethnic social organization	68
Bibliography	71
References cited	71
Additional references	77

ILLUSTRATIONS

Figures

Figure 1: Mojave winter house	7
Figure 2: Mojave farming practices correlated with Colorado River flow	17
Figure 3: Mojave storage basket	20
Figure 4: Southern Paiute temporary shelter	36
Figure 5: Hualapai sele seed beater	59

Maps

Map 1: Lake Mead National Recreation Area	2
Map 2: General region of the western arm of the Colorado River, with Indian territories	3
Map 3: Mojave territory at time of earliest contact with western explorers	8
Map 4: Territories of selected Chemehuevi and Southern Paiute bands	28
Map 5: A Cuchan Indian's map of the Lower Colorado River . .	38
Map 6: A Chemehuevi Indian's map of the Lower Colorado River	38
Map 7: General territory occupied by hunting and gathering Hualapai bands	55

TABLES

Table 1:	Important flora of Southern Paiute territory	30
Table 2:	The fauna of Southern Paiute territory	32
Table 3:	Plants collected by the Southern Paiute and their uses	43
Table 4:	Wild plants used by the Hualapai	62

ACKNOWLEDGEMENTS

This ethnographic overview of the Lake Mead National Recreation Area could not have been written without the assistance of many people. Study of this type is never the work of one person, but the product of many individuals, who have applied a wide variety of skills and devoted a great deal of time to the task. The author wishes to acknowledge their help.

Keith Anderson, Chief of the Division of Internal Archeological Studies of the Western Archeological Center in Tucson, Arizona, conceived and outlined the goals for this overview. Clearly, without his initial help and continued guidance the overview would not have been written. Dianne Kay Herron, secretary of the division, provided invaluable assistance in solving a variety of problems. The staff of the Lake Mead National Recreation Area, especially Superintendent William Briggles and David Huntzinger, saw to it that my visit to the Area and subsequent research went smoothly. Their help and cooperation is greatly appreciated.

At the University of Nevada at Las Vegas, Richard and Shiela Brooks provided needed guidance in locating important research materials on the region. John Bancroft provided a great deal of effort in editing the drafts of the overview and applied his patience and skill to guide it through to publication. Scott Clemans drew the maps and Jeanette Schloss penned the illustrations. Cris Bramley typed the overview, an essential and demanding task, which often goes unacknowledged.

ABSTRACT

This ethnographic overview of Lake Mead National Recreation Area, which will serve as companion to a forthcoming archeological overview of the area, provides an ethnographic context for future archeological research and for current interpretation.

The Recreation Area, which includes land in both Nevada and Arizona, overlaps early Native American ethnic boundaries, as well as modern state borders. Groups whose territories touched upon or fell within current park boundaries include the Mojave, the Chemehuevi, the Southern Paiute and the Hualapai. Each of these groups is first examined individually, in terms of territory occupied, environment exploited, subsistence practices and social organization; extensive lists of crops cultivated, wild plants collected and animals hunted for food and other uses are presented, as are several illustrations of tools, shelters and containers made and used by the various groups. The author then summarizes ways in which these groups interacted, citing instances of trade, warfare and other intergroup contact. The author finds that although each ethnic group had its own way of coping with and exploiting its environment, these groups did not exist in isolation; trade among them, for example, flowed primarily along an east-west axis (e.g., between the Mojave and the Hualapai), while relations among north-south neighbors (such as the Hualapai and the Southern Paiute) tended to be less friendly.

INTRODUCTION

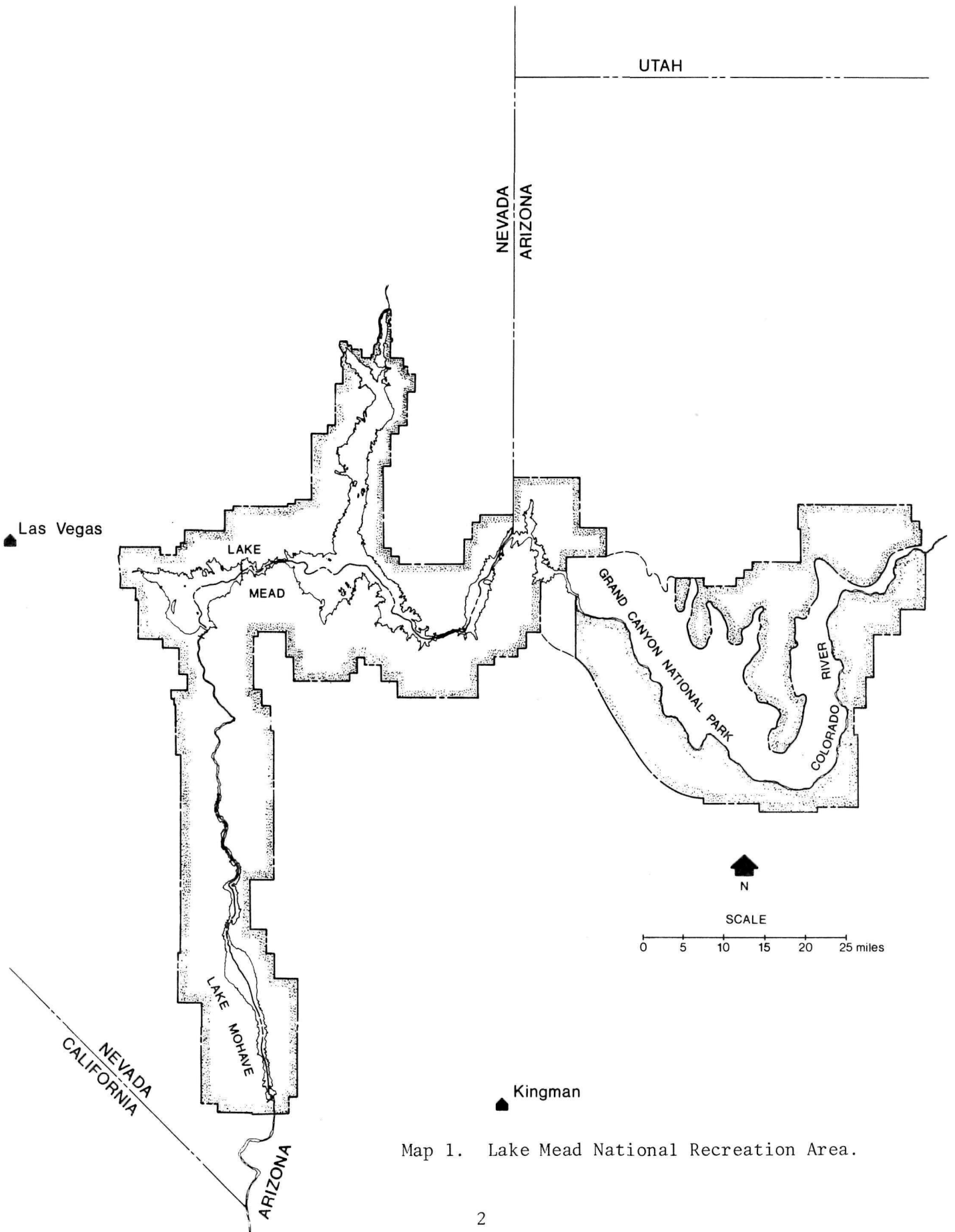
The western portion of the Colorado River has long played a central role in human affairs. Native American groups, such as the River Yumans, farmed its lower alluvial plains for centuries. To the north, where it turns south toward the Gulf of California, the river served as a major geographic barrier, separating the Yuman-speaking Hualapai and Havasupai from the Numic-speaking Southern Paiute. During the early explorations of the region by Europeans the Colorado carried both men and supplies. Early trappers found a reliable source of animal hides in its waters and the waters of its tributaries. Today the river figures no less importantly. It continues its traditional role in human social and political affairs, serving as a natural border between the states of Nevada, California and Arizona and as a portion of the international boundary between the United States and Mexico. The river continues to supply necessary water to farming and recreational facilities in each of these states and in northern Sonora.

The larger region of the western arm of the Colorado River is characterized by wide geographic diversity. To the north of the river, in the states of Arizona and Utah, are high plateaus and deep valleys, which provide a wide spectrum of flora and fauna. To the west, in California, one encounters the vast and arid Mohave Desert and Death Valley before reaching mountains nearer the coast. To the south, the river flows toward the Gulf of California through upper and lower Sonoran desert regions in Arizona and Mexico. The eastern portion of the river runs through the mighty Grand Canyon and cuts through high plateau regions.

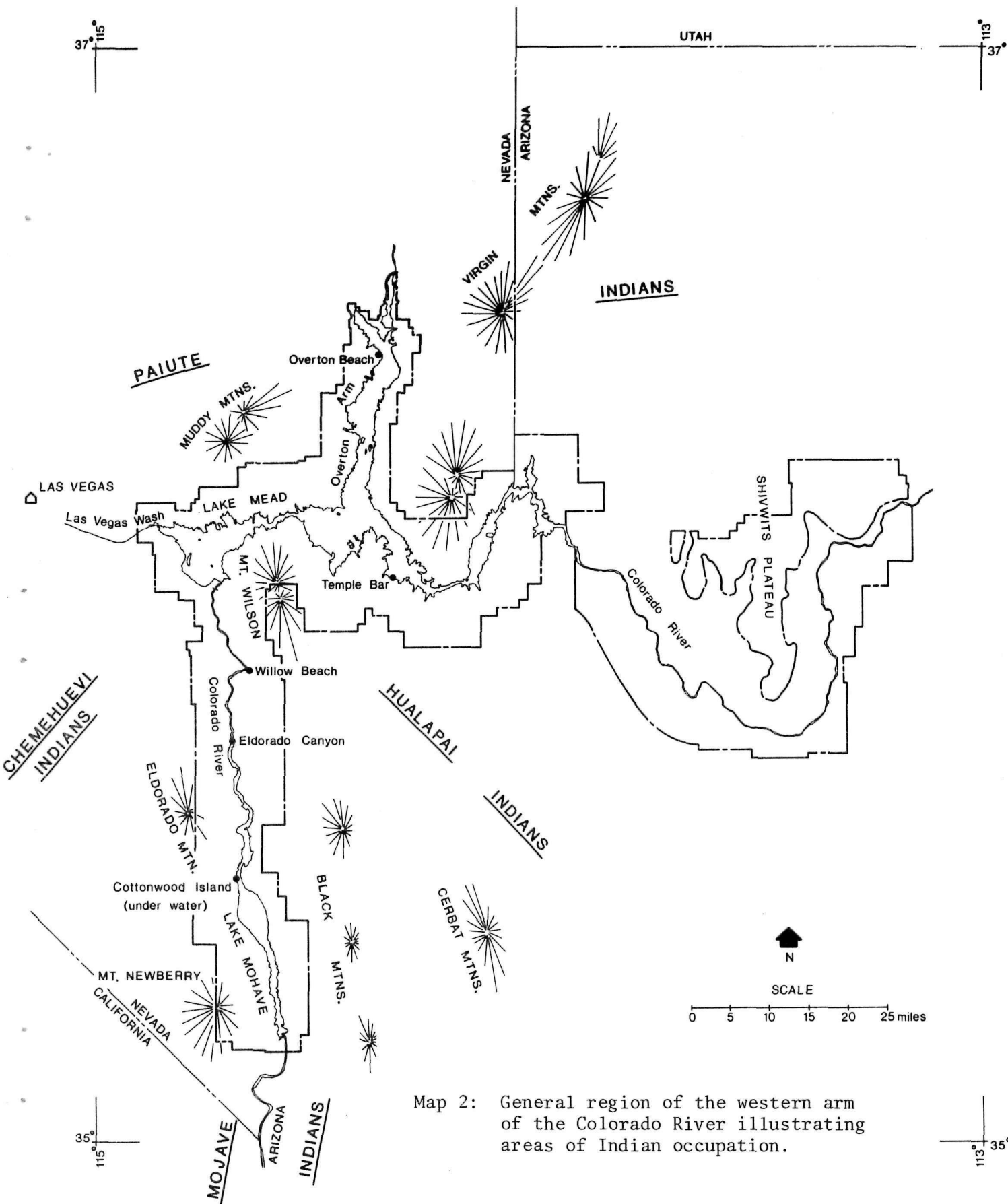
The Lake Mead National Recreation Area comprises approximately a 115-mile stretch of the western portion of the old Colorado River, as well as a sizeable section of the Virgin River near its junction with the Colorado (Map 1). Waters backed up by Hoover and Davis dams form Lake Mead and Lake Mohave, respectively, and provide well over 500 miles of shoreline in the Recreation Area. These lakes form a natural border between southern Nevada and northwestern Arizona.

The Recreation Area overlaps early Native American group boundaries, much as it cuts across modern state boundaries. The Mojave Indians occupied the alluvial plains of Mohave Valley, which lies south of Davis Dam, as well as an area north of the dam called Cottonwood Island, now submerged under the waters of Lake Mohave. The Chemehuevi Indians once occupied Cottonwood Island and the desert region to the west. Southern Paiute bands hunted and gathered wild seeds and game west and north of the Colorado's great bend. The Hualapai Indians in Arizona occupied a large territory south and east of the river's banks (Map 2).

These Indian groups can be placed under two major linguistic headings. The Mojave and the Hualapai speak closely related Yuman languages. The Yuman language group also includes Indian cultures along the lower Colorado, as well as the Yavapai in central Arizona, the Havasupai in the Grand Canyon and the Maricopa along the Gila River. The Chemehuevi and the Southern Paiute belong to the Uto-Aztecan language stock and speak what is referred to as southern Numic. The Numic languages also are



Map 1. Lake Mead National Recreation Area.



spoken by the Southern Ute, the Shoshone of central Nevada and the Northern Paiute of Nevada, California and southeastern Oregon. The southern Numic speakers are believed to be descendants of peoples who moved into the region from the west and south approximately 1000 years ago, replacing an earlier pueblo-type culture related to groups in western New Mexico, eastern Arizona and southern Colorado (cf. Miller 1966; Fowler 1972; Lamb 1958, 1964).

OVERVIEW OBJECTIVES

This ethnographic overview of the Lake Mead region is intended to meet three major objectives. The first of these is to provide an ethnographic context for archeological interpretation. Detailed information on selected features of the social life and economy of groups once living within or around the Recreation Area, as described in the historical or ethnographic literature, can provide the archeological researcher with an important body of data. These data can be used to verify or to refute existing archeological hypotheses, form new testable hypotheses and provide an ethnographic framework within which archeological interpretations can be placed.

The second objective is to identify, from the existing literature, the aboriginal territorial boundaries of groups which once occupied the Lake Mead region. The purpose here will be to describe the extent to which these boundaries overlapped the boundaries of the Recreation Area. It was originally hoped that historical literature would yield substantial clues to the location of Indian habitation sites within the park. Early explorers, however, often did not give precise locations of Indian villages or settlements; those that can be identified now are under the waters of Lake Mead or Lake Mohave. Joseph Ives (1861) and Wheeler (1869, 1870, 1871) provide maps indicating the location of Indian settlements. Wheeler's maps are especially interesting in this regard, but most of his designations of "Indian Rancherias" were well outside the boundaries of Lake Mead National Recreation Area. Further research into the early maps of the region may provide more information on approximate site locations within the park.

The third objective is to provide a comprehensive bibliography of major works on the Native American groups which once inhabited the Recreation Area. Although not all of these works are cited in the overview, additional references are appended to the bibliography to provide sources on topics not covered in the text.

This overview discusses a limited number of social and economic features, selected for their relevance to archeology. Subsistence practices are discussed in detail, as are those environmental features related to these practices. The social organization of these groups is treated briefly, reflecting the level of generality at which the topic is discussed in the literature. When possible, illustrations or descriptions of houses and settlements are included, as is information on inter-tribal trade and warfare.

Important elements, such as the introduction of the horse into the area and the development and consequences of the Ghost Dance, have been omitted from the overview. The importance of the horse cannot be

underestimated, as it was central to changes in aboriginal subsistence and trade patterns, warfare and social organization. The Ghost Dance was an important response to the encroachment of whites and, as a conservative force, sought to restore aboriginal conditions. Both of these developments were part of the rapid pattern of change within and between these Indian groups after European contact, but a detailed discussion of change will have to await further research and discussion, as the primary focus of the present overview is description of a few selected features of aboriginal life before these changes so dramatically disrupted earlier patterns.

THE MOJAVE

The Mojave aboriginally occupied both sides of the lower Colorado River, from just south of Davis Dam to Topock. Although this area, defined by Kroeber (1953) as the "core" of the Mojave occupation, lies just outside the Lake Mead National Recreation Area, it would be a major oversight to exclude the Mojave from this review. This "core" may well have been limited to the area defined by Kroeber, but the impact of the Mojave on neighboring groups to the north and east demands that they be treated in length. Early Mojave alliances, warfare and subsistence activities took them well beyond the limits of their valley. The group's territorial control and influence were felt not only as far south as the Colorado River delta region, but also as far north along the river as the Paiute and Hualapai territories. In short, any complete overview of the Recreation Area must recognize the Mojave as an important element in Lake Mead's culture history.

TERRITORY AND ENVIRONMENT

Mohave Valley, the "core" area described by Kroeber, takes its name from the people who have lived there (in houses much like the one illustrated in Fig. 1) for at least the past three centuries. The valley's southern limits lie just south of Topock at 114° 32' west and 34° 40' north, a point known to insurgent Americans as "The Needles" (a series of narrow low pinnacles) and to the Mojave as "huqueamp avi" ("where the battle took place") (cf. Sherer 1965:71). The northern edge of the valley lies near Bulls Head Rock at 35° 15' north and 114° 34' west (Castetter and Bell 1951). The western border of the valley lies in Nevada and California, its eastern border in Arizona. The entire valley is a natural flood plain, which before extensive dam construction allowed the Colorado River to swell considerably during the spring and early summer. The flood waters played an important part in early Mojave subsistence patterns and will be treated in greater detail later.

A description of the valley itself does not necessarily set the limits of the Mojave occupation range (Map 3). Kelly (1934; also in Stewart 1966) provides a map which extends the Mojave range north along the Colorado, well above old Cottonwood Island (approximately 15 miles north of Davis Dam, 35° 40' north). This map, along with other supporting evidence, places the Mojave within the present Recreation Area. Kroeber (1953) claims that the Mojave once occupied Chemehuevi Valley to the south of Mohave Valley proper, which pushes their southern range well below "The Needles."

Restricting the occupation area to Mohave Valley would be too narrow a view in another respect. In lean years, or in times when the Colorado did not flood the valley floor, the Mojave followed an expanded food gathering subsistence pattern. The climate of the area is extremely dry (5 to 10 inches of precipitation per year). If the Colorado did not provide the moisture needed to germinate seeds and to sustain crops over the warm months the Mojave expanded their hunting and gathering range to include areas where grass seed and game were more abundant.

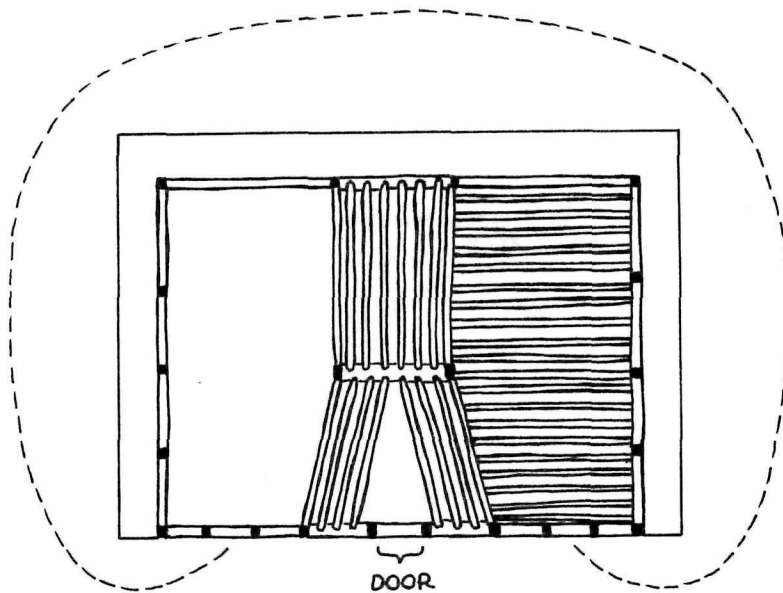
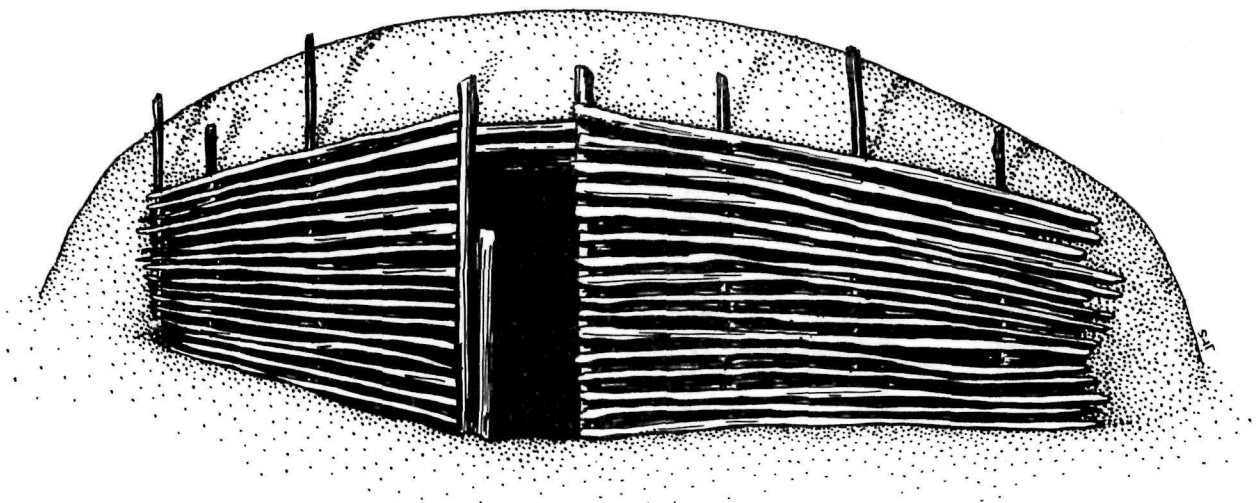
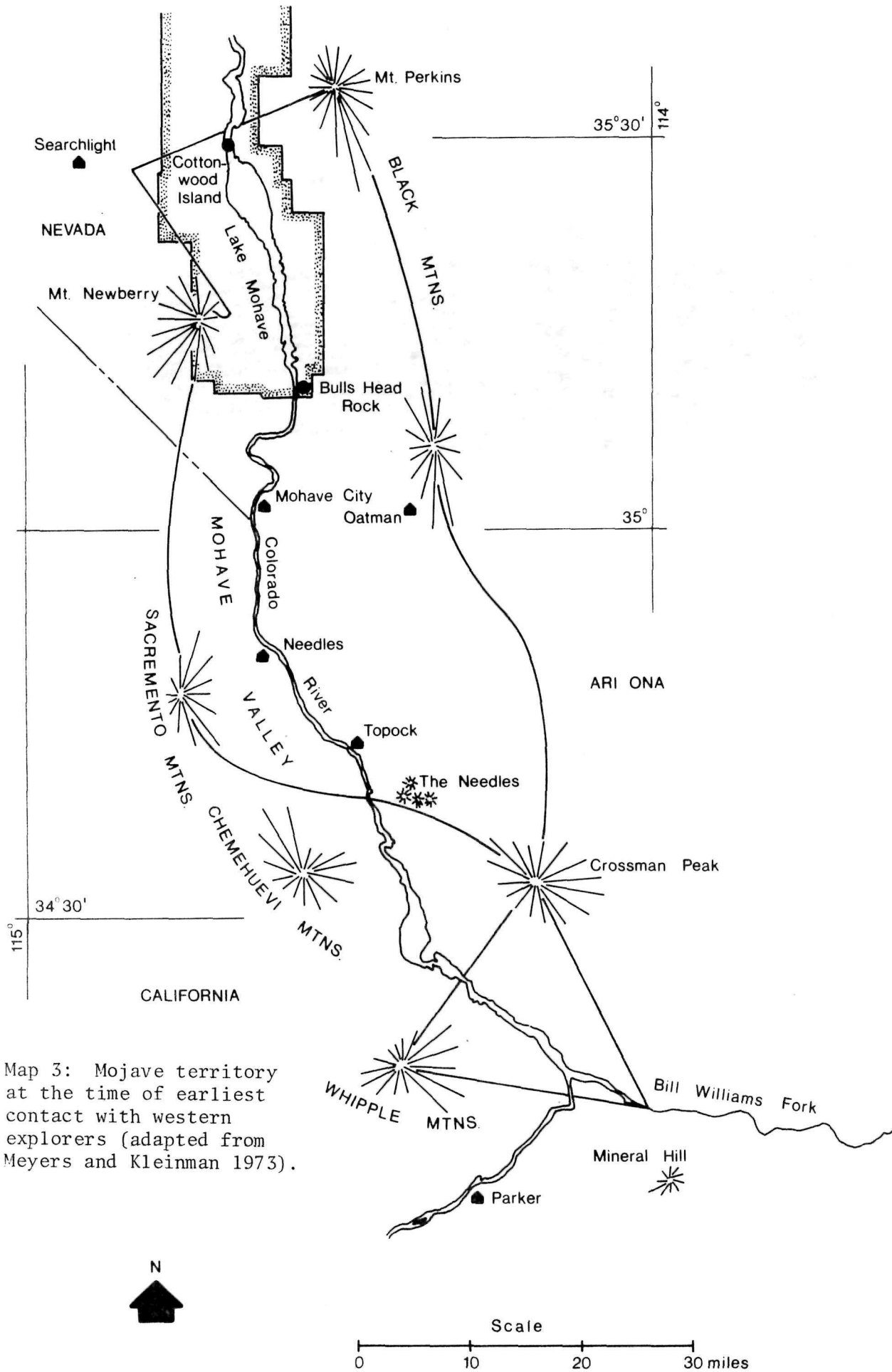


Figure 1: Mojave winter house; front view (top; drawn from early photographs in Smith 1966) and plan (bottom; after Kroeber 1925).



