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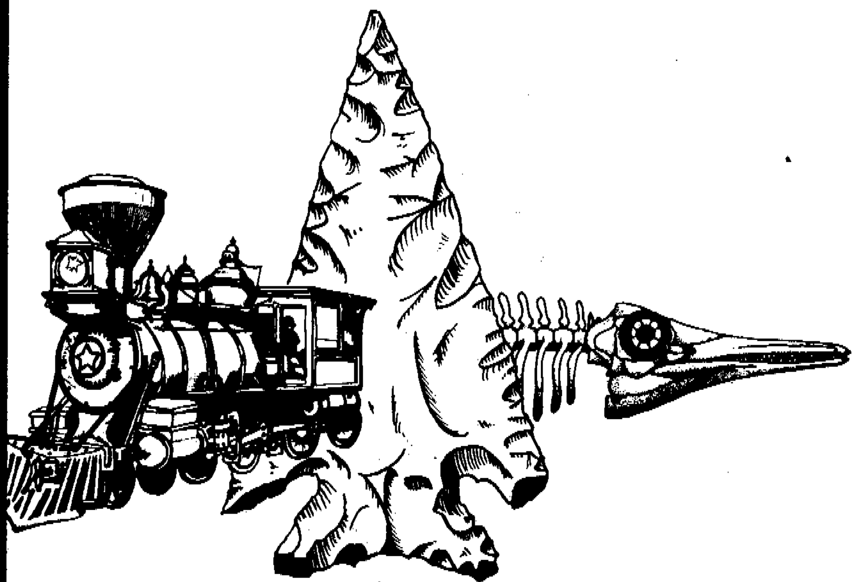

PREHISTORY, ETHNOHISTORY, AND HISTORY OF EASTERN NEVADA:

A CULTURAL RESOURCES SUMMARY OF THE ELKO AND ELY DISTRICTS

edited by
Steven R. James

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ABSTRACT

The Bureau of Land Management Elko and Ely district cover most of eastern Nevada. An overview of the environment, prehistory, ethnohistory, and history of the region is presented.

Archaeological investigations in eastern Nevada have been conducted since the mid-1920's. Most of our prehistoric knowledge about the region, however, is derived from research since the 1950's. Four prehistoric cultural periods spanning the past 15,000 years have been identified in the archaeological record: Paleoindian, Archaic, Late Prehistoric, and Proto-Historic.

Although represented by few cultural remains, the earliest human occupation of the region was probably by Paleoindian hunters between 15,000 and 10,000 years ago. Toward the end of the Paleoindian period, people of the Western Pluvial Lakes tradition (11,000 to 8,000 B.P.) apparently lived along the edges of waning pluvial lakes and marshes in the region and subsisted on lacustrine food resources from these lakes. Out of the Paleoindian-lacustral lifeway, the Archaic hunting and gathering pattern emerged, a pattern which persisted into the Proto-Historic period as represented by Numic peoples. Between A.D. 900 to 1200 the Fremont culture, a mixed horticultural and hunting-gathering people, occupied the eastern portion of the study area and may have co-existed with other Late Prehistoric peoples who continued to lead a hunting and gathering lifeway. After A.D. 1200, Numic peoples represented by Western Shoshoni and Southern Paiute lived in the region.

At the time of European contact eastern and northeastern Nevada was occupied by Numic-speaking, mobile hunters and gatherers. Living in a semi-arid setting these central Great Basin Native American groups were not rich in material culture or ritual life. However, their lifeway blended effectively with their environment and focused on the available resources, which, although not as spectacular as the great bison herds of the Plains or the fisheries of the Pacific Coast, were diverse and abundant in season.

In the historical period, fur trappers, government exploring expeditions, and emigrants bound for California passed through the study area. Some of the most significant historical events centered on the development of trans-continental communication and transportation routes. The major industry in the region during the nineteenth century was mining. Acitivity of this kind occurred in every county in the area and led to the development of some of the state's richest strikes. Ranching and agriculture also played an important role in the economic development of eastern Nevada.

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ACKNOWLEDGMENTS

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Steven R. James
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PART I

CULTURAL RESOURCE OVERVIEW

SETTING AND ENVIRONMENTAL BACKGROUND

Steven R. James

Political Boundaries

Elko District

The U. S. Department of Interior, Bureau of Land Management, Elko District encompasses the northeastern portion of Nevada between approximately 40 and 42 degrees north latitude and 114 and 117 degrees west longitude. The Elko District includes all of Elko County and the northern portions of Eureka and Lander Counties (Figure 1).

Public land administered by the Elko District totals 2,954,810 ha (7,387,026 acres). Other federal agencies administering public lands within the district boundaries are the Humboldt National Forest (Department of Agriculture), Duck Valley and South Fork Indian Reservations (Bureau of Indian Affairs), Ruby Lake National Wildlife Refuge, and a small portion of the Wendover Range (Department of Defense) (see Figure 2).

The Elko District is divided into the Elko and Wells Resource Areas. The two resource areas are further subdivided into planning areas and planning units: (1) Elko Resource Area--(a) Tuscarora Planning Area: Tuscarora and North Fork Planning Units, and (b) Humboldt Planning Area: Buckhorn Planning Unit; (2) Wells Resource Area--(a) Wells Planning Area: Contact and Currie Planning Units (BLM Nevada Statistics 1979).

Ely District

The Ely District is located in east-central Nevada between approximately 37 degrees 30 minutes and 40 degrees north latitude and 114 and 116 degrees west longitude. White Pine County, northern Lincoln County, and northeastern Nye County are included within the district boundaries (Figure 1).

A total of 3,203,586 ha (8,008,966 acres) of public land is administered by the Ely District. Other federal agencies which have jurisdiction over public lands within the district boundaries are the Humboldt National Forest (Department of Agriculture)--Ely and White Pine Ranger Districts, Lehman Caves National Monument (Department of Interior, National Park Service), and Goshute Indian Reservation, Duckwater Reservation, and Ely Colony (Bureau of Indian Affairs) (see Figure 3). In addition to the federal agencies, state agencies administer the Sunnyside and Key Pittman Wildlife Management Areas (Nevada Fish and Game Commission) and Ward Charcoal Ovens State Park.

The Ely District is divided into the Egan and Schell Resource Areas. The two resource areas are further subdivided as follows: (1) Egan Resource Area--(a) Cherry Creek Planning Area: Steptoe, Butte, and Newark Planning Units, and (b) Currant Planning Area: Duckwater, Preston-Lund, and Horse and Cattle Camp Planning Units;

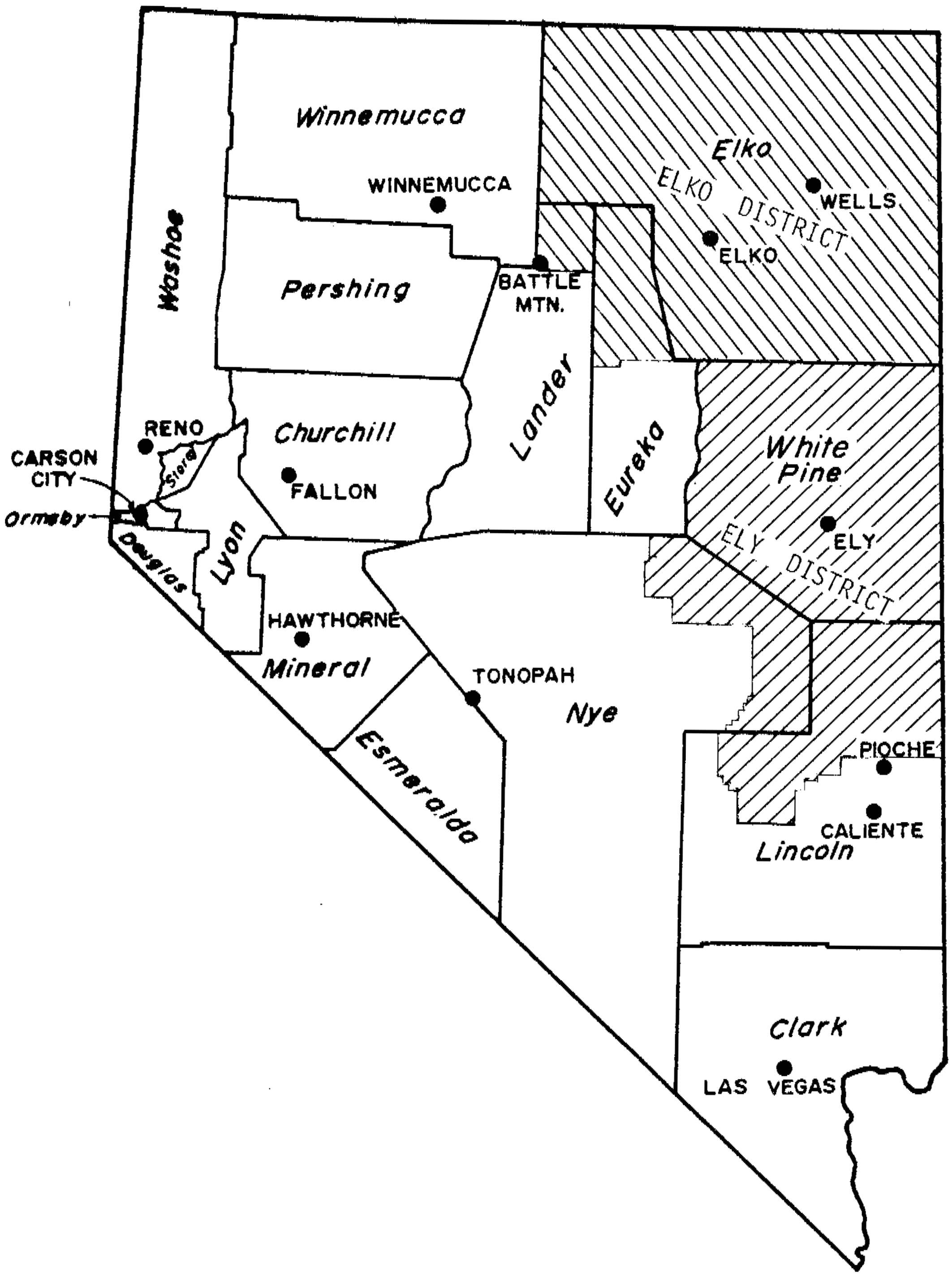


Figure 1. Map showing counties in Nevada and location of Elko and Ely districts (shaded).

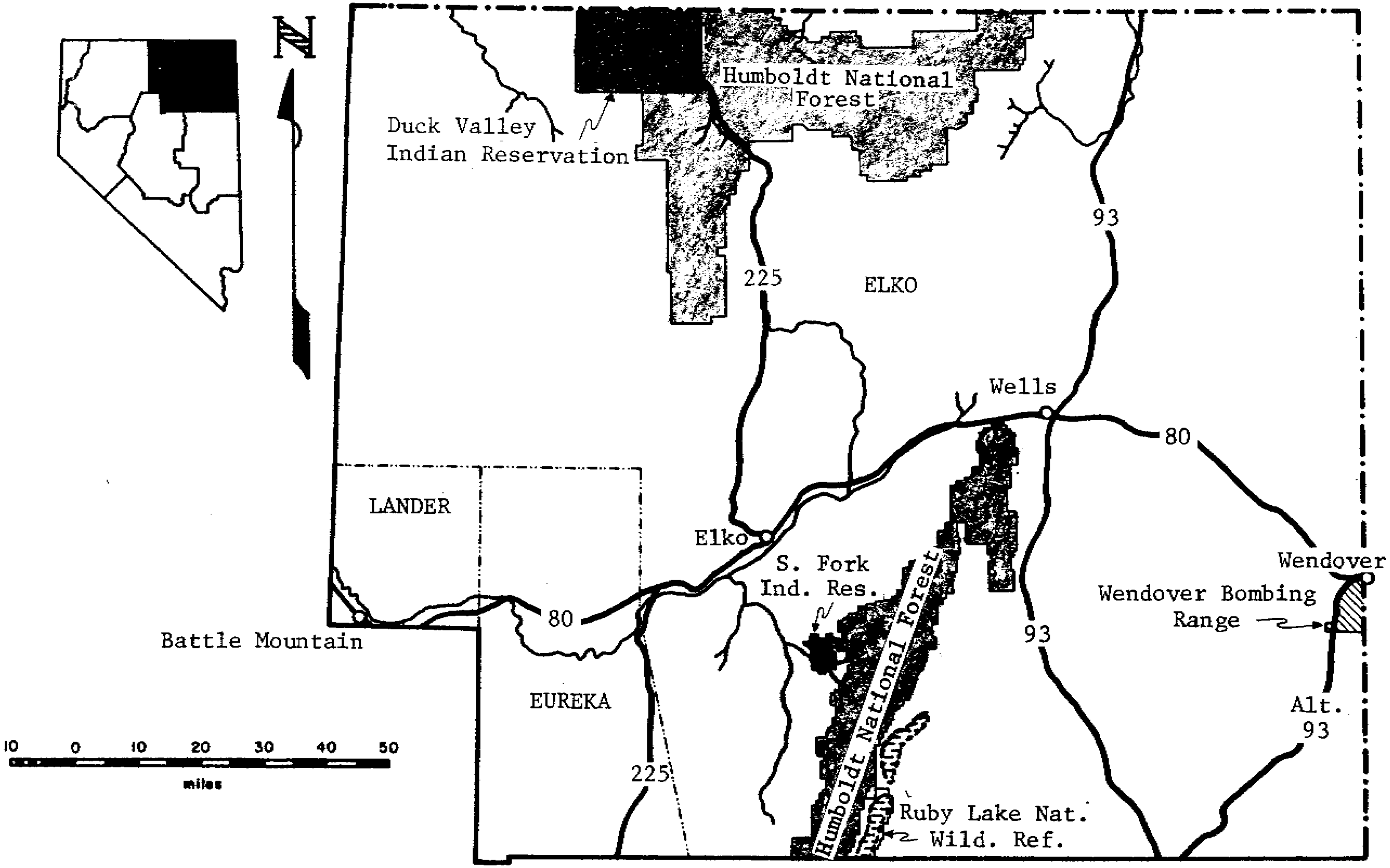


Figure 2. Location of public lands administered by other federal and state agencies within the boundaries of the Elko District.

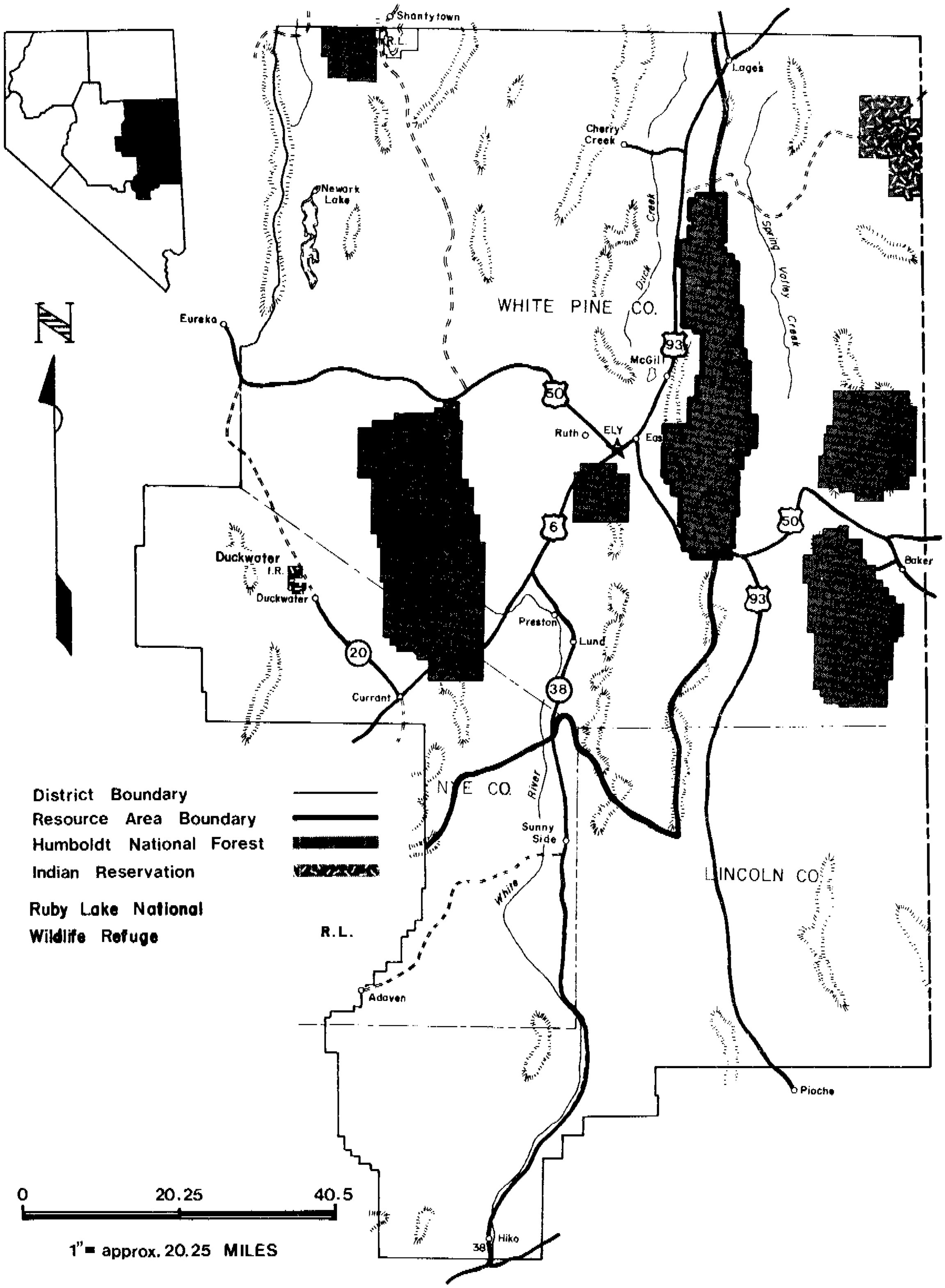


Figure 3. Location of public lands administered by other federal and state agencies within the boundaries of the Ely District.