Expeditions of warfare and trade to neighboring groups also often took the Mojave beyond Mohave Valley and the Colorado River; when this is taken into consideration, the "core" area is seen to be surrounded by a large "buffer zone," within which the Mojave felt they had ultimate rights. Respect for this zone was maintained through alliances with some groups and through a constant state of warfare with others.

The Mojave apparently loved travel and pursued it for reasons of warfare, trade and pure pleasure. They did not see themselves as inexorably tied to the valley proper and knew of routes which extended far beyond their homeland. These trails reached as far north as the Shivwits Plateau (well into southern Great Basin territory); as far east as Supai and Hopi; southwest to Gila Bend and Phoenix; south to Yuma and the head of the Gulf of California; west to the Pacific Ocean at San Diego and Ventura, and northwest to Tehachapi and the Tula Lakes of San Joaquin (Kroeber 1953).

EARLY CONTACTS

Early explorers in the Southwest referred to the Mojave in a variety of ways, as each explorer heard something slightly different in response to his question about the name of the tribe. A partial list of tribal names attributed to the Mojave by early explorers includes: Amacave, Amajave, Jamajabs, Tamajabs, Ammachaves and Ammuchabos (Smith 1966). Coues (1900:226) gives a more complete listing: Amaguagua, Amahuayas, Amochave, Amojaves, Amoxawi, Amuchabas, Hamockhavens, Hamoekhave, Hamokiavi, Hamukhava, Jamalas, Machaves, Macjave, Mahaos, Majabos, Majave, Mohave, Mohavi, Mohawa, Mohaw, Mohaoes, Mojaris, Mojaur, Molxares, Moyave, Soyopa, Tamasabes, Wah-muk-a-hah-ve, Yumagas and Yamajab (the list is included here for future research reference). Even the modern name (often written as "Mohave") is a misrepresentation of the name used by the Indians. "Mojave" is the spelling accepted officially by the tribal council, but the original name is "Aha macava," which means "people who live along the river" (aha - "water"; macave - "along or beside") (Sherer 1965:6, 71, Smith 1966). Coues (1900) and Hodge (1917), among others, mistakenly attribute the meaning of this term to the Mojave compound of "hamock" ("three") and "avi" ("mountain"); thus, the early interpretation that "Mojave" meant "three mountains" (referring to the Needles).

Regardless of the tribal names used by explorers, their accounts of early contacts with the tribe are informative. They give us an idea of the extent of Mojave territory just preceding the contact era and some information on how this territory expanded and contracted over time in response to changing relationships with their closest neighbors, to environmental stress and to the advance of white settlement.

1540 - Hernando de Alarcon: The earliest explorer to contact the Mojave may have been Alarcon, a member of Coronado's expedition of 1540. Alarcon, charged with the exploration of the Colorado River delta region, traveled some 200 miles up the river in a small boat before turning east in an effort to join Coronado's party. Smith (1966) claims that this would have put Alarcon in Mojave territory and in certain contact with members of the tribe. Coues (1900) also claims that Alarcon possibly came

into contact with the Mojave and Schroeder (1954) traces Alarcon's route well into territory under Mojave influence. Although he made no explicit reference to the Mojave, Alarcon was told of Indians further upriver by his "Cumana" guides (Yavapai?; cf. Schroeder 1954).

There may be some question as to whether Alarcon actually came into contact with the Mojave, but given that communication often was swift among tribes along the Colorado and that the Mojave were possessed of a penchant for travel and adventure, it seems reasonable to assume that the Mojave were aware of Alarcon's expedition. The question then becomes one of the Mojave discovering Alarcon, rather than one of Alarcon discovering the Mojave (see also Hammond and Rey 1940).

1604 - Don Juan de Oñate: The first reference to the Mojave comes from the Oñate expedition of 1604-05. Oñate set out westward from Sante Fe and marched toward the lower Colorado. There is some disagreement over his actual route (Kroeber 1953; Bolton 1950), but it seems that Oñate came into contact with "Amacavas" just above the present site of Parker Dam. After his arrival on the Colorado at the mouth of Bill Williams Fork, Oñate traded with the Mojave for foodstuffs (corn, beans and squashes). Leaving the mouth of Williams Fork, the expedition traveled down the Colorado approximately 15 miles (five leagues) to the present site of the Colorado Indian Reservation, where he found "Indians of the same tribe or nation" (Kroeber 1953:3).

Thus, Oñate's visit clearly establishes the Mojave in Mohave Valley over three and a half centuries ago. More importantly, it is clear from his accounts that the Mojave were engaging in horticultural practices in the valley before 1600.

1776 - Fray Francisco Garcès: The next major contact with the Mojave was made by the indefatigable Fray Garcès in 1776. Garcès, while stationed as a priest at San Xavier del Bac Mission near Tucson, ventured west on a number of expeditions in order to baptize Indians, to record the geographic locations of various tribes and to establish a route of communication between the missions in New Mexico and California. It was on his fifth expedition that Garcès came into close contact with the Mojave. His route on this trip took him along the Gila River to its mouth at the Colorado. Turning north, he came upon the Mojave along the Colorado River near the Mohave Range. After baptizing and preaching to a few "Jamajab," Garcès was guided to the Mojave Trail (which leads through the Mohave Desert) by "el principal" of the Mojave group he was visiting (Coues 1900:228-29).

Garcès' description of the Mojave encountered on this trip is informative (Coues 1900:230-32):

The female sex is the most comely on the river; the male very healthy and robust. The women wear petticoats of the style and cut that the Yumas (wear). The men go entirely naked, and in a country so cold this is well worthy of compassion (the journal is dated February 29). These say that they are very strong; and so I found them to be, especially in enduring hunger and thirst. It is evident that this nation goes on increasing, for as I saw

many young lusty fellows, and many more boys, the contrary is experienced in the other nations of the river. There came together to visit me about 20 hundred souls. Abound here certain blankets that they possess and weave furs of rabbits and otters (Coues notes here that these "otters" are probably beaver), brought from the west and northwest, with the people of which parts they keep firm friendship. They have been also intimate friends of the Yumas . . . the enemies that they have are, on the northeast the Yibipais Cuercomaches (an unknown group of Yavapai); on the east the Jaguallapais (Hualapai); and on the south the Jalchecones (the Halchidoma).

On a return trip to Mojave territory in July of the same year, Garcès makes note of additional trade between the Mojave and tribes to the east (Coues 1900:414):

There came with me . . . two Yabipais Jabesua (Havasupai) who brought mantas, leggings, and pieces of cowhide (pedazos de cuero de baca) to trade with the Jamajabs for shells - only for white sea-shells, for no others do they receive in exchange.

The description of trade relations points clearly to Mojave influence far beyond Mojave Valley. Trading extended north to the Paiutes (Chemehuevi?) for rabbit and beaver furs. Blankets, leggings and cowhide came from the Yavapai to the east and probably from as far as Navajo country in the northeast corner of Arizona.

1851 - Captain Lorenzo Sitgreaves: Not long after the Southwest territories were brought under the control of the United States, the Army dispatched an expedition to explore the new area. Sitgreaves led a party across northeastern Arizona to the Colorado River to the present site of Fort Mohave (Schroeder 1954). After traveling many days through Hualapai territory from Flagstaff, Sitgreaves' party on November 5, 1851, descended the west side of the Black Mountains near the present town of Oatman. On his way to the river he met a party of Indians (one too heavily laden to escape; a trading party, perhaps), but he gives no indication as to the Indians' tribal affinity (Sitgreaves 1853:17). He apparently reached the river without encountering other Indians.

Two days later, after deciding not to follow the Colorado north to explore the mouth of the Virgin River, Sitgreaves followed "well-worn trails" down the river. It was along these trails that large numbers of Mojave gathered to meet his party:

In the evening the camp was crowded with them (Mojave) bringing in for barter small quantities of pumpkins, beans, corn, and in one or two instances, of wheat, which seem to be the staples of their food, for no animals, except a few horses, were seen among them, and the few sheep we had left were the objects of great admiration, especially to the women (Sitgreaves 1853:18).

The beans, pumpkins, corn and wheat, which was introduced by the Spanish, were no doubt signs of a good crop during the preceding summer. At this time of the year these foodstuffs probably represented the Mojave's winter stores, which they relied on to get them through the dry, cold months of winter. Abundant crops during the summer were not always the case, however, as will be explained in greater detail later.

The party first was approached by three Mojave "mounted on fine horses" (Sitgreaves 1853:17). The Mojave kept only a few horses, for purposes of communicating news quickly between villages. Stationed at various places along the river, these horses were the prized possessions of the tribe and were exceptionally well cared for. They were kept in readiness to warn people in the valley in the event of an enemy attack, a call to war or the death of a relative. Non-Indian visitors often remarked on the sacredness of these horses (Fathauer 1954:101).

Sitgreaves (1853:18-19) gives further description of the Mojave themselves:

The appearance of the Mojaves is striking, from their unusual stature, the men averaging at least six feet in height; and their stalwart and athletic figures offered a convincing proof of the excellence of a vegetable diet. Almost all the men were naked, with the exception of the breech-cloth. The hair, cut square across the brows in front, hung in loose braids behind, reaching frequently as low as the waist; occasionally it was matted on the top of the head into a compact mass with mud, for the purpose of destroying the vermin that infest them. The only garment worn by the women was a long fringe of strips of willow-bark wound around the waist, and falling as low as the knees. No covering to the feet was worn by either sex. Their arms are the bows and arrow, the spear and the club. The arrow is formed of two pieces - that to which the barb is attached, of hard wood seven inches long, or one-fourth the entire length; and the other of a light reed that grows profusely along the banks of the river, feathered, as usual, at the extremity. The custom still prevails among them of carrying a firebrand in the hand in cold weather, which is mentioned in the account of Coronado's expedition in 1540, and induced these discoverers to give to the river the name Rio del Tizon. (Sitgreaves must be referring to Alarcon's journal. However, it is doubtful that Alarcon was attributing the firebrand to the Mojave; he probably noted its use among the Cocopa or the Yuma.) Their lodges are rectangular, formed of upright posts imbedded in the ground, and rudely thatched on the top and three sides; a portion of the interior altitude being sometimes obtained by excavation.

1853 - Lieutenant A. W. Whipple: In 1853 and 1854 the Army sent an exploration team to survey railway routes across the Southwest. Whipple led the group across northern Arizona, following Bill Williams Fork to the Colorado River.

Whipple provides some information on Mojave social organization. He noted that there were five "chiefs" of the Mojave and that each chief was the leader of a group of warriors, varying in size from 50 to 100 members. "Lesser captains" were subordinate to these chiefs and commanded small handfuls of men (five in one case cited). Other men chose to remain at home to tend fields and were not of the warrior class (Whipple 1855:17).

Whipple estimated Mojave populations in 1853 at 4,000 including 600 warriors. There is no way to determine the accuracy of this figure. His descriptions of a few examples of Mojave dress, jewelry and weaponry, however, are fairly complete (pp. 33, 51-52). He also mentions the presence of Hopi blankets and a Zuni sash, which the Mojave claimed to have obtained from the Paiutes and the Yavapai (p. 43), giving some indication of trade with these groups. Other aspects of Mojave life are not described, but this probably was due to a lack of "a better means of communication with the people" (Whipple 1855:43).

1858 - Lieutenant Joseph C. Ives: Ives set out to scientifically explore the Colorado River area in 1857. His party, which included geologists, botanists, zoologists, topographers, meteorologists and artists, provided one of the first careful and complete descriptions of an area already traversed by a number of explorers. Ives himself proved to be a careful observer of the Indian groups he encountered. His route took him north along the Colorado River, from its mouth at the Gulf of California to Black Canyon. He then backtracked to Mohave Valley, where he turned east traveling along the southern plateau through Hopi and Navajo territory to Fort Defiance.

Ives provides some information on Mojave subsistence agriculture. From what Ives could determine, the Mojave hunted and fished little and relied almost exclusively on agricultural products, such as corn, wheat and beans:

It is somewhat remarkable that these Indians should thrive so well upon the diet to which they are compelled to adhere. There is no game in the valley. The fish are scarce and of very inferior quality. They subsist almost exclusively upon beans and corn, with occasional watermelons and pumpkins, and are probably as fine a race, physically, as there is in existence. (Ives 1861:73)

The season during which Ives visited the Mojave is significant, in that it documents a reliance on these foods in February. It seems that during good harvest years--years when the Colorado overflowed its banks long enough to grow abundant crops--the store of agricultural products saw the Mojave through the winter. The Mojave did fish, but probably only after the river's floods subsided during the summer. The corn, wheat and beans doubtlessly were supplemented by stores of mesquite or screwbean meal gathered during the fall.

Interestingly, Ives makes special note of the importance of the seasonal flooding of the Colorado River. He goes so far as to suggest that when the river did not overflow, the result was a disastrous famine

for the Mojave. Although he fails to make note of his sources, his information probably comes from Olive Oatman's account of the famine of 1853 (cf. Pettid 1968). He also suggests a direct relationship between the floods and the maximum population the valley could support:

The annual overflow of the river enables them (Mojave) to raise, with little labor, an abundant supply of provisions for the year, which they improvidently consume, allowing the future to take care of itself. The failure of a crop is, therefore, an irremediable calamity. During one season, a few years since, the Colorado did not overflow its banks; there were consequently no crops, and great numbers of the Mojave perished from starvation. It is quite possible that such visitations are of periodical occurrence, and are among the means adopted by nature to prevent the population of the valley, as there is no outlet for its expansion, from increasing beyond the capacity of the country to sustain it. This number is apt to be overrated. I have discovered that the crowds seen collected at the different points passed during our progress up the river have been composed, to a considerable extent, of the same set of individuals, and suspect that the chiefs in their formal visits have enhanced their apparent state and importance by borrowing recruits from their neighbors. (Ives 1861:73)

Summary: This short description of early contacts with the Mojave is not complete. Others contacted the Mojave, including the famous explorer Jedediah Smith in 1826 (cf. Morgan 1953) and Edward F. Beale, who in 1857 led a party of explorers (equipped with camels) through Mojave territory for the purpose of opening a road from Fort Defiance to the west coast (cf. Smith 1966; Schroeder 1954). Young Olive Oatman, a survivor of a Mojave-Apache (probably Yavapai) attack in 1851, lived among the Mojave as a captive for approximately five years. Her experience provides information which will be used in a later description of Mojave agriculture and warfare. The purpose here has been to provide a summary of those contacts which revealed most about Mojave aboriginal life. Even a limited understanding of the Mojave during the period of these early contacts is useful, as it helps place later ethnographies in a better perspective.

SUBSISTENCE

Mastamho was standing, with his arms folded, he took two steps toward the west, thinking about food. He went north two steps and stood with folded arms, thinking. He went east two steps, still thinking. Then he went south two steps and stood. Now he made a little hole and spat white (frothy) saliva into it. . . soon something small grew up from the hole into which he had spat. . . then Mastamho said, "Listen to me. This is corn. This is watermelons (sic). This is squash. This is wheat. This is quail-beans."

Mojave Myth (Kroeber 1972:12)

Agriculture: According to Castetter and Bell (1951), the Mojave cultivated maize, teparies (both the white and yellow varieties), pumpkins (Cucurbita moschata and possibly a variety of C. pepo), gourds (Lagenurua sicereria), tobacco (Nicotiana trigonophylla), wheat and barley, muskmelons, cowpeas (Vigna sinensis) and sunflowers (Helianthus annus). The wheat, barley, melons and cowpeas were introduced by the Spanish. The Mojave also semi-cultivated seed plants, such as panic grass (Panicum hirticaule), crowfoot grass (Dactyloctenium aegyptium), curlydock (Rumex crispus), barnyard grass (Echinochloa crusgalli) and an unidentified seed plant (Mojave name: ankithi).

Many of the early explorers' accounts refer to Mojave agriculture. Alarcon in 1540 found the major cultigens among the Yuman tribes of the Lower Colorado River to be pumpkins, maize, "a grain-like millet" and bottle gourds. Alarcon himself apparently brought such items as wheat "and other grains," beans and a few Spanish hens and cocks to trade (Castetter and Bell 1951:98-99). Thus, the Mojave may have been introduced to wheat, and perhaps watermelon, as early as the 1540s. Wheat was a firmly established cultigen among the Halchidoma (a group south of the Mojave until 1828) when Garcès visited that area of the Colorado in 1776. Although the Halchidoma were not on the friendliest terms with the Mojave, there is reason to assume that wheat had become equally well established in Mohave Valley by this time. Olive Oatman's account of 1853 reports the cropping of "corn, melons and a few garden of vegetables" and suggests that wheat was established as a major crop upon which the Mojave relied heavily. By this time wheat shared the importance of corn and beans in the diet of the Mojave. Others, including Ives (1861) and Sitgreaves (1853), also report on the importance of agriculture among the Mojave.

The flood plains of Mohave Valley provided the arable land needed to cultivate these plants. The Mojave each year would wait for the Colorado to overflow its banks and to deposit its layer of fertile silt over the valley floor. When the water receded in July, seeds were planted in the soft mud with a simple planting stick. In this nutrient rich soil crops grew quickly and easily, without much field maintenance. The remaining summer rains were relied on for additional moisture as the river water receded farther from the fields.

There was no system of canal irrigation to bring water to fields in times of drought or when the river failed to overflow its banks, probably because canals could easily have been destroyed by the flooding from year to year. Fluctuations in the river's peak flooding also may have discouraged canal building, as such fluctuations would threaten damage or destruction of canals more than once during any given season. Individual family groups planted on higher ground in January and relied on pot-carried water until the river again flooded, leaving behind rich soil and ample moisture.

Castetter and Bell (1951:145) provide a yearly schedule for agricultural and hunting and gathering activities for the tribes along the lower Colorado; this schedule does not specifically describe Mojave activity, but it provides a general pattern, which the Mojave probably followed:

1. First Month - "budding of cottonwood;" equates with late February to early March; a month of relative inactivity because of climatic conditions.
2. Second Month - "month in which willow and mesquite bud; also the windy month;" March; clear new land suitable for planting; greatest dependence on hunting; fishing unimportant.
3. Third Month - "planting of spring;" most of April; if conditions were suitable, some planting was done; otherwise, hunting and fishing were emphasized (this means that when very early flooding of the river occurred, an early planting sometimes was made); clearing of old lands in preparation for main planting.
4. Fourth Month - "month of wild berries; month when wheat ripens;" latter part of April and early May; taking of river fish.
5. Fifth Month - "month when river reaches its highest peak; breaking-of-the-gourd month;" a somewhat variable period, usually coming in late May and June; before waters receded, stranded fish were taken or those in shallow water were shot; period of scarce food supply; planting was done toward end of period.
6. Six Month - "mesquite beans ripe;" late June and early July; women gathered mesquite pods and pigweed greens; men finished planting.
7. Seventh Month - "hoeing time;" equates with late July and much of August; screwbeans ripe; river fish taken.
8. Eighth Month - "green corn ripe;" most of September; river fish taken.
9. Ninth Month - "harvest month;" late October and early November; busy with gathering crop; lots of dancing and celebrating; rabbits and birds taken.
10. Tenth Month - "frost months;" most of November; building of winter home, which was very important.
11. Eleventh Month - "middle of winter;" December; a period of inactivity although rabbits and birds were hunted.
12. Twelfth Month - "dried cane month;" January and early February; a continued period of inactivity; rabbits and birds hunted; food supply scarce.

Figure 2 correlates these activities with the flooding patterns on the river.

The importance of the flooding of the Colorado cannot be overestimated. The Mojave relied on agricultural products for an estimated 50% of their subsistence (Castetter and Bell 1951:74). If the flood plains were not inundated with water, planting was difficult or impossible; because the surrounding area receives so little annual rainfall (5-10 in.), post-flood water was essential to crop maturation. The importance of flooding is underscored by the celebrations which took place when it occurred. Oatman (1935:124) writes that ". . . it was a season of great rejoicing when the Colorado overflowed, as it was only after overflows that they could rely upon their soil for a crop."

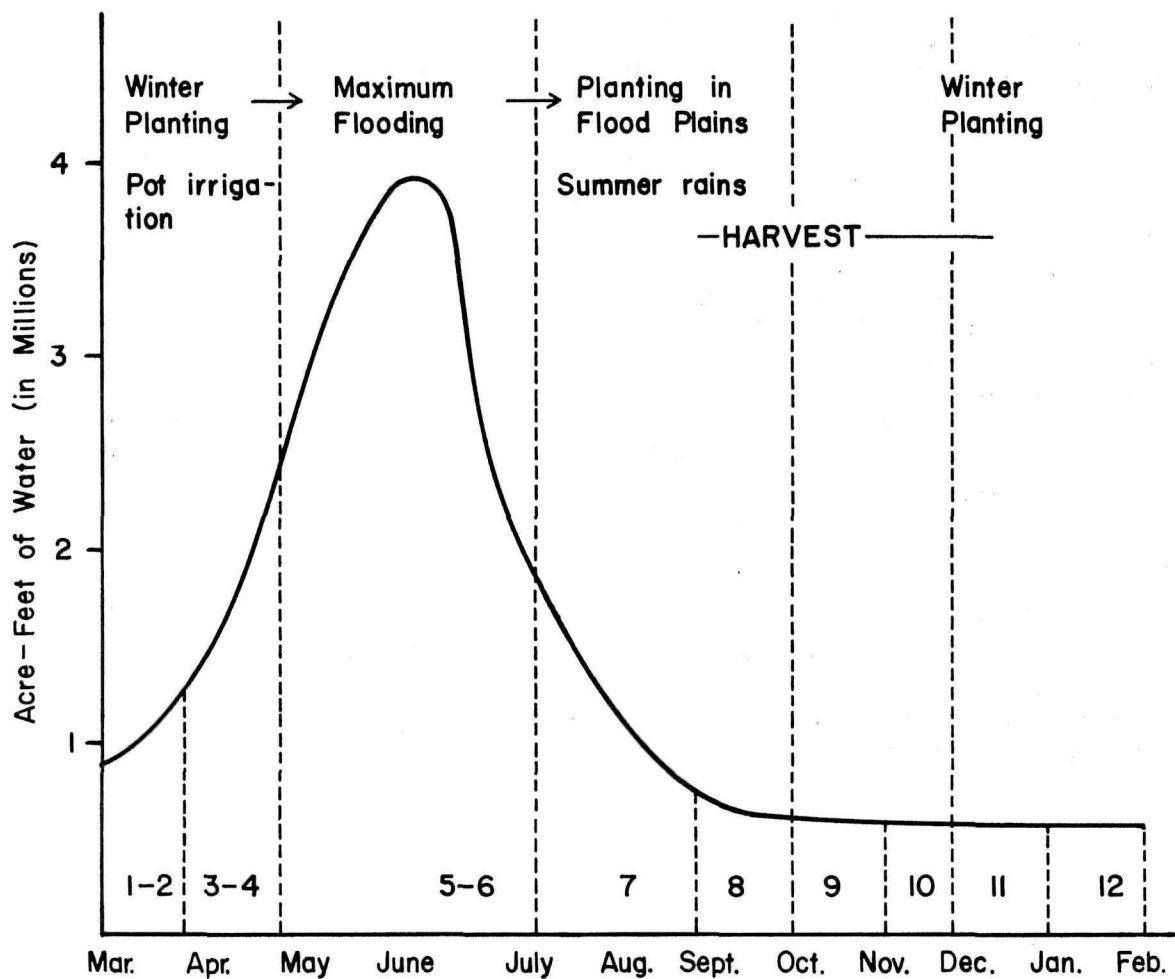


Figure 2: Mojave farming practices correlated with average Colorado River flow (flow records from Castetter and Bell 1951).

The Mojave relied on agriculture far more than did other tribal groups along the lower Colorado (Cocopa - 30%, Yuma - 40%) (Driver 1957). The combined physical features of Mohave Valley, along with silting and flooding patterns, may account for this. The valley configuration provided extended flooding (1 to 2 miles wide) when the river overflowed. The silt left behind by the floods was essential to Mojave agriculture in a desert environment. Noy-Meir notes (1974:205) that in ". . . most arid soils a large proportion of nutrients in both organic and mineral forms is concentrated in the surface layer (0-5 cm), while the rest of the profile is rather nutrient poor. This is because both decomposition and leaching rates are low. The consequences are that a large part of the nutrient pool is susceptible to loss by erosion and (for nitrogen) volatilization." Thus, these nutrients are the first to wash away in heavy rains and runoff. The Colorado River silt carried these soil nutrients and deposited them in the river's flood plains. Mohave Valley's wide flood plains allowed long shallow flooding and deep renewed silting from year to year, encouraging unusually rapid crop growth and good yields with minimum maintenance. Mojave dependence on agriculture, therefore, was fostered by the environment in which they lived.

Land was owned privately or was claimed by specific groups living on or near the land. Landmarks designating family garden plots or a group's larger agricultural tract often were wiped out by annual flooding, however, resulting in quarrels over land ownership. A ritual tug-of-war between opposing individuals or groups provided a solution. Kroeber (1925:744-45) describes the contest:

. . . One man was surrounded by his friends, who tried to shove or drag him across the disputed territory, whereas their opponents struggled to carry a champion of theirs to the farthest end of the land of the aggressors. In this scuffle legs were sometimes broken and the human footballs nearly crushed and pulled to death. The stake of the contest may sometimes have been not only the stretch first in dispute but the entire arable holdings of both contestants.

If the losers were dissatisfied, they reappeared next morning at their asserted boundary, armed with willow poles a couple of inches thick and 5 or 6 feet long. Each man held a shorter stick in his left hand. The victors met them, and a stick fight, *chetmana'ak*, ensued, which might last for hours. The contestants beat each other, but no one was killed, say the Mohave, but men sometimes died afterwards, especially when they fought long on a summer's day and maggots bred in the wounds. The object of each party was to drive the other back across the disputed tract, whereupon title to it was definitely established.

Wild Resources: The Mojave relied upon a wide variety of wild plants to supplement their agricultural produce. Fishing was important just after the floods along the river receded, leaving sloughs with trapped fish. The hunting of small game, such as birds and rabbits, took place throughout the year, while larger game, such as deer and bighorn sheep, occupied the men during the winter (Smith 1966; Steward 1947, 1957; Castetter and Bell 1951).

Wild Plants: The mesquite bean was the most important wild food gathered by the Mojave. Two varieties of mesquite were gathered: screwbean (Prosopis pubescens) and the honey-bean mesquite (P. juliflora). Mesquite beans were harvested in late June, the screwbean in August. Women did most of the gathering of mesquite and other plants, sometimes ranging far from camp or village after the mesquite nearby was harvested. Trees normally belonged to the owner of the land on which they were found and permission from the owner was required to gather mesquite on another man's land (Smith 1966; Castetter and Bell 1951).

Mesquite meal was made by drying the bean on housetops before crushing it into a flour with wooden or stone mortars. The meal sometimes was eaten raw (Kroeber 1925). Cakes were made by adding water to the meal and baking the dough on hot stones. These sometimes were stored for later use or were taken on long journeys as a ready food supply. Raw beans were stored in rooftop arrowweed willow baskets or on short platforms (Fig. 3). Fresh screwbeans sometimes were cured in large pits, 15 ft. across and 4 or 5 ft. deep, lined with arrowweed; water was sprinkled on the beans, which turned brown and sweet and were ready to eat in about a month (Kroeber 1925). A mildly intoxicating drink was made from the honey bean and the screwbean by steeping the crushed pods in water (Castetter and Bell 1951).

After the mesquite bean, wild seed plants proved the most useful to the Mojave. A list of seed plants utilized by the Mojave, a modification of Castetter and Bell's (1951) list for the entire lower Colorado River region, appears below:

1. Quail brush or lenscale (Atriplex lentiformis)
2. Desert Saltbush (A. polycarpa)
3. Careless weed, bleddo, redroot, pigweed, love-lies-bleeding, quelite (Amaranthus palmeri, A. caudatus)
4. Barnyard grass (Echinochloa crusgalli)
5. Panic grass (Panicum hirticaule)
6. Tansy mustard (Descurainia obtusa)
7. Sprangle-top (Leptochloa viscida)
8. Iodine bush (Allenrolfea occidentalis)
9. Flat-edge, chufs, yellow nut grass (Cyperus ferax)
10. Ammannia (Ammannia coccinea)
11. Evening primrose (Oenothera brevipes)
12. Sage, chia (Salvia columbariae)
13. Ironwood (Olneya tesota)
14. Yellow paloverde, Blue paloverde (Cercidium microphyllum, C. floridum)
15. Sunflower (Helianthus annuus)
16. Acorns (Quercus turbinella)
17. Curlydock (Rumex crispus)
18. Seven unidentified plants are listed. The Mojave names are: Koskwaka, Samkoatk, Xam ats pats, kwats kul ka, Apan, Ex ham, Sekel.

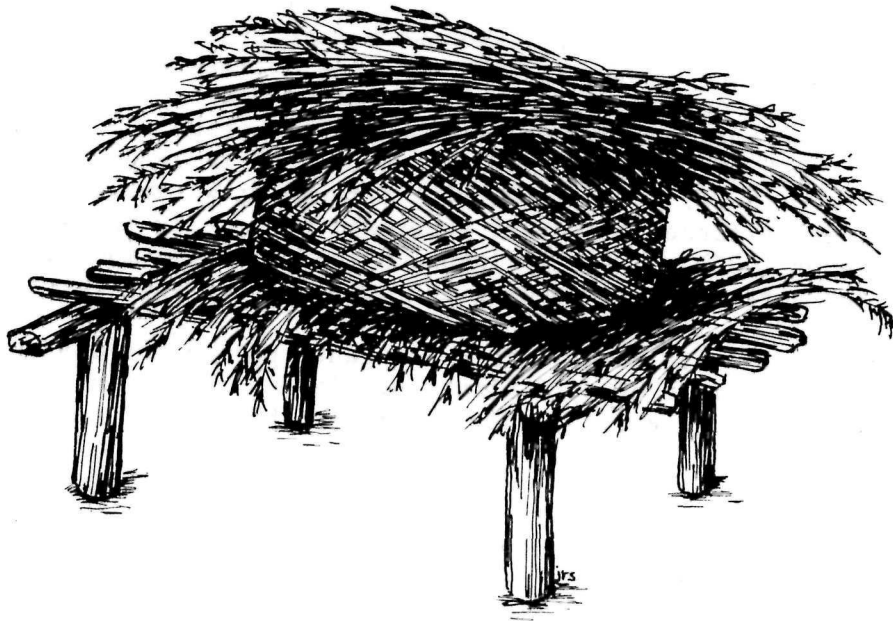


Figure 3: Mojave storage basket; raised on platforms or rooftops, these baskets stored a winter supply of mesquite beans and screw-beans (drawn from early photographs in Smith 1966).

The seeds were prepared in various ways; some were dried into flour, some were boiled and some were eaten raw. Beverages were made by steeping the seeds in water.

The Mojave also gathered roots and tubers. Cattail (Typha latifolia, T. angustifolia) was sought for its roots and pollen. The tubers of the arrowweed plant (Sagittaria simplex) reportedly were used by the Mojave as early as 1878. The desert lily (Hesperocallis undulata) occurs in the area and probably was eaten by the Mojave, as it was gathered by tribes farther south along the Colorado. The hog potato (Hoffmanseggia densiflora) and an unidentified plant known to the Mojave as slalyk also were eaten.

Some plants were used as greens and the fruit of others was gathered at certain times of the year. A list of these plants appears below:

<u>Greens</u>	<u>Fruit</u>
1. Careless weed (<u>Amaranthus palmeri</u>)	1. Wolfberry (<u>Lucium fremontii</u> , <u>L. exsertum</u> , <u>L. andersonii</u>)
2. Sow thistle (<u>Sonchus asper</u>)	2. Lotebush (<u>Condalia lycioides</u>)
3. Spiny aster (<u>Aster spinosus</u>)	3. Cholla (<u>Opuntia echinocarpa</u>)
4. Thelpodium (<u>Baccharis glutinosa</u>)	4. Pricklypear (<u>Opuntia engelmannii</u>)
5. Goosefoot (<u>Chenopodium fremontii</u> , <u>C. murale</u>)	5. Mohave yucca (<u>Yucca schidigera</u>)
6. Dudley or Goodding willow (<u>Salix</u> <u>gooddingii</u>)	6. Ground cherry (<u>Physalis fendleri</u>)
7. Curlydock (<u>Rumex crispus</u>)	7. Kukik (Mojave name - specific plant type unknown)

Game: Small game was hunted throughout the year; larger game was hunted during the winter. Stewart (1947) reports that hunting parties consisted of from 10 to 12 men. These parties normally had no officially sanctioned hunt leader. The Mojave hunted with bow and arrow or with a throwing stick. The bow and arrow were used for larger game, such as mountain sheep (Ovis canadensis) and the black-tailed deer (Odocoileus hemionus); the curved throwing stick was used to kill the three varieties of rabbit in the area (Lepus californicus eremicus and L. californicus deserticola, L. alleni alleni, Sylvilagus auduboni arizonae). The black-tailed jackrabbit (L. californicus) was considered poisonous. Rabbit drives, in which the animals were chased into nets made of vegetable fiber, were practiced and rabbit traps also were used.

Deer were hunted between the months of July and October and, occasionally, in the spring. Only certain men hunted deer. The dream life was important to the Mojave and only those who dreamed of hunting early in life were given the title of sharpshooter and allowed to hunt deer. Deer meat and hide often were obtained from Hualapai hunters, who accepted agricultural products in return. A deer brought in by a Mojave hunter could not be eaten by the hunter; he received vegetable goods from others in return for the meat.

The Mojave also hunted and ate the ground squirrel, chipmunk, raccoon, badger, gopher, muskrat, chuckwalla, beaver, rat, fox and coyote. Fox and coyotes were taken in baited dead falls. Rats were trapped in snares with pumpkin seeds as bait. Fish nets were thrown over dams to catch beaver. Wildcat, mountain lion, bobcat, skunk and porcupine also were trapped, but were not eaten, as they were valued for their hides.

Quail were trapped in nets, snares and box traps. Quail eggs also were eaten. Ducks and mudhens were hunted and eaten, while eagles, buzzards, crows, pelicans, cranes, blackbirds, roadrunners, hawks and owls were hunted for their feathers and were not eaten (Stewart 1947).

Castetter and Bell (1951) note that hunting was a relatively unimportant activity for the Mojave and that the lack of ritual activity related to hunting reflects its lack of importance in Mojave subsistence. There is other evidence that hunting occupied the Mojave less than it did other Yuman groups on the lower Colorado, but to rely on the lack of ritual activity as an indicator of this is risky. For example, there seems to have been little ritual connected with agricultural practices, yet agricultural products may have constituted more than half of the Mojave's yearly subsistence.

Fish: Fish were plentiful in the Colorado during the flood season and those trapped in sloughs as the water began to recede were easily caught with limited equipment. As in hunting, success in the dream life was necessary for successful fishing. Stewart (1957:199) notes that "the expert fishers were men who had dreamed properly, upon whom the culture hero Mastamho had conferred in dreams the power for success in piscatorial activities. One of my informants said, 'When the man that dreams catches hold of a fish, the fish won't move.'" The power to catch fish, however, could be given to others who had dreams and fishing was pursued actively by anyone who wished to try his luck.

Fish caught and eaten included humpbacked sucker (Xyrauchen texanus, a fish approximately 18 to 24 inches long), bony tail (Gila elegans), mullet (Mugil cephalus) and bull salmon (Ptychocheilus lucius, a three-foot minnow).

Stewart (1957) lists a number of techniques used by the Mojave to catch fish. These include:

1. Ihuly: A seine or drag net, approximately 25 feet long and 8 feet high, was made of tough cowpea fibers and weighted with stones attached to arrowweed sticks placed vertically through it. Poles were attached to each end of the net and two men dragged it through the water.
2. Suak: A net six feet in length and four feet deep, the suak was attached to two poles and dipped into the water by one man. Another man beat the water with sticks, driving the fish toward the net. The net man brought the sticks together, thus trapping fish in the closed net.
3. Acisayul: A small suak used in shallow water, this device required no beater. The net man merely watched for fish swimming near the net.
4. Kwithata: The kwithata was a fish scoop, 5 feet long and 18 inches wide, made of willow. A handle attached to the willow allowed one man to manage the scoop. It was used only in sloughs and lagoons.

5. Acucukpe: This brush "fence" or weir, 10 to 15 feet in length, was constructed of willow twigs and poles set in the mud. One man with a dip net (suak) stationed himself in the weir and scooped out the fish when they became trapped.
6. Acinuya: A semi-circular weir baited with pumpkin seeds, this trap was constructed much like the acucukpe, but the procedure for catching the fish differed. The fisherman, after baiting the weir, would leave for several hours. If the willow sticks set in the mud were moving when he returned, he merely scooped up the fish with a suak.
7. Hook and line: A Mojave occasionally used a barrel cactus spine (heated and bent into shape) for a hook, in conjunction with a willow pole and cowpea fiber line. Bait included worms, grasshoppers and small fish. Stewart (1957:201) doubts that this method was used commonly by the Mojave, as fish could more easily be caught with traps and scoops.
8. Bow and arrow: The bow and arrow rarely were used to fish and then only by old men in sloughs and lagoons.

Fish was prepared and cooked by men, as was meat. Women were responsible for cooking agricultural products and wild seeds. Fish was eaten fresh and normally was prepared by broiling on hot coals or by boiling in a stew to which cornmeal was added.

RELATIONS WITH NEIGHBORING GROUPS

Before there was dry land, before Matavilya, that is when we were all born. The way it was, we were born in one place; all tribes were born at Avilwame - the Mojave (sic) youngest, the other tribes older. This is what I know from what I was told and what I dreamed: we were like children; that is how fighting began.

Mojave Myth (Kroeber 1972)

Warfare: Discussion of warfare is prominent in the Mojave literature. The Mojave warred on neighboring groups with frequency and were regarded by early white settlers as extremely hostile. A system of alliances made the Mojave permanent friends with the Yuma, Havasupai, Hualapai and Yavapai. Among the bitter enemies of the Mojave were the Maricopa, who lived along the Gila River; the Halchidoma, who were expelled by the Mojave from their territory on the Colorado River south of the Needles, and the Cocopah. There are reports of fighting with the Chemehuevi, a Southern Paiute group which for a time occupied Chemehuevi Valley and, later, Cottonwood Island (now submerged under Lake Mohave) north of Mohave Valley; the Southern Paiute, probably the Las Vegas and/or Moapa Paiute; the Diegueno to the southwest in California, and the Pima, the Gila River irrigation farmers to the southeast.

As in all other aspects of Mojave life, dreams played an important role in warfare. Potential warriors dreamed of hawks, the morning star, dust storms or of fighting large animals. Young men who claimed to have

dreamed properly were quizzed about their dreams by elder warriors. If the young men correctly recounted their dreams, they were said to have "dream power" and became good prospects as "braves." Members of other Mojave institutions also received their "powers" from dreams. Shamanistic powers, for example, were conferred on those who had "dreamed properly." Women who danced at festive occasions and who supported men in war parties through performances of certain dances also received their power from dreams. In short, dreaming provided one's credentials for membership in all important Mojave institutions. Fathauer (1954) claims that dreaming is the very foundation of Mojave social life and that proper dreaming provides a selection for or against individuals with specific personality traits. Young men who "acted mean" or were aggressive in their dealings with others became members of the warrior class. Dreaming, then, can be seen as a means of ritually institutionalizing and reinforcing certain kinds of social behavior. In the case of warriors, dreaming reinforced and sanctioned belligerence, aggressiveness and bravery in fighting.

Mojave fighting methods stressed close-in hand-to-hand combat. Bows and arrows were used, but bowmen were not "proper dreamers" and did not belong to the warrior class (Fathauer 1954). The object in battle was to draw the enemy close so that a mallet-headed war club, the halyahwai, or the tokyeta, a straight club of mesquite wood (Kroeber 1925:751), could be used to smash his skull. When an opponent fell, his head sometimes was removed so that scalpers could claim their prize at their leisure after the battle. Scalpers belonged to their own class and, like warriors, received their power from dreams. Stewart (1947) notes that a few women sometimes accompanied men in war parties. They did little fighting, however, except in self-defense. Their primary function was to help increase morale among the young warriors.

War parties of 50 to 60 men commonly were formed and raids were planned well in advance. These expeditions were carried out against traditional enemies, but a few skirmishes engaged Hualapai allies to the east and the usually friendly Chemehuevi, who settled along the Colorado south of Mohave Valley. Oatman (1935:156-157), who for a time was a captive of the Mojave, describes the extensive and well-laid plans for a raid on the Cocopah near the Colorado delta. Large expeditions also were planned. The Mojave mustered their own warriors with those of neighboring allies, such as the Yavapai and the Yuma, to war against the Maricopa, their traditional enemy. Kroeber (1925:753) recounts the last great war expeditions against the Maricopa in 1857 or 1858. His narrative not only illustrates the size of such a war party, but also gives a notion of the extent of Mojave alliances and the general Yuman style of fighting:

. . . The Mohave, in a party whose numbers are not exactly known but estimated by themselves as about 200, were joined at Avi-kwa-hasala by 82 Yuma and a considerable body of Yavapai and a contingent from a more remote tribe whom the Mohave call Yavapaya-hwacha, "traveling" or "nomadic Yavapai" and the description of whose appearance and manners exactly fits the Apache. The Maricopa summoned the Hatpa or Pima, "a large tribe of many villages," as the Mohave found to their cost. The battle took place at Avi-vava, in an open plain. The Apache fought fiercely for a time but fled

when things turned against them, and escaped without a fatality. The Yavapai followed but lost seven. The majority of warriors of these tribes were probably mounted, whereas the river nations fought on foot. A part of the Mohave and all the Yuma were surrounded and exterminated after a most determined hand-to-hand fight. Sixty Mohave fell and 80 to 82 Yuma - Mumara-va'acha and Kwasanya being the only survivors of the latter. The Yuma refused to flee and stood in a dense mass. When the foe charged, they attempted to grasp and drag him into their body where he was hacked to pieces with great knives.

Theories attempting to explain Mojave warfare are found throughout the literature. A few authors suggest an economic motivation for fighting. Kroeber (1925), for instance, draws attention to the taking of women and children after a victorious battle. These captives became a source of domestic labor in Mojave villages or were sold as slaves to other groups. In a general discussion of changes in Yuman warfare, Dobyns and co-authors (1957) espouse the hypothesis that raiding for slaves was important. They also suggest that raiding for horses became a major motive for war after Spanish and American contact. These authors also claim that Stewart (1947) provides evidence that the Mojave raided Maricopa camps for agricultural products, recounting an episode in which the Mojave "killed a few people, and ran away with corn, watermelons. . .," as well as horses (Dobyns et al 1957:49).

Fathauer (1954:110) provides a different view. Warfare for the Mojave, he claims, "was largely non-instrumental: it was an end in itself." Mojave warfare was stimulated by tribal mythology and functioned to reinforce elements of prestige and bravery. Fathauer nods to the economic theories by stating that there may have been a need earlier in Mojave occupation along the Colorado to defend the fertile Mohave Valley from the intrusions of neighboring groups. Outside of this, he rejects economic explanations and relies on psychological and sociological factors.

Kroeber (1925) tacitly supports this view by suggesting that the Mojave fought for pleasure and for sport. Non-economic explanations also are advanced by Forde (1931) for warfare among the Yuma, frequent allies of the Mojave. Forde writes that "fighting was not justified merely as a virile pursuit, nor was economic need adduced as a factor: warfare to the Yuma possessed a strong mystical value as the means whereby the spiritual power of the entire tribe was enhanced and at the same time demonstrated" (in Kroeber and Kroeber 1973:2). Although Dobyns and co-authors (1957) suggest that Stewart (1947) gives evidence for economic motivations for Mojave warfare, Stewart himself (1947:431) relies on the non-economic psychological explanation. He describes the Mojave as constant aggressors, uninterested in plunder, and claims that territorial aggrandizement was not a motivating factor.

Both the economic and the psychological explanations have their appeal. There can be little doubt that the Mojave organized war parties with specific reasons in mind, such as the enhancement of personal prestige among young warriors. At times, though perhaps infrequently, they stole

foodstuffs and took captives for labor and to sell as slaves. Mojave warfare was incontestably a major sociological fact of life, in that it was institutionalized in a warrior class (kwunamis), which derived its authority through the "proper dreaming" of its members. No serious examiner of the historical record can dispute the conclusion that warfare among the Mojave was a complex blend of psychological, sociological and economic factors, much as it is in our own society.

THE CHEMEHUEVI AND THE SOUTHERN PAIUTE

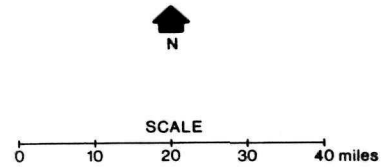
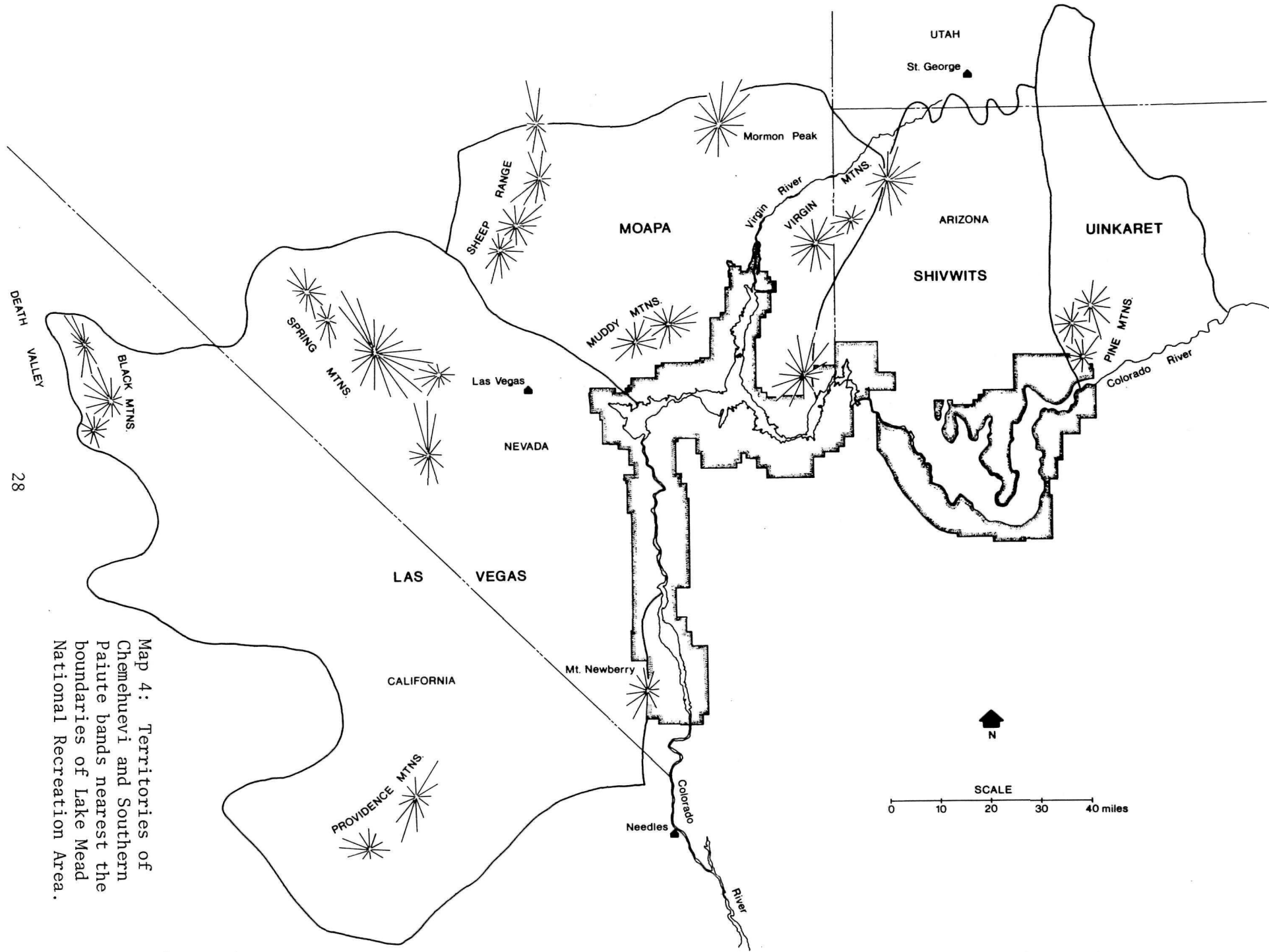
The Chemehuevi and the Southern Paiute are treated together in this section. Although called by different names, they are members of the same linguistic group (Numic), exploited contiguous and similar habitats, shared many cultural items and, most importantly, identified themselves as closely related. Garcès, who encountered the Chemehuevi south of Mohave Valley, notes (Coues 1900:221) that the Chemehuevi nation ". . . extends to another river north of the Colorado, and that there they sow." The reference probably is to the Virgin River and Muddy Creek, drainages along which the Moapa and St. George Southern Paiute occasionally farmed. The close relationship between the Chemehuevi and the Southern Paiute is expressed even in the names they used in reference to themselves. As did many southwestern Indian groups, the Southern Paiute referred to themselves as "person" or "people" (ninwin--Kelly 1964). The Chemehuevi called themselves tantawats, which, according to Coues (1900), means "southern men." This is both a reference to their occupation south of the Southern Paiute and an affirmation of their close relationship to them. Kelly (1934; In Euler 1966:4) writes that "the Southern Paiute and Chemehuevi merge so inextricably in language and culture that any separation of the two would be highly artificial."

TERRITORY AND ENVIRONMENT

The Southern Paiute bands which occupied the areas west and north of the Colorado River primarily were hunting-gathering groups. They were seasonally nomadic, moving between high plateaus and lower elevations as the availability of faunal and floral food resources dictated. The Southern Paiute range was extensive: it bordered Shoshone territory on the northwest, Ute territory on the northeast, Navajo and Pai territory (Hualapai and Havasupai) on the south and southeast and the Panamint and Vanyuma areas to the west; the Colorado River marked the southern and eastern borders of their range.