(2) Schell Resource Area--(a) Moriah Planning Area: Moriah Planning Unit, and (b) Pony Springs Planning Area: White River, Lake Valley, and Wilson Creek Planning Units (BLM Nevada Statistics 1979).

Physiography

For the most part, the Elko and Ely districts are situated in the section of the Basin and Range Province known as the Great Basin. The northern end of the Elko District is included in the Snake River Plain Province, for the rivers in this area drain into the Snake River. Similarly, the southern portion of the Ely District lies outside the Great Basin since the White River and Meadow Valley Wash eventually connect with the Colorado River System.

The term "Great Basin" was first used by Lieutenant John C. Fremont in 1844 to describe the internal drainage pattern of the region (Cline 1963:214-215; Fremont 1845:274-276). However, the name is misleading, for this region is not one large basin but contains over 150 enclosed basin separated by mountain ranges (Synder, Hardman, and Zdenek 1964).

The Great Basin stretches from the Wasatch Range on the east to the Sierra Nevada on the west, and from eastern Oregon and the southeastern corner of Idaho in the north to the southern end of Nevada. The region is characterized by alternating, short north-south trending mountain ranges and parallel alluvium-filled valleys. The mountain ranges are fault blocks or horsts that have been uplifted, and the valleys have been down-dropped as grabens. The block faulting, perhaps initiated as early as the Oligocene, continues even today. During the early Pleistocene the entire region was epeirogenically uplifted, with the major effects of this uplifting occurring along the western edge of the Wasatch Range and on the eastern side of the Sierra Nevada (Morrison 1965c:265). Today, elevations in the Great Basin range from 4005 m (13,140 feet) on Boundary Peak in the White Mountains on the California-Nevada border, the highest point in Nevada, to 86 m (282 feet) below sea level in Death Valley, California, the lowest point in the United States. More generally, the mountain ranges extend from 1829 m (6000 feet) to 3658 m (12,000 feet), and the valleys from 1219 m (4000 feet) to 1829 m (6000 feet). In eastern Nevada, the mountain ranges average between 2134 m (7000 feet) and 3353 m (11,000 feet), while the valley floors are around 1524 to 1828 m (5000 to 6000 feet) in elevation. Wheeler Peak at 3984 m (13,063 feet) elevation in the Snake Range on the Nevada-Utah border is the second highest peak in Nevada.

The Great Basin is part of a larger physiographic province, the Basin and Range Province (Fenneman 1931). This province extends from southeastern Oregon and central Idaho southward into Mexico and runs longitudinally from southeastern California to west Texas. With the exception of the Great Basin, areas of this region have egress to the sea, although some of them do not have sufficient rainfall for external drainage to actually occur. For further details on landforms of the Basin and Range Province, the reader should consult Peterson (1981).

Geology

Since the geology of eastern Nevada has been intensively studied, only a brief review of the regional geological history will be presented. Specific details on the geology and mineral resources for each county in eastern Nevada are available: Elko County (Hope and Coats 1976; Smith 1976b), Eureka County (Roberts et al. 1967), Lander County (Stewart and McKee 1977; Stager 1977), Lincoln County (Tschanz and Pampeyan 1970), northern Nye County (Kleinhampl and Ziony 1967), and White Pine County (Hose and Blake 1976; Smith 1976a). Thornbury (1965) and Hunt (1974:487-489) provide brief discussions on Great Basin geology and physiography. A comprehensive summary of Nevada geology, upon which the following summary is based, has recently been completed by Stewart (1980).

The geological history of Nevada begins in Paleozoic time. Metamorphic Precambrian rocks in southern Nevada are the oldest in the State and are dated at 1,740 ± 25 m.y.a. (million years ago). During late Precambrian, Cambrian, Ordovician, and Devonian time, shallow marine sediments were deposited in Nevada along what was then the western continental shelf of North America. In the Late Devonian and Early Mississippian, the Antler orogeny transported siliceous and volcanic rocks over coeval carbonates 145 km eastward along the Roberts Mountains thrust. This event created the Antler Highland in north-central Nevada from which coarse detrital material was eroded and deposited in a shallow-water foreland basin to the east. Deposition of carbonate-terrigenous detrital debris from the Antler Highland continued throughout the Mississippian and Pennsylvanian. In the Permian, carbonate, sandstone, and siltstone materials were added to this depositional matrix throughout eastern Nevada.

In Lower Triassic time, shallow-water marine sediments were lain down in eastern Nevada, and an upland region occupied the central portion of the State. The Lower Triassic rocks in eastern Nevada and northeastern Nevada are assigned to the Thaynes Formation. During the Upper Triassic and early Jurassic, continental sedimentary rocks were deposited in eastern Nevada. The only Triassic-Jurassic exposure in the region is located in Elko County near Currie. In late Jurassic and throughout Cretaceous time, minor tectonic effects of the Sevier orogeny, a period of thrust faulting and folding in western Utah, were felt in eastern Nevada. The Sevier orogeny created a mountainous highland in western Utah, which represented a small portion of the Cordilleran mountain chain that ran from Alaska to southern Nevada (Hintze 1973).

Two metamorphic core complexes, a term applied to isolated complexes of metamorphic rock in the western North American Cordilleran, have been recognized in the Ruby Mountains and the Snake Range (Stewart 1980:79-80). Although the dating of the metamorphism is not well established, the event is thought to have begun in Jurassic time.

Early and middle Cenozoic events in Nevada are not well known. The Sheep Pass Formation in the Egan Range is estimated to be Paleocene and/or Eocene in age. This sedimentary formation of fluvial and lacustrine origin unconformably overlies Paleozoic rocks. Other sedimentary deposits of an equivalent age are found in the Jarbidge, Pinon, and Schell Creek Ranges of eastern Nevada. In general, the lack of early Tertiary sedimentary rocks apparently indicates that much of the region was elevated (Stewart 1980:105).

During middle Tertiary time (43 to 34 m.y.a.), a sizable amount of igneous activity occurred in northeastern Nevada. Igneous rocks of this age consist mainly of andesitic and rhyolitic lava flows and intrusive granites. Beginning about 34 m.y.a. and continuing to 17 m.y.a., volcanic activity shifted away from northeastern Nevada to the central and south-east central regions of the State. The composition of the volcanics changed at that time, as well, with quartz latitic and rhyolitic ash-flow tuffs predominating (Stewart 1980:100).

Between 17 and 6 m.y.a., late Cenozoic volcanic activity was widespread throughout most of Nevada, except in the eastern central region (i.e., White Pine County). Concomitantly, extensional block faulting began to form the characteristic basin and range topography. About 7.5 m.y.a., alluvial filling of the present basins was initiated.

During the Pleistocene, pluvial lakes filled many of the enclosed basins, and a minor amount of glaciation occurred in several Great Basin ranges. The geological evidence for these two synchronous events is observable throughout the Great Basin. Data on pluvial lakes in eastern Nevada are included in Gilbert (1890), Meinzer (1922), Hubbs and Miller (1948), Synder and Langbein (1962), Synder et al. (1964), Morrison (1965c; see also 1965a, 1965b), Morrison and Frye (1965), Mifflin and Wheat (1979), and Currey (1980a, 1980b). Hubbs and Miller (1948) contains many early references pertaining to eastern Nevada pluvial lakes. A list of individual pluvial lakes in the region, along with size and elevational data, is shown in Table 1.

Research on glaciers in eastern Nevada has tended to lag behind that of pluvial lakes. The following is a listing of glaciated ranges in eastern Nevada and associated references: Independence, Jarbidge, and Pilot Ranges (Blackwelder 1934); Ruby Mountains and East Humboldt Range (Blackwelder 1930, 1931; Sharp 1938a, 1938b, 1940, 1942; Wayne 1977); Schell Creek Range (Blackwelder 1931; Morrison 1965c); and Snake Range (Blackwelder 1931; Drewes 1958; Ives 1946; Whitebread 1969).

Late Quaternary Environmental Changes

Evidence for very late Quaternary environmental changes in the Great Basin and adjacent regions are based on several types of research. Studies of plant macrofossil remains from dry caves, fluctuations of lake levels, tephrachronology, floral and faunal distributions, dendrochronology and dendroclimatology, glacial and periglacial deposits, arroyo cutting and filling, and fossil pollen have contributed to our knowledge of the Holocene in the Great Basin (see Mehringer 1977 for a review of this research).

Table 1 . Pleistocene Lakes in Eastern Nevada
(modified from Mifflin and Wheat 1979:53-57).

Basin Name	Lake Name	Lake Area (sq. mi.)	Maximum Lake Elevation (feet)	Basin Floor Elevation (feet)
Antelope	Antelope	48	5724	5650
Bonneville*	Bonneville	19940	5188	--
Butte	Gale	159	6250	6161
Cave	Cave	69	6000	5900
Clover-Independence	Clover	352	5674	5578
Coal	Coal	69	4990	4956
Dry Lake	Bristol	35	4620	4579
Goshute (Steptoe)	Waring	541	5777	5583
Lake (Duck)	Carpenter	134	5985	5915
Long	Hubbs	195	6300	6062
Newark	Newark	302	6060	5834
Ruby	Franklin	483	6068	5939
Spring	Maxey	81	5880	5751
Spring	Spring	233	5770	5532

*Very little of Lake Bonneville extended into eastern Nevada.

The first comprehensive treatment of Holocene environmental changes in the Great Basin was by Antevs (1948, 1952a, 1952b, 1953a, 1953b, 1955; see also 1938, 1962). In his 1948 publication, Antevs proposed a three-stage Holocene climatic sequence: Anathermal (9000 to 7000 years before present, or B.P.), Altithermal (7000 to 4500 B.P.), and Medithermal (4500 B.P. to present). According to Antevs, at the end of the Wisconsinan glaciation (the last major Pleistocene glacial epoch), the Anathermal climate was at first cooler and wetter after the retreat of the glaciers, but the climate steadily grew warmer. In the Altithermal, the warming trend continued until the Great Basin was more arid and warmer than at the present. The waning pluvial lakes completely dried up during the Altithermal. With the rebirth of glaciers in the Sierra Nevada, Wasatch, and Uintah Mountains during neoglaciation in the Medithermal, the climate became much like today.

For a time, Antev's tripartite scheme was accepted with little objection, but eventually some researchers began to accumulate evidence differing in some respects from Antevs' scheme. The major controversy centered on Antevs' Altithermal as a hot, arid period and its effects on human populations (particularly Aschmann 1958; Bryan and Gruhn 1964; Jennings 1968; Martin 1963a, 1963b; Martin and Mehringer 1965; but see Baumhoff and Heizer 1965). Some of those who disagreed with Antevs felt that summer rain increased in the Southwest during the Altithermal so that this time period would have been wet and humid, rather than arid and warm. This debate still continues today in some circles although most researchers acknowledge the existence of the Altithermal as slightly warmer and drier than at present. Just what the effects of the Altithermal were on prehistoric populations remain uncertain (e.g., see Benedict and Olsen 1978); however, it seems doubtful that the Great Basin was depopulated. In general, Antev's scheme does characterize the climate of the Holocene, although recent research has shown that there are several epi-fluctuations within each of his major stages, and the use of Antevs' three part classification in archaeological discussions is now outdated.

Currey and James (1981) have recently summarized the geological and biological evidence on the late Quaternary paleoenvironmental history of the northeastern Great Basin and adjacent regions. The reader should consult this work for more information on paleoenvironmental changes in these regions.

Climate

The climate of the Elko and Ely districts falls under the classification of mid-latitude steppe and mid-latitude desert, with cold winters, hot summers, and semi-arid to arid conditions (Houghton et al. 1975:Figure 1). Annual average precipitation ranges between 10 and 40 cm. In some higher parts of the districts, mean annual snowfall may be between 100 and 200 cm. The coldest and warmest months are January and July, respectively. Mean annual temperatures recorded at Elko (1547 m elevation) during January are -5 degrees C, and in July the mean is 21 degrees C. These mean temperature ranges are typical of northeastern Nevada, which is the coldest portion of the state. The growing season averages between 100 and 120 days per year, based on the number of days in which temperatures are always above 32 degrees F; however, Elko records one or more nights below freezing throughout every month of the year (Houghton et al. 1975:26).

The general circulation pattern of weather systems over Nevada has been summarized as follows:

> Winter: periods of fair weather are associated with Great Basin highs, but Pacific fronts also move inland in the prevailing westerlies aloft, bringing precipitation and frequent weather changes.
>
> Spring: precipitation and changeable weather are common largely because of Great Basin lows, which are frequent in the spring. In late spring, the subtropical high brings drought to southern Nevada.
>
> Summer: clear dry weather is dominant due to the subtropical high and the lack of available moisture from the Pacific Ocean. Precipitation occurs as occasional showers in moist air from the tropical oceans. Thunderstorm frequency increases over eastern Nevada.
>
> Fall: fair weather is dominant, with frequent Great Basin highs, but Pacific fronts and Great Basin lows cause precipitation and changeable weather, especially in the late fall (Houghton et al. 1975:19).

Vegetation

On a floristic basis, eastern Nevada is classified under the Intermountain Sagebrush Province (Bailey 1978). This province is essentially coextensive with the Great Basin physiographic section, but also includes portions of Idaho, Oregon, and Washington which are outside the Great Basin and drain into the Pacific Ocean.

The Intermountain Sagebrush Province is divided into five sections, three of which are in eastern Nevada. The majority of the region lies in the Great Basin Sagebrush Section. In northern Elko County, the area draining into the Snake River is part of the Sagebrush-Wheatgrass Section. On the east along the Nevada-Utah border, a small segment of the Bonneville Saltbush-Greasewood Section extends into Nevada.

Great Basin vegetation can be separated into several zones (Billings 1951; Cronquist et al. 1972). Billings (1951) divides the valley floors and adjacent bajadas of the Great Basin into three vegetation zones: creosote bush, shadscale, and sagebrush-grass zones. The latter two zones constitute the northern desert shrub formation of Shantz (1925:16-19).

Creosote Bush Zone

Dominated by creosote bush (Larrea divaricata), this zone covers much of the Mohave Desert. The creosote bush zone penetrates the study area in the lower valleys of southeastern Nevada where it intermingles with the shadscale zone (see Cronquist et al. 1972 for more details).

Shadscale Zone

The shadscale zone in eastern Nevada is very limited and is present only in the lower valleys below 1372 m (4500 feet) (see Billings 1949:Figure 1). As the name implies, this zone is dominated by shadscale (Atriplex confertifolia) which often exists as pure stands on heavy silty soils in dry valleys of the Great Basin. Other important woody shrubs in the vegetational matrix of this zone are spiny-hop sage (Grayia spinosa), Nevada joint fir or Mormon tea (Ephedra nevadensis), bud sage (Artemisia spinescens), winterfat (Eurotia lanata), and horsebrush (Tetradymia spp.). Perennial herbs include Indian ricegrass (Oryzopsis hymenoides), and galleta grass (Hilaria jamesii). Within the shadscale zone are several "edaphically controlled communities", such as those on saline soils and dunes where shadscale is not dominant (Billings 1951:109; Fautin 1946:265-272). In areas of high salinity, greasewood (Sarcobatus vermiculatus), salt grass (Distichlis sp.), and pickleweed (Allenrolfea occidentalis) communities predominate. In other areas, depending upon the soil, moisture, and topography, communities of Tetradymia, Eurotia lanata, and black sage (Artemisia nova) can be found. Of course, in areas of extreme saline and alkaline conditions, such as on the playas and salt flats, there is little or no plant growth.