Although they spoke mutually intelligible dialects, the Southern Paiute can be broken up into distinct bands (the technical meaning of the term as it applies to the Southern Paiute has been in dispute, but "bands" will be used here for the sake of simplicity; cf. Manners 1959; Stewart 1938). Each band had a range or territory of its own and, although boundaries were fuzzy and often overlapped for these nomadic hunting-gathering groups, their yearly round of subsistence activities found them exploiting reasonably well-defined geographic areas, each of which offered a wide range of environmental settings. Map 4, a modification of Kelly's map (1934), illustrates the territorial ranges of the Las Vegas, Moapa, Shivwits and Uinkaret bands, all of whom occupied areas of what is now Lake Mead National Recreation Area.

The area outlined in Kelly's map is subdivided by Fowler (In Euler 1966:15-17) into three major environmental subregions. Each subregion is characterized by different biotic features, which affected Southern Paiute subsistence activities.



Map 4: Territories of Chemehuevi and Southern Paiute bands nearest the boundaries of Lake Mead National Recreation Area.

Basin-range subregion: Fowler describes the basin-range subregion as a series of mountains and valleys running along a north-south faulting axis. Mountain ranges which climb to elevations of 4,000 ft. to over 10,500 ft., support a wide variety of fauna and flora. The dry valley floors form basins, which receive run-off from the higher elevations; they support little vegetation, however, as waters quickly evaporate or are high in salts and other minerals which retard or preclude vegetal growth. Few of these pan-shaped valley systems have outlets and water collects during certain rainy periods to form large, shallow ephemeral lakes. After these waters evaporate or are absorbed into the soil, a thick layer of mineral and salt-laden mud remains.

Hot and cold springs found in certain areas of this subregion were vital to Paiute subsistence, because they provided potable water and increased biota.

Rainfall in the basin-range subregion varies with elevation. The extreme lowlands receive 4 to 8 inches annually; the higher elevations can receive as much as 16 to 20 inches per year. General weather patterns are affected by the numerous north-south ranges in the western portion of the subregion. The Sierra Nevada, San Jacinto, Santa Rosa and San Bernardino mountains effectively block moisture from the Pacific Ocean.

The mean January temperature in this subregion is 16°F in the mountains and 70°F in the lowlands. Average summer temperature is 52°F in the mountains and 116°F in the basins (Fowler: In Euler 1966).

High Plateaus: This subregion is characterized by rich soil, relatively high precipitation and a wide variety of flora and fauna. Rainfall in some areas can reach 32 inches per year. Zero temperatures are not uncommon above 7,000 ft. in the winter and the July average in the valleys on the plateaus is 72°F. The plateaus occur throughout the central section of Southern Paiute territory and range from 5,000 ft. to 11,000 ft. in altitude.

Canyonlands: The canyonlands subregion comprises hundreds of steep-walled gorges; the largest and best known of these are Grand Canyon, Glen Canyon and Marble Canyon. The large canyons are major drainage systems and are surrounded by hundreds of smaller canyons. Most of the drainage flows toward the Colorado River; the Little Colorado River flows north into the Colorado, while Kanab Creek and the Paria, Escalante and Virgin rivers flow south into the Colorado. Rainfall in the canyons ranges between 6 and 10 inches a year and temperatures range from 20° to 48°F in the winter to 68° to 96°F in the summer (see Fowler 1966 for more details).

The vast differences in climate encountered as one moves from one subregion to the next engenders broad diversity in the floral and faunal resources of the area. Southern Paiute nomadic hunting-gathering bands took advantage of this variety and seasonally exploited resources as they moved through all three subregions. Fowler characterizes the flora by breaking up the entire region into standard life zones: (1) Desert Shrub - below 3,000 ft.; (2) Upper Sonoran - 3,000 to 7,000 ft.; (3) Transitional Zone - 7,000 to 9,000 ft., and (4) Canadian Zone - 7,500 to highest elevation. Table 1 provides short lists of important flora in each of these life zones; Table 2 lists the faunal characteristics of each of the subregions defined earlier.

Table 1: Important flora of Southern Paiute territory
(after Fowler 1966).

I Lower Sonoran or Desert Shrub - below 3,000 ft.

creosote bush	<u>Larrea tridentata</u>
saltbush	<u>Atriplex polycarpa</u>
burr sage	<u>Franseria dumosa</u>
joshua tree	<u>Yucca brevifolia</u>
mesquite	<u>Prosopis glandulosa</u>
screwbean	<u>P. pubescens</u>

II Upper Sonoran

A. Sagebrush-greasewood formation - 3,000 to 5,000 ft.

sagebrush	<u>Artemisia tridentata</u>
sagebrush	<u>A. nova</u>
little rabbitbush	<u>Chrysothamnus puberulus</u>
shadscale	<u>Atriplex confertifolia</u>
winter-fat	<u>Eurotia lanata</u>
hop-sage	<u>Grayia spinosa</u>
soleogyne	<u>Coleogyne ramossissima</u>
budsagebrush	<u>Artemisia spinescens</u>
mat sagebrush	<u>Atriplex corrugata</u>
gray molly	<u>Sarcobatus vermiculatus</u>
seepweed	<u>Dondia torreyana</u>
pickleweed	<u>Allenrolfea occidentalis</u>
samphire	<u>Salicornia utahensis</u>
samphire	<u>S. rubra</u>
saltgrass	<u>Distichlis spicata</u>
alkali sacaton	<u>Sporobulus airoides</u>
rabbitbrush	<u>Chrysothamnus graveolens</u>
Indian rice grass	<u>Oryzopsis hymenoides</u>

B. Pinyon-Juniper formation - 5,000 to 7,000 ft.

single leaf pinyon	<u>Pinus monophylla</u>
double leaf pinyon	<u>P. edulis</u>
Indian rice grass	<u>Oryzopsis hymenoides</u>
goosefoot	<u>Chenopodium album</u>
pigweed	<u>Amaranth sp.</u>
saltbrush	<u>Atriplex canescens</u>
princess prane	<u>Stanleya elata</u>
princess prane	<u>S. pinnata</u>
yucca	<u>Yucca augustifolia</u>
yucca	<u>Y. harrimaniae</u>
yucca	<u>Y. baccata</u>
yucca	<u>Y. mohavensis</u>

prickly pear
wild onion
mariposa lily
squawberry
agave
cane
service berry
squaw apple
watercress
juniper
juniper

Opuntia basilaris
Allium palmeri
Calochortus gunnisonii
Rhus aromatica
Agave utahensis
Phragmites vulgaris
Amelanchier scopulorum
Peraphyllum ramosissimum
Sisymbrium nasturtium
Juniperus scopulorum
J. utahensis

III Transitional Zone - 7,000 ft. to 9,000 ft.

open yellow pine
wheatgrass
bluegrass
needlegrass
June grass
chokeberry
strawberry
raspberry
currant
currant
blueberry
elder
elder

Pinus ponderosa
Agropyron
Poa
Stipa
Koeleria cristata
Prunus melanocarpa
Fragaria ovalis
Rubus strigosus
Ribes montigenum
R. wolfii
Vaccinium oreophilum
Sambucus racemosa
S. coerulea

IV Canadian Zone - 7,500 ft. to highest elevation

service berry
rose
wild sweet pea
wheatgrass
bluegrass
needlegrass
brome grass
aspen
subalpine fir
Englemann spruce

Amelanchier alnifolia
Rosa fendleri
Lathyrus utahensis
Agropyron
Poa
Stipa
Bromus
Populus tremuloides
Abies lasiocarpa
Picea engelmanni

Many of the berries that occur in the transitional zone.

Table 2: The fauna of Southern Paiute territory
(after Fowler 1966).

<u>Species</u>	<u>Common Name</u>	<u>Basin Range</u>	<u>High Plateaus</u>	<u>Canyon- lands</u>
<u>Scapanus latimanus</u>	broad-footed mole	x		
<u>Sorex spp.</u>	shrew	x	x	
<u>Notiosorex crawfordi</u>	Crawford shrew	x	x	
<u>Myotis spp.</u>	myotis	x	x	x
<u>Lasionycteris noctivagans</u>	silvery haired bat	x	x	x
<u>Pipistrellus hesperus</u>	western pipistrelle	x	x	x
<u>Eptesicus fuscus</u>	big brown bat	x	x	x
<u>Lasiurus spp.</u>	bat	x	x	x
<u>Corynorhinus rafinesquei</u>	long eared bat	x		x
<u>Antrozous pallidus</u>	pallid bat	x		x
<u>Tadarida mexicana</u>	Mexican free tailed bat	x	x	x
<u>Ursus americanus</u>	black bear		x	
<u>Ursus horribilis</u>	grizzly bear		x	
<u>Procyon lotor</u>	raccoon		x	
<u>Bassariscus astutus</u>	ring tailed cat	x	x	x
<u>Martes caurina</u>	western martin		x	
<u>Mustela spp.</u>	weasel	x	x	x
<u>Lutra canadensis</u>	river otter	x	x	
<u>Spilogale gracilis</u>	spotted skunk	x	x	x
<u>Mephitis mephitis</u>	striped skunk	x	x	x
<u>Taxidea taxus</u>	badger	x	x	x
<u>Vulpes fulva</u>	red fox	x	x	x
<u>Vulpes macrotis</u>	kit fox	x		
<u>Urocyon cinereoargenteus</u>	gray fox	x		x
<u>Canis latrans</u>	coyote	x	x	x
<u>Canis lupus</u>	wolf	x	x	
<u>Felis concolor</u>	mountain lion	x	x	x
<u>Lynx rufus</u>	bob cat	x	x	x
<u>Lynx canadensis</u>	Canada lynx		x	
<u>Marmota flaviventris</u>	yellow bellied marmot	x	x	
<u>Citellus spp.</u>	ground squirrel	x	x	x
<u>Cynomys spp.</u>	prairie dog	x	x	x
<u>Glaucomys sabrinus</u>	northern flying squirrel		x	
<u>Eutamias spp.</u>	chipmunk	x	x	x
<u>Tamiasciurus hudsonicus</u>	red squirrel		x	
<u>Perognathus spp.</u>	pocket mouse	x		x
<u>Microdipodops spp.</u>	kangaroo mouse	x		x
<u>Dipodomys spp.</u>	kangaroo rat	x		x
<u>Thomomys spp.</u>	pocket gopher	x	x	x
<u>Castor canadensis</u>	beaver	x	x	x
<u>Onychomys spp.</u>	grasshopper mouse	x		x
<u>Peromyscus spp.</u>	mouse	x	x	x

<u>Species</u>	<u>Common Name</u>	<u>Basin Range</u>	<u>High Plateaus</u>	<u>Canyon- lands</u>
<u>Reithrodontomys megalotis</u>	western harvest mouse	x	x	x
<u>Dipodomys ordi</u>	Ord kangaroo rat			x
<u>Microtus spp.</u>	meadow mouse, vole		x	x
<u>Neotoma spp.</u>	wood rat, etc.	x	x	x
<u>Lagurus curtatus</u>	sagebrush vole	x	x	x
<u>Ondatra zibethica</u>	muskrat	x		
<u>Fiber xibethicus</u>	muskrat		x	x
<u>Rattus rattus</u>	black rat	x		
<u>Zapus princeps</u>	big jumping mouse		x	
<u>Zapus hudsonius</u>	prairie jumping mouse		x	
<u>Erethizon epixanthum</u>	porcupine	x	x	x
<u>Lepus townsendi</u>	white tailed jack rabbit		x	
<u>Lepus americanus</u>	snowshoe rabbit		x	
<u>Lepus californicus</u>	blacktailed jack rabbit	x	x	x
<u>Lepus bairdi</u>	Rocky Mountain snow- shoe		x	
<u>Sylvilagus spp.</u>	cottontail	x	x	x
<u>Cervus canadensis</u>	Wapiti, elk		x	
<u>Odocoileus hemionus</u>	blacktailed mule deer	x	x	x
<u>Odocoileus americanus</u>	whitetailed deer		x	
<u>Antilocarpa americana</u>	pronghorn antelope	x	x	x
<u>Ovis canadensis</u>	mountain sheep	x	x	x
<u>Alces americanus</u>	moose		x	

EARLY CONTACTS

1776 - Silvestre Velez de Escalante: The earliest record of contact with native Americans in the Paiute territory was left by Escalante, a Franciscan priest. His explorations across this territory followed a circular path, which traversed present-day northeastern Arizona; southern, central and eastern Utah, and most of western Colorado (Bolton 1950). Escalante's trip did not take him into the immediate area of what is now Lake Mead, but his description of the Paiute in other areas is informative.

Along the Virgin River in southwestern Utah, Escalante found evidence that the Paiute near St. George, Utah, practiced some farming. The explorer found:

. . . a well made mat with a large supply of ears and husks of green corn which had been placed on it. Near it, in the small plain and on the bank of the river, there were three small corn patches with their very well made irrigation ditches. . . From here downstream and on the mesas on either side for a long distance, according to what we learned, live Indians who sustain themselves by planting maize and calabashes, and who in their language are called the Parussi. (Euler 1972:12)

Near Mount Trumbull, Escalante came into contact with hunting and gathering Paiute, the Uinkaret. A brief description is given of the trade items obtained from these people:

In exchange for a piece of woolen cloth, three of them led the Spaniards to water and then promised them food, a small supply of wild (mountain) sheep, dried tuna (prickly pear cactus fruit) made into cakes, and grass seeds. The following day, twenty of these Indians came into the explorers' camp 'with some cakes or loaves of tuna and several bags of seeds of various herbs' to barter. Later, many more Indians came in with 'many bags of the seeds mentioned and some fresh tuna. . . and dried ones made into cakes. . . their foods were seeds, tunas, pinon nuts. . . and what hares, rabbits and wild sheep they hunted.' (Euler 1972:15)

1777 - Fray Francisco Garcès: On his trip across Arizona south of the Colorado, Garcès came into contact with Chemehuevi. Garcès makes reference to Chemehuevi territory, some clothing items, relationships to other groups and farming. At one point, his party spotted six Indians on a hill and called to them to come down:

The garb of these Indians is Apache mocassins (zapato), shirt of antelope skin (vesta de gamuza), white headdress like a cap (gorra blanca a modo de solideo) with a bunch of those very curious feathers which certain birds of this country have in their crest. . . The Dhemebets say that their nation extends to another river, north of the Colorado, and that there they sow. (Coues 1900:vol. 1, 219-221)

"Another river, north of the Colorado," probably referred to the Virgin or one of its tributaries. These Chemehuevi clearly identify themselves with the Southern Paiute, as they belong to the same "nation."

1827 - Jedediah Smith: Smith made contact with a few Southern Paiute along the Virgin and Colorado rivers in 1827. Smith made two trips into the area and claims that the same Paiute farmers were cultivating crops in the same spot a year after his first trip. Smith noted little other than that they farmed a little corn and pumpkins and hunted hares; he can hardly be faulted for not noting more of Paiute life, however, as his prime interest was hunting beavers for their skins (Morgan 1953).

1830 - G. Yount and W. Wolfskill: An expedition, which covered the entire route of the Old Spanish Trail, was led by George C. Yount and William Wolfskill in 1830. Yount was an old hand in the area and had been among the Paiute and Mojave with fur trapper James O. Pattie a few years before. In the Sevier Valley Yount's party came into contact with a solitary Paiute, who led them to his people. Euler (1966:42) quotes the following passage from Yount's notes:

. . . All they had in the world was some dried rabbit meat. . . they had not a hatchet, nor any instrument to cut or perforate the softest wood. . . they would get fire by rubbing together pieces of hard wood. . . when they would fell a tree for fuel, or for any purpose they built a fire about its roots--and they cut it up with fire--to erect a dwellinghouse for their own abode and shield them from the severe cold, they were accustomed to break off boughs and stick them in the snow and sloping the tops inward they would pile bushes on top. . .

As Euler notes (1966:43), Yount's notes tend toward the ethnocentrism common among the fur trappers of his day, but they also provide some useful information on the method of constructing the winter "wikiup" (Fig. 4). Contact with Paiute groups during the winter months was difficult and there is little information from the early sources on their winter habitation.

1853 - Lieutenant A. W. Whipple: During his expedition to find a suitable route for a railroad across Arizona, Whipple came into contact with Mojave and Chemehuevi along the Colorado River. His report reaffirms the Chemehuevi relationship to the Southern Paiute and provides an interesting description of their apparel, weapons and physical features. The Chemehuevi, unlike many other Southern Paiute groups, were more attached to agricultural subsistence practices and, like the Mojave, were more closely tied to the river and its arable flood plains. Whipple claims that the Chemehuevi's main interest was farming, but the season of his visit may account for this.

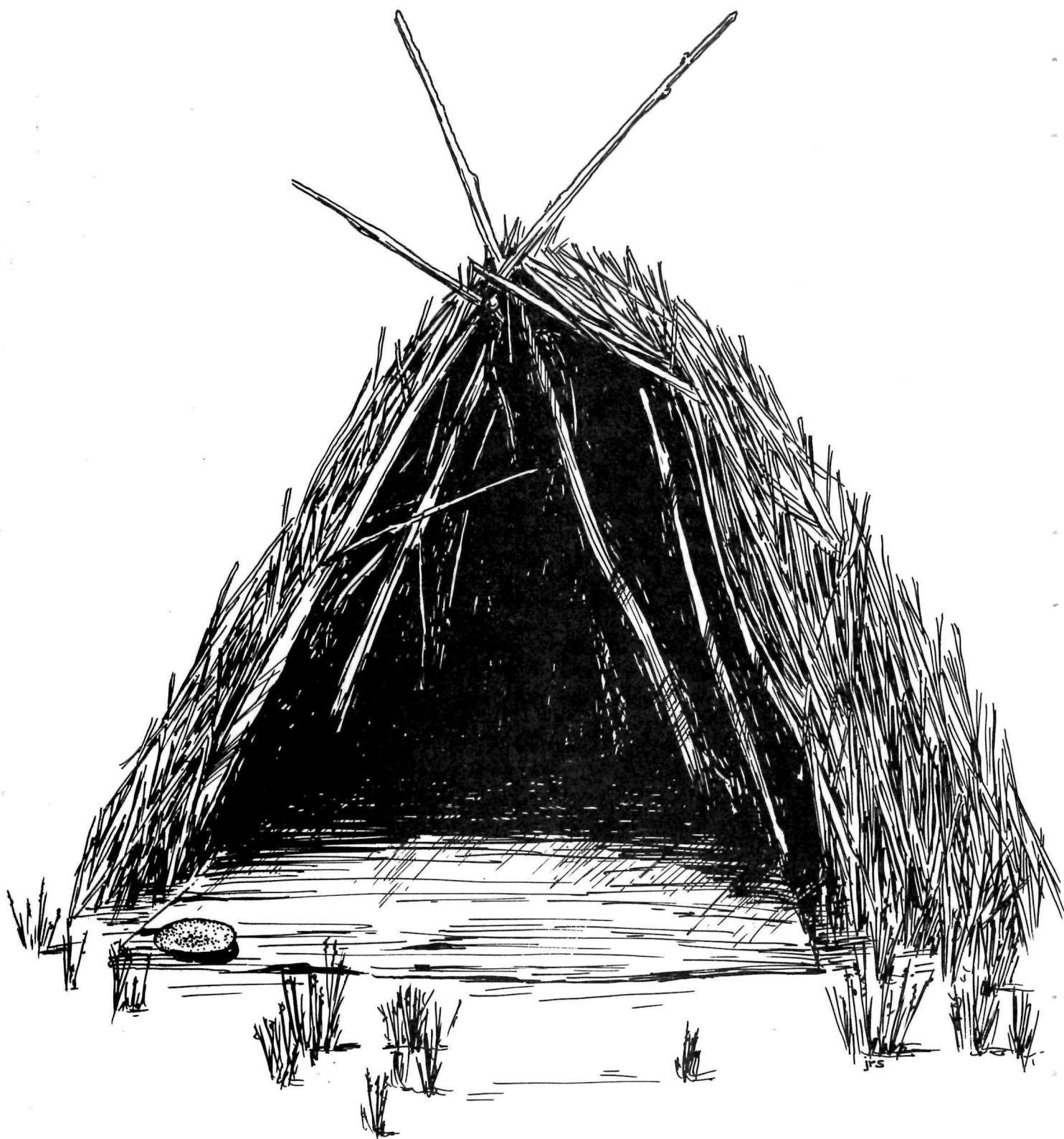


Figure 4: Southern Paiute temporary shelter (drawn from early photographs in Fowler and Fowler 1971).

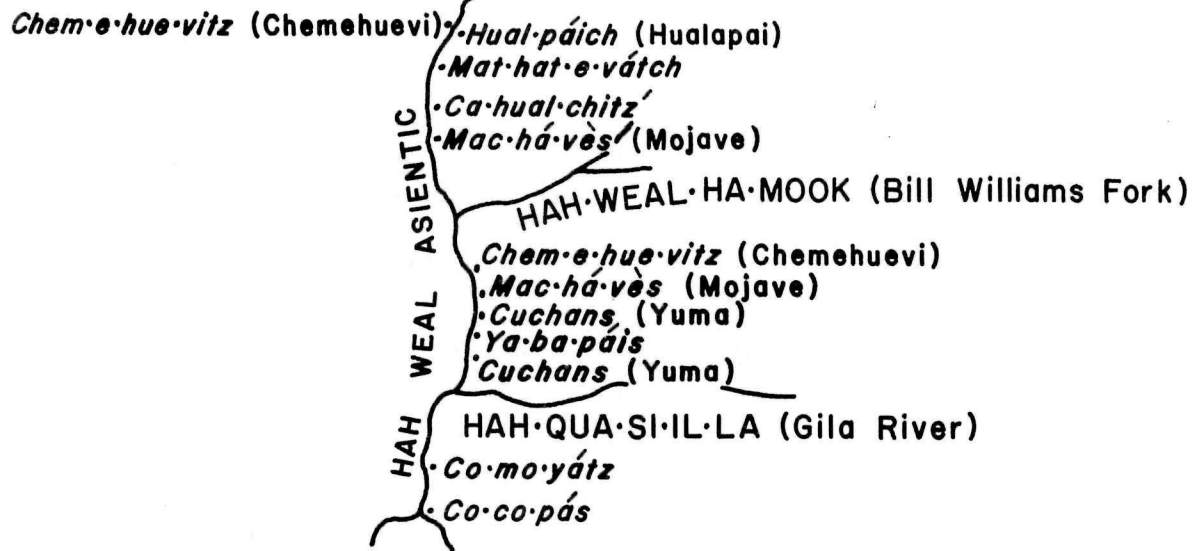
Agriculture is their main pursuit; hunting an occasional pastime. Their bow is characteristic of the tribe to which they belong, being of bois-d'arc, elegantly curved, bound with sinews, and frequently ornamented at one end by the skin or rattle of a snake. They are less majestic in figure than are the Mojaves and Yumas; their eyes are small; their hair is clipped in front, and usually gathered behind by a narrow band, from which it hangs loosely down the back. Their native dress consists simply of a bark petticoat for women, and a breech-cloth for men, each girded upon the loins by a cord. (Whipple et al 1855:32-33).

Whipple also provides two maps which locate the Chemehuevi along the lower Colorado River. The first map (Map 5) was drawn in the dust by a "Yuma (Cuchan) Indian" and places the Chemehuevi both north and south of the Mojave. The second map (Map 6) was provided by a Chemehuevi and shows that the Chemehuevi occupied only the valley south of the Mojave (possibly Chemehuevi Valley). The absence of Chemehuevi north of Mohave Valley on this map may be due to the fact that it was drawn by a Chemehuevi; since they thought of themselves as closely related to other Paiute groups, the Chemehuevi may have seen little need to indicate a Chemehuevi group, distinct from the Paiute, north of the Mojave.

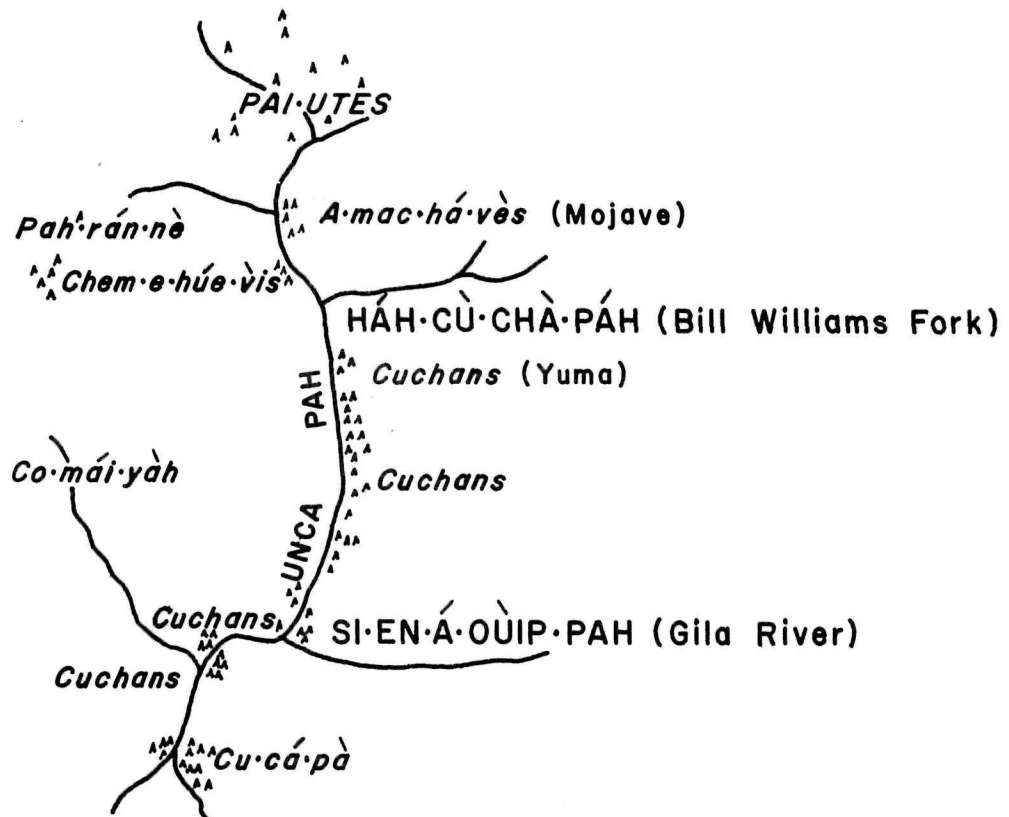
Other early contacts with the Paiute also were reported: Ives, on his steamboat trip up the Colorado in 1857, reported Chemehuevi and other Paiute groups north of Mohave Valley, and Mormons, who settled in Paiute territory near St. George and St. Thomas on the Virgin and Muddy rivers, provide some information on the Ute and Paiute bands in the area. Without doubt, however, the most important contacts with the Paiute were made by Major John Wesley Powell during his two expeditions down the Colorado through the Grand Canyon. Powell exhibited a great deal of ethnographic interest and provides a wealth of information on the aboriginal life of the Paiute. His personal notes of the trips have been compiled by Fowler and Fowler (1971) and will be relied upon, along with additional sources, for the following description of Paiute subsistence practices and social organization.

SUBSISTENCE

Farming: The Paiute generally relied on hunting and gathering for their subsistence. From fragments of explorers' journals, however, it is evident that a few groups also farmed, to a limited extent. Farming, of course, was limited to areas where the necessary moisture was available. As did the Mojave, the Paiute had to rely on river and stream banks for land suitable for farming; the early accounts of Paiute farming came from areas along the Muddy, Virgin and Santa Clara rivers. Forbes (1963) claims that while the Paiute generally were not horticulturalists, they had the repeated opportunity to learn agricultural techniques from their Yuman neighbors to the south and from the Navajo and the Hopi. Chemehuevi agricultural practices doubtlessly were linked to Mojave farming methods.



Map 5: A Cuchan Indian's map of Lower Colorado River, showing areas occupied by various Indian groups (after Whipple 1855).



Map 6: A similar map drawn by a Chemehuevi Indian (after Whipple 1855).

Early Spanish explorers commented on Paiute agriculture. Escalante, as already mentioned, in 1877 found evidence of horticulture on lower Ash Creek, including corn patches and "their very well made irrigation ditches" (Bolton 1950). Garcès noted that Chemehuevi and Pa-Ulches (sic) were raising corn and pumpkins in 1776. Antonio Armijo's 1828 expedition across northern Arizona and southern Nevada recorded cornfields, or milpas, on a branch of the Virgin River (Forbes 1963). A map published by French cartographer A. H. Brue seems to have been influenced by Jedediah Smith's maps of the area, but none of Smith's maps have survived to this day. The French map notes the Paiute as "cultivateurs" (Euler 1966:39).

A few accounts of Paiute farming come from Mormons who settled in the area. The Mormons were sent into Paiute territory by Brigham Young to teach, baptize and "civilize" the Indians. One Mormon commented on the Paiutes at Ash Creek in 1857 (Euler 1972:56):

We then got some Indian guides, who brought us to . . . Ash Creek, where we found a number of Indians raising grain. Their corn was waist high; squashes, beans, potatoes, and . . . looked well. They had in cultivation some four or five acres; their wheat had got ripe and was cut. I looked around to see their tools, but could not see the first tool, only their hands, to dig their ditches, make dams, or anything else.

From this account it is obvious that others had introduced wheat and potatoes before these settlers arrived. The Paiutes apparently were very willing to add new cultigens to their aboriginal crops.

On an ill-fated trip through Paiute country in 1849, William Manly noted native farmers from Southern Utah to Death Valley. He reported seeing crops along the Santa Clara River, Meadow Valley Wash and near Death Valley (Forbes 1963). Manly met a Paiute near Death Valley and was given corn to eat. Although there were no free-running streams or rivers in this area, Manly notes:

By the aid of a warm spring near by they had raised some corn here, and the dry stalks were standing around. . . the warm spring was quite large and ran a hundred yards or more before the water sank. . . the dry cornstalks of last year's crop. . . suited our animals. (In Forbes 1963:4)

Many other 19th century contacts with the Paiutes give evidence that certain Paiute groups farmed for a portion of their subsistence, but farming probably played a less important role in aboriginal Paiute life before settlers began introducing new crops and farming technology. Many of the early explorers noted farming practices because they usually traveled along rivers and washes, where one is more likely to find arable land and water, and because they probably were surprised to find farming among a people who generally hunted and gathered for their living. Agriculture, in short, may have been the exception to a more general rule of hunting and gathering in the Paiute area, at least in historic times.

Details of Southern Paiute agricultural practices are scarce. Steward (1938) gives a brief description of Las Vegas agriculture. Kelly (1964) provides a more complete account of Kaibab Paiute horticulture. In Pahrump Valley and Ash Meadows, the Paiute cultivated corn, squash, beans and sunflowers. There was so little arable land in these areas that not every family owned a plot on which to grow crops. Those families who did not farm traded wild plant and animal foods for cultivated seeds and grains. Cultivated foods were far more scarce than were wild grass seeds and nuts. Farming, therefore, could not provide a major portion of Paiute subsistence. Crops successfully grown were stored for short periods, but the farming families usually moved on to hunting grounds to search for wild foods during the winter (Steward 1938).

The Kaibab planted around the end of May or the beginning of June (Kelly 1964). Men prepared the fields by burning away the brush and planted corn in rows on small hills after the ground was softened with initial watering. Kelly notes (1964:40) that Sapir's Kaibab informants claimed that corn was planted not in rows, but in small pits (3 ft. in diameter and 6 in. deep) to help collect rain water and to facilitate irrigation by hand-carried water from local springs. Planting in rows may have been the result of Mormon influence during the mid and late 1800s.

Seeds were planted (with shovel-ended digging sticks) about 6 in. deep and 2 ft. apart. Men and women shared the field maintenance work, hand-pulling weeds, waving brush to frighten birds and building fires around the fields or carrying smoking brands to scare off rodents. Corn was gathered by the men. Neighbors were assigned specific gathering areas and kept what they picked (Kelly 1964:40-41).

Squash and sunflowers were planted between rows of corn. Sunflowers and squash were roasted in ashes, baked near the fire or dried and later boiled. Sunflower seeds were pounded with a stick; the seeds then were winnowed, dried and ground into a mush.

Hunting and Gathering: It is difficult to discuss specific hunting and gathering techniques for those Southern Paiute groups which once lived in the Lake Mead National Recreation Area, as so little direct ethnographic evidence exists. There is, however, data for surrounding groups, such as the Kaibab Paiute (cf. Kelly's work 1964), the Shoshone (Steward 1938) and the Northern Paiute (e.g., Wheat 1967 and Stewart 1939, 1941). Powell's records (Fowler and Fowler 1971) provide some direct information, as does Palmer's ethnobotanical collection (Bye 1972). Hiller's photographs (cf. Steward 1939) of the area during the last century provide interesting and informative visual records of a few aspects of Paiute hunting and gathering. Unpublished Mormon records of early contact doubtlessly contain information, as do the unpublished early Bureau of Indian Affairs records. The limited description of Paiute hunting and gathering which appears here, however, is a summary of the easily obtainable published materials on the subject.

Historical evidence sheds some light on Southern Paiute hunting and gathering. Yount, who crossed Southern Paiute territory in his travels over the Old Spanish Trail, made note of elements in the Paiute diet on a visit near the south end of Sevier Valley (in Euler 1972:27-28):

. . . Their food consists of occasionally a rabbit, with roots and mice, grasshoppers and insects, such as flies, spiders and worms of every kind. Where nuts exist they gather them for food. . .

Euler (1972:33-34) also provides excerpts from two additional travelers through the region. In the summer of 1839, Thomas J. Farnham noted that the Paiute:

. . . eat roots, lizards and snails. . . they provide nothing for future wants. And when the lizards and snails and wild roots are buried in the snow of winter, they are said to retire to the vicinity of timber, big holes in the form of ovens in the steep sides of the sand hills and having heated themselves to a certain degree, deposit themselves in them, and sleep fast until the weather permits them to go abroad again and hunt for food.

In a later volume Farnham quotes another traveler, Dr. Lyman, who in 1841 journeyed over the Old Spanish Trail:

They collect the seeds of grasses, growing on the margins of the springs and salt ponds, roast and pulverize them between two stones, and then boil them into a thick mush. . . Sometimes they succeed in ensnaring a hare, the flesh of which they eat, and the skin of which they cut into cords with the fur adhering; and braid them together so as to form a sort of cloak with a hole through which they thrust their heads. The bark of pine trees growing on some of the trap mountains, is also a general article of food; so are roots. Ants, grasshoppers, and lizards, are classed among their choicest dainties! (In Euler 1972:36)

It is clear from these accounts that the Southern Paiute, like most hunting-gathering groups, utilized a wide variety of food resources. Grass seed, rabbit, sheep, bark, roots, local fowl, lizards, insects and more were collected when available. The Southern Paiute also used insect by-products. Jones (1945, 1948) documents the use of "honey dew" by the Moapa Paiute on the Virgin River. The Mealy Plum aphid (Hyalopterus arundinis) nests in "tule" reed or cane (Phragmites communis) and deposits a sweet residue, which the Paiute ate. The reeds were cut, dried in the sun and beaten with a stick until the "honey dew" fell out of the cane onto hides laid on the ground. It was then rolled into balls and wrapped in leaves for later use (see also Heizer 1945).

Mesquite: Stuart (1945) refers to mesquite bean meal as the Paiute "staff of life." The mesquite bean was ground into meal in August, when it turned brown. The meal was packed into conical baskets and dried in the sun. The resulting mesquite cakes were stored in winter houses near fires or were stored in pot-shaped pits in the rear walls of rock shelters. These pits were lined with grass to help preserve the meal. The solidified bean meal was the basis of all stews and was the major

stored food source throughout the winter. Powell (Fowler and Fowler 1971) also notes the use of mesquite (Prosopis juliflora and P. pubescens) and generally agrees with Stuart's account.

Piñon: Pine-nuts (piñon), when in season, also were an important part of the Paiute diet. During certain seasons and at certain altitudes the piñon was quite abundant. The nuts were picked before they fell from the tree. Powell (in Fowler and Fowler 1971:39) records that pine-nuts were thrown into a fire and left to char; they then were removed from the fire and the roasted nuts were cached in great numbers for the winter. The roasted nuts sometimes were boiled by placing hot rocks in basket jars and ground nuts sometimes were roasted by placing them in a cooled fire pit and leaving them covered with dirt overnight. Stuart (1945:155) describes the piñon gathering tool as a long stick with a curved end, looking somewhat like a "shepherd's crook." Kelly (1964:43) reports that the Kaibab gathered pine-nuts and that there was an implicit ownership of trees by specific family groups. She writes that an old method of gathering nuts was to climb the tree to break off branches. The "hooked" pole described above, according to Kelly, was a more recent development.

Mescal: Women apparently were the major gatherers among the Southern Paiute. The men primarily were hunters. Kelly's account (1964) of Kaibab mescal gathering illustrates this division of labor. Mescal (agave) was gathered in winter and spring, when the stored food supply was running low. Family groups apparently moved to Kanab Canyon and to an area just below the rim of the Grand Canyon. The women collected and cooked the plant, while the men "hunted rabbits and sat around" (Kelly 1964:44).

Mescal was prepared much as was the piñon nut. Stuart (1945:80-81) reports that a cooking pit was pre-heated and that the mescal was placed in the pit after the coals cooled. The mescal, resting on these coals, was covered with dirt "all day and all night." They then were crushed into flour and mixed with mesquite bean meal. Kelly's Kaibab ethnography (1964) records that mescal leaves were cut with a special bone knife (see illustration in Kelly 1964:44) and that the leaves were sucked to extract the juice. The leaves then were discarded and the agave head was brought back to camp for roasting.

Seeds: Seeds were one of the Paiute's chief staples. The women gathered grass seed while the men hunted. Kelly (1964:41) describes the Kaibab method of preparing seeds: the seeds were gathered in close-twined conical baskets, then hulled, if necessary, on a metate and winnowed in a basket tray or a circular coiled basket. The seeds were parched, ground and mixed with water to make a mush. Kelly provides a list of seeds gathered by the Kaibab in nearby valleys and on plateaus.

Bye (1972) has published Palmer's and Powell's collections of plants used by the Southern Paiute. Although these collections refer to more than one group, they are of special interest because they provide detailed information on Southern Paiute ethnobotany in general.

Table 3 summarizes plants collected and the uses to which they were put. Of course, not every Southern Paiute band or group necessarily used all of the plants listed. Kelly worked with the Kaibab, Steward's material

Table 3: Plants collected by the Southern Paiute
and their uses.

<u>Name</u>	<u>Genus & Species</u>	<u>Plant Part</u>	<u>Use</u>	<u>*Reference</u>
Joint-fir	<u>Ephedra torreyana</u>		tea - remedy for venereal disease	B
Pinyon pine	<u>Pinus edulis</u> <u>P. monophylla</u>	seeds resin bark wood	food chewing, cementing, waterproofing food fuel	B, K, S B
Agave (mescal)	<u>Agave utahensis</u>	"heart" leaves	food food, drink	B, K
Yucca	<u>Yucca baccata</u> <u>Y. baileyi</u>	fruit stems leaves	food soap fiber food	B, K K
Joshua-tree	<u>Yucca brevifolia</u>	seeds	food	B
Bulrush	<u>Scirpus</u>	seeds	food	B
Cock spur	<u>Echinochloa miricata</u> <u>E. microstachya</u>	seeds	food	B
Love grass	<u>Eragrostis</u> sp.	seeds	food	B
Muhly	<u>Muhlenbergia asperifolia</u>	seeds	food	B
Panicum	<u>Panicum</u> sp.	seeds	food	B
Reed	<u>Phragmites communis</u>		food (source of "honey dew")	B
dropseed	<u>Sporobolus</u> sp.	seeds	food	B, K

*B = (Bye 1972); K = (Kelly 1964); S = (Steward 1938)

<u>Name</u>	<u>Genus & Species</u>	<u>Plant Part</u>		<u>Use</u>	<u>Reference</u>
cat-tail	<u>Typha domingensis</u>	flowers	food		B
Amaranth	<u>Amaranthus albus</u>	seeds	food		B
	<u>A. hypochondriacus</u>	seeds	food		B
	<u>A. leucocarpus</u>	seeds	food		B
	<u>A. powellii</u>	seeds	food		B
	<u>A. retroflexus</u>	seeds	food		B, K
	<u>A. blitoides</u>	seeds	food		K
Squawbush	<u>Rhus trilobata</u>	fruit	food		
		twigs	containers		B
	<u>R. utahensis</u>	fruit	food		K
Snowberry	<u>Symphoricarpos</u> sp.	leaves	smoking		B
Powell's saltbush	<u>Atriplex powellii</u>	seeds	food		B
goosefoot	<u>Chenopodium</u>	seeds	food		B, K
Yarrow	<u>Achillia millefolium</u>		tea - medicine for disordered stomachs		B
Sage-brush	<u>Artemisia dracunculoides</u>		tea - general remedy for colds, headaches, worms; assist in childbirth		B, K
	<u>A. ludoviciana</u>	seeds			
		leaves	to stop nosebleeds		
	<u>A. filifolia</u>	leaves	remedy for swellings & bruises		B
	<u>A. tridentata</u>	leaves	dye; remedy for headaches, colds and worms		B, K
Sunflower	<u>Helianthus annus</u>				B, K
	<u>H. annus lenticularis</u>				B, K
	<u>H. petiolaris</u>	seeds	food		B
	<u>Perezia wrightii</u>	hairs at stem base	remedy for hemorrhages and wounds		B
		roots	cathartic		B

<u>Name</u>	<u>Genus & Species</u>	<u>Plant Part</u>	<u>Use</u>	<u>Reference</u>
	<u>Viguiera multiflora</u>	seed	food	B
Dogwood	<u>Cornus stolonifera</u>	bark	smoking	B
Tansy-mustard	<u>Descurainia pinnata</u>	seeds	food	B, K
	<u>D. halictorum</u>	seeds	anti-ascorbatic agent	B
Freemont's pepper-grass	<u>Lepidium fremontii</u>	seeds	same as Descurainia	B
peppergrass	<u>L. lasiocarpum</u>	seeds	same as Descurainia	B
wild gourd	<u>Cucurbita foetidissima</u>	pulp seeds roots	soap food remedy for piles and sores	B
squash	<u>Cucurbita sp.</u>	fruit	food	B
Manzanita	<u>Arctostaphylos patula</u>	fruit leaves	food, drink tobacco, medicine	B
	<u>A. pungens</u>	fruit leaves	food, drink remedy for fever	B
Yerba Santa	<u>Eriodictyon angustifolium</u>	leaves	smoked as remedy for colds, rheumatism-partial paralysis and lung illnesses	B
Desert root	<u>Glycyrrhiza lepidota</u>	roots	general remedy	B
Mesquite	<u>Prosopis glandulosa</u>	seeds fruit wood	food food fuel	B, S B
Screwbean	<u>Prosopis pubescens</u>	fruit	food	B

<u>Name</u>	<u>Genus & Species</u>	<u>Plant Part</u>	<u>Use</u>	<u>Reference</u>
Scurf-pea	<u>Psoralea castorea</u>	roots	food	B
stick-leaf	<u>Mentzelia albicaulis</u> <u>M. multiflora</u>	seeds seeds	food food	B, K, S K
sand food	<u>Orobanche fasciculata</u> <u>O. corymbosa</u> <u>O. lucoviciiana</u> <u>O. multiflora</u>	 whole plant	 food, drink	 B
buckwheat	<u>Fagopyrum sagittatum</u>	seeds	food	B
wild rhubarb	<u>Rumex hymenosepalus</u>	roots leaves	tanning, dye, fuel food	B K
Purslane	<u>Portulaca retusa</u> <u>P. oleracea</u>	seeds young plant seeds young plant	food greens food greens	 B B
Cliff-rose	<u>Cowania mexicana</u>	bark	fiber	B
Bastard toad-flax	<u>Comandra umbellata</u>	fruit	food	B
Yerba mansa	<u>Anemopsis</u>	roots powdered roots	medicinal tea venereal sores, cuts	 B
Jimson-weed	<u>Datura wrightii</u>	roots, seeds seeds	medicinal tea drug	B B
Squaw-berry	<u>Lycium torreyi</u> <u>Lycium sp.</u>	fruit fruit	food food	B, K B
Tobacco	<u>Nicotiana attenuata</u>	leaves	smoking	B, K

<u>Name</u>	<u>Genus & Species</u>	<u>Plant Part</u>	<u>Use</u>	<u>Reference</u>
	<u>Ligusticum porteri</u>	roots	medicine for sprains, bruises, stomach pain; nose plug to prevent contagious disease contamination	B
Valerian	<u>Valeriana edulis</u>	roots	food	B
Canyon grape	<u>Vitis arizonica</u>	fruit	food	B
Creosote-bush	<u>Larrea divaricata*</u>	gum or aphid secretion- soaked plant	cement for arrows, lotion for sores	B
Mountain Rice	<u>Artemisia wrightii</u>	seeds	food	
	<u>A. vulgaris</u>	seeds	food	
	<u>Balsamorhiza</u>	seeds	food	K
	<u>Epicampes rigens</u>	seeds	food	K
	<u>Gilia inconspicua</u>	seeds	food	K
	<u>Juniperus utahensis</u>	berries	food	K
	<u>Mahonia fremontii</u>			K
	<u>Oryzopsis hymenoides</u>	seeds	food	K
	<u>Sphaeralcea marginata</u>	seeds	food	K
currant	<u>Ribes aureum</u>	berries	food	K
	<u>R. cereum</u>			
raspberry	<u>Rubus leucodermis</u>	berries	food	B, K
service berry	<u>Amelanchier pallida</u>	berries	food	B, K
	<u>Peraphyllum ramosissima</u>		starvation food	K
chokeberry	<u>Pinus edulis</u>	seeds	food	K
	<u>Prunus melanocarpa</u>	berries	food	K
	<u>Sambucus melanocarpa</u>		food	K

*Bye also includes a list of unvouchered plants probably used by the Southern Paiute. Only the vouchered specimens appear in this list.

<u>Name</u>	<u>Genus & Species</u>	<u>Plant Part</u>	<u>Use</u>	<u>Reference</u>
Acorns	<u>Quercus gambelii</u>	seeds	food	K
	<u>Q. turbinella</u>	seeds	food	K
Cactus	<u>Opuntia engelmannii</u>	fruit	food	K, S
	<u>O. rhodantha</u>		food	K
	<u>O. whipplei</u>	blossoms	food	B, K
thornberry	<u>Coryphantha arizonica</u>		food	K
	<u>Echinocereus engelmannii</u>		food	K
	<u>Phellosperma tetrancistra</u>		food	K
	<u>Oreogenia</u>	roots	food	K
	<u>O. linearifolia</u>	roots	food	K
Mariposa lily	<u>Calochortus flexuosus</u>	root	food	K
	<u>Chrysothamnus viscidifolius</u>	greens	food	K
	<u>Ephedra torreyana</u>		beverage	K
	<u>Mentha canadensis</u>	"bug-sugar"	beverage	K
	<u>Orobancha fasciculata</u>		food	K
	<u>Peteria thompsonae</u>	root	food	K
	<u>Robinia neomexicana</u>		food	K
	<u>Sonchus asper</u>		food	K
	<u>Stanleya pinnata</u>		food	K
	<u>Stephanomeria exigua</u>		chewed	K
	<u>Typha latifolia</u>	seed heads, roots	food	K

refers to the whole basin area and only the plants utilized by Southern Paiute, or designated by Steward, appear here. Bye's list is from a collection by Palmer, who explored more than one Southern Paiute area with Powell.

Game: Kelly (1964) provides a short description of kaibab hunting. Men hunted alone or in groups of two or three and a "chief" (hunt leader) sometimes accompanied the men.

Men stalking deer alone hunted naked and used no body ointment, ashes or dirt to disguise body scent. A lone hunter who killed a large deer partially butchered the kill on the spot and returned to camp for help with the rest of the meat. Sapir noted the use of an aspen leaf, placed in the mouth, to imitate a fawn's cry. Hunting "charms" and other magic apparently were not used.

Different techniques were used if there was a hunt chief or if men hunted in a group. The leader assigned certain hunters stations; others chased game through the brush or forest toward these stations. The function of the hunt leader was to organize this small party, deciding where the hunt should take place and what techniques should be used. Sapir (In Kelly 1964) makes a distinction between an actual chief and a hunt leader: a hunt leader was someone who had special knowledge of the surrounding country and of the game, but who may not have had any special status apart from the hunt.

Small boys learned to hunt by killing small animals, such as squirrels or rabbits. A boy was not allowed to eat his own kill until he was "old enough to marry" (Kelly 1964:47). When a boy killed his first deer he left the kill site and returned to tell his father, who skinned the deer and helped carry a portion of the kill back to camp. Only men hunted; women were charged with the cooking duties.

Much small game was available throughout the year. Kelly (1964:50) reports that cottontail and jackrabbit were tracked in the snow in winter and that they were pulled from holes "beneath sagebrush with a straight stick twisted (into) the fur. In spring, a hunter attracted rabbits by smacking lips in imitation of young." Rabbits were also taken in nets during winter rabbit drives. Nets were strung out in an arc and each man stood by his own net. The brush sometimes was burned to cut off retreats and the rabbits entangled in the nets were killed by the net attendants. The entire kill was divided among the boys who chased the rabbits and the net owners.

Other small animals were important to the Kaibab. These included marmot, squirrel, chipmunk, rat, porcupine, badger and wildcat. Birds, apparently an important part of the diet, were shot from blinds near watering places. These birds included quail, mourning dove, pinyon jay, bluebird, red-shafted flicker, woodpecker, sage grouse and duck. The eggs of these birds also were eaten (Kelly 1964).

Deer was not the only large game animal taken. Powell (in Fowler and Fowler 1971) notes that grizzly bear was quite a prize when killed. Hunters illustrated the prowess of their forefathers with bear hunting stories. Powell also mentions the hunting of elk, antelope, mule deer, mountain sheep and beaver.

Fowler (1966) notes that the Paiute diet included a number of reptile species. Many varieties of lizards and snakes inhabit the Southern Paiute region. The Panamint, living in the same environmental setting as the basin-range Paiute, ate the large western chuckwalla (Sauromalus obesus). The Chemehuevi ate lizards, but the Ash Meadows, Shivwits, Kaibab and San Juan did not (Drucker 1937; Fowler 1966).

ENVIRONMENTAL MANIPULATION

Stewart (1938:230) opens a discussion of Great Basin social organization with the following: "The natural environment was a constant." It would, of course, be setting up a straw man to argue that a major weakness in early ecologically oriented interpretations was the assumption that the environment was a constant or unchanging variable. It now is recognized that hunting-gathering groups do not merely exploit their environment, but that they also manipulate it in ways which affect their own adaptive posture. Lists of animals hunted and plants gathered (i.e., Tables 1, 2 and 3) must be viewed with Paiute environmental manipulation in mind.