Sagebrush Zone

Above 1370 m (4500 feet), the shadscale zone is replaced by sagebrush (Artemisia tridentata) and various grasses. Other characteristic plants of this zone are Tetradymia glabrata, green joint fir or Mormon tea (Ephedra viridis), and rabbitbrush (Chrysothamnus spp.). Dominant grasses are wheat grass (Agropyron spicatum), needle-and-thread grass (Stipa comata), Indian ricegrass, and galleta grass. Other perennial grasses and herbs include three-awn grass (Aristida longiseta), balsam root (Balsamorhiza sagittata), phlox (Phlox sp.), milk vetches (Astragalus uintahensis and A. cibarius), Eriogonum sp., and Castilleja sp. Introduced species resulting from burning, cultivation, over-grazing, clearing, and other ecological disturbances attributable to man include brome or cheat grass (Bromus tectorum), Russian thistle, pigweeds (Amaranthus spp.), and sunflower (Helianthus annuus) (Fautin 1946:272-273; Billings 1951:110-112).

Above the sagebrush zone, Billings (1951) outlines three montane series classes for the ranges across the Great Basin: Sierran, Basin Range, and Wasatch. The Basin Range and Wasatch series overlap in the eastern Great Basin.

Pinyon-Juniper Zone

The pinyon-juniper zone is the lowest zone in the Basin Range series. It is an open woodland dominated by single-needle pinyon (Pinus monophylla) and Utah or Western juniper (Juniperus osteosperma) interspersed with many of the species found in the sagebrush-grass zone. This zone varies in elevation from 1542 m (5000 feet) at the lower tree limit, to 2438 m (8000 feet) at its upper limit.

Upper Sagebrush-Grass Zone

The upper sagebrush-grass zone lies above the pinyon-juniper woodland zone and contains many of the species present in the lower sagebrush zone in addition to mountain mahogany (Cercocarpus ledifolius), and quaking aspen (Populus tremuloides).

Limber Pine-Bristlecone Pine Zone

Moving upward from the upper sagebrush-grass zone, the limber pine-bristlecone pine zone occurs, beginning at about 3038 m (10,000 feet). This zone is the open, subalpine forest dominated by limber pine (Pinus flexilis), and, at higher elevations, bristlecone pine (Pinus longaeva Bailey). In the northern Great Basin, other members of the Pinaceae Family are also present in this subalpine forest (Critchfield and Allenbaugh 1969).

Alpine Tundra Zone

The Basin Range alpine tundra zone is present in the higher ranges of the Great Basin, such as the East Humboldt, Ruby, Grant, Schell Creek, and Snake ranges in eastern Nevada. Vegetation in this treeless zone is composed of low perennial herbs (see Cronquist et al. 1972; McMillan 1948 for a complete description).

Wasatch Series

Billings' (1951:118-119) vegetational zones for the Wasatch series illustrate the flora in this portion of the Coloradan biotic province. The vegetation of this series is quite similar to that of the central Rocky Mountains. Even so, a transition to the Wasatch vegetation can be observed in the ranges of eastern Nevada and western Utah, where small stands of spruce and fir grow at high elevations on north-facing slopes. The Oquirrh and Stansbury Mountains of western Utah exhibit even stronger floral affinities to the Wasatch vegetation zones.

In the Wasatch Range, the oak-maple zone replaces the sagebrush-grass zone above 1524 m (5000 feet). Gambel oak (Quercus gambelii), bigtooth maple (Acer grandidentatum), and Rocky Mountain maple (A. glabrum) are the dominant species in this zone. At about 2286 m (7500 feet), the white fir-Douglas fir-blue spruce zone succeeds the oak-maple vegetation. The dominant species are white fir (Abies concolor), Douglas fir (Pseudotsuga taxifolia), blue spruce (Picea pungens), yellow pine (Pinus ponderosa), and quaking aspen (Populus tremuloides), the latter being a successional species occurring as a result of fire or other disturbances.

The Engelmann spruce-alpine fir zone occurs above the white fir-Douglas fir zone beginning at about 2896 m (9500 feet). On north-facing slopes this subalpine forest is composed primarily of Engelmann spruce (Picea engelmannii), and subalpine fir (Abies lasiocarpa) while on southern slopes, shrubs (including Artemisia) and grassy meadows are interspersed among stands of these trees. At elevations above 3200 m (10,500 feet), the Wasatch alpine tundra zone is present in the north-facing cirques on the higher peaks of the Wasatch Range.

Fauna

Distributions and descriptions of mammals in eastern Nevada are contained in Hall (1946). Birds of the region are detailed by Linsdale (1936); although pertaining to the Deep Creek and Raft River Mountains of northwestern Utah, Behle (1955, 1958) may also contain some information on birds in the study area. Amphibians and reptiles are reported by Van Denburgh (1922), Linsdale (1940), and Stebbins (1966). LaRivers (1962) has described the fishes. Additionally, species lists of the animals found in the Elko and Ely districts have been complied by the Bureau of Land Management and are available at the district offices.

SUMMARY OF PREVIOUS INVESTIGATIONS AND RESEARCH

PREHISTORY

Steven R. James

In this section, archaeological investigations in the Elko and Ely districts, as well as a few of the more important sites that are just outside the study area, are discussed in chronological order beginning with the earliest work. Since investigations prior to the 1950's consisted of only brief accounts, these are simply summarized by noting the more significant aspects of the work which might be of interest to cultural research managers and future researchers. For archaeological work since the early 1950's up to the present time, a more detailed synthesis is presented (see also Fowler 1980; Fowler et al. 1973:4-6; Heizer and Hester 1978a; James and Singer 1980:22-64 for various reviews on the history of Great Basin archaeological research).

While little was specifically mentioned about the archaeology of eastern Nevada, nineteenth century explorers, travelers, and historians briefly reported archaeological sites in the surrounding areas. One of the early references to the archaeology of the region was written by Captain Howard Stansbury (1852b:182) who mentioned finding some Indian pottery and obsidian at a campsite while exploring the northwestern shore of Great Salt Lake. Another observation made in 1854 briefly described petroglyphs and adobe ruins with artifacts in Red Creek Canyon north of Parowan, Utah (Carvalho 1954:272-273, orig. 1857:206-207; also quoted in Bancroft 1875:715-717).

Earlier, Brigham Young (1851:46-47) provided a fairly detailed description of the Red Creek ruins which indicated the large size of Fremont villages in the eastern Great Basin prior to being razed for farm land:

> On the 14th we visited the ruins of an ancient Indian village on Red Creek, where we found quantities of broken, burnt, painted earthenware, arrow points, adobes, burnt brick, a crucible, some corn grains, charred cobs, animal bones, and flint stones of various colors. The ruins were scattered over a space about two miles long and one wide. The buildings were about 120 in number, and were composed apparently of dirt lodges, the earthen roofs having been supported by timbers, which had decayed or been burned, and had fallen in, the remains thus forming mounds of an oval shape and sunken at the top. One of the structures appeared to have been a temple or council hall, and covered about an acre of ground. Red Creek had been turned out of its natural channel to run through and water the village. The aborigines had a tradition that the Moquitch Indians made the crockery, but of the builders or the inhabitants of the village no tradition was extant.

On the Wheeler survey during the early 1870's, mounds near Provo, Paragonah, and Beaver, Utah, were reported and excavations were even carried out at the Provo mounds (Severance 1874; Severance and Yarrow 1879). One of the most interesting archaeological accounts from the region during this time period was by Hoffman (1878). While serving as surgeon and naturalist for the U. S. Geographical and Geological Survey west of the one hundredth meridian in 1871-72, Hoffman made several ethnological and archaeological observations on the Indians in Arizona, Nevada, and California. Between Eureka and Belmont, Nevada, Hoffman (1878:473) observed the remains of stone circles in the pinyon groves constructed by Shoshonis for storing pinyon nuts. Furthermore, he noted that:

> Circles of similar construction are sometimes found upon elevated points of land, where they are located as a post from which a good view of the surrounding country can be obtained. Here sentinels are posted, or a voluntary watcher may take his station to notify his camp of the approach of game or of strangers, where his time employed in making or mending bows, arrows, or other trappings. Frequently the ground around such watch-stations is literally covered with chirt (sic) or flint chippings. These, however, are not of very recent date, as stone darts are not as numerous as they were previous to their communication with the whites. Nevertheless, these siliceous chips and flakes are found more or less about all such stations, and from the surface accumulation we are enabled to form some idea of their age (Hoffman 1878:473-474).

It should be noted that Binford (1978) has recently reported in detail the activities that transpired at Nunimiut Eskimo hunting stations, and here we have a short, but similar observation in the Great Basin a hundred years earlier!

Hoffman (1878:468-469) also mentioned that the Shoshoni rarely used stone arrowheads, but that the typical form was triangular. He then speculated on the origin of this point type and concluded: "Specimens of nearly this form are frequently found in the old "work-shops", or arrow-makers' camps, in various sections of the country, which appear to be mere coincidences."

Although the mid-nineteenth century accounts by the U. S. exploration expeditions included relatively little on the archaeology of eastern Nevada, a considerable amount of ethnographical information was collected, much of which has implications for the Numic archaeology of the region. For instance, during the 1859 expedition, Captain James H. Simpson (1876:56) described a "Root-Digger" (Gosiute) camp with juniper brush shelters in Spring Valley, Nevada, and in Steptoe Valley (probably near Schellbourne), he mentioned a deserted "wick-e-up" in which a charred human skull was found (Simpson 1876:58). Other descriptions of Shoshoni and Paiute groups in the Great Basin are to be found in Beckwith (1855), Fremont (1887), and Kern (1876).

In 1875, historian Hubert H. Bancroft (1875) had little to write about the archaeology of Nevada, save for a report of abandoned Indian salt works and ruins in southern Nevada. Angel (1881:20) in the History of Nevada included a reference to petroglyphs in Condor Canyon ten miles southeast of Pioche. The same site was similarly described a decade afterwards by Mallery (1893:95) and later by Steward (1929:146, Site 217). Both Angel (1881:19-20) and Mallery (1893:92-96) also reported the existence of other petroglyph locations in western and southern Nevada. At the turn of the century, Duffield (1904) briefly noted the presence of pottery, stone implements, and petroglyphs in the Spring Mountains near Las Vegas and old turquoise pits and workings in association with stone implements in the Providence Mountains.

With the exception of Simpson (1876), all the early observations cited above are outside the study area. It was not until the 1920's and 1930's that the archaeology of eastern Nevada aroused much attention and that this virtually unknown area began to be investigated. In the major report on his excavations in western Utah (e.g., Judd 1916, 1917), Judd (1926:60-61) briefly discussed the presence of mounds and pottery in Snake Valley and the finding of an "earthen" vessel filled with corn in a cave southwest of Garrison. An apparent reference to Council Hall Cave is also contained in correspondence sent by George Bishop to Neil Judd:

> On the George Bishop ranch at Smithville is a large cave difficult of access, the dimensions of which are given as 80 feet by 80 feet, with a rear width of only one-tenth that at the mouth. A small spring flows from the back wall. The floor of this cave is covered with fine red earth; in the middle is a pile of charcoal at least 3 feet high. About the old hearth were a number of mountain sheep horns, two or three pairs of which were later sent by Mr. Bishop to a Salt Lake City museum. He adds that nine pairs remained in the cave (Judd 1926:61).

That this cave is Council Hall Cave is indicated by the site description and the pile of twelve mountain sheep horns, for the latter were similarly noted in a memorandum by District Forest Ranger Graham S. Quate (1924; reprinted in Appendix I) who visited the cave with C. T. Rhodes and Captain Alan LeBaron on August 27, 1924, and gave the cave its name. The Quate party also uncovered a basket below the surface containing juniper bark, yellow dent corn kernels, a corn cob, and unidentified seeds. In addition to Council Hall Cave, Kachina Rockshelter in Smith Creek was described (see Tuohy 1979:6-8). In Hendry Creek Canyon, to the south, a rock alignment resembling a low corral and a cave containing crude pottery were examined. The stone corral appears to be the antelope drive later described by Rudy (1953:18-20; UU site no. 26WP13); the cave is apparently an unrecorded site.

Archaeological investigations in central eastern Nevada during the 1920's and 1930's focused on the caves that abound in the Snake Range near Baker, Nevada, and in Smith Creek Canyon north of Baker. During this same time period in areas to the south outside the study area, excavations were conducted in Condor Canyon near Pioche and at "Lost City" and Gypsum Cave near Las Vegas. Nearly all the work was done by Mark R. Harrington, his family, and his associates with funds provided by the Heye Foundation's Museum of the American Indian in New York and later by the Southwest Museum in Los Angeles.

After the 1924 investigations by the Quate party, "excavations" in the Snake Range (actually little more than pothunting) were carried out in 1925 by two of Harrington's Indian laborers from his "Lost City" excavations, Willis L. Evans and George A. Evans (Tuohy 1979:8-12). Their work was financed by the State of Nevada under the direction of Governor James Scrugham. The Evans' dug in Baker Cave near Lehman Caves National Monument and in Council Hall Cave and Smith Creek Cave. As an interesting aside, two atlatls were recovered in Council Hall Cave during the excavations from which George Evans later made a copy that eventually turned up in Susanville, California (Fenenga and Heizer 1941, 1942; Hester and Mildner 1974:33-35; Tuohy 1979:12; see also Grosscup 1960).

Following the Evans' work, the intensity of archaeological investigations in the Snake Range and in other areas of eastern Nevada increased. Several test holes were dug in Sawmill Rockshelter (26WP26) above Baker Creek and three snare bundles were reported (Schellbach 1927). In 1925 and 1927, Harrington traced the boundary of "Pueblo" ceramics in eastern Nevada by examining sites around Las Vegas, Pioche, Baker, Smith Creek Canyon, Ely, Wells, and Cobre (Harrington 1926d, 1928). Kachina Rockshelter in Smith Canyon was dug in 1932 and the pictographs at the site were reported (Harrington 1932b) as were the pictographs in the Baker Creek Caves (E. Harrington 1933). The Baker Creek Caves pictographs had previously been reported in the Nevada State Journal on August 24, 1924 (Steward 1929:145-146, Site 216). Other caves in the area were also examined at the time by Harrington (1932a) including Smith Creek Cave. Additionally, two pottery vessels, pottery sherds, and several other artifacts from caves near Garrison, Utah, where Snake Creek crosses the state line were found by Graham S. Quate and were given to the Southwest Museum (Harrington 1932c).

During the time Harrington was working in east central and southern Nevada, Mathew W. Stirling (1931), chief of the Bureau of American Ethnology who would later become known for his Mesoamerican investigations, examined a number of caves and archaeological sites north of Deeth, Nevada, in 1930. In the largest (26EK7) of many smoke-blackened shelters (26EK8) on the west side of Mary's River, a test pit was dug which yielded fragments of decayed matting, burned bones, and chipped stone (Stirling 1931:173). A lithic scatter (also 26EK7) containing arrowheads was observed on the flat hill above the shelters. Several miles northwest of the shelters (Stirling 1931:173, Figures 151 and 152) is Hot Springs Butte (26EK9), a large geyser cone 300 feet in diameter. According to local Ute Indians (more likely Western Shoshoni), captives were thrown into the boiling water of the geyser. North of this area, several caves (26EK10) on the headwaters of the Bruneau River and a white opal quarry site (26EK11) near Coyote Lakes were investigated (Stirling 1931:176, Figures 150 and 153).

In 1934, excavations were again undertaken at Upper Baker Creek Cave and Smith Creek Cave, and sites along the Lake Bonneville terraces near Smith Creek Canyon were investigated (Harrington 1934a, 1934b, 1935; see also Howard 1935, 1952 and Stock 1935, 1936 on Smith Creek Cave fauna). In Smith Creek Cave, extinct horse bone fragments believed to be split by humans were found. Later in 1936, Lieutenant S. M. Wheeler and Johns Harrington, Mark R. Harrington's son, continued excavations in Smith Creek Cave and reported finding the Baker "pueblo" site [26WP63] (Harrington 1936; J. Harrington 1943; Hodge 1937; Wheeler 1936). In 1937 and 1938, the Baker "pueblo" site was further examined; excavations were carried out in Lehman Cave (26WP19), Snake Creek Burial Cave (26WP23), and Owl Cave (26WP62); and several other sites in the vicinity and in western Utah were located (J. Harrington 1938, 1939; Wheeler 1937a, 1939a).

On an ethnological survey of Great Basin Indians across western Utah and Nevada in 1939 accompanied by Anne M. Cooke (Smith), Douglas Osborne (1941) investigated archaeological sites near Ibapah in Utah, Ely, Owyhee, and Battle Mountain. Northwest of Ely, he collected artifacts from a site at Hercules Gap (26WP16). A private collection of Mr. and Mrs. Jacobsen from Ely was also examined which contained projectile points and three types of pottery.

Near the town of Owyhee in the Duck Valley Indian Reservation, northeastern Nevada, Osborne test excavated a cave (26EK6). The site is located 1.2 miles south of Roa's Store on the road out of Owyhee, which partially cut through the cave. The test pit at the site was dug to a depth of about one meter and revealed three layers of deposit mixed with cultural materials including freshwater "Unio" (mussel?) shells and jackrabbit bones. At another site about seven or eight miles southeast of Owyhee, Osborne (1941:193) found Pinto and Shoshoni type projectile points, a granite pestle, and other lithic debris at a site (26EK5) around a spring which was known to the local Indians as Water Baby Springs in a legend associated with mythical beings.

Around Battle Mountain, Osborne (1941:194) found a corner-notched obsidian point which he believed to be of Shoshoni origin. He also reported finding two knife fragments, blue-glass trade beads, and pieces of calcite in an old disturbed grave near the local Indian graveyard.

In the summers of 1939 and 1940, the University of Utah investigated archaeological sites in the Deep Creek Valley region around Ibapah, Utah, along the Utah-Nevada state line (Malouf 1946; Malouf et al. 1940). Fifteen sites were located in the area of the Deep Creek Indian Agency along Fifteen Mile Creek, a tributary of Deep Creek. Two other surface sites in the Deep Creek Valley (U-157, now 42TO22; U-158) were also reported, and two historic Gosiute burials (U-159 and U-159a; now 42TO23) on the Utah-Nevada border were excavated. About 3,000 points, flakes and potsherds were found on the sites. The pottery, as described by Malouf (1940d, 1946), included Knolls ware, Sevier Gray, Great Salt Lake ware, Plain Gray, (Deep Creek) Shoshone ware, a corrugated ware, and a black-on-gray type. Dibble (1940) described the stone tools from sites U-157 and U-158. The two historic Gosiute burials were analyzed by Smith (1940), as were the measurements of two other skulls found in Deep Creek Valley. Aside from sites in Deep Creek Valley, the Tunnel Canyon pictographs (26WP66) near Tippett, Nevada, were reported, as were pictographs (26WP14) in a cave along Choke Cherry Creek described earlier by Reagan (Malouf 1940d:52, 1946:118, Figure 45b; see also Reagan 1929:115, 1934:43-45; Heizer and Baumhoff 1962).

Beginning in the 1950's, archaeological investigations in eastern Nevada were more thoroughly conducted and documented. For that reason, a more detailed account of this research follows in outline form. Major archaeological sites in the Elko and Ely districts are shown in Figures 4 and 5.

The work which is reviewed up to the mid-1970's is mainly that of published reports, and an attempt has been made to be as thorough as possible in this regard. With the impetus of cultural resource management (CRM) since the mid-1970's, however, numerous unpublished CRM reports have been written that pertain to the Elko and Ely districts. Most of these reports concern BLM inhouse clearance projects; others are large scale surveys conducted by contracting agencies. Since a comprehensive synthesis of this work is beyond the scope of the present report, only the large scale archaeological surveys, as well as some small surveys which have yielded pertinent data on the cultural history of eastern Nevada, are reviewed.

Date of Fieldwork: 1949, 1950, 1951, 1953

Project: Excavation of Danger Cave, Juke Box Cave, and Raven Cave

Investigator: Jesse D. Jennings

Sponsoring Institution: The excavations were carried out by field classes of the Department of Anthropology, University of Utah. Funding for the analysis and publication was made possible by the Wenner Gren Foundation for Anthropological Research. A grant from the Research Fund of the University of Utah helped pay for the publication.

Location: Danger (42TO13) and Juke Box (42TO20) caves lie several kilometers northeast of Wendover, Utah, on the western edge of the Great Salt Lake Desert. The base of the cultural deposits in Danger Cave lies at an elevation of 1314 m (4312 ft) and is about 244 m (800 ft) below the Bonneville level, the highest shoreline of Pleistocene Lake Bonneville. Juke Box Cave, which is higher than Danger Cave, is at an elevation of 1341 m (4400 ft). Raven Cave (UU site no. 26EK2; NSM no. 26EK12) lies 40 km north of Wendover in Elko County, Nevada. Raven Cave is situated on a broken, jagged hogback at 1509 m (4950 ft) elevation at the base of Pilot Peak.

Purpose of Work: The excavations around Wendover were undertaken with two objectives in mind: 1) the training of students in

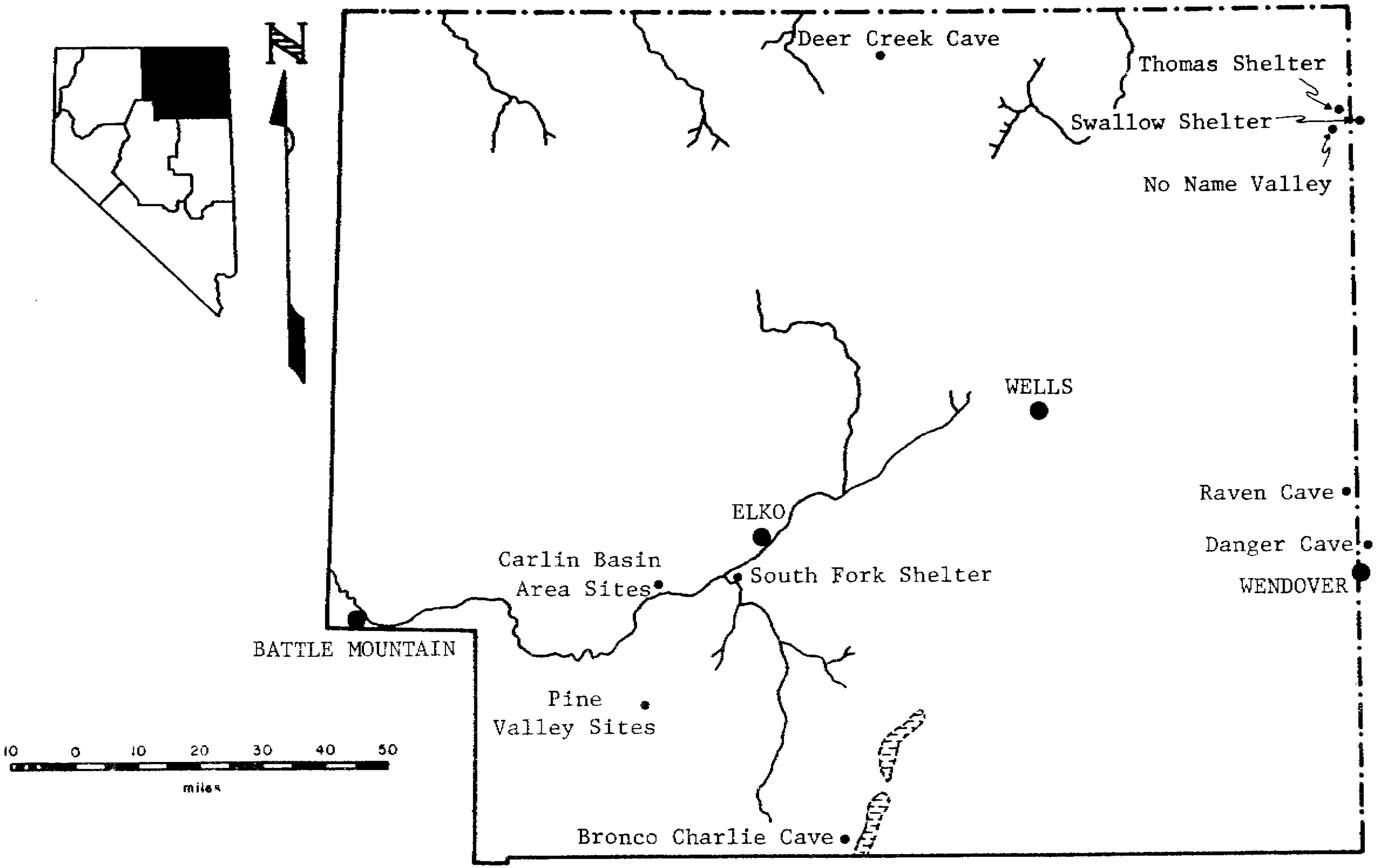


Figure 4. Major excavated archaeological sites in the Elko District, northeastern Nevada.

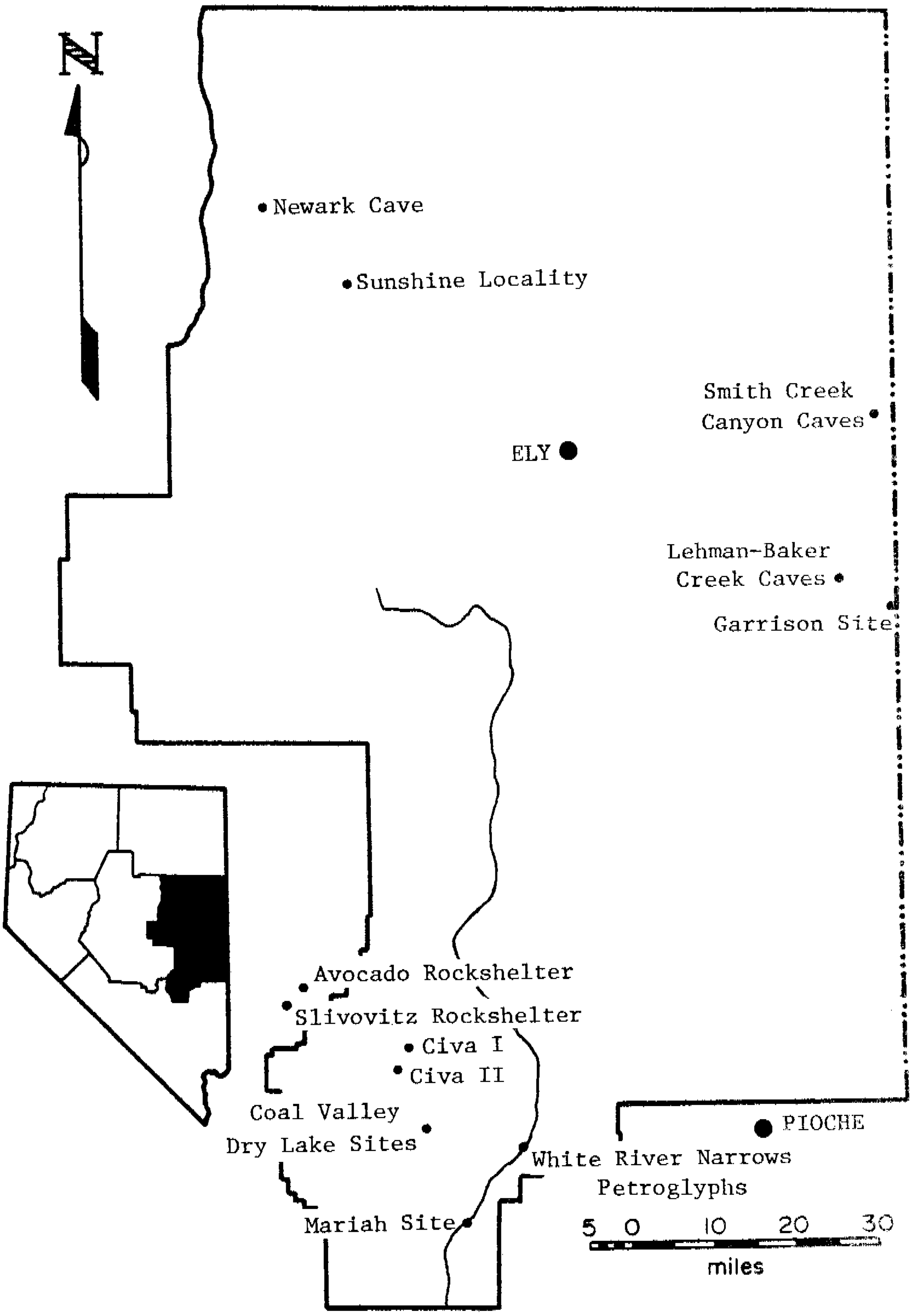


Figure 5. Major archaeological sites in the Ely District, eastern Nevada.

excavation techniques; and 2) the collection of new data on the prehistory of Utah (Jennings 1957:9).

Procedures and Techniques: In the excavation of Danger Cave, a trench was first dug from the outside and below the cave into the mouth. Work then proceeded from the front to the back of the cave with a series of (usually) .7 m vertical by .7 or 1.5 m horizontal cuts across the full length of the working face. The excavation of Juke Box Cave was initiated with a long trench down the central axis of an arbitrary grid system established on the surface. Lateral trenches were then run off the central trench to the northeast wall; these were widened as the excavation progressed. The fill from the caves was stripped by natural levels. The deposits were removed by pick and shovel and transported outside by wheel barrows, or as in Juke Box Cave, moved elsewhere in the cave. About 75 to 85 % of the fill from Danger Cave in 1950 and 100 % in 1951 and 1953 was screened (size not specified). Only about 20 % of the fill from Juke Box Cave was screened. Jennings (1957:10) estimated that about 98 % of the artifacts recovered were found during the screening.

Findings/Results: Five cultural levels are represented in Danger Cave: I, II, III, IV, and V, with level I being the lowest. Levels II through V consist of alternating beds of eolian dust or loess, vegetable matter, limestone roof fall fragments, and guano, as well as the cultural materials. The maximum thickness of these levels totals about 3.6 m.

The lowest and oldest of the cultural strata is level I, a two-component layer of fine limestone, the consistency of sand. The lower of these sand layers (Sand 1) rests on cemented beach gravels. The elevation of Sand 1 is about 1314 m and appears to represent the last time in which the receding waters of Lake Bonneville washed into the cave. A stick found just above the cemented gravels yielded a radiocarbon date of 11,151 ± 570 B.P. (Libby 1952). Level I contained several small fires; these constitute the earliest evidence of human occupation in Danger Cave. Charcoal from this level has been radiocarbon dated to 10,270 + 650 B.P. (M-202) and 10,150 ± 170 B.P. (Tx-87) (Tamers et al. 1964:157).

Below level I are banded clays at the rear of the cave which appear to grade into the beach gravels at the front. These deposits are over 2 m in thickness. In all, the deposits in Danger Cave are about 5 to 6 m in depth.

Quite an abundance of perishable and nonperishable cultural material was recovered from the excavations. Included among the list are chipped and ground stone, pottery (Shoshoni, Snake Valley Gray, and Great Salt Lake Gray), worked and unworked bone, a few shells, basketry casts, coiled and twined basketry fragments, skin and hides, and various wooden implements.

References: Jennings (1953, 1957), Price and Burnett (1950)

Date of Fieldwork: 1951-1952

Project: Archaeological survey of western Utah and eastern Nevada

Investigator: Jack R. Rudy

Sponsoring Institution: Statewide Archeological Survey, University of Utah

Location: Majority of survey was in western Utah; several sites were recorded and test excavated in White Pine and Lincoln counties, Nevada.

Findings/Results: Two camps/lithic scatters were recorded in Lincoln County--University of Utah (UU) site nos. 26LN1 and 26LN2. Thirteen sites were recorded in White Pine County:

UU Site No.+	Smithsonian No.*	Site Type	Remarks
26WP1	26WP46	Cave	Smith Creek Cave
26WP2	26WP19		Lehman Caves
26WP3		Camp	Camp with house remains
26WP4	26WP23	Cave	Snake Creek Burial Cave
26WP5	26WP62	Cave	Owl Cave
26WP6	26WP54	Mounds	Garrison Site
26WP7	26WP54	Mounds	Fremont pottery
26WP8	26WP63 26WP200	Mound	Fremont pottery
26WP9		Camp	Fremont pottery
26WP10	26WP43	Cave	
26WP12		Mounds	Fremont pottery
26WP13		Rock wall	Antelope corral
26WP14		Overhang	
26WP15		Camp	Fremont pottery

+ UU means University of Utah site number.

* Smithsonian site numbers are Nevada State Museum numbers.

Reference: Rudy (1953)

Date of Fieldwork: 1952

Project: Excavation of the Garrison Site

Investigators: Dee C. Taylor, supervisor; Jesse D. Jennings, field director

Sponsoring Institution: University of Utah

Location: Site is just west of the Nevada-Utah border between the towns of Baker, Nevada, and Garrison, Utah.

Findings/Results: The Garrison Site is a Fremont habitation site consisting of two mound groups. A total of nine structures containing 18 rooms were excavated. Six were coursed adobe surface structures; two were semi-subterranean, adobe-walled structures; one was a rectangular jacal house. Cultural materials recovered during excavation include 30 arrowheads, other chipped stone pieces, ground stone, Fremont pottery (Great Salt Lake Gray, Sevier Gray, Snake Valley Gray, Snake Valley corrugated, and Snake Valley Black-on-gray), bone awls, gaming pieces, bone beads and shell beads (cf. Olivella biplicata). Antelope and mountain sheep constituted the highest number of unworked bone fragments. Bison, mule deer, jackrabbit, rodents, dog, coyote, birds and fish were also present.

References: Taylor (1954a, 1954b)

Date of Fieldwork: 1955

Project: Archaeological Survey of Southern Nevada

Investigator: Richard Shutler, Jr.

Sponsoring Institution: Nevada State Museum

Location: The survey and test excavations were carried out in the southern and eastern portions of Nevada.