The hunting-gathering Paiute lived in, relied closely upon and, perhaps, as Euler (1972:37) puts it, enjoyed a "rapport" with, their environment. As an adaptive system, however, Southern Paiute cultures must be viewed in terms of their ability to promote group solidarity and survival. Downs (1966) suggests that environmental manipulation by Great Basin groups, which he sees as essential to group adaptation in desert regions, often is overlooked. He gives examples of certain groups who viewed their surroundings with more than passive interest. Among some, range and brush burning was practiced to encourage the growth of wild plants. Others combined the sowing of wild plant seeds with burning. Some groups irrigated wild plants. Downs (1966:47) suggests further that these practices were in no way in conflict with hunting and gathering and that they may have contained the seeds of incipient agricultural development. To quote Downs:

. . . We see a picture of the Great Basin in which all but three groups of the thirty-three studied made some effort to encourage or increase plant growth, or to assure crops in certain areas. The practices at least by the middle of the last century ranged from burning off brush to increasing tobacco growth to horticulture of indigenous and introduced crops. With the exception of these, manipulative acts and innovations were carried out by individuals or families and did not in any major way interfere with traditional hunting and gathering practices.

At least one group, the Washo, attempted to encourage wild animal population growth. "There are reports, for instance, that the Washo from time to time would cut off the higher limbs of trees during the winter to provide browse for deer, thus encouraging them to stay in the area" (Downs (1966:49). If wild plant growth was encouraged through burning and sowing

wild seeds, the plant growth may, in turn, have encouraged increases in animal populations. The practice, for example, may have provided feed for local birds, an important item in the Paiute diet (cf. Steward 1938). Rodent hunting involved carrying water to burrows and flooding the animals out of their holes. Downs (1966:51) writes that this was practiced among the Southern Paiute and that such rodent flooding may, in turn, have affected wild plant growth (although he cautions that this needs far more research). In short, the Basin-Plateau groups not only exploited their environment, but also, at times, manipulated it in small but important ways to ensure their own survival.

This short discussion of environmental manipulation is not intended to dispute the real limitations the environment placed on the Southern Paiute. Availability of fresh water, the relationship between topography and rainfall, the failure or success of piñon nut crops in winter and other factors had their effect on Paiute distribution and culture throughout the Basin-Plateau region. The complex relationship between these factors and Paiute social organization remains a critical problem and must not be minimized. Stewart's (1938) work on this problem remains a classic; also important are the works of d'Azevedo et al (1966) and Fowler (1972). Perhaps one of the most interesting discussions of these relationships is found in Thomas' work on western Shoshone ecology (1972).

SOCIAL ORGANIZATION

Few details of Southern Paiute social organization are available. Steward (1938) provides a substantive discussion of the range of organizational types found in the Great Basin, but no specific examples focus on the Southern Paiute.

Kelly (1934) groups the Southern Paiute into 15 "bands" on the basis of slight linguistic differences. One informant told her that other groups "speak the same language but the voice sounds different" (1934:550). Thus, Kelly placed little or no emphasis on the social or organizational aspects of this designation of "bands" and apparently grouped the Paiutes by perceived dialectical differences. Powell's expedition journals refer to 31 "tribes" of the Southern Paiute. He noted that several of these "tribes" were united into separate confederations, the origin of which may have been a reaction to the white man's usurpation of aboriginal lands (Fowler and Fowler 1971).

Manners (1957:180) argues against the "tribe" label as applied to the Southern Paiute. His argument is that the "lumping of autonomous families, villages, or bands into the larger package of a tribe was a matter of expediency for early government functionaries. Thus, while the designations of the early explorers, traders, trappers and missionaries may often have resulted from errors in understanding, it is very likely that those of the government functionaries were more often the product of intent, with or without an accompanying ignorance of the facts of aboriginal social organization." Designations of "tribe" or "nation" derived from an "effort to facilitate administration and the drawing up of treaties and agreements" (Manners 1959:180). Manners feels that grouping the Paiute into differing "tribes" masks the actual pre-contact

organizational mode. There is some evidence to support this view. Steward notes (1938:185) that from "informant testimony, Paiute of the Pahrump and Las Vegas regions were never unified in a single band."

Among the Southern Paiute, as among other groups for which hunting and gathering was the primary mode of subsistence, the nuclear family was the primary unit of social organization. Families often would aggregate around a specific water hole or spring, but they dispersed as seasons changed (see Thomas 1972). Extended families might travel together to new areas to hunt and to gather, but large, permanent settlements were, at least in historic times, not the case. Steward (in Manners 1959:189) describes native Shoshonean economic organization, which is comparable with that of the Southern Paiute:

The individual family was in most respects necessarily the independent economic unit. Subsistence in most of the area was primarily upon plant foods. When gathering these foods, group endeavor might bring the pleasure of companionship, but it did not increase the per capita harvest. . . as food shortage was always a real danger it was necessary that families harvest alone or in the company of not more than one or two other families. A woman harvested exclusively for her own family. . . the technique utilized. . . did not permit a woman to gather more plant foods than were absolutely required by her family. . . she frequently shared seeds with neighbors, and especially with relatives, but was not obliged to do so. . .

A large "festival," held in the fall, was probably the single most important factor in the formation of large temporary Paiute groups. Members of "villages" (loosely aggregated families who wintered or watered together) came together yearly. These festivals lasted three or four days and were terminated with specific rituals (Steward 1938:144). Little information exists on the activities which took place during these festivals, but it seems safe to assume that the gatherings involved exchange, both social and material, and that this played a part in reaffirming group identity and inter-group amity.

Aside from these large festivals and a few semi-permanent gatherings of extended families around springs and watering places ("villages"), Southern Paiute families moved constantly from place to place, setting up temporary camps as they followed the food resources from season to season. Thus, summer would find them gathering seeds from grasses and mesquite in the Basin areas or near drainages. Winter would find families in areas where hunting larger game was possible. It was in winter that these families relied on food caches stored during the summer in caves. Spring found them running short of cached foods and moving to areas near the canyon rim, where mescal grew. A good yield of summer mesquite beans and grass seed brought the fall gathering mentioned above. Southern Paiute life generally was nomadic, with hunting and gathering the primary subsistence mode. Paiute social organization was affected dramatically by these factors.

Little more can be drawn from the literature. Fowler (1966) discusses it at the same level of generality as do Steward (1938), Kelly (1934) and Manners (1959). Kelly's (1964) description of Kaibab chieftanship gives some clues to the fluid nature of Southern Paiute leadership. Her informants divided Kaibab chieftanship into "big" and "little" chiefs. Big chiefs were distinguished by the importance of the settlement in which they lived and by their personal ability. There were many minor chiefs; different men served as hunting chiefs for different game and there was a special chief of the "round dance," an important dance featured at the annual festivals. The general "subsistence" chief directed hunts for deer and stood in the doorway of his hut in the morning shouting hunting instructions to the men in the camp. Chiefs were chosen by a delegation of the elders after some discussion. Rarely was the son of a chief chosen to be the new chief. Kelly gives no explanation for this, other than that the Kaibab preferred it that way.

THE HUALAPAI

Here is the land where you will live. Go to the places where you find water. Mark off your land and live by the water. Name these places. In summer live by berries and wild food plants. In winter go live in caves on your own land. In these you will have stored your food that you gathered in summer. . .

Hualapai Origin Myth (Kroeber 1935)

The area south of the Colorado River in the northwest corner of Arizona was occupied aboriginally by the Hualapai Indians. The Hualapai are a Yuman-speaking people, which places them in close relationship with the tribes occupying the Lower Colorado River. Although they may not admit to the relationship between them, the Mojave, Cocopah, Yuma and Hualapai belong to the same linguistic group.

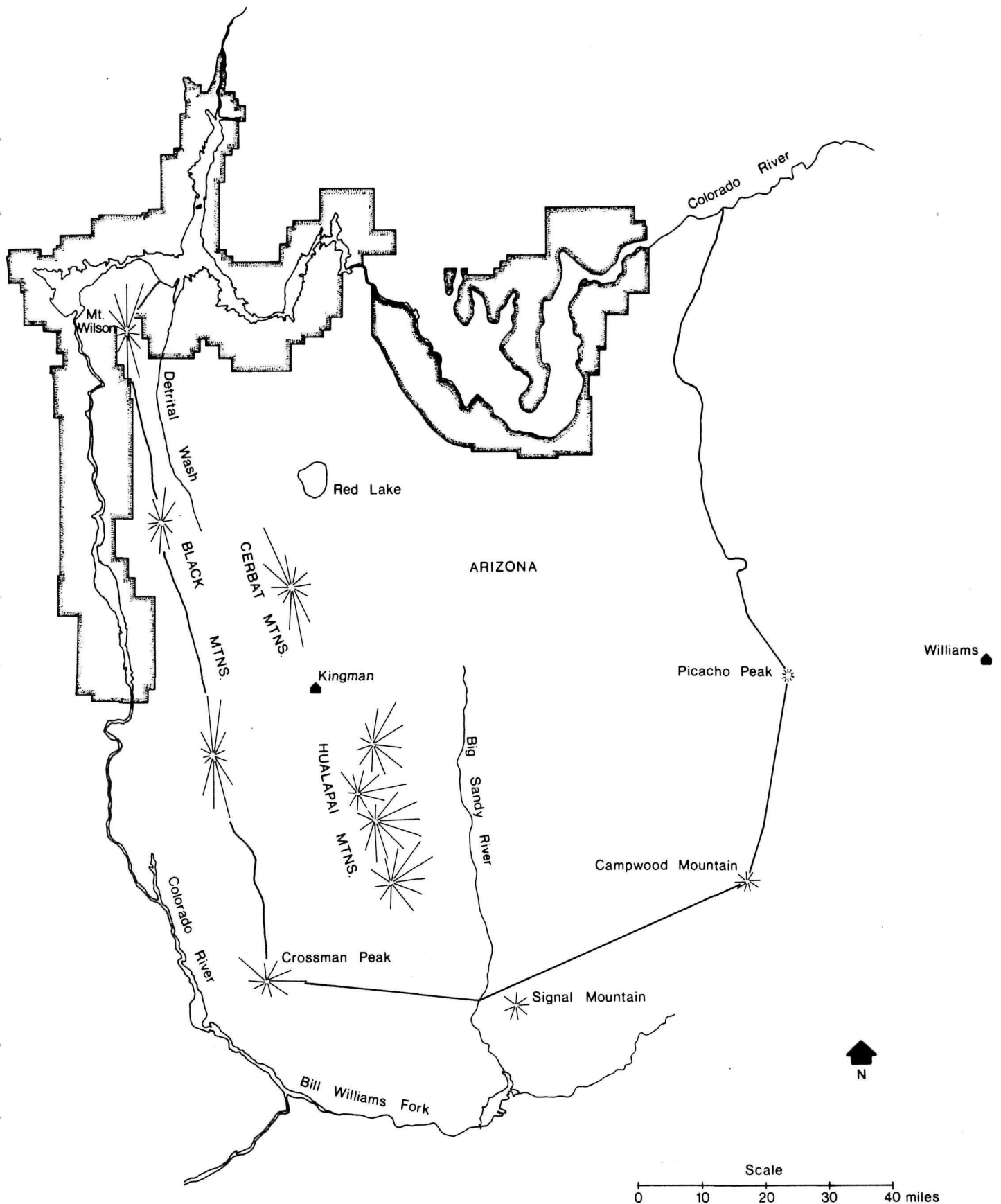
More closely related are the other "Pai" peoples, the Havasupai and the Yavapai. Of these, the Havasupai enjoyed the closer historic and pre-historic relationship with the Hualapai (Dobyns and Euler 1970; Schwartz 1955). At one time both the Hualapai and the Havasupai occupied the high plateau regions on the southwest side of the Grand Canyon. Both roamed this area in hunting-gathering groups until the Havasupai moved into Cataract Creek Canyon, where they began farming its fertile bottom lands during the summer; they moved back to the plateau only to hunt during the winter. The two groups consider themselves closely related and inter-marriage today maintains that relationship.

While the Havasupai traditionally were considered friends of the Hualapai, the Yavapai were their traditional enemies. The Paiutes (the St. George Paiute are named in one case) also were somewhat troublesome to the Hualapai. Thus, the Hualapai had enemies to the north and south (Paiute and Yavapai) and friends to the east and west (Havasupai, Mojave, Hopi and Navajo). This alignment of friends and enemies is consistent with the major trade routes in the area. The major movement of trade goods was in an east-west direction, while there was virtually no trade between the Paiute, Yavapai and Hualapai on a north-south axis (cf. Mook: In Kroeber 1935).

TERRITORY AND ENVIRONMENT

The Hualapai today occupy a small portion of their original hunting-gathering territory. Their present lands, which lie south of the Colorado River (Map 7), extend just south of Peach Springs, the location of the tribal headquarters, west to the Music Mountains and Sloth Cave, which is in Lake Mead National Recreation Area, and east to the Coconino Plateau near the Havasupai home in Cataract Creek Canyon.

Before contact with Europeans, small Hualapai bands hunted and gathered in a territory covering the entire northwest corner of Arizona south of the Colorado. Kroeber (1935) outlines the western boundary along



Map 7: General territory occupied by hunting and gathering Hualapai bands (after Kroeber et al 1935).

the Lower Colorado and south along Mojave territory to an area just north of Bill Williams Fork. The boundary then turned northeast and ran through Walnut Creek and present day Seligman. The northeast corner of their territory bordered Cataract Creek Canyon.

The Colorado River apparently formed an effective barrier to extended contact with the Southern Paiute. Smith (in Morgan 1953) noted on one of his trips through the area that Paiutes were farming on the south side of the Colorado near the Virgin River, but permanent Paiute settlement south of the river seems to have been the exception. As mentioned earlier, the Paiute crossed the Colorado to trade with the Navajo and were on reasonably good terms with the Havasupai (cf. Spier 1928).

The environment of this large aboriginal area (approximately 10,000 square miles) is similar to that of the area occupied by the Southern Paiute north of the Colorado River. The entire region is extremely arid and the Basin and Range-Plateau-Canyonland division used by Fowler (1966) is as applicable in describing Hualapai territory as it is in describing the Southern Paiute area.

Sections of the western range of Hualapai territory are climatically part of the Mohave Desert. Rainfall, which increases as one moves to the higher plateau areas, generally is infrequent and most of the drainages (which run longitudinally) remain dry until heavy summer storms glut them with flood waters. Kniffen (in Kroeber 1935:29) notes that the only rivers or creeks which carry a continuous flow are the Big Sandy River, which flows between Wickiup and Signal, and Trout Creek, which flows into the Sandy from the Cross Mountains. These are the exceptions in an area characterized by playas and dry washes.

Springs are rare throughout the area and occur only occasionally on the plateaus and in the basins. Most of the high plateau regions contain little water, other than that from rain, which quickly drains into the basin washes. Occasional springs, which run from the escarpments of the plateaus, provide about enough water to supply a family or two. Kniffen (in Kroeber 1935:29-30) observes that "the presence of permanently available surface water. . . is associated with the land structure. It is along the desert ranges, about the escarpments of the plateau, upon a portion of the plateau itself, that the strategic sites are found. The valleys, a large part of the plateau surface, are actually or effectively deserts, where water may be obtained only intermittently."

EARLY CONTACTS

Early explorers in this region certainly came into contact with Hualapai bands, but there seems to have been a great deal of confusion in the application of names. Yavapai territory lies just south of the Hualapai and early writers often classed these groups together. There are good reasons for this, even though the Hualapai considered the Yavapai a bitter enemy. The Yavapai and Hualapai occupied contiguous country, both were hunting-gathering groups fragmented into bands (cf. Gifford 1936) and they spoke a mutually intelligible language. More important, perhaps, is the fact that white contact with Yavapai pre-dated that with Hualapai.

Garcès (in Coues 1900) was one of the earliest to refer specifically to a Hualapai group. His journal of 1776 clearly distinguishes the Hualapai from other groups in the area, referring to them as "Jaquallapais." Garcès noted that he ". . . travelled four leagues east, and arrived at the Jaquallapais, who had provided much game for our refreshment. . . They go dressed in antelope skins and other implements that they obtain from Moqui. I saw no crops, and so I believe that they subsist on mescal and game" (Coues 1900:316). Manners (1973) calculates Garcès' position at this point to have been near present day Kingman, Arizona.

But even Garcès' journals evidence confusion. Manners notes (1973:87) that northeast of the Little Colorado, Garcès came to a rancharia of 30 "souls" and the "captain of this rancharia turned out to be the 'brother of the Jabesua (Havasupai) Indian that accompanied me (Garcès). There arrived later two Indians from Moqui (Hopi), dressed in leather jackets . . . and they came to trade with the Yabipais.'" The close relationship with the Havasupai strongly suggests that these were Hualapai and not Yavapai, as intermarriage was frequent between the first two groups. The Hualapai, on the other hand, were bitter enemies of the Yavapai and any suggestions of kinship between them would be subject to doubt.

Whipple, in his 1853 survey through the area, also has trouble identifying the Hualapai. Ives in 1857 was led by the famous Mojave chief Iretaba to a Hualapai camp near the mouth of the Diamond River, but he later refers to a "Yamapais" village in a canyon near Cataract Creek Canyon, the summer home of the Havasupai. In terms of territorial range, this is a confusing identification. But support for Ives' identification comes from Bell, who in 1860 refers to this group as "Yampais." Hamblin's early explorations in this area refer only briefly to a group of "Walapai" near Seep Springs (Manners 1973).

There are few direct references to the Hualapai in the historic literature, possibly because the earliest explorers in the area followed the best water courses through the northern Sonoran desert. Consequently, many early pathfinders coming up the Colorado turned east on Bill Williams Fork or traveled along the Gila River, which would have put them into Yavapai country just south of Hualapai territory. The country in which these early travelers would have found Hualapai was extremely arid, encouraging swift passage from the eastern Pueblos to the lower Colorado or vice versa. It also should be remembered that early surveyors were not interested primarily in recording the presence of aboriginal Americans; they were preoccupied with finding the best route for a railroad.

SUBSISTENCE

Agriculture: The extreme aridity of Hualapai territory made agriculture on a large scale impractical. Small summer gardens were cultivated along perennially flowing rivers and creeks and summer rains allowed a few small family plots near washes. The little agriculture practiced was probably encouraged by the Hualapai's knowledge of both Havasupai and Mojave cultivation. Trade between these groups indicates that the Hualapai valued highly the corn, melons and pumpkins raised by these neighbors,

but even small family garden plots occurred infrequently. One would have to conclude, as did Garcès (in Coues 1900), that the Hualapai primarily were hunter-gatherers. The brief description of Hualapai agriculture which follows comes from MacGregor (in Kroeber 1935).

An indicator of the minor role agriculture played in Hualapai subsistence is the size of the most important agricultural plot, which was situated in Spencer Canyon below Matewitide; the plot comprised only about six to eight acres. Other areas of cultivation reported by MacGregor were Dolan, Bourne and Whiskey Springs near the southern Cerbats and Walnut Creek on the west slope of Fort Rock, all of which were the sites of small family plots. Other places mentioned are the Hualapais, along the Big Sandy River, Fort Rock on Trout Creek, Clay Springs on the Plateau and Diamond Creek Canyon.

Small amounts of land owned by individual families were the sites of summer brush homes and small gardens. The garden area was fenced with brush. The ground was broken up with a stick before planting and was then irrigated by ditches, dug with sticks and mountain sheep horn, leading from a nearby spring or wash. Both men and women worked on the planting and irrigation ditches, but the men tended the garden and only the women harvested. Much of the harvest was consumed quickly, but some was dried in the sun and later placed in skin sacks and hung in caves for consumption during the winter. Cultigens included maize, pumpkins, sunflowers and white, yellow, brownish and blackeyed beans (MacGregor in Kroeber 1935).

Southern Paiute and Hualapai agricultural practices were similar: planting took place in spots where the necessary moisture was available. Agriculture was less frequently practiced by the Hualapai than by the Southern Paiute, possibly due to the greater aridity of the land south of the Colorado River. Downs' (1966) remark that agriculture among the Great Basin groups was so limited that it did not interfere with the overall pattern of hunting-gathering is equally true of the Hualapai.

Hunting-Gathering: Hunting small game and, most importantly, gathering wild food plants and seeds provided the Hualapai with their major foods. McKeel (in Kroeber 1935) claims that the Hualapai relied more heavily on wild plant foods because game was scarce. Most of the plant foods were gathered by women; hunting was left to the men. One of Kroeber's (1935) informants, however, indicated that both men and women gathered berries and piñon nuts.

According to McKeel (in Kroeber 1935), the major wild foods were derived from cactus fruit and from seeds of various grasses and plants. Many of these foods were important, as they were easily stored for use during the winter. Some foods were dried, placed in buckskin bags and stored in caves, which often served as winter homes. Seeds were ground into flour on a metate and stored as dried cakes. Hualapai camps, which consisted of a small cluster of individual family groups, moved from place to place as food plants ripened in different locales. Some of the important food plants, along with descriptions of gathering techniques and of preparation, appear below.

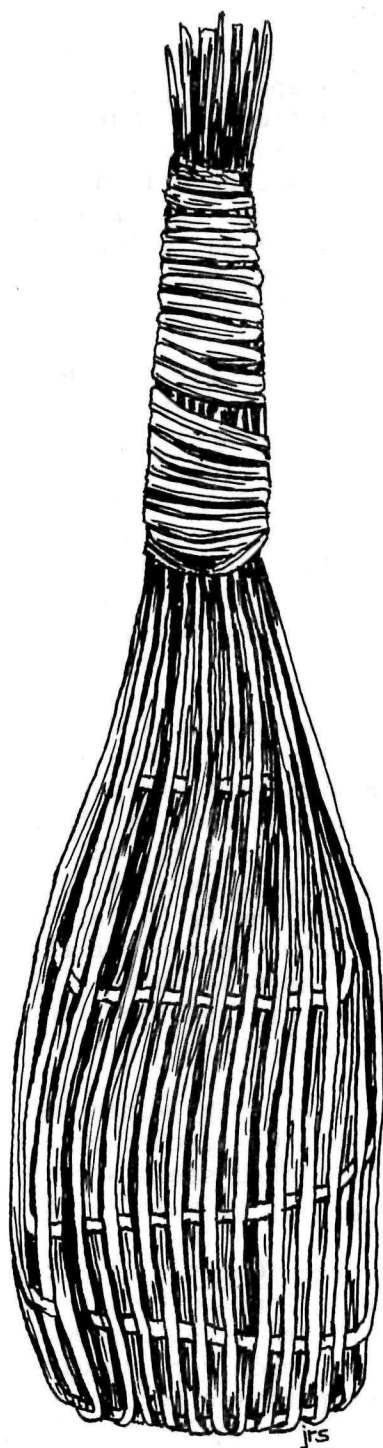


Figure 5: Hualapai sele ("stick leaf") seed beater (after Kroeber et al 1935).

Stick leaf (Mentzelia albicaulis): Called sele or zule in the literature of the Hualapai, the seed of the *Mentzelia* was an important element in the aboriginal wild food diet. Sele was mentioned by writers throughout the period of white contact with the Hualapai. It apparently was abundant in the days before cattle grazing was introduced, but has since been hard to find. Sele was without botanical classification until C. G. Smith's (1973) research identified the plant and described its importance in the early Hualapai diet. The information here is taken largely from Smith's work. The plant produces a very small seed, which is high in carbohydrates and fat (85% and 6.4% respectively). The major nutrient value of the seed is derived from its carbohydrate and fat content, as total protein content is less than 4% (Smith 1973:104).

The seed was collected in great quantities during spring and early summer (late April to mid-June). If picked green, the seeds were allowed to dry in the sun. Ripe, dry seeds were broken off the plant stem and winnowed in a wicker tray. Seed beaters (Fig. 5) were used in the winnowing process. The dried seeds were stored in buckskin bags for winter use.

Smith demonstrates the relative importance of sele in the early Hualapai diet by citing early concern that the plant was disappearing from the region. A cavalry officer, Captain Bourke, in 1886 wrote of the importance of sele to the Hualapai and his fear that the Indians were losing a major food staple:

. . . Game is very scarce. There are a few deer, antelope (on the lower plateau), mountain sheep, mountain lions, and bears in the canyons; and coyotes and rabbits everywhere. In the Colorado Canyon there is some mescal and, at other points, Spanish Bayonet, mesquite, and a grass, called, in the Hualapai language, Zule, which bears a nutritious seed, of which the Indians are very fond. Since the coming of cattlemen into northern Arizona, cattle have eaten up much of the Zule and mesquite, and also scared away the wild animals, thus raising the problem of how the Hualapais are to live. (Bourke 1886; U.S. Senate 1936:151 in Smith 1973:105)

When abundant, the seed was collected by women and prepared by parching in trays with hot coals. It then was ground on a nether-stone and the oily mush was eaten alone. Unparched seeds were boiled in salt water after being ground. The resulting soup or mush was described as "very greasy" (Smith 1973:103).

Cactus (Cactaceae): Prickly pear (*Opuntia*) fruit was eaten raw or was dried and pounded into a coarse flour to be stored in skin bags for later consumption. The seeds sometimes were crushed with pulp and the resulting juice was drunk after the seeds were strained out. McKeel (in Kroeber 1935) notes that in preparation for winter a Hualapai might store away 25 or more pounds of dried *Opuntia* in a dry cave. Special tongs were used to pick prickly pear fruit (cf. illustration in Kroeber 1935:50).

Sahuaro and cholla cactus also were eaten. The sahuaro fruit was picked with a long hooked pole. Cholla stems were broken open and the

inner parts of the long spines were eaten. McKeel (in Kroeber 1935) lists a number of additional cactus plants used as food, but identification of these plants is difficult, as only the Hualapai name is given.

Mesquite (Prosopis): Whole camps were moved when the mesquite beans ripened in August. Beans were collected, dried and pounded into a meal. The meal was eaten during the picking season or was stored in sacks for consumption during the winter. A drink sometimes was made with the sweet meal. Screwbean also was gathered when ripe. The screwbean was dried, ground, soaked in water and squeezed. The result was a clear, sweet beverage. The course meal was thrown away or kept in dried chunks.