Findings/Results: In the Snake Range of eastern Nevada, several sites were examined as reported by Shutler (1961:11-12) and probably more were recorded than he notes. In Snake Creek Canyon two rockshelters (Wh-42 and Wh-43; now designated 26WP42 and 26WP43) yielded North Creek gray pottery sherds, two flake knives, a "typical" Pueblo point, and a spire-lopped Olivella bead (Shutler 1961:12, Plates 21b, 22p to 22s). These sites are interpreted as temporary camp sites for hunting and gathering. At another rockshelter (Wh-44; now 26WP44) in Baker Creek Canyon south of Lehman Cave, Pueblo and Southern Paiute Brown Ware pottery were recovered (Shutler 1961:11, Plate 21a). Shutler (1961:12, Plate 21c) also visited Smith Creek Cave (Wh-26; now 26WP26) in Smith Creek Canyon but found no artifacts.

Reference: Shutler (1961)

Date of Fieldwork: 1958, 1959

Project: Excavation of South Fork Shelter (26EK13) and testing of Upper Shelter (26EK42)

Investigators: Robert H. Heizer and Martin A. Baumhoff

Sponsoring Institution: University of California at Berkeley

Location: Both sites are located on the South Fork of the Humboldt River near its confluence with the Humboldt River southwest of Elko, Nevada.

Techniques: South Fork Shelter was excavated by two trenches. All the excavated deposit was passed through 1/4 inch mesh screen, and all cultural materials were saved. Vertical control was maintained by excavating in 6 inch arbitrary levels.

Upper Shelter was test excavated by digging a 10 by 5 foot trench.

Findings/Results: South Fork Shelter was dug to a depth of 120 inches. Three radiocarbon dates were obtained on charcoal: 3320 ± 200 years B.P. (LJ-212) from the 72 inch level, and 4310 ± 300 B.P. (UCLA-295) from the 120 inch level, and 4310 ± 400 years B.P. (UCLA-296) from the 94-100 inch level. From this evidence, the earliest occupation of the site would be around 4300 years B.P.

Projectile point types recovered from South Fork Shelter were Humboldt Series, Pinto Series, Elko Series, Eastgate Expanding Stem, Cottonwood Triangular, and Desert Side-notched. Other tools were knives, blades/blanks, drills, scrapers, cores, manos, metates, and a possible pestle fragment. Bone awls, bone tubes, Shoshoni pottery, and one twined basketry fragment were also recovered. Based on bone count, mountain sheep and cottontail were the most common remains of 11 identified mammalian species. Mussel shell (Magaritifera margaritifera) was the most common type of shellfish recovered from the site.

Not as many artifacts were found at Upper Shelter, but the types were similar. It was inferred that Upper Shelter may have served as a cache cave or occasional shelter for a population overflow from South Fork Shelter.

In addition to the excavations, artifacts collected from two surface sites (both designated 26EK21) near South Fork Shelter are reported.

Comment: According to the late Robert F. Heizer, South Fork Shelter and Upper Shelter were apparently destroyed several years ago by quarrying activities (Colin I. Busby, personal communication, January 27, 1981).

References: Heizer, Baumhoff, and Clewlow (1968); see also Baumhoff and Heizer (1965:704)

Date of Fieldwork: 1959

Project: Test excavation of Freighter's Defeat (26EK20)

Investigators: Martin A. Baumhoff, Robert F. Heizer, and others

Sponsoring Institution: University of California at Berkeley

Location: The site is a rockshelter along the base of a basalt cliff located north of Jarbidge in Jarbidge River Canyon near Deer Creek Cave.

Findings/Results: The report has never been finished. Don Fowler re-recorded the site in 1966 and noted bone, shell, and obsidian flakes in the back dirt of pot hunters' holes. At least 2 m of fill was present, but the site had been badly potted.

References: Site form 26EK20; Freighter's Defeat is briefly mentioned by Fowler (1968a:1, 7).

Date of Fieldwork: 1960

Project: Excavation of Deer Creek Cave (26EK25)

Investigators: Mary and Richard Shutler

Sponsoring Institution: Nevada State Museum

Location: Deer Creek Cave is located 6.5 km north of Jarbidge on the north bank of Deer Creek near its confluence with the Jarbidge River, northeastern Elko County. The cave faces to the southeast at an elevation of 1768 m, about 152 m above Deer Creek.

Techniques: The cave was excavated to bedrock by means of three trenches. The deposit was 130 inches deep at the mouth and 14 inches along the rear wall. Vertical control was maintained by arbitrary 6 inch levels, and the deposit was passed through 1/4 inch mesh screen.

Findings/Results: Eight firehearths were uncovered during excavation. Seven radiocarbon dates were obtained on charcoal from the hearths and on a sample of wood. Dates range from 10,085 $\pm$ 400 (I-1028) at a depth of 101 inches below ground surface to 715 $\pm$ 140 (WSU-244) at 8 inches depth.

Chipped stone artifacts recovered from the cave include various projectile points, knives, drills, perforators, scrapers, and unmodified flakes. In comparison, only a small number of ground stone artifacts were recovered. Worked bone items include awls, flakers, bone beads or tubes, and antler tines. Several wooden items and a shell disc bead were also recovered. Eighteen Shoshoni sherds were found in the uppermost levels. Of the identified faunal remains, mountain sheep, marmot and porcupine were the most numerous species represented.

The archaeological evidence recovered from Deer Creek Cave indicates that the site was occupied between 8000 B.C. and the historic period as a hunting camp, primarily for exploitation of mountain sheep, marmot, and porcupine. The material culture exhibits closer similarities to the eastern Great Basin and Columbia Plateau than to the western Great Basin. Based on the presence of Shoshoni pottery in the upper levels, Shoshoni groups begin to occupy the area about A.D. 1150. Basically, their technology differed little from earlier occupants; however, as indicated by the first appearance of grinding slabs in the deposits, greater emphasis on gathering and processing of wild plants is suggested for the Shoshoni.

References: Shutler and Shutler (1963)

Date of Fieldwork: 1960

Project: Archaeological excavations on Meadow Creek, Elko County

Investigator: Richard Shutler, Jr.

Sponsoring Institution: Nevada State Museum

Location: The two rockshelters are located on the west side of Meadow Creek at 1725 m elevation. Vegetation in the area is dominated by pinyon-juniper on the higher slopes, sagebrush on the lower slopes, and riparian species along the creek.

Findings/Results: Sites were located during a survey in the spring of 1960 and two rockshelters, Gateway Rockshelter No. 1 (26EK22) and Meadow Creek Rockshelter No. 3 (26EK24), were excavated in August of that year. Gateway Rockshelter No. 1 is a slight overhang of a cliff that faces east about one meter above Meadow Creek. Several trenches were dug, apparently by arbitrary levels. The small amount of cultural material recovered from the site included cut wood fragments with burned ends, a few scrapers, cores, flakes, three projectile point fragments, and faunal remains. In addition, a fire hearth was exposed about 12 inches below the surface.

Meadow Creek Rockshelter No. 3 lies about 3 km south of Gateway Rockshelter No. 1 on the western slope of the canyon about 15 m above Meadow Creek. The deposit in the shelter was shallow, being only 20 cm in the center where a fire hearth was present. The few artifacts consisted of an arrowhead, flakes, burned wood, and some animal bones.

Reference: Shutler (1960)

Date of Fieldwork: 1962

Project: Archaeological survey of Nevada Northern natural gas pipeline

Investigator: Donald R. Tuohy

Sponsoring Institution: Nevada State Museum

Location: Pipeline runs from near Mountain Home, Idaho, to Reno Nevada.

Findings/Results: In the section of pipeline located in northwestern Elko County, 16 sites were recorded--26EK26 to 26EK41. (Note: In the survey report, these sites were designated El instead of EK; see Tuohy 1963:24). All of these sites are situated in the Owyhee Uplands physiographic subsection of the Columbia Plateau. Nine of the sites are chipping areas, 4 are rockshelters, and 3 are camp sites. Materials collected from the sites include projectile points, basalt waste flakes, miscellaneous stone tools, river mussel shells, a mortar and a stone anvil.

Reference: Tuohy (1963)

Date of Fieldwork: 1963

Project: Excavation in Lehman Caves (26WP19)

Principal Investigator: Charles Rozaine

Sponsoring Institution: Nevada State Museum

Location: Lehman Caves National Monument, west of Baker, Nevada

Techniques: Trenches, divided into 5 foot square pits, were dug in rooms 1 and 2 of the cave near the original entrance. A total of 19 pits was dug. The deposit was passed through 1/4 inch mesh screen.

Findings/Results: Eighteen hearths were encountered during the excavation. Charcoal samples from two hearths were submitted for radiocarbon dating. However, the samples appear to have been contaminated, for the dates were quite recent, 150 ± 175 years B.P. (WSU-164) and 140 ± 175 years B.P. (WSU-163).

Both historic and prehistoric artifacts were recovered. Historic items include nails, glass, matches, a hood latch, cartridge shells, shell buttons, and other miscellaneous debris. The prehistoric artifacts, which were not quite so numerous, consisting of a projectile point fragment, obsidian flakes, hammerstones, a bow end and cane arrow fragments. Sixty five pieces of human bone were found scattered throughout the deposit, and apparently do not represent interments. Almost 30 species of animals were represented in the non-human faunal remains.

References: Rozaire (1964); Brooks and Brooks (1964); Ziegler (1964); see also Taylor (1954b:13)

Date of Fieldwork: Unknown, but prior to 1964

Project: Excavation in Snake Creek Cave (26WP28)

Location: Snake Creek Cave is located in Cave Canyon, north of Snake Creek, on the eastern slope of the Snake Range, Humboldt National Forest, White Pine County, Nevada.

Findings/Results: Unknown

Comments: The cave, which apparently contained human remains, was dug by Graham Quate of Soquel, California, according to Ralph Kaufman, Baker, Nevada (Rozaire 1964:15-16).

Reference: Rozaire (1964)

Date of Fieldwork: 1966

Project: Excavation of Newark Cave (26WP107)

Investigator: Don D. Fowler

Sponsoring Institution: Desert Research Institute, University of Nevada

Location: Newark Cave is a wave-cut opening on the northeastern end of Newark Valley, northwestern White Pine County, Nevada. The cave is at an elevation of 1875 m and faces west-northwest overlooking the valley.

Techniques: The site was excavated by means of one-meter square units in 20 cm arbitrary levels. In all, six arbitrary levels were dug. All excavated fill was passed through 1/4 inch mesh screen.

Findings/Results: Five strata were identified in the deposit. Features uncovered during the excavation consist of three pits and eight firehearths.

A total of 70 projectile points was recovered. Types include Humboldt concave Base A, Elko Corner Notched, Elko Eared, Eastgate Expanding Stem, Rose Spring Corner Notched, Cottonwood Triangular, and Desert Side Notched. The stratigraphic position of these projectile points in the deposit is consistent with the chronology which has been established for the Great Basin.

Other stone artifacts were scrapers, drills, flake tools, hammerstones, cores, manos, and grinding slabs. Pottery recovered from the cave consisted of one Snake Valley Black-on-gray sherd and 103 Shoshoni sherds, representing probably 4 vessels. Perishable items include bark bundles, quids, reeds, wood, seeds, worked bone (awls, notched bones, and cut bones), cordage, basketry, and an *Olivella biplicata* shell.

Possibly 20 animal species are represented in the unworked bone remains. Based on relative numbers of bones, cottontail, jackrabbit, and marmot were the most abundant. Antelope and deer were also important. Of interest, 5 *Bison bison* bones were recovered.

Reference: Fowler(1968b)

Date of Fieldwork: 1966

Project: Archaeological survey of eastern Nevada

Investigator: Don D. Fowler

Sponsoring Institution: Desert Research Institute, University of Nevada

Location: Elko and White Pine Counties, Nevada, with a brief reconnaissance in Lincoln County (not reported at this time; see Fowler et al. 1973)

Findings/Results: Eighty six sites were recorded, and 20 previously recorded sites were revisited. Eight areas in eastern Nevada were surveyed:

(1) Jarbidge Area. Sites recorded were 26EK300 to 26EK309.

(2) Thousand Springs Creek-Trout Creek Areas. Sites recorded were 26EK310, 26EK311, 26EK318 to 26EK330; and two isolated finds, EK00-19 and EK00-20.

(3) Dixie Flats-Cedar Ridge Area. Sites recorded were 26EK400 to 26EK419, and eleven isolated finds, EK00-1 to EK00-11. Two sites were also recorded near Elko: 26EK425 and 26EK426.

(4) Cherry Creek Range. Sites recorded were 26EK420 to 26EK424, and six isolated finds, EK00-13 to EK00-18.

(5) Egan Range-Schell Creek Range. Sites recorded were 26WP117 to 26WP127, and six isolated finds, WP00-8 to WP00-13.

(6) South end of Ruby Valley. Sites recorded were 26EK313, 26EK314, 26WP100 to 26WP103, and two isolated finds, EK0012 and WP00-1.

(7) Newark Valley Region. Sites recorded were 26WP104 to 26WP116, 26EU100 to 26EU102, and six isolated finds, WP00-2 to WP00-7.

(8) Snake Valley. Two sites were recorded, 26WP200 and 26WP201.

Additionally, one site in Lincoln County, 26LN100, was briefly mentioned.

Seven site types were recognized on the survey. The distribution of these is: 60 chipping stations, 3 gathering, 11 camp sites, 3 quarry sites, 1 village site, 6 rockshelters, and 2 petroglyph sites. Thirty three isolated finds of artifacts were also recorded and collected.

Artifacts recovered from the sites include Fremont sherds (all from Snake Valley--26WP200 and 26WP201), Shoshoni sherds, projectile points, blades/bifaces, scrapers, flake tools, chills, manos and grinding slabs.

References: Fowler (1968a)

Date of Fieldwork: 1966, 1967, 1969-71

Project: Archaeological survey and excavations in southeastern Nevada

Principal Investigator: Don D. Fowler

Sponsoring Institution: Desert Research Institute, with assistance of the Nevada State Museum

Location: Central Lincoln County, Nevada, and extreme southwestern Utah in Washington County

Findings/Results: The major portion of the fieldwork was the excavation of Conway Shelter (26LN126), O'Malley Shelter (26LN418), and the Scott Site (26LN407). These sites are located near Caliente, Nevada, south of the Ely District.

Archaeological surveys and test excavations were conducted in the region. Within the southern portion of the Ely District, sites were recorded in Lower White River Valley, Pahranagat Valley, Pahroc Range, upper Meadow Valley drainage, Fairview Range, Muleshoe Valley, Delamar Mountains and Delamar Valley. Descriptions of the sites are presented in Fowler and Sharrock (1973). Diagnostic cultural materials found at these sites include Humboldt, Elko, Desert side-notched, Cottonwood Triangular, and Rose Spring Series projectile points and Fremont and Shoshoni sherds. A few North Creek Gray sherds of the Virgin Branch Anasazi were found at two sites (26LN364 and 26LN374), and a single San Juan Red ware sherd was found at another site (26LN372). Both types co-occur with Shoshonean and Fremont ceramics.

Sites 26LN204 and 26LN241 were test excavated in the area. Site 26LN204 is a shallow rockshelter on the east side of Pahranagat Valley that has been vandalized. The site was tested by a 1 by 2 m test pit which showed 30-38 cm of deposit in profile, but only waste flakes and charcoal flecks were recovered in the pit. In the vandal's backdirt and rat's nest, sherds of Shoshonean ware, Shinarump Brown, Snake Valley Black-on-Gray, and Elko Corner-notched projectile points were among the artifacts collected. Faunal remains consisted of bighorn sheep, mule deer, jackrabbit, cottontail, badger, and domestic cow. The artifacts indicate the presence of Puebloid and Shoshonean groups, although stratigraphic relationships cannot be determined.

Site 26LN241 is also a small rockshelter, located on the eastern slope of Mt. Irish above Pahranagat Valley. A 1 x 2 test pit was dug through two strata to bedrock at ca. 35 cm below the surface. The upper 10 cm of the deposit yielded Shoshonean sherds and a Rose Spring Corner Notched projectile point. In the next lower 15 cm, three Elko Series projectile points were recovered along with mountain sheep, bobcat, cottontail, and mule deer bones. A circular hearth area was noted at a depth of 10-15 cm from which a scraper was recovered. Historic artifacts, presumably from a miner's camp, were found on the surface. The evidence from the upper 10 cm indicates the presence of Shoshonean groups at the site. Desert Archaic groups represented by the Elko Series points in the 10-25 cm level appear to have visited the site at an earlier time (Fowler and Sharrock 1973:121-123).

From the results of the surveys and excavations, Fowler and Sharrock (1973:135) conclude that Desert Archaic groups intermittently occupied the area beginning around 7000 B.P. until ca. A.D. 1. After an hiatus of a millennium, Puebloan groups, probably Parowan Fremont, and possibly a few Virgin Branch Anasazi, reoccupied the area for a time before abandoning it about A.D. 1100-1200. Prior to the Puebloan abandonment, Shoshonean groups entered the area and remained until the historic period. Because of the paucity of village sites, it is inferred that Puebloan subsistence in the region was primarily based on hunting and gathering with some horticulture being practiced by them and by later Shoshoneans.

References: Fowler et al. 1973; Fowler and Sharrock 1973

Date of Fieldwork: 1967

Project: Archaeological reconnaissance of the area between Winnemucca and Battle Mountain.

Investigators: Robert L. Stephenson and Kent Wilkinson

Sponsoring Institution: Nevada Archeological Survey, University of Nevada, Reno.

Location: The archaeological survey covered five valleys north of the Humboldt River: Paradise, Eden, and Kelly Creek Valleys in eastern Humboldt County, Nevada; and Evans and Squaw Valleys in western Elko County.

Findings/Results: A total of 91 sites was recorded in Elko, Humboldt, and Lander counties. Eighty-five sites are open lithic scatters, four are small rockshelters, and two are petroglyph sites.

Twenty-one of the sites were recorded in the Elko District: 26EK501 through EK520 and 26LA501.

Cultural materials collected from the survey and from small test pits dug at several sites included projectile points, blanks, drills, knives, blades, scrapers, chopping tools, and cores. A small number of manos, milling stones, and Shoshoni pottery was also recovered from a few sites. Diagnostic projectile points were Humboldt Concave Base, Elko Corner-notched, Elko Eared, Eastgate Expanding Stem, Cottonwood Triangular, and Desert Side-notched. Based on these point types, the time range of the sites are estimated to date from 4000 years B.P. to the protohistoric period. The locations of the sites and the paucity of grinding implements suggest that the area was occupied for primarily hunting on a seasonal basis.

Reference: Stephenson and Wilkinson (1969); see also Rusco (1978)

Date of Fieldwork: 1968

Project: Recordation of a petroglyph site (University of Utah site no. 26WP16; Nevada State Museum no. 26WP134) in Humboldt National Forest, Snake Range, White Pine County, Nevada.

Investigator: C. Melvin Aikens

Sponsoring Institution: University of Utah

Location: The site is situated in a pinyon forest at 2134 m elevation near Wheeler Peak in the southern Snake Range.

Findings/Results: The site covers an area ca. 400 m by 200 m and contains 81 separate petroglyph panels with 140 individual elements. The petroglyphs are carved on thin rock slabs that litter the ground surface. Petroglyph elements at the site are classified as Great Basin Representational, Great Basin Curvilinear, Great Basin Pecked Rectilinear, and Great Basin Scratched styles (cf. Heizer and Baumhoff 1962).

Reference: Aikens (1978c)

Date of Fieldwork: 1968, 1971, 1974

Project: Excavations in Smith Creek Canyon

Investigators: Alan R. Bryan, Ruth Gruhn, and Donald R. Tuohy

Sponsoring Institutions: University of Alberta and Nevada State Museum

Location: Smith Creek Canyon lies on the eastern slope of the Snake Range, eastern Nevada, several kilometers from the Nevada-Utah state line. The town of Baker, Nevada, is about 32 air kilometers to the south. The excavations were at sites on land administered by the Humboldt National Forest.

Findings/Results: Four cave/rockshelters were excavated: Amy's Shelter (26WP230), Council Hall Cave (26WP229), Kachina Cave (26WP69), and Smith Creek Cave (26WP46). The latter three sites, particularly Smith Creek Cave, have been the focus of intermittent archaeological and paleontological interest since the mid-1920's (e.g., Harrington 1934a, 1934b; Howard 1935, 1952; Quate 1924 [see Appendix in present report]; Stock 1935, 1936; Wheeler 1936).

Amy's Shelter yielded the most complete cultural sequence of the four sites excavated by the University of Alberta-Nevada State Museum party. The earliest human occupation of the site began about 5000 C-14 years B.P. by Desert Archaic groups. The site was intermittently occupied thereafter up into the historic period. Fremont groups frequented the shelter between A.D. 1000-1200. The site is inferred to have been used by primarily hunting parties who pursued mountain sheep in the early spring.

Kachina Cave yielded a similar, though not as complete, cultural sequence as Amy's Shelter. Smith Creek Cave contained a 10,000 to 12,000 year old Paleoindian occupation, which can be classified within the Western Pluvial Lakes tradition. Sporadic Archaic and Fremont occupations are indicated as well. Little cultural remains were recovered from Council Hall Cave. Some of the fragmented animal bones from the early Council Hall Cave levels are considered by Bryan (1979a) to possibly represent green bone fracturing by humans, but the evidence is not clear by any means.

References: Bryan (1979a, 1979b); Firby (1979); Gruhn (1979); Miller (1979); Thompson (1979); Tuohy (1979); Tuohy and Rendall (1979).

Date of Fieldwork: 1969-1973

Project: Archaeological survey in northwestern Utah and northeastern Nevada; excavations of Swallow Shelter and other sites in the area

Investigator: Jesse D. Jennings

Sponsoring Institution: Department of Anthropology, University of Utah, with National Science Foundation grants (GS-2443 and GS-28389)

Location: The study area was in the Grouse-Goose Creek region of northeastern Nevada and northwestern Utah

Purpose of Work: The field work was undertaken as part of the Statewide Archeological Survey program of the Department of Anthropology, initiated in 1948. The purpose of this survey has been, and still is, to obtain information elucidating the prehistory of Utah. This study area was chosen specifically for its potential to yield data to substantiate an annual round model suggested by the Hogup Cave data, especially for the Archaic period.

Procedures and Techniques: The survey of the area was extensive, although no formal systems of sampling were employed. Major drainages were used to control the area coverage (Dalley 1977a:6). Surface collections were made, but in most cases these were uninformative as to cultural affiliation, temporal placement, and site type due to intensive collecting by amateurs.

Some of the sites were tested and several were excavated. This was generally accomplished by digging 1.5 m square test pits and/or trenches. The deposits in the sites were stripped by following the natural stratigraphy. In some cases, arbitrary 15 cm levels were employed until the natural stratigraphy was determined. Presumably, most of the fill from the excavations was passed through 6 mm (1/4 inch) mesh screens, though this is only stated for a few of the sites.

Findings/Results: During the 1970 season, 204 sites were located in Elko County, Nevada, and Box Elder County, Utah. Seven of these sites were tested or excavated: Swallow Shelter (42BO268), Kimber Shelter (42BO245), Thomas Shelter (26EK658), Tube Cave (42BO245), and the Pigeon Mountain sites (42BO204 and 42BO206), and 26EK655. Little work was carried out in the 1971 season.

The 1972 season saw the excavation of Beatty Springs (42BO200) and Remnant Cave (42BO365), additional work at Swallow Shelter, and the testing of Rabbit Springs (42BO161) and Owl Springs (42BO301), two low elevation spring-associated sites. A total of 65 sites were also recorded on a two-week survey of the Dairy Valley area. The excavations at the No Name Valley Site (26EK910) occupied the entire 1973 season.

Of all the sites, Swallow Shelter was the most important and informative. In the west area of the shelter, 11 strata were discernible, numbered stratum 1-11, with stratum 1 overlying the bedrock at the base of the deposit. Four strata were present in the eastern area of the site. Five radiocarbon dates were obtained, the oldest of which was 3460 B.C. or 5410 ± 170 B.P. (RL-235) on charcoal located 1.2 m above bedrock in Stratum 1. Cultural materials from the site include both perishables and nonperishables. The radiocarbon dates and diagnostic artifacts show that the site was occupied through time by Desert Archaic, Fremont, and Shoshonean cultural groups, respectively.

References: Adovasio (1977); Dalley (1977a, 1977b); Berry (1977a, 1977b); Hull (1977); Wylie (1971a, 1971b, 1971c)

Date of Fieldwork: 1970

Project: Preliminary recordation of a petroglyph site (26WP135) in the Snake Range, Humboldt National Forest, White Pine County

Investigator: Mary Rusco

Sponsoring Institution: Nevada Archeological Survey, University of Nevada, Reno

Location: The petroglyph site is situated on the eastern slope of the Snake Range near Wheeler Peak at 2590 m elevation in the pinyon vegetation zone.

Findings/Results: The petroglyphs are carved on tabular quartzite slabs. A total of 12 panels containing 86 elements was recorded, but it was estimated that there might be as many as 200 elements present. The elements represented at the site are classified into four Great Basin styles (cf. Heizer and Baumhoff 1962): Great Basin Curvilinear Abstract, Great Basin Rectilinear Abstract, Great Basin Representational, and Pit-and-Groove.

Reference: Rusco (1970)

Comment: Since the recordation of this site by Rusco, many, if not all, of the panels have been moved by the Forest Service to a warehouse in Ely, Nevada (Jack Wilcox, Ely District Ranger, personal communication to S. R. James, 1977).

Date of Fieldwork: 1971

Project: Archaeological reconnaissance of a Sierra Pacific Power Company power line right-of-way

Investigators: Amy and William Dansie under direction of Donald R. Tuohy

Sponsoring Institution: Nevada State Museum

Location: The Sierra Pacific 230KV power line runs east-west through the central portion of Nevada, essentially parallel to U. S. Hwy 50.

Findings/Results: Sixty-seven archaeological sites were recorded along the right-of-way in White Pine (35 sites), Lander (12 sites), Churchill (11 sites), Eureka (8 sites), and Lyon (1 site) counties, Nevada. Sites 26WP50, WP208, WP213, WP214, WP217, WP219, and WP234 were recorded in the Schell Creek Range, White Pine County.

Site types were occupation sites, campsites, rockshelters, quarries and workshops, chipping stations, and historic sites. Diagnostic artifacts recovered from the sites included Pinto, Gypsum, Elko, Rose Spring, Cottonwood Triangular, and Desert Side-notched projectile points. Other chipped stone artifacts collected from the sites consisted of drills, gravers, knives, and preforms. Snake Valley Black-on-gray and Snake Valley Gray ceramics were recovered in an excavated rockshelter on the transmission line right-of-way (Tuohy 1974:Figure 4). Shoshonean ware was also present at other sites.

Based on diagnostic artifacts, the time depth of the sites spans the period from ca. 5000 years B.P. to the historic period.

References: Tuohy (1974); Seelinger (1978b)

Date of Fieldwork: 1971-1973

Project: Archaeological survey in Ruby Valley and excavation of Bronco Charlie Cave (26EK801)

Principal Investigator: Laurel Ann Casjens

Sponsoring Institutions: Harvard University and the Nevada State Museum

Location: The area around Ruby Marsh in Ruby Valley, Elko and White Pine Counties, was surveyed.

Techniques: Bronco Charlie Cave was excavated in two meter squares with vertical control being maintained by digging in 5 cm arbitrary levels, except for two test pits which were dug in stratigraphic levels. All excavated deposits were passed through 1/8 inch mesh screen.

Findings/Results: Four major strata were discerned in the cave deposits. Features uncovered during excavation include several hearths. Unfortunately, although charcoal was abundant, "no carbon-14 dating was done because associations with any date would be unclear" (Casjens 1974:174-175). Based on the presence of Elko projectile points in the lower strata, Casjens feels that occupation of Bronco Charlie Cave began about 700 B.C. and extended to the historic period.

A total of 282 artifacts was recovered from the deposits. These include chipped and ground stone tools, one Snake Valley Gray sherd, Shoshoni sherds, wooden and bone implements, basketry, ornaments, and hematite. Projectile point types are Elko Corner-notched, Elko Eared, Eastgate Expanding Stem, Rose Spring Corner-notched, Cottonwood Triangular, and Desert Side-notched. Ground stone was relatively rare. At least 26 mammalian species are represented in the faunal remains. Based on MNI (minimum numbers of individuals), mountain sheep were the most common of the artiodactyla. Interesting enough, *Bison bison* was identified in the faunal remains. From the types of artifacts recovered, the site is inferred to be a hunting and butchering camp.

Fourteen pictographs are drawn on the walls of Bronco Charlie Cave. One element is in red, the rest are black. Casjens feels that these pictographs may be connected with the use of the site as a hunting camp.

The surface survey in Ruby Valley was divided into 8 resource zones based on biotic communities or vegetation zones present in the area. Approximately 395 sites were recorded in Elko County, and 82 in White Pine County. In addition, 130 isolated finds were recorded in Elko County, and 40 in White Pine County.

Reference: Casjens (1974)

Date of Fieldwork: 1973

Project: Recordation of two petroglyph sites in Lincoln County, Nevada

Investigators: Robert F. Heizer and Thomas R. Hester

Sponsoring Institution: University of California at Berkeley

Location: One petroglyph site (UCB site no. NV-Li-9) is located in the White River Narrows about 16 km north of Hiko on State Highway 38. The other site (UCB site no. NV-Li-7) is near Lower Pahranagat Lake south of Alamo, Nevada, and lies outside (south) of the Ely District.

Findings/Results: The White River Narrows petroglyphs were previously photographed in Hubbs and Miller (1948:Figures 25 and 28). Their figures are of Locality 4 and 6 at the site (Heizer and Hester 1974:9,14). Robert L. Stephenson surveyed the area in 1967 for the Nevada Archeological Survey and designated the site NSM 26LN210. Fowler and Sharrock (1973:101, Figure A9a) show a portion of Locality 2, Panel 1 of Heizer and Hester (1974:9, Figure 4).

In the work done by Heizer and Hester, the petroglyph site was mapped by recording individual panels within general areas or localities. A total of six localities were recorded, the largest of which contained 10 petroglyph panels. The majority of the petroglyphs are of the Great Basin Representational style. Great Basin Curvilinear Abstract, Great Basin Scratched, and Puebloan styles are also represented (Heizer and Hester 1974:18; see also Heizer and Baumhoff 1962:202-208).

Two other sites were also mentioned by Heizer and Hester (1974:18). One site is on Mt. Irish and is briefly reported by Townley (1970). The other site is south of the Hiko Post Office on the east side of an artificial lake. A petroglyph boulder from the latter site has been removed to the Hiko Post Office.

Reference: Heizer and Hester (1974)

Date of Fieldwork: 1973

Project: Test excavations and controlled surface collecting in Long

Valley, Nevada

Principal Investigator: Robert York under the general supervision of Donald R. Tuohy

Sponsoring Institution: Nevada State Museum

Location: The fieldwork was undertaken in Long Valley, White Pine County, at what is now called the Sunshine Locality.

Techniques: Test pits and trenches were dug at several sites to mean depths of 80 cm, and some units were excavated up to 1.7 m in depth. Nearly all the fill was passed through 1/8 inch mesh screen. Vertical control was maintained by digging in 10 cm arbitrary levels.

Findings/Results: Subsurface tests were carried out at five sites, two of which were Rabbit Hip Hill (26WP317) and Greenstone Site (26WP318A). Mostly waste flakes were recovered from the excavations, and little cultural material was found below 40 cm. No features or datable materials were encountered in the excavations. A layer of volcanic ash (source not identified) was present below the cultural debris at Rabbit Hip Hill.

In addition to a brief description of the test excavations, York (1974) summarizes the results of the surface collecting at the Sunshine Locality (55 sites recorded) in Long Valley and in the adjacent mountain range. Projectile points recovered from Long Valley include a complete Hell Gap point (specimen 26WP001(LV)/1), Pinto Series, crescents, a Scottsbluff point, and a Haskett knife. Based on the evidence recovered from Long Valley, York (1974:13) feels that the valley floor was mainly utilized during the early Holocene and possibly the Late Pleistocene.

References: York (1974, 1975, 1976, 1978); see also Tadlock (1966) for data on Long Valley surface collections.

Date of Fieldwork: 1974

Project: Archaeological survey of Mount Wilson fire rehabilitation chaining and reseeding project.

Investigator: Richard H. Brooks

Sponsoring Institution: Nevada Archaeological Survey, University of Nevada at Las Vegas

Location: The area surveyed is in northeastern Lincoln County on the eastern side of the Wilson Creek Range. Mount Wilson, at an elevation of 2833 m, is the highest peak in the range. Pinyon and juniper dominate the vegetation.

Findings/Results: The survey covered about 2500 acres, about one-third of the burned area. Since the densely vegetated area had been burned off, many archaeological sites were exposed which might not have been observed otherwise. Ninety sites were recorded within the project area. At seventy-three of the sites, collections of diagnostic artifacts, ground stone, and lithic debitage were made. All the sites were open sites, for no rockshelters or petroglyphs were located. Fifty-seven sites contained simply lithic materials. Chert and other siliceous materials dominated the lithic assemblages, but obsidian was present as well. Thirteen sites had Shoshonean, Fremont, and Puebloan pottery. A finer distinction of the pottery was not made, although Brooks et al. (1974:13) mentioned that the Puebloan pottery was similar to Tusayan Gray Ware, a Virgin Branch Anasazi type. Ground stone, including one "Utah Type" trough metate, was present at nine sites. Lastly, nine of the sites have stone circles, which probably represent the footings for brush shelters. The size of the sites range from 5 to 200 m in radius. Diagnostic projectile points include Humboldt, Pinto, Elko, Gypsum, Eastgate and Rose Spring Series, Cottonwood Triangular, and Desert Side-notched which occur at twenty-seven sites. Elko, Pinto, and Humboldt points were found at isolated sites, while Rose Spring and Desert Side-notched were apparently associated with Cottonwood Triangular points. Based on the time range of the projectile points and ceramics, the area appears to have been occupied from 6000 years B.P. to the historic period.