Piñon (Pinus): When the pine-nuts ripened in the early fall the camps were moved from summer sites to wooded areas. Piñon picking was primarily a woman's job (McKeel in Kroeber 1935), as were most gathering activities. The nut was picked by using a long, hooked stick to reach into the tree. The pine-nuts then were thrown into a large fire; the nut was removed by pounding the remains with a stone. The nuts either were dried, winnowed and eaten on the spot or they were stored, like other foods, in sacks in preparation for the colder winter months. McKeel notes that in some years the piñon was abundant, while in other years the crop failed. Thus, the piñon, though an important food source when it was available, was not reliable and the Hualapai must have relied heavily upon other food sources as a back-up when the supply of piñon failed.

Other Wild Plant Foods: Acorns (which were pounded on the metate and mixed with water), black walnuts (October and November), Mulberry (June), Juniper berries (September), Squawberries, wild grapes, wild onions and sunflowers also were eaten. Tools to pick or prepare these foods included three mescal tools (a special mescal cutter, thin quartz blades to cut off mescal leaves and a "woman's knife," a 12-inch piece of wood "one and one-half inches in diameter, with an obsidian blade set in lengthwise," which was used to cut off mescal leaves), sagebrush to brush off cactus spines, a sele seed beater and a wood stirrer, which was "half a split stick bent double, the split surface inside" (McKeel in Kroeber 1935:57).

Explicit identification of plants is difficult in some cases because only the Hualapai name is given. Kniffen (in Kroeber 1935:31-35), however, provides a list of plants in the Hualapai habitat and gives their scientific names. It is not certain that all the Hualapai bands used all these plants. His list (Table 4) has been modified here by omitting those plants not used by the Hualapai for any purpose.

The Hualapai hunted small game to supplement wild plant foods. Game was scarce in the dry regions of their territory, relegating hunting to a relatively unimportant role.

Only men hunted; women did most of the gathering. Hunting experience began for a Hualapai boy at approximately eight years of age, when a father would send his son out to hunt small game, such as rabbits, rats or birds. Later, as the boy gained in elementary experience, his father took him on regular hunting trips in pursuit of larger game, such as deer or antelope, thus teaching him the full range of skills for a successful hunt (McKenna in Kroeber 1935).

Table 4: Wild plants used by the Hualapai (after Kniffen in Kroeber 1935:31-35).

<u>Common Name</u>	<u>Genus & Species</u>	<u>Part Used</u>	<u>Use</u>
Tuna, Prickly Pear	<u>Opuntia</u>	fruit	food
Sahuaro, Giant Cactus	<u>Carnegiea gigantea</u>	fruit	food
Barrel Cactus	<u>Echinocactus</u>	fruit	food
Cholla	<u>Mammillaria</u>	inner part of cactus branch	food
Spanish Bayonet	<u>Yucca baccata</u>		fiber used
Spanish Dagger	<u>Y. mohavensis</u>	fruit	food
Joshua Tree	<u>Yucca</u> sp.		used for house thatch; not edible
Mescal, Agave	<u>Agave utahensis</u>	base of flower stalk	food
Greasewood, Creosotebush	<u>Covillea</u> <u>C. glutinosa</u>		tepi'l, the gum
Palo Verde	<u>Cercidium</u> <u>torreyanum</u>	beans	food
Mesquite	<u>Prosopis</u> <u>P. glandulosa</u>	beans	food
Screw-bean	<u>P. pubescens</u>	beans	food
Catclaw	<u>Acacia greggii</u>	beans	bean eaten
Black Willow	<u>Salix nigra</u>		basket material
Unknown	<u>Quercus undulata</u>	acorns	food
Walnut	<u>Juglans</u>	nut	food
"Wild Mulberry"		wood berries	used for bows, baskets; red berries eaten in summer
Unknown		wood	mescal cutter, arrow foreshafts

<u>Common Name</u>	<u>Genus & Species</u>	<u>Part Used</u>	<u>Use</u>
Yellow Pine Piñon	<u>Pinus ponderosa*</u> <u>P. cembroides</u>	nut	food
Juniper "cedar"	<u>Juniperus</u> <u>californica</u> var. <u>utahensis</u>	berries	food
Arrowweed	<u>Pluchea sericea</u>	wood	arrowshafts, thatch
Cane or Reed	<u>Phragmites communis</u>		arrowshafts, for flutes
Sagebrush	<u>Artemisia</u> <u>tridentata</u> <u>Philadelphus</u> <u>lewisii</u>		arrowshafts
Cliff Rose	<u>Cowania mexicana</u>	bark	clothing, etc.
Squaw Bush	<u>Rhus trilobata</u>	berries wood	food; basket material
Wild Currant	<u>Ribes</u>	fruit	food
Wild Grape	<u>Vitis</u>	fruit	food
Wild Onion	<u>Allium</u>		two-inch bulb; food
Wild Onion	<u>Allium</u>		one-inch bulb; food
Wild Asparagus		root	food

Hunting parties left camp with provisions of dried meat, mescal and seeds. The entire party, however, relied heavily on what was killed on the hunt. The technique generally used for large game procurement was the animal drive: while a few men chased animals in one direction, another group would wait, weapons ready, for the animals to run by. Smaller animals were taken from their burrows with a small hooked stick; the stick was pushed into the burrow and twisted into the animal's fur, allowing the small victim to be yanked from its hole.

Most game was butchered and skinned at the kill site. Deer were skinned and the heads and spinal cords were given to the hunt leader for tanning. Rabbits and rodents were treated in a similar way. Birds, which were hunted with a special four-pointed arrow, were stripped of their feathers on the spot. McKennan (in Kroeber 1935) reports that dead-falls similar to those used by the Havasupai were used to trap and kill some birds, but that, on the whole, snares and traps seldom were used. Bow-and-arrow was the most important weapon, although stones sometimes were used to kill rabbits. Dogs sometimes were used to hunt small game or in tracking wounded animals. They were thought to scare away larger game, however, and were not used to hunt deer or antelope.

Large game eaten by the Hualapai included antelope, mountain lion, bear, mountain sheep, coyote, fox and deer. Small animals, much more important in the Hualapai diet, included cottontail, jackrabbit, badger, porcupine, rat, kangaroo rat, chuckwalla and almost all birds, except the eagle. Birds' eggs also were eaten. The Hualapai did not eat fish, snakes, turtles, frogs, Gila monsters, most small lizards, dogs and hummingbirds (McKennan in Kroeber 1935).

SOCIAL ORGANIZATION

The social organization of the pre-contact Hualapai clearly was related to their subsistence technology and to the environment to which they were adapted. The sparse rainfall of the region and the absence of continually running rivers or streams precluded the development of a high dependency on agriculture. The apparent scarcity of wild game and the seasonal nature of wild plant food availability made small group or family foraging the general pattern. The parallel with the Southern Paiute is clear: the seasonally roving hunting-gathering band was a reasonable response to the environmental constraint of low moisture and a great deal of topographical and eco-zone diversity. Manners (1973:36) notes that Steward's comments (1938) concerning the social organization of the Great Basin groups and its relationship to environmental features is equally applicable to the Hualapai:

Rainfall, soils, topography and climate determined the nature, quantity and distribution of plant and animal species which were required for food. The hunting and gathering devices and transportational facilities known in the area allowed only a certain quantity of these to be procured and consequently limited the general population density. The subsistence habits required in

each region largely determined the size, nature, and permanency of population aggregates. These, in turn, predetermined many, though not all, features of social structures and political controls. . .

Among western Shoshoni and many of their northern Paiute and southern Paiute neighbors, it was physically impossible for families either to remain in one place for any considerable time or for more than a few families to remain in permanent association. The outstanding socio-political units, consequently, were the biological family and the small winter villages, consisting of a loose aggregate of families. Families comprising a village were often related. The village headman or 'talker' was little more than family leader or village adviser. Inter-family and inter-village alliances for cooperative enterprises were of limited scope and brief duration, occurring only at communal hunts or festivals, each of which had a special director. Because, however, of the erratic occurrence of wild seeds and the frequent variation of terrain covered, alliances did not always bring together the same families or village members. Habitual cooperation of the same people and therefore the development of fixed, if limited, political allegiances and controls was impossible.

Dobyns and Euler (1970:49) take a somewhat different view. Manners' argument, they claim, understates the organizational complexity of the Hualapai. The size of the territory and the limits placed on communication between groups tended to mask the potential organizational abilities of the Hualapai in times of need. In response to Manners' (1957) argument that the Hualapai did not possess the socio-political organization to concentrate the forces of several groups to repel an enemy's invasion of their territory, Dobyns and Euler note that:

. . . Kroeber (1935:180) recorded oral traditions of "Walapai" defense against a partly mounted Yavapai raiding party which initially involved Pai from "forty camps" gathering "black-berries" in Round Valley. Riders were sent for reinforcements and, after an all-day battle, the raiders were repulsed. The large size of the encampment and the defense showed concentration and cooperation of several bands, since Round Valley lay at the frontier of several bands' territories and no two alone could muster 40 families.

The factor limiting the size of the Pai defensive force was not lack of leadership on that occasion, but lack of time to send messengers to distant groups and for those to collect before the aggressors exterminated the group under attack or disengaged and retreated.

Instead of viewing complex organizational features as absent from Hualapai social life, Dobyns and Euler argue that they simply were latent. Given the right conditions (invasion of an enemy on the boundaries of adjacent bands), cooperation and leadership capabilities arose to meet the occasion. The point made by Dobyns and Euler--that under certain conditions cooperation above the local band or family level did take place--must be granted, but this does not negate the description of the "general" nature of social organization advanced by Steward.

These arguments are related to the relationship between social organization and concepts of territoriality. Manners (1957) notes that the Hualapai may have had a general territory in which small bands hunted and gathered, but that designating this arrangement a "tribe," considering the social and political implications this term carries, might be misleading. Given the nature of Hualapai habitat and subsistence practices, Manners claims that aggregates of individuals (one or two families) were the most common feature of social organization. The Hualapai did not necessarily defend their territory as their own; there seems to have been a great deal of overlapping with neighboring Yavapai and, during winters on the plateau, with the Havasupai. In short, Hualapai social organization was limited to small family groups, which were engaged primarily in hunting and gathering. Their lack of a sense of territory precluded larger aggregates, prompting the conclusion that the Hualapai never formed a "tribe" in the political sense.

Manners' arguments (1973) were directed to an understanding of Hualapai "boundaries" (or a lack of them); he was interested only secondarily in social organization. His discussion of the Hualapai (and Southern Paiute; cf. Manners 1959) also involves all those difficulties with the meaning of "tribe" which have plagued anthropological discussion for years (cf. Naroll 1964). While admitting that "Pai territory" was inhabited by bands engaged in differential exploitation of the region, Dobyns and Euler (1970) claim that these small groups held very strong common notions of "tribal" identity and of common territories, which they sought to defend from enemies. This sense of territory and self-identity, they claim, was a "clear operational definition of tribalism, not merely in defense of this territory against invasion, but more importantly in the very conceptualization of tribal boundaries" (Dobyns and Euler 1970:8; emphasis mine), a claim which asserts that the Hualapai were organized on a level not indicated by Manners and Steward. They argue also that due to this sense of territoriality and to a common or shared self-identification, the Hualapai were tacitly organized on a tribal level.

Chieftainship: Hualapai "chiefs" functioned in much the same way as Southern Paiute chiefs. There was no one leader with authority over all the Hualapai. There were, instead, a number of "headmen," who gained the title of "talker" through ability or heredity and who exercised limited authority over small groups or in one of the seven geographical subdivisions of the tribe (McKennan in Kroeber 1935). These headmen were chosen for their known ability to "talk" or to "harangue" and for their bravery in battle. A man was chosen chief if he had fought the Yavapai well and could stand before the whole camp and deliver speeches on how to hunt or raise children properly or if he could give instructions on

how people generally should behave. The title of "chief" had a tendency to be hereditary, passing to a man's son, but the title remained quite fluid and could pass to anyone who exhibited bravery, personality and fluency of tongue (McKenna in Kroeber 1935).

LAKE MEAD INTER-ETHNIC SOCIAL ORGANIZATION

The ethnic groups which occupied the Lake Mead area have thus far been treated in isolation. Selected characteristics of each group have been presented in a way which stresses the notion of tribal or ethnic group separateness, pointing out that each ethnic group had its own technique of cultivation, food gathering, warfare, etc. But it is important to realize that these groups did not live in isolation. Trade, alliances in warfare or the simple love of travel prompted frequent interaction. Thus, the entire Lake Mead region should be viewed not as an area made up of wholly distinct and separate groups, but as an area characterized by ethnic group interaction, a poly-ethnic region with its own inter-ethnic social organization (cf. Underhill 1954).

Trade between these groups flowed primarily along an east-west axis. That is, there are numerous references to the Mojave trading their cultivated food products, such as melons, maize and squash, to the visiting Hualapai, who traded, in turn, wild animal products, such as dried meat and skins. The Mojave, known for their penchant for travel, often crossed the Mohave Desert to obtain shells from the Pacific Coast region. These shell trade items were brought back to the Colorado River area to be traded with the Hualapai and, later, to the Havasupai, Hopi and Navajo. There are infrequent references, however, to Mojave trade relations with the Southern Paiute to the north. The Mojave seemed more likely to view their Southern Paiute neighbors with suspicion than with amity. The famous Mojave Chief Ireteba, accompanying Ives on his trip up the Colorado, was quick to note that the party needed to be wary of "bad Pai-Utes" north of Mojave territory (Ives 1861:80). The Mojave generally were on good terms with the Chemehuevi, but the Las Vegas Paiute were, at times, victims of Mojave raids.

The Hualapai seemed to have had the same general relationship with the Southern Paiute. Southern Paiute bands traded with the Navajo and frequently sent trading parties across the Colorado to the east. Paiute relations with the Havasupai occasionally were friendly. The Hualapai, on the other hand, seemed more inclined to fight the Paiute than to trade with them. Little or no trade took place on a north-south axis between the Hualapai and the Yavapai. The Yavapai, occupying the area south and east of Bill Williams Fork, were bitterly hated by the Hualapai.

Good relations between the Mojave and the Hualapai may have stemmed from their exploitation of differing resources. While the Mojave farmed the floor plains of Mohave Valley and hunted little, the Hualapai occupied a territory in which hunting, by necessity, took on greater importance. Thus, the Mojave could offer the Hualapai goods, such as melons, squash and cultivated grains, which were valued by the Hualapai, but which were not easily obtained in their own territory. In turn, the subsistence practices of the Hualapai brought game and buckskins to the Mojave. Mutual trade relations between these groups, then, can be viewed as effectively expanding the range of their subsistence practices, the Mojave

benefiting from the hunting of the Hualapai and the Hualapai benefiting from the farming of the Mojave. Just how much of this trade took place is open to question, but a limited amount of inter-group dependency based on subsistence specialization is suggested.

Hualapai trade relations differed markedly with groups engaged in subsistence practices similar to their own. The Southern Paiute were primarily hunting-gathering bands, as were the Yavapai to the south. Because they exploited similar (sometimes overlapping) habitats, these groups may have had little to offer one another in terms of trade. The Southern Paiute were separated from the Hualapai by the formidable barrier of the Colorado River, which may account for the relative lack of trade and infrequent hostilities between these two groups. The Yavapai occupied and exploited, as hunters and gatherers, territory contiguous to Hualapai hunting areas and thus posed a greater threat, especially in an area where game and water were scarce.

Kroeber and Kroeber (1973) note that the influence of white contact in the area may have markedly affected relationships between these groups. Mojave relations with the Paiute may have stemmed from the initial Southern Paiute friendliness with the first white explorers and with later Mormon settlers. The friendly relations forged between the Yumas, with whom the Mojave enjoyed long-standing military alliances, and the white settlers on the lower Colorado may have caused drastic shifts in traditional inter-ethnic relations along the river. Interestingly, the presence of a single white man affected later relations between Mojave, Hualapai and Yavapai (cf. Kroeber and Kroeber 1973). These examples emphasize the need to carefully consider white influence in the area when discussing Native American inter-ethnic organization.

The problem of inter-ethnic relations touched on above is only one of many issues which need to be addressed in a discussion of ethnographic and ethnohistorical materials of the Lake Mead region. Among the most interesting ethnohistorical problems is the relationship between Mojave warfare and subsistence practices; comparative work on the Mojave and other southwestern groups, such as the Pima, could illustrate the role of warfare in agriculture-based groups with and without stable irrigation systems. A careful examination of group adaptation to a specific environment, such as the close fit between Hualapai or Southern Paiute technology, social organization and environmental features, also would be valuable. Downs' suggestion (1966) that Southern Paiute farming illustrates important aspects of the process of cultural and technological change in hunting-gathering groups needs further examination. The impact of European contact with Native American groups in the Lake Mead region mentioned above is an important issue, as is the impact of the Colorado River on ethnic group interaction and the maintenance of ethnic, as well as territorial, boundaries. Many of these issues should be examined from an archeological point of view (indeed, need to be, as there are wide gaps in the historical literature), as well as from an ethnohistorical and ethnological perspective.

The summary of materials presented here on the groups which once occupied the Lake Mead region is certainly not comprehensive enough or handled in sufficient depth to treat these additional issues with care. This is, of course, not a suggestion that they should be ignored; it is a call for additional work. The Lake Mead region offers a unique regional orientation, in which cultural group interaction is punctuated by outstanding physical and cultural diversity and in which these problems can profitably be examined.

BIBLIOGRAPHY

References Cited

- Bolton, Herbert E.
1950 Pageant in the wilderness. The story of the Escalante expedition to the Interior Basin, 1776, including the diary and itinerary of Father Escalante. Utah Historical Quarterly 18.
- Bye, Robert A., Jr.
1972 Ethnobotany of the Southern Paiute Indians in the 1870s: with a note on the early ethnobotanical contribution of Dr. Edward Palmer, In Great Basin cultural ecology: a symposium. Don Fowler (ed.). Desert Research Institute Publications in the Social Sciences No. 8, pp. 87-104. Reno.
- Castetter, E.F. and Willis Bell
1951 Yuman Indians agriculture. University of New Mexico Press, Albuquerque.
- Coues, Elliot
1900 On the trail of a Franciscan pioneer: the diary and itinerary of Francisco Garcès. American Explorer Service III, New York.
- d'Azevedo, Warren L. et al (eds.)
1966 The current status of anthropological research in the Great Basin: 1964. Desert Research Institute Technical Report Series No. 1, Reno.
- Dobyns, H.F. and R.C. Euler
1970 Wauba Yuma's people; the comparative socio-political structure of the Pai Indians of Arizona. Prescott College Studies in Anthropology No. 3, Prescott.
- Dobyns, Henry F., Paul Ezell, A. Jones and G. Ezell
1957 Thematic changes in Yuman warfare, In Cultural stability and cultural change. Proceedings of the American Ethnological Society. Annual Spring Meeting.
- Downs, James F.
1966 The significance of environmental manipulation in Great Basin cultural development, in The current status of anthropological research in the Great Basin: 1964. Desert Research Institute Technical Report Series No. 1, pp. 57-74. Reno.
- Driver, Harold E.
1957 Estimation of intensity of land use from ethnobiology: applied to the Yuma Indians. Ethnohistory 4(2): 174-197.

- Drucker, Phillip
 1937 Culture element distributions. University of California Anthropological Records. 1(1): pp. 1052, Berkeley.
- Euler, Robert C.
 1966 Southern Paiute ethnohistory. University of Utah Anthropological Papers, No. 78, Salt Lake City.
 1972 The Paiute People. Indian Tribal Service, Phoenix.
- Fathauer, G.H.
 1954 The structure and causation of Mohave warfare. Southwestern Journal of Anthropology 10: 97-118.
- Forbes, Jack D.
 1963 Indian horticulture west and northwest of the Colorado River. Journal of the West (1): 1-14.
- Forde, C.D.
 1931 Ethnography of the Yuma Indians. University of California Publications in American Archeology and Ethnology 28: 83-278.
- Fowler, C.S.
 1966 Environmental setting and natural resources, In Southern Paiute ethnohistory, R. Euler (ed.) University of Utah Anthropological Publications No. 78, pp. 18-31. Salt Lake City.
 1972 Some ecological clues to proto-numic homelands, In Great Basin cultural ecology: a symposium. D. Fowler (ed.). Desert Research Institute Publications in the Social Sciences No. 8, pp. 105-122. Reno.
- Fowler, D. and C. Fowler
 1971 Anthropology of the Numa: John Wesley Powell's manuscripts on the Numic peoples of Western North America, 1868-1880. Smithsonian Institution, Washington, D.C.
- Gifford, E.W.
 1936 Northeastern and western Yavapai. University of California Publications in American Archeology and Ethnology 34:4, Berkeley.
- Hammond, George P. and Agapito Rey
 1940 Narratives of the Coronado Expedition. Coronado Historical Series, Vol. II, Albuquerque.
- Heizer, Robert F.
 1945 Honey-dew "sugar" in western North America. Masterkey 19: 140-145.

- Hodge, F. W. (ed.)
 1917 Handbook of the American Indians north of Mexico.
Bureau of American Ethnology Bulletin Pt. 1, Washington.
- Ives, Joseph C.
 1861 Report upon the Colorado River of the West explored in
 1857 and 1858. Senate Executive Document, 36th Congress,
1st session. Washington. Government Printing Office.
- Jones, V.H.
 1945 The use of honey-dew as food by Indians. Masterkey,
 Vol. 19 (5): 145-9.
- Kelly, I.T.
 1934 Southern Paiute bands, American Anthropologist, 36:
 548-60.
- 1964 Southern Paiute ethnography. University of Utah Anthro-
pological Papers, No. 69, Salt Lake City.
- Kroeber, A.L.
 1925 Handbook of Indians of California. Bureau of American
Ethnology, Bulletin 78. Washington.
- 1935 Walapai ethnography. American Anthropological Association
Memoir 42: 1-293.
- 1953 Report on aboriginal territory and occupancy of the Mohave
 tribe. Expert Testimony, Indian Claims Commission. Xerox
 copy.
- 1972 More Mohave myths. California University Anthropological
Records 27, Berkeley.
- Kroeber, A.L. and C.B. Kroeber
 1973 A Mohave war reminiscence, 1854-1880. University of
California Press, Berkeley.
- Lamb, Sydney M.
 1964 The classification of the Uto-Aztecan languages: a histor-
 ical study. University of California Publication in Lin-
guistics 34: 106-25.
- Manners, Robert A.
 1957 Tribe and tribal boundaries: the Walapai. Ethnohistory 4
 (1): 1-26.
- 1959 Habitat, Technology and Social Organization of the Southern
 Paiute. America Indigena 19 (3): 179-97.
- 1973 Hualapai in Arizona. Report prepared for the Indian Claims
 Commission. Clearwater Publishing Company.

- Meyers, D.D. and F.R. Kleinmann
 1959 Mohave lands in Arizona, California and Nevada. Expert Testimony, Indian Claims Commission, Clearwater Publishing Co.
- Miller, Wick
 1966 Anthropological linguistics in the Great Basin. In The Current Status of Anthropological Research in the Great Basin. d'Azevedo et al (eds.). Desert Research Institute Social Science and Humanities Publication 1, Reno.
- Morgan, Dale L.
 1953 Jedediah Smith and the opening of the West. Bobbs-Merrill Co., New York.
- Naroll, R.
 1964 On ethnic unit classification. Current Anthropology 5(4): 283-291.
- Noy-Meir, Imanuel
 1974 Desert ecosystems: higher trophic levels. Johnston, Frank and Michener (eds.) Annual Review of Ecology and Systematics.
- Pettid, Edward
 1968 Olivia Ann Oatman's lecture notes and the Oatman bibliography. San Bernardino County Museum Quarterly 16(2).
- Schroeder, Albert H.
 1954 A study of Yavapai history. Prepared for the U.S. Department of Justice. National Park Service, Santa Fe.
- Schwartz, Douglas A.
 1955 The Havasupai, 600 A.D.-1955 A.D.: a short culture history. Plateau 28(2): 77-85.
- Sherer, Lorraine M.
 1965 The clan system of the Fort Mohave Indians. The Historical Society of Southern California, Los Angeles.
- Smith, Charlie G.
 1973 Sele, a major component of the aboriginal Hualapai diet. Plateau 45(3): 102-110.
- Smith, G.A.
 1966 The Mohaves. San Bernardino County Museum Association Quarterly 14(1).
- Sitgreaves, Lorenzo
 1853 Report of an expedition down the Zuni and Colorado rivers. Senate Document 59, 32nd Congress, 2nd session. Washington.
- Spier, Leslie
 1928 Havasupai ethnography. American Museum of Natural History, New York, Anthropological Papers 29: 81-329.

Steward, J.H.

- 1938 Basin-plateau aboriginal socio-political groups. Bureau of American Ethnology Bulletin 120.
- 1939 Notes on Hiller's photographs of the Paiute and Ute Indians taken on the Powell expedition of 1873. Smithsonian Institution Miscellaneous Collections, Vol. 98.
- 1941 Nevada Shoshone. Anthropological Records 4: 209-59.

Stewart, K.N.

- 1947 Mohave hunting. Masterkey 21: 80-84.
- 1947 Mohave warfare. Southwestern Journal of Anthropology 3: 257-278.
- 1957 Mojave fishing. Masterkey 31(6).

Stewart, Omer C.

- 1966 Tribal distributions and boundaries in the Great Basin, In The current status of anthropological research in the Great Basin: 1964. d'Azevedo et al. (eds.). Desert Research Institute Social Science and Humanities Publication 1, Reno.

Stratton, R.B.

- 1935 Life among the Indians or the captivity of the Oatman girls among the Apache and Mohave Indians. Grabhorn Printers, San Francisco.

Stuart, B.R.

- 1945 Southern Paiute staff of life. Masterkey 19: 133-4.

Thomas, David Hurst

- 1972 Western Shoshone ecology: settlement patterns and beyond, In Great Basin cultural ecology: a symposium. Don Fowler (ed.) Desert Research Institute Publication in Social Science No. 8, pp. 135-153, Reno.

Underhill, Ruth

- Intercultural relations in the Greater Southwest. American Anthropologist 56(4) Pt. 1: 645-657.

Wheat, M.M.

- 1967 Survival acts of the primitive Paiutes. University of Nevada Press, Reno.

Wheeler, G.M.

- 1869 Map showing detailed topography of the country traversed by the reconnaissance expedition through southern and southeastern Nevada. National Archives Record Group 75 tube 20 No. 2.

Wheeler, G.M.

1871 Preliminary topographical map. Explorations and surveys
south of Central Pacific RR. National Archives Record
Group 59, Tube 59 No. 1.

1870 Reconnaissance maps. Department of California Military Map
National Archives Record Group 75, Tube 20 No. 1.

Whipple, A.W.

1855 Reports of explorations and surveys route for a railway to
the Pacific Ocean, 35th Parallel. Executive Document No. 78,
Vol. 13, Washington.

Additional References

- Adovasio, J.M. and G.F. Fry
1972 An equilibrium model for culture change in the Great Basin: a symposium. Desert Research Institute Publications in the Social Sciences, No. 8, pp. 67-71, Reno.
- Allen, G.V.
1891 Manners and customs of the Mohaves. Annual Report of the Smithsonian Institution for 1890, pp. 615-616.
- Alter, J. Cecil
1944 The Mormons and the Indians. Utah Historical Quarterly 12. Salt Lake City, 1944.
- Anonymous
1933 Indian red paint. Masterkey 7(3):85-7.
- Anonymous
1940 The Havasupai and the Hualapai. Arizona State Teachers College Bulletin, 21(8).
- Anonymous
1961 Old Toab. Utah Historical Quarterly 29(3):300-302.
- Aschmann, Homer H.
1958 Great Basin climates in relation to human occupance. Reports of the University of California Archaeological Survey 42:23-40.
- Auerbach, Henry S.
1943 Father Escalante's journal with related documents and maps. Utah Historical Quarterly 9. Salt Lake City.
- Baldwin, Gordon C.
1938 Indian tribes of Arizona, Part 1. Kiva 3(5):17-20; Part II Kiva (6):21-4.
1950 The pottery of the Southern Paiute. American Antiquity 16: 50-56.
- Barnes, J.A. (ed.)
1966 Lore of the Mohave nation. San Bernardino County Museum 13(3) & (4).
- Bartlett, Katherine
1933 The Indians of Northern Arizona. Museum of Northern Arizona Museum Notes, 5(2):65-71. Flagstaff.

- Bartlett, K.
 1938 Notes on the Indian crafts of Northern Arizona. Museum of Northern Arizona Museum Notes 10(7): 21-24. Flagstaff.
- 1945 The distribution of the Indians of Arizona in 1848. Plateau 17(3): 41-5.
- Beale, Edward F.
 1858 The report of Edward Fitzgerald Beale to the Secretary of War concerning the wagon road from Fort Defiance to the Colorado River. House of Representatives Executive Document 124, 35th Congress, 1st session. Washington.
- Bell, Willis H. and E.F. Castetter
 1937 The utilization of mesquite and screwbean by the aborigines in the American Southwest, In Ethnobiological studies in the American Southwest. University of New Mexico Bulletin, Biological Series (2) Pt. 5, pp. 2-55. Albuquerque.
- Bolton, Herbert E.
 1913 Spanish exploration in the Southwest, 1542-1706. Charles Scribners' Sons, New York.
- Bolton, H.E.
 1919 Father Escobar's relation of the Oñate expedition to California. American Catholic Historical Review 5: 19-41.
- Bourke, J.G.
 Notes on the cosmogony and theogony of the Mohave Indians of the Rio Colorado, Arizona. Journal of American Folklore, 2: 169-189.
- Brooks, Juanita
 1944 Indian relations on the Mormon frontier. Utah Historical Quarterly 12.
- Bureau of Ethnic Research
 1958 Colorado River Reservation. Social and economic studies. University of Arizona Report No. 1-3. Tucson.
- Campbell, Franklin
 1866 Map of Nevada with tribal boundaries added. The National Archives Map No. 178, Tube 99.
- Carter, George F.
 1945 Plant geography and culture history in the American Southwest. Publications in Anthropology, Viking Fund, No. 5, New York.
- Chamberlin, R.V.
 1911 The ethno-botany of the Gosiute Indians of Utah. Memoir of the American Anthropological Association 2: 331-405.

- Cleland, Robert G. and Juanita Brooks (eds.)
 1955 A Mormon chronicle: the diaries of John D. Lee, 1843-1876.
 The Huntington Library, San Marino, California.
- Cook, S.F.
 1941 The mechanism and extent of dietary adaptation among certain groups of California and Nevada Indians. Ibero-Americana 18: 1-59.
- Corbusier, Edward S.
 1886 The Apache-Yumas and Apache-Mojaves. American Antiquarian 8: 276-284, 325-339.
- Coville, F.V.
 1904 Desert plants are a source of drinking water. Smithsonian Institution Annual Report, 1903 pp. 449-505.
- Culley, J.
 1936 The California Indians: their medical practices and drugs. Journal of American Pharmaceutical Association 25: 332-339.
- Dale, Edward E.
 1949 The Indians of the Southwest. University of Oklahoma, Norman, Press.
- Dellenbaugh, Frederick S.
 1926 A canyon voyage: the narrative of the second Powell expedition down the Green-Colorado River from Wyoming and the explorations on land in the years 1871-1872. Yale Press, New Haven.
- Deveraux, G.
 1935 Sexual life of the Mojave Indians. Ph.D. dissertation. University of California.
 1937 Homosexuality of the Mojave Indians. Human Biology 9: 498-527.
 1938 L'Envoûtement chez les Indiens Mohave. Jour. de la Societe des Americanistes de Paris. 29: 405-412.
 1939 Mohave culture and personality. Character and Personality 8: 91-109.
 1939 Mohave soul concepts. American Anthropologist 39: 417-422.
 1939 The social and cultural implications of incest among the Mohave Indians. Psychoanalytic Quarterly 8: 510-533.
 1941 Mohave beliefs concerning twins. American Anthropologist 43: 573-592.
 1942 Primitive psychiatry (part II). Bulletin of the History of Medicine 11: 522-542.

Deveraux, G.

- 1947 Mohave orality: an analysis of nursing and weaning customs. Psychoanalytic Quarterly 16: 519-546.
- 1948 Mohave etiquette. Southwest Museum Leaflet, No. 22.
- 1948 Mohave Indian infanticide. Psychoanalytic Review 35: 126-139.
- 1948 Mohave coyote tales. Journal of American Folklore 61: 233-255.
- 1948 The Mohave neonate and its cradle. Primitive Man 21: 1-18.
- 1948 Mohave Indian obstetrics. American Imago 5: 95-139.
- 1948 Mohave zoophilla. Journal of the Indian Psycho-Analytical Society 2: 227-248.
- 1949 Mohave voice and speech mannerisms. Word 5: 268-72.
- 1949 The Mohave male puberty rite. Journal of the Indian Psycho-Analytical Society 3: 11-25.
- 1949 Post-partum parental observances of the Mohave Indians. Transaction of the Kansas Academy of Science 52: 458-465.
- 1950 Amusements and sports of Mohave children. Masterkey 24: 143-152.
- 1950 Heterosexual behavior of the Mohave Indians. Rohican, G. (ed.). Psychoanalysis and the Social Sciences 11, New York.
- 1951 Mohave chieftanship in action: a narrative of the first contacts of the Mojave Indian with the United States. Plateau 23: 33-48.
- 1951 Psychodynamics of Mohave gambling. American Imago.
- 1951 Cultural and characterological traits of the Mohave related to the aral state of psychosexual development. Psychoanalytic Quarterly 20: 398-422.
- 1961 Mohave ethnopsychiatry and suicide: the psychiatric knowledge and the psychic disturbances of an Indian tribe. Bureau of American Ethnology Bulletin No. 175.

Dobyys, Henry F.

- 1956 Prehistoric Indian occupation within the eastern area of the Yuman complex. MA thesis. University of Arizona, Tucson.
- 1956 The Indian Bureau is wrong. Desert Magazine 19(3): 26-27.

Dobyys, H.F. and R.C. Euler

- 1960 A brief history of the Northeastern Pai. Plateau 32: 3.

- Dobyns, H.F. and R.C. Euler
 1967 The Ghost Dance of 1889 among the Pai Indians of northwestern Arizona. Prescott College, Studies in Anthropology No. 1, Prescott.
- 1971 The Havasupai people. Indian Tribal Series, Phoenix.
- Dobyns, H.F., P.H. Ezell and G. Ezell
 1963 Death of a society. Ethnohistory 10:2.
- Driver, H.E.
 1937 Southern Sierra Nevada. Anthropological Records I: 53-154.
- Drucker, P.
 1941 Yuman-Piman. Anthropological Records 6: 91-230.
- Ehrenberg
 1865 Bureau of Indian Affairs, report for 1865, p. 139. Washington.
- Empey, Jessie K.
 1941 The last squaw fight. Utah Historical Quarterly 9(3-4): 137-40.
- Euler, Robert C.
 1958 Walapai culture history. Ph.D. dissertation. University of New Mexico.
- 1964 Southern Paiute archaeology. American Antiquity 29: 379-81.
- 1964 An archaeological survey of the south rim of Walnut Canyon National Monument. Anthropological Papers, No. 1. Northern Arizona University, Flagstaff.
- Euler, Robert C. and Henry F. Dobyns
 1961 Ethnic group land rights in the modern state: three case studies, In Arizona Indians and their economic development. F. Vogel (ed.). Pp. 203-7.
- Euler, R.C. and C. Fowler
 1966 Southern Paiute ethnohistory. University of Utah Anthropological Papers No. 78, Salt Lake City.
- Ewing, Henry P.
 1960 The Pai tribe. R.C. Euler and H.F. Dobyns (eds.). Ethnohistory 7(1): 61-80.
- 1961 The origin of the Pai tribes. H.F. Dobyns and R.C. Euler (eds.). Kiva 26(3): 8-23.
- Fathauer, George H.
 1951 The Mohave "Ghost Doctor." American Anthropologist 53: 605-607.

- Fontana, Bernard L.
 1963 The Hopi-Navajo colony on the Lower Colorado River: a problem in ethnohistoric interpretation. Ethnohistory 10(2): 162-82.
- Forbes, J.
 1965 Warriors of the Colorado. University of Oklahoma, Norman, Press.
- Fowler, C.S.
 1969 Unpublished field notes on medicinal plants. Shoshone, Southern Paiute and Ute informants.
- Fowler, Don (ed.)
 1972 Great Basin cultural ecology: a symposium. Desert Research Institute Publications in the Social Sciences, No. 8, 1972. Reno.
- Fremont, J.C.
 1845 Report of the exploring expedition to the Rocky Mountains in the year 1842 and to Oregon and North California in the years 1843 and 1844. Washington.
- Hafen, Leroy R. and A.W. Hafen
 1954 Spanish Trail, Santa Fe to Los Angeles. Arthur H. Clark Co. Glendale, California.
- Hall, S.H.
 1903 The burning of a Mohave chief. Out West 18: 60-65.
- Hall, Kenneth
 1958 Interval diversity in Uto-Aztecan: I. International Journal of American Linguistics 24(2): 101-07.
- Harrington, John P.
 1908 A Yuma account of origins. Journal of American Folklore, 21(82): 324-348. New York.
 1911 The origins of the names Ute and Paiute. American Anthropologist 13: 173-4.
 1960 Paiute trouble. Masterkey 34(4): 146.
- Harrington, M.R. and Bradly R. Stuart
 1945 "Bug sugar." Masterkey 19: 95-6.
- Heizer, R.F.
 1948 A bibliography of ancient man in California. University of California Archaeological Survey, Riverside No. 2.
 1967 Languages, territories and names of California Indian tribes. University of California Press, Berkeley.

- Henshaw, H.W. and A.L. Kroeber
 1907 Chemehuevi. In Handbook of American Indians north of Mexico. F.W. Hodge (ed.), pp. 242-3, Bureau of American Ethnology Bulletin, Pt. 1, Washington.
- Hoffman, Walter J.
 1874 Pah-Ute cremation. Proceedings of the American Philosophical Society 14: 297-8.
 1878 Miscellaneous ethnographic observations on Indians inhabiting Nevada, California and Arizona. 10th Annual Report of the U.S. Geological, Geographical and Geodetic Survey. Washington.
- Hoover, J.W.
 1931 Geographic and ethnic grouping of Arizona Indians. Journal of Geography 30(6): 235-46.
- Indian Claims Commission of the U.S.
 1953 Before the Indian Claims Commission of the U.S. the Hualapai tribe of the Hualapai Reservation, Arizona, petitioner, vs. the U.S. of America, defendant, Docket No. 90. Court Reporter's Transcript of Hearings, August.
- James, George W.
 1903 The Indians of the Painted Desert region: Hopis, Navahos, Wallapais and Havasupais. Little Brown & Co., Boston.
- James, J.A.
 1954 A reinterpretation of the Ute-Southern Paiute classification. Anthropological Quarterly, 27 (New Series, Vol. 2), (2): 53-8.
- Jennings, J.D. and Edward Norbeck
 1955 Great Basin prehistory: a review. American Antiquity 21 (1): 1-11.
- Jones, D.W.
 1890 Forty years among the Indians. Salt Lake City.
- Jones, V.H.
 1948 Notes of Frederick S. Dellenbaugh on the Southern Paiute from letters of 1927 and 1928. Masterkey 22: 177-82.
- Kelly, Isabel T.
 n.d. Las Vegas and Chemehuevi field notes. Unpublished manuscript, University of California, Berkeley.
 1919 Ethnography of the Surprise Valley Paiute. University of California Publications in American Archeology and Ethnology No. 65.

- Kelly, Isabel T.
- 1938 Band organization of the Southern Paiute. American Anthropologist 40: 633-4.
 - 1939 Southern Paiute shaminism. Anthropological Records 2: 151-167.
- Kelly, William A.
- 1953 Indians of the Southwest. Bureau of Ethnic Research, University of Arizona, Tucson.
- Kirchoff, Paul
- 1954 Gatherers and farmers in the greater Southwest: a problem in classification. American Anthropologist 56(4) pt. 1: 529-50.
- Knowlton, Clark S. ed.
- 1964 Indian and Spanish American adjustments to arid and semi-arid environments. A symposium held during the 40th Annual Meeting of the Southwestern and Rocky Mt. Division of the American Association for the Advancement of Science, April 28, 1964.
- Kroeber, A.L.
- 1902 A preliminary sketch of the Mohave Indians. American Anthropologist 4: 276-285.
 - 1908 Notes on California folklore. Journal of American Folklore 21 (81-82): 237-45.
 - 1908 Origin tradition of the Chemehuevi Indians. Journal of American Folklore 21: 240-2.
 - 1917 California kinship systems. University of California Publications in American Archeology and Ethnology 12: 339-396.
 - 1920 Yuman tribes of the Lower Colorado. University of California Publications in American Archeology and Ethnology.
 - 1925 Earth-Tongue, a Mohave, In American Indian Life. Parsons, E.C. (ed.). New York.
 - 1947 A Southwestern personality type. Southwestern Journal of Anthropology 3(2): 108-13.
 - 1948 Seven Mohave myths. University of California Anthropological Records 11(1).
 - 1951 A Mohave historical epic. University of California Anthropological Records 4(2).
 - 1971 Elements of culture in native California, In California Indians: a source book. Heizer, R.F. and M.A. Whipple (eds.) University of California Press, Berkeley and Los Angeles.

- Lamb, Sydney M.
 1958 Linguistic prehistory in the Great Basin. International Journal of American Linguistics. 24: 95-100.
- Larson, A.K.
 1946 Agricultural pioneering in the Virgin River basin. MA thesis. Brigham Young University, Provo, Utah.
- Lasker, Gabriel Ward
 1954 Human evolution in contemporary communities. Southwestern Journal of Anthropology 10: 353-365.
- Little, James A.
 1871 Mission to the Mohave. Juvenile Instructor 6 (15).
- Loew, Oscar
 1876 Notes upon ethnology of Southern California and adjacent regions. In Annual report upon the geographical surveys west of the one hundredth meridian, in California, Nevada, Utah, Colorado, Wyoming, New Mexico, Arizona and Montana (under George M. Wheeler). Annual Report of the Chief of Engineers for 1876. Appendix JJ, pp. 321-8. Washington.
 1876 Report upon the physical and agricultural features of Southern California and especially the Mohave Desert. In Annual Report of the Chief of Engineers for 1876, pp. 214-22.
- Lowie, R.H.
 1928 The cultural connection of California and plateau Shoshonean tribes. University of California Publications 20: 145-56.
 1924 Notes on Shoshonean ethnography. Anthropological Papers of the American Museum of Natural History 20: 185-314.
 1924 Shoshonean tales. Journal of American Folklore 37: 92-200.
- Lyman, A.R.
 1930 Pahute biscuits. Utah Historical Quarterly, 3: 118-20.
- Malde, Harold E.
 1964 Environment and man in arid America. Science 145 (3628): 123-129.
- Malouf, Carling and A.A. Malouf
 1945 Effects of Spanish slavery on the Indians of the inter-mountain West. Southwestern Journal of Anthropology 1(3): 378-391.
- Matson, Richard G.
 1971 Adaptation and environment in the Cerbat Mountains, Arizona. Unpublished Ph.D. dissertation. University of California, Davis.

Mohr, Albert

- 1951 The hunting crook: its use and distribution in the Southwest. Masterkey 25(5): 145-54.

Murphy, Edith Van Allen

- 1959 Indian uses of native plants. Desert Printers, Inc. Palm Desert.

Murphy, R.F.

- 1970 Basin ethnography and ecological theory. In Languages and cultures of western North America. E.H. Swanson, Jr. (ed.). pp. 152-71, Idaho State University Press, Pocatello.

Palmer, E.

- 1871 Food products of the North American Indians. U.S. Dept. of Agriculture Report for 1870, pp. 404-428, Washington.
- 1878 Plants used by the Indians of the U.S. American Naturalist 12: 593-606, 646-55.

Palmer, William R.

- 1929 Pahute Indian government and laws. Utah Historical Quarterly 2(2): 35-42.
- 1933 Pahute Indian homelands. Utah Historical Quarterly 6(3): 88-102.
- 1933 The Pahute fire legend. Utah Historical Quarterly 6(2): 62-4.
- 1938 The religion of the Paiutes. Improvement Era 39(9): 534-37.
- 1942 Pahute Indian medicine. Utah Historical Quarterly 10(1-4): 1-13.
- 1946 Pahute Indian legends. Deseret Publishing Co., Salt Lake City.

Park, Willard A.

- 1938 Tribal distributions in the Great Basin. American Anthropologist 40: 622-638.
- 1946 Culture succession in the Great Basin, In Language, culture and personality; essays in memory of Edward Sapir. Sapir Memorial Fund, Menasha.

Powell, John W.

- 1875 The exploration of the Colorado River of the West and its tributaries, explored in 1868, 1870, 1871 and 1872 under the direction of the secretary of the Smithsonian Institution. Government Printing Office, Washington.
- 1875 An overland trip to the Grand Canyon. Scribner's Monthly 10 (6): 659-78.

- Powell, Ingalls.
 1910 Handbook of American Indians. Bureau of American Ethnology Bulletin 30 (pt. 2): 188.
- Reed, Flo and Byron F. Stetler
 1962 Use of native plants by Nevada Indians. Nevada State Department of Education, Carson City.
- Richards, Cara B. and H.F. Dobyns
 1955 Anthropology and Indian land claims litigation: a symposium. Dittoed report of proceedings.
- Sapir, E.
 1910 Song recitative in Paiute mythology. Journal of American Folklore 23: 455-472.
- 1910 Two Paiute myths. Museum Journal. University of Pennsylvania, pp. 15-68.
- 1915 Southern Paiute and Nahuatl. American Anthropologist 17 (Part II): 98-120, 306-328.
- 1930 Southern Paiute, a Shoshonean language. Proceedings of the American Academy of Arts and Sciences 65: 1-296.
- 1930 Texts of the Kaibab Paiutes and Unitah Utes. Proceedings of the American Academy of Arts and Sciences 65: 297-535.
- 1931 Southern Paiute dictionary. Proceedings of the American Academy of Arts and Sciences 65: 537-730.
- Schwartz, D.W.
 1958 Prehistoric man in the Grand Canyon. Scientific American 198(2): 97-100.
- 1959 Culture area and time depth: the four worlds of the Havasupai. American Antiquity 61: 1060-1070.
- Schroeder, A.H.
 1953 Brief history of the Havasupai. Plateau 25: 45-52.
- 1959 A study of Yavapai history. Vol. I & II, National Park Service, Santa Fe.
- Service, Elman R.
 1962 Primitive social organization, an evolutionary perspective. Random House, New York.
- Spicer, Edward
 1962 Cycles of conquest; the impact of Spain, Mexico and the United States on the Indians of the Southwest, 1533-1960. University of Arizona Press, Tucson.

Spier, Leslie

- 1933 Yuman tribes of the Gila River. Cooper Square Publishers, Inc., New York.
- 1936 Cultural relations of the Gila River and Lower Colorado Tribes. Publications in Anthropology, No. 3, Yale University.
- 1946 Comparative vocabularies and parallel texts in two Yuman languages of Arizona. University Publications in Anthropology No. 2. University of New Mexico.

Steward, Julian H.

- 1933 Archeological problems of the northern periphery of the Southwest. Museum of Northern Arizona Bulletin 5.
- 1936 Economic and social basis of primitive bands, In Essays in honor of A.L. Kroeber, pp. 331-350. University of California Press, Berkeley.
- 1970 The foundations of basin-plateau Shoshonean society, In Languages and cultures of western North America, pp. 113-151. Idaho State University Press, Pocatello.

Stewart, K.M.

- 1947 An account of the Mohave mourning ceremony. American Anthropologist 49: 146-148.

Stewart, O.C.

- 1939 The Northern Paiute bands. California University Anthropological Records 2(3): 127-149,
- 1941-42 Culture element distributions; Ute, Southern Paiute. Anthropological Records 6, Pt. 18.
- 1942 Ute-Southern Paiute. Anthropological Records 1-6(4): 231-356. University of California, Berkeley.

Stuart, B.R.

- 1942 Paiute surprise the Mohave. Masterkey 12: 217-19.
- 1945 Pug-A-Roo gathers mescal. Masterkey 19(3): 79-81.
- 1945 Pug-A-Roo picks pine nuts. Masterkey 19(5): 155.
- 1945 Old John's Ford. Masterkey 19(1): 28-29.

Swanson, Earl H. Jr.

- 1970 Languages and cultures of western North America. Idaho State University Press, Pocatello.

Taylor, F.S. and W.J. Wallace

- 1947 Mohave tattooing and face painting. Southwest Museum Leaflet No. 20.

Train, George L. and Edith C. Trager

- 1959 Medicinal uses of plants by Indian tribes of Nevada. Contributions toward a flora of Nevada No. 33. The Division of Plant Exploration and Introduction, Bureau of Plant Industry, U.S. Department of Agriculture. Washington.

Udell, John

- 1868 Journal kept during a trip across the plains containing an account of the massacre of a portion of his party by the Mojave Indians in 1859. Jefferson, Northern Ashtabula Sentinel Steam Press Print.

U.S. Senate

- 1936 Walapai papers: historical reports, documents and extracts from publication relating to the Walapai Indians of Arizona. U.S. Senate, 74th Congress, 2nd Session, Document No. 273. Washington.

Van Valkenburgh, Richard F.

- 1936 Chemehuevi notes. Unpublished manuscript, Museum of Northern Arizona Library, Reprint file No. 6315. Flagstaff.

Wallace, W.J.

- 1948 The girl's puberty rite of the Mohave. Proceedings of the Indiana Academy of Science 57: 37-39.
- 1948 Infancy and childhood among the Mohave Indians. Primitive Man 21: 19-38.
- 1953 Tobacco and its use among the Mohave Indians. Masterkey 27: 192-202.

Wallace, W.W.

- 1947 The dream in Mohave life. Journal of American Folklore 60: 252-258.

Walker, Clifford

- 1967 Life and adventure along the Mohave River Trail. San Bernardino Museum Quarterly 15(1).

Watkins, F.E.

- 1945 Moapa Paiute winter wickiup. Masterkey 19: 13-18.

Wetherill, Milton A.

- 1954 A Paiute trap corral on Skeleton Mesa, Arizona. Plateau 26: 116.

Winter, Werner

- 1957 Yuman languages 1: first impressions. International Journal of American Linguistics 23: 18-23.

Witherspoon, W.W.

- 1889 Collection of honey dew by the Nevada Indians. American Anthropologist 2(4): 380.

Woodward, Arthur

1953 Ireteba, chief of the Mohave. Plateau 25(3): 53-68.

Yanovsky, E.

1936 Food plants of North American Indians. U.S. Department
of Agriculture Miscellaneous Publications No. 237. Washington.