Reference: Brooks et al. (1974)

Date of Fieldwork: 1974-1975

Project: Archaeological survey between Carlin and Beowawe and in Pine Valley, Eureka County.

Investigator: Brian Hatoff

Sponsoring Institution: University of California at Davis

Location: The survey area is located south of Beowawe and Carlin in northern Eureka and southwestern Elko counties in the Elko District.

Findings/Results: A 10% sample of two internally stratified transects was conducted. One of the transects ran east-west across Pine Valley; the other was located between Carlin and Beowawe. A total of 255 sites was recorded (site nos. 26EK2267 to 26EK2295 and 26EU459 to 26EU690). About 58 sites were artifact scatters; the rest were isolated finds. All were surface sites with the exception of Mineral Cave, a rockshelter containing no cultural material which was excavated during the survey (see McGuire 1980 and discussion below).

A total of 273 typeable projectile points was recovered. Points types included Pinto/Gatecliff, Humboldt, Rose Spring/Eastgate, Cottonwood Triangular and Desert Side-notched. Shoshoni pottery was recovered from one site. Ground stone was present at most sites, but it was not abundant. No structural features were observed on the sites. It is inferred that the majority of the sites were temporary campsites.

Reference: Brian Hatoff, personal communication, January 19,1981

Date of Fieldwork: 1975-1976

Project: Excavation of four sites in the Interstate 80 right-of-way near Carlin, Elko County

Investigator: Mary K. Rusco, Jonathan O. Davis, and Andrew Jensen

Sponsoring Institution: Nevada State Museum

Location: The four sites are located east and west of Carlin along tributaries of the Humboldt River, which lies to the south. Susie Creek Site (26EK1671) and Railroad Site (26EK1672) are situated near Susie Creek. Maggie Creek Site (25EK1670) is on Maggie Creek, as the site name indicates. Carlin's Water Site (26EK1669) is along lower James Creek, which supplies water to the town of Carlin. Vegetation in the vicinity is dominated by the rabbitbrush-greasewood-grass and sagebrush-grass associations.

Findings/Results: Cultural deposits at the Carlin Basin Area Sites were very shallow and generally confined to the upper 15 cm. Cultural materials from the surface and excavations consisted of flaked and ground stone, Shoshoni sherds from two vessels, some faunal and plant remains, and historic debris. Diagnostic projectile points included Humboldt, Elko, Rose Spring, Eastgate, Cottonwood Triangular. Desert Side-notched, and two central Sierra Nevada types--Martis and Serrated Triangular. Among the features were firecracked and soot-stained rocks, three firepits or hearths one of which was stone-lined, ash lenses with rock clusters, and flaked stone concentrations. From radiocarbon dates and time-diagnostic artifacts, occupation of the sites date from 600 years B.P. to the historic period. The radiocarbon dates from the hearths narrow the site occupation down to between 360 B.C. and A.D. 1230.

Reference: Rusco, Davis, and Jensen (1979)

Date of Fieldwork: 1975

Project: Test excavations of four sites on State Highway 38 right-of-way: 26LN617, 26LN618(Mariah Site), 26LN619, and 26LN647.

Investigator: Richard H. Brooks

Sponsoring Institution: Nevada Archaeological Survey, University of Nevada at Las Vegas

Location: The sites are located along State Highway 38 between 11 and 14 km north of Hiko, northern Lincoln County, Nevada, in the Hiko Narrows through which the White River drains.

Findings/Results: Four sites were tested or excavated as part of the archaeological survey during the construction of State Highway 38. The sites are situated at about 1280 m elevation in the sagebrush-grass vegetation zone. Site 26LN617, a lithic scatter, was excavated by ten, one meter square test pits but yielded no subsurface materials. From a one meter square test pit at 26LN647, cultural material consisting of waste flakes was present to a depth of 40 cm. Site 26LN619 was tested by six randomly placed auger holes. Waste flakes and charcoal were recovered up to a depth of 70 cm below the surface with possibly more depth present.

The Mariah Site (26LN618) is a slight overhang of a cliff which faces north in the Hiko Narrows. A petroglyph consisting of parallel lines, geometric designs, and mountain sheep elements is located just above ground level along the base of the cliff which forms the rear of the shelter.

Test units at the Mariah Site consisted of one meter square units excavated by 10 cm arbitrary levels in some units and by natural stratigraphy in others. Additionally, a backhoe was used to extend one of the trenches into the drainage in front of the site. The depth of the units varies from one meter to just under three meters with seven strata being determined.

The cultural assemblage recovered from the Mariah Site included projectile points, bifaces, unifaces, cores, hammerstones, waste flakes (predominately chert but a small percentage of obsidian), ground stone and pottery. The eleven typeable projectile points from the deposit were Cottonwood Triangular, Desert Side Notched, Eastgate, Rose Spring, and Elko Series. The pottery consisted of Fremont types (Snake Valley Black-on-gray and Sevier Gray) with a small percentage of Virgin Branch Anasazi ware. No Shoshonean pottery was recovered. Unfortunately, the faunal analysis was not reported in any detail, but burned and unburned animal bones including burnt artiodactyl long bones were recovered. Occupation of the site is inferred to have been related to seasonal hunting and gathering. Two radiocarbon dates were obtained: 30 ± 75 years B.P. or 1920 A.D. (UGa-473) from stratum 2 and 1125 ± 75 B.P. or 825 A.D. (UGa-1474) from stratum 4. The more recent date is probably from a historic campfire; the latter date of 825 A.D. is consistent with the projectile points and Fremont ceramics found at the site.

Reference: Brooks et al. (1977)

Date of Fieldwork: 1975

Project: Archaeological reconnaissance of Steptoe Creek region

Investigator: Don D. Fowler

Sponsoring Institution: Western Studies Center, Desert Research Institute

Location: The survey was concentrated along Steptoe Creek road from U.S. 6/93 via Success Summit to Berry Creek road in the Schell Creek Range mostly on Humboldt National Forest land, White Pine County.

Findings/Results: A total of 13 sites were recorded--26WP642 through 26WP654. Eight sites are lithic scatters; 3 are rockshelters/caves, one containing two pictograph elements (26WP654); one is an isolated find, and one is a historic site, Monitor Mill. Materials observed or recovered from the sites include projectile points (Desert Side Notched, Rose Spring Corner Notched, Rose Spring Side Notched, Rose Spring Contracting Stem, Cottonwood Triangular, and Elko Corner Notched), blades, knives, drills, burins, cores, hammerstones, scrapers, and Fremont and Shoshoni pottery.

Reference: Fowler (1975)

Date of Fieldwork: 1975

Project: Excavation of Mineral Hill Cave

Principal Investigator: Kelly R. McGuire

Sponsoring Institution: University of California at Davis

Location: Mineral Hill Cave is located in the Sulphur Spring Range near Carlin, Nevada

Techniques: Two test pits near the cave entrance were dug in arbitrary 10 cm levels to a depth of 1.4 m. The fill was passed through 3.17 mm (0.125 in.) screen.

Findings/Results: Although no cultural material was recovered, the cave deposit contained a number of faunal remains which appear to have accumulated in the cave as a result of natural processes. Twenty two mammalian species are represented, including several late Pleistocene taxa-horse (*Equus* sp.), llama (*Hemiauchenia* sp.), and shrub ox (*Euceratherium* sp.). Furthermore, split mammalian long bone fragments and charcoal were observed throughout the deposit. Their presence in a non-cultural context brings into question other such finds which are usually attributed to Paleo-Indians or Big Game Hunters in the Great Basin.

Reference: McGuire (1980)

Date of Fieldwork: 1975-1977

Project: Archaeological survey and excavations in Garden and Coal Valleys, Lincoln and Nye Counties, Nevada

Investigator: Colin I. Busby

Sponsoring Institution: Archaeological Research Facility, University of California at Berkeley

Location: Garden and Coal Valleys, northern Lincoln and northeastern Nye Counties

Findings/Results: A major facet of the fieldwork was the excavation of Civa Shelter II (26LN1590) during the 1976 and 1977 field seasons. Slivovitz Shelter (26NY1263), Avocado Shelter (26NY1263), and Civa Shelter I (26NY264) were also excavated. Aside from the excavations, 70 sites were recorded in Garden and Coal Valleys.

Civa Shelter I is located at the northern end of the Golden Gate Range overlooking Coal Valley. Projectile points recovered from the site include Rose Spring Corner-notched, Cottonwood Triangular, and Desert Side-notched. Based on these point types, the site is inferred to have been occupied by Shoshoni and/or Southern Paiute between A.D. 600-700 and the historic period.

Also in the Golden Gate Range, Civa Shelter II yielded a wider variety of cultural materials. The 104 typeable projectile points were Humboldt, Elko, Rose Spring, Cottonwood Triangular, and Desert Side-notched. Other chipped stone items, ground stone, Shoshonean and Fremont ceramics, worked and unworked bone, shell, and a few perishables were recovered. Occupation of the site began about A.D. 600-700 and continued into the historic period. Primary subsistence activities consisted of plant processing and jackrabbit hunting.

Slivovitz Shelter is located in the Quinn Canyon Range on the western side of Garden Valley. Humboldt, Elko, Eastgate, Rose Spring, Cottonwood Triangular, and Desert Side-notched points were recovered in the deposits along with other chipped stone, ground stone, worked and unworked bone, Shoshoni and Fremont pottery, and shell artifacts. The site is inferred to have been occupied for mountain sheep hunting.

References: Busby (1977, 1978, 1979); Busby and Seck (1977)

Date of Fieldwork: 1976

Project: Archaeological survey of Cave Lake State Recreation Area

Investigator: Don D. Fowler

Sponsoring Institution: Desert Research Institute

Location: The area around Cave Lake in the Schell Creek Range, White Pine County, was surveyed.

Findings/Results: The area around Cave Lake Reservoir was systematically surveyed in the area to be impacted by further development. Two lithic scatters, 26WP736 and 26WP737, were recorded on the edge of Cave Lake, and artifacts were collected from the sites by means of several 2m diameter sampling units. Lithic debitage was recovered from 26WP736; lithic debitage, Snake Valley Gray sherds, Shoshoni sherds, and ground stone were collected at 26WP737. A small cave; 26WP738 (previously designated 26WP119 [Fowler 1968b:46]), was also recorded along Cave Creek upstream from the development area. Two potholes had been dug into the deposit, but no cultural material was observed.

In addition to the survey around Cave Lake Reservoir, the results of the 1975 survey in the area (Fowler 1975) are summarized. The 1976 test excavations and surface collections of sites 26WP645 and 26WP649 are also reported. Testing of the two sites revealed little subsurface materials. Artifacts collected from the surface of the two sites include gypsum series, Elko corner-notched, and Desert side-notched projectile points and Shoshoni sherds.

Reference: Fowler (1976)

Date of Fieldwork: 1976

Project: Two cultural resource clearances at Adams-McGill Reservoir

Investigator: Robert York

Sponsoring Institution: Bureau of Land Management

Location: The surveys were conducted in the Ely District near Sunnyside, Nye County, at Adams-McGill Reservoir.

Findings/Results: Two lithic scatters were recorded: 26NY556 (BLM: CrNV-04-216) and 26NY557 (BLM: CrNV-04-217). Site 26NY556 yielded Pueblo Black-on-white (probably Snake Valley Black-on-gray) and Shoshoni sherds. Subsurface materials in the form of waste flakes were observed in postholes to a depth of 50 cm. Due to its location in the White River drainage and proximity to Fremont agricultural sites near Baker, Nevada, York (1977) speculates that the aboriginal inhabitants of the site could have partially relied on agriculture. At site 26NY557 one Elko Series projectile point was recovered. This site appears to have been a seasonal camp.

Reference: York (1977)

Date of Fieldwork: 1978, 1979

Project: Cultural resource survey of the Sierra Pacific Power Company 230/345KV transmission line corridor through northern Nevada

Investigators: L. Kyle Napton and Elizabeth A. Greathouse

Sponsoring Institution: Institute for Archeological Research, California State College, Stanislaus, Turlock, California

Location: Survey of the transmission line corridor ran from Oreana, Nevada, on the west through the Humboldt River Basin to the Nevada-Idaho border in northeast Nevada. Within the BLM Elko District, the transmission line bisects Elko County in a southwest-northeast direction.

Findings/Results: The survey of the transmission line was divided into four segments: (1) Sacramento Canyon in Pershing County; (2) Valmy Reroute near Battle Mountain in Pershing, Humboldt, and Lander Counties; (3) Rossi Reroute in Lander County; and (4) AT and T Reroute, a 110 mile segment in Elko County beginning on Maggie Creek and extending to the Nevada-Idaho border near Jackpot. A total of 65 archaeological sites was recorded during the surveys. All but one are exposed or open sites. Diagnostic projectile points indicate that the sites date from 6000 years ago to the historic period. The AT and T Reroute, Rossi Reroute, and a small portion of Valmy Reroute are within the Elko District and are summarized here.

On the Valmy Reroute survey, site K16L (26LA1286) and Izzenhood Pass (26LA1287) were recorded within the Elko District. Both are listed as occupation sites. Thirty, 30 by 30 meter square surface units were collected, and two, 1 by 1 meter square pits were excavated at site K16L. At the Izzenhood Pass Site, cultural materials were collected in six, 30 by 30 meter square units.

Sixteen sites were recorded along the Rossi Reroute corridor: Assembly Yard Antelope (26EK1996), Falling Rock (26EK1997), Shoestring (26EK1998), Lower Creek Crossing (26EK1999), STR 153 (26EK2000), STR 154 Draw (26EK2001), 158/159 (26EK2002), 159 Flakes (26EK2003), 160 Ridge (26EK2004), 161 Slope (26EK2005), Upper Creek Crossing (26EK2006), Antelope Creek (26EK2007), Rossi Rill (26EK2008), 26EK1522, Assembly Yard Rossi (26EK2009), and 26EK1523. All are defined as occupation sites with the exception of 26EK2000 and 26EK2002, which are isolated finds. Collections were made at the sites, and in some cases, all debitage was collected. 26EK1522 and 26EK1523 were previously recorded and mitigated by the Nevada State Museum.

During the survey of the AT and T Reroute, thirty-seven sites were recorded, several of which had previously been recorded and mitigated by the Nevada State Museum and the Bureau of Land Management. The sites are as follows: 26EK1510 (previously recorded), Grinding Stone (26EK2010), Busy Beaver (26EK2011), 26EK1512 (previously recorded), Roads End (26EK2012), BM 6231 (26EK1511), Maggie North (26EK2013), Fenceline (26EK2014), Maggie Slope (26EK2015), R2D2 (26EK2019), R3-A (26EK2020), HWY 11 (26EK2021), 26EK1755 (previously recorded), Assembly Yard Gance (26EK2022), Gunsite (26EK2023), R-6 (26EK2024), Tobacco Tin (26EK2025), Uranus (26EK2026), STR 521 (26EK2027), White Rock (26EK2028), Shine (26EK2039), Sun (26EK2040), TV Point (26EK2041), and Frosted Flakes (26EK2042). All are considered to be occupation sites except for Maggie Flat, R3-A, and R3-6, which are isolated finds. Surface collections were made at most of the sites, and test excavations were conducted at BM 6231 (26EK1511), Fenceline (26EK2014), R2D2 (26EK2016), and STR 521 (26EK2027).

Reference: Napton and Greathouse (1979-1980)

Date of Fieldwork: 1978, 1979, 1980

Project: Survey and excavations in Pine Valley along proposed reconstruction of Nevada State Route 51, Eureka County

Investigator: Thomas H. Turner

Sponsoring Institution: Archaeological Division of the Environmental Section, Nevada State Highway Department

Location: The sites are located on the east side of Pine Valley along Nevada State Route 51 between mile post EU62 and EU69. Elevation along the highway is about 1573 m.

Findings/Results: Thirteen sites along State Route 51 were recorded or re-recorded. Eleven of the sites are open lithic scatters (26EU22 to 26EU24, 26EU26, 26EU28 to 26EU31, 26EU48, 26EU49, 26EU51); one site is an open lithic scatter with an historic trash dump (26EU27); and one site is an isolated find (26EU25). With the exception of the isolated find, the sites are interpreted as three seasonal base camps and nine task sites. In 1978, test excavations were conducted at nine of the sites: 26EU22, EU23, EU26, EU27, EU28, EU29, EU48, EU49, and EU51. All but 26EU29 yielded subsurface cultural materials. Depth of the deposits at the sites ranged from 10 cm to over 50 cm.

Diagnostic projectile points recovered from the survey and test excavations include Humboldt Concave Base B, Pinto, Elko, Eastgate, Cottonwood Triangular, and Desert Side-notched. From these point types, the sites are relatively dated between 4500 years B.P. and the historic period. The majority of the artifacts recovered from the tests consist of unmodified flakes. Historic and prehistoric debris was present to a depth of 50 cm at site 26EU27. Bone fragments were recovered from several sites.

During the 1979 and 1980 field seasons, further work has been carried out at the sites, but the results have not been reported.

References: Stearns, Steinberg, and Turner (1978); Turner, Stearns, and Turner (1979); T. H. Turner, personal communication, 1981.

Date of Fieldwork: 1979

Project: Recordation of White River Narrows petroglyphs, Lincoln County (BLM site no. CrNV-04-110)

Investigator: Mark Henderson

Sponsoring Institution: Bureau of Land Management, Ely District Office

Location: The petroglyph sites are located about 16 km north of Hiko along State Highway 38 in the White River Narrows.

Findings/Results: Many of the petroglyph localities in the White River Narrows had been previously recorded by Heizer and Hester (1974; UCB site no. NV-Li-9) and briefly surveyed by the Desert Research Institute and Nevada State Museum (Fowler and Sharrock 1973:101, Figure A9a; NSM site no. 26LN210).

At the time of this writing, the report on the results of this project has just been completed and was not available for inclusion here.

Reference: Walt Cassidy, Ely District Archaeologist, personal communication, February 23, 1981

Date of Fieldwork: 1979

Project: Cultural resource survey of eastern White Pine and northeastern Lincoln Counties

Investigator: Mark Henderson

Sponsoring Institution: Bureau of Land Management, Ely District Office

Location: Portions of Snake and Spring Valleys in eastern White Pine County and Lake Valley and White Rock Mountains in northeastern Lincoln County were surveyed.

Findings/Results: The survey areas were sampled using 500 square meter units. Two hundred and six of these sample units were surveyed which amounted to a total of 5090 ha (12,725 acres). All cultural materials ranging from prehistoric artifacts to modern trash were recorded. Twenty-eight prehistoric and four historic sites were recorded, as were over 2500 isolated artifacts. Diagnostic prehistoric cultural materials indicate that Archaic, Fremont, and Numic groups occupied the sites. Two Fremont sites were located which are similar to the Garrison and Baker sites. At another site, Shoshonean ware ceramics and a military button dating between 1855 and 1884 were found in association. The final results of this work have not been reported at the time of this writing.

Reference: Walt Cassidy, Ely District Archaeologist, personal communication, February 23, 1981

Date of Fieldwork: 1979

Project: Cultural resources reconnaissance at Freeport Mining Corporation's Jerritt Canyon project area

Investigator: Moen Associates

Sponsoring Institution: Moen Associates, Inc., Las Vegas, Nevada

Location: The Jerritt Canyon project area is situated at the southern end of the Independence Range in the Humboldt National Forest, about 80 km northwest of Elko, Nevada. Elevations in the project area range from 1830 m at the mouth of Jerritt Canyon to 2590 m on the summit of California Mountain.

Findings/Results: A total of twenty prehistoric occupation sites, four small lithic scatters, fourteen isolated finds, and one historic dump site was recorded during several phases of the survey. None of the sites in the report were designated by Smithsonian site numbers. The twenty prehistoric occupation sites are separated into the following types: eight hunting base camps, four hunting and gathering base camps, five temporary hunting camps, and three rockshelters. One of the rockshelters, Burns Canyon Shelter, contained red pictograph elements which included a possible human figure.

Projectile points were present at nineteen sites. Of the thirty typeable points, Northern Side-notched, Humboldt Concave Base, Pinto Square Shoulder, Elko Eared, Elko Corner-notched, Rose Spring Corner-notched, Rose Spring Contracting Stem, Eastgate Expanding Stem, and Cottonwood Triangular were identified. Ground stone was present at six sites. One site (Temp. no. 8-2) yielded several incised stone slabs. Based on the diagnostic projectile points, the sites appear to have been occupied from 6000-5000 years B.P. to the historic period.

References: Moen Associates (1979)

From the review of archaeological surveys and excavations presented above, it is apparent that certain portions of the Elko and Ely districts have been investigated more thoroughly than others. The areas which have been the focus of these investigations are the result of approximately 12 major archaeological surveys (Table 2). These areas are as follows: northwestern Elko County (Tuohy 1963); Jarbidge, Thousand Springs, Cedar Ridge, Cherry Creek, Ruby Valley, Newark Valley, Schell Creek Range, Egan Range, and Snake Valley in Elko, Eureka, and White Pine Counties (Fowler 1968a); Winnemucca-Battle Mountain area (Stephenson and Wilkinson 1969); Goose Creek-Grouse Creek region of extreme northwestern Utah and northeastern Nevada (Dalley 1977a; Wylie 1971a, 1971b, 1971c); Lincoln County, southeastern Nevada (Fowler and Sharrock 1973); Ruby Valley, Elko and White Pine counties (Casjens 1974); Long Valley and Buck Mountain (York 1974, 1975, 1976, 1978); Pine Valley (Brian

Hatoff, personal communication, 1981); Mt. Wilson, northern Lincoln County (Brooks et al. 1974); Garden and Coal Valleys, southeastern Nevada (Busby 1978, 1979); Sierra Pacific power line, northern Nevada (Napton and Greathouse 1979-1980); and Snake, Spring, and Lake Valleys (Walt Cassidy, personal communication, 1981). The locations of these surveys are shown in Figure 6.

[Editor's note: Several other large archaeological projects, namely the 1980 MX survey, have been conducted in eastern Nevada. The results of these surveys, however, are not available at the time of this writing.]

Table 2. General Locations of Large Scale Archaeological Surveys Which Have Been Conducted in the Elko and Ely Districts.

1. Northwestern Elko County (Tuohy 1963)

2. (a) Jarbidge, (b) Thousand Springs, (c) Cedar Ridge, (d) Cherry Creek, (e) Ruby Valley, (f) Newark Valley, (g) Schell Creek Range, (h) Egan Range, and (i) Snake Valley in Elko, Eureka, and White Pine Counties (Fowler 1968a)

3. Winnamucca-Battle Mountain area (Stephenson and Wilkinson 1969)

4. Goose Creek-Grouse Creek region of extreme northwestern Utah and northeastern Nevada (Dalley 1977a; Wylie 1971a, 1971b, 1971c)

5. Lincoln County, southeastern Nevada (Fowler and Sharrock 1973)

6. Ruby Valley, Elko and White Pine Counties (Casjens 1974)

7. Long Valley and Buck Mountain (York 1974, 1975, 1976, 1978)

8. Pine Valley (Brian Hatoff, personal communication, 1981)

9. Mt. Wilson, northern Lincoln County (Brooks et al. 1974)

10. Garden and Coal Valleys, southeastern Nevada (Busby 1978, 1979)

11. Sierra Pacific power line, northern Nevada (Napton and Greathouse 1979-1980)

12. Snake, Spring, and Lake Valleys (Walt Cassidy, personal communication, 1981)

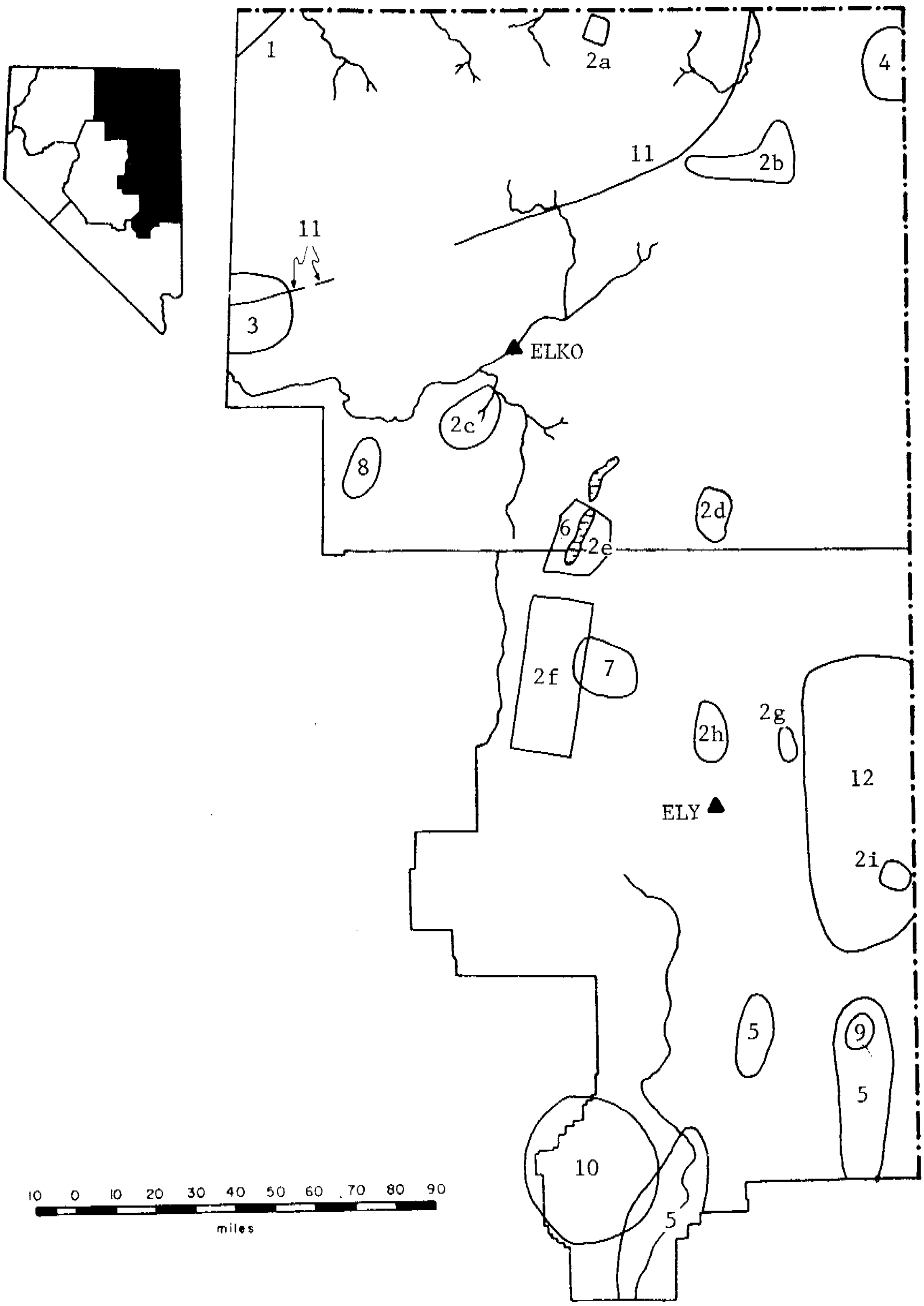


Figure 6. General locations of large scale archaeological surveys which have been conducted in the Ely and Elko districts.

DISTRIBUTION OF ROCK ART SITES IN EASTERN NEVADA

Steven R. James

Introduction

Great Basin rock art has been divided into five major styles and three substyles (Baumhoff, Heizer, and Elsasser 1958; Heizer and Baumhoff 1962:197-209). These styles and substyles are: (1) Great Basin Pecked with three substyles: (a) Great Basin Representational, (b) Great Basin Curvilinear Abstract, and (c) Great Basin Rectilinear Abstract; (2) Great Basin Painted; (3) Great Basin Scratched; (4) Puebloan Painted; and (5) Pit-and-Groove.

Great Basin Representational elements include mountain sheep (which are the most common elements), deer, other quadrupeds, human feet and hand prints, Kachina figures, horned human figures, and any other non-abstract forms. Some of these elements, particularly Kachina and horned human figures, also occur in the Puebloan Painted Style.

The Great Basin Curvilinear Abstract style was originally defined by Steward (1929:220). The most common elements in this style are circles and curvilinear meanders. Concentric circles, chains of circles, tailed circles, sun disks, stars, and snakes are also included in this style.

The Great Basin Rectilinear Abstract style was also originally defined by Steward (1929:220). Common elements include gridirons, cross-hatching, angular meanders, dots, bird tracks, and rakes.

The Great Basin Painted style includes circles, parallel lines, and any other elements which are painted and are not classified under the Puebloan Painted style. Some of the elements found in the pecked style are also motifs of the Great Basin Painted style.

The Great Basin Scratched style is characterized by straight lines, sun figures, and cross-hatching elements etched or scratched onto the rock surface with a sharp stone tool, such as obsidian or chert.

The Puebloan Painted style consists of painted triangular-bodied anthropomorphic figures, such as Kachina and horned figures. While called Puebloan or Puebloid by Heizer and Baumhoff (1962:208), these figures are generally associated with the Fremont in eastern Nevada and are considered to be a Fremont style (Schaafsma 1971:104-108).

The Pit-and-Groove style is characterized by pits varying in size from several centimeters to 30 cm in diameter and grooves from one to two centimeters wide. The pits and grooves are randomly pecked or battered on the rock surfaces. Most of the Pit-and-Groove petroglyph sites in the Great Basin are confined to western Nevada.

Further information on these and several other Great Basin rock art styles, as well as dating and interpretation, has been summarized by Wellmann (1979:54-62).

Great Basin rock art styles have been tentatively dated by Heizer and Baumhoff (1962:Table 9 on p. 234) as follows: Great Basin Representational (A.D. 1 to A.D. 1500), Great Basin Curvilinear Abstract (1000 B.C. to A.D. 1500), Great Basin Rectilinear Abstract (A.D. 1 to A.D. 1500), Great Basin Painted (A.D. 1000 to historic period), Great Basin Scratched (A.D. 1000 to historic period), Puebloan Painted (A.D. 900 to A.D. 1100), and Pit-and-Groove (5000 B.C. to 3000 B.C.). As this chronology indicates, rock art in the Great Basin may date from the middle Archaic to the historic period. Establishing the age of these rock art styles is quite difficult, since they are usually not found in any datable context. Researchers in the Great Basin have recently attempted to date rock art styles by neutron activation analysis (Bard 1976; Bard, Asaro, and Heizer 1978) and correlation of projectile point designs in rock art with actual projectile point types (Thomas and Thomas 1972). [For recent work on attempts at rock art dating outside the Great Basin, see Butzer et al. 1979; Lynch and Robbins 1977.]

In addition to Great Basin rock art styles and problems of dating, the interpretation of these sites is also important. Speculations on the meaning and function of rock art are widespread in the literature. Rock art probably served various functions depending on the location, context, and elements depicted, and no single function or purpose can be assigned to all sites. Some ethnographic studies have reported that children are responsible for the drawings, yet in the same region other designs have ritualistic significance (cf. Heider 1979:58-59). In the Great Basin, rock art sites depicting game animals have been shown to be near game trails, and the sites are inferred to be associated with hunting magic (for further details, see Heizer and Baumhoff 1959, 1962; Heizer and Clewlow 1973; Heizer and Hester 1974; von Werlhof 1961, 1965).

Rock Art Sites in Eastern Nevada

In their seminal work on the distribution and interpretation of Great Basin rock art, Heizer and Baumhoff (1962) listed only one site in Elko County, six in White Pine County, and five in Lincoln County. Only one of the Lincoln County sites is in the study area, Li-4 (UCB site no.) near Hiko Springs (Heizer and Baumhoff 1962:41; Hubbs and Miller 1948:Figures 25 and 28), which actually are the White River Narrows petroglyphs, although there are other sites near Hiko Springs. Since Heizer and Baumhoff's study, many new rock art sites have been located in eastern Nevada.

Elko County

The only rock art site (26EK3; UCB:NV-El-1) in Elko County described by Heizer and Baumhoff (1962:35-36, Figure 78d) is apparently of historic origin. Several prehistoric rock art sites have since been recorded in Elko County. Although not discussed in their report, Stephenson and Wilkinson (1969) recorded a rockshelter with a red pictograph element (26EK505) in Evans Valley on their 1967 survey of the Winnemucca-Battle Mountain area.

Casjens (1974) located one pictograph site and possibly a second site during a survey of Ruby Valley. Site 26EK1085 is an open site along Harrison Pass Creek in Ruby Valley and supposedly contains pictographs, although the site form is very vague and the listing of rock art may be a mistake on the form. In any case, Bronco Charlie Cave (26EK801) which was excavated by Casjens does have pictographs on the limestone walls (Casjens 1974:183-202). Fourteen badly weathered elements are present. One is painted in red, and the rest are drawn with a black pigment. Pictograph elements include wavy lines, zig zag lines, parallel lines, rakes, one-pole ladders, segmented circles, dot designs, hatched areas, cross-hatched areas, enclosed zig zags, crescents, and possibly Kachina figures. These fall under the Great Basin Painted style and possibly Puebloan Painted style (but see Casjens 1974:184 for a different opinion). Casjens feels that the pictographs may be connected with the use of the cave as a hunting site. While dating of the pictographs is uncertain, Bronco Charlie Cave is estimated to have been occupied from 700 B.C. to the historic period.

During a 1979 survey of Jerritt Canyon in the Independence Mountains northwest of Elko, pictograph elements were found at Burns Canyon Shelter (Temp. site no. B.C.S.), a southwest facing rockshelter situated at 1890 m elevation above Burns Creek (Moen Associates 1979). The pictograph elements are all painted with a red pigment and include a double arrow-shaped figure, a hand or possibly a block human figure, and parallel lines. The other elements are merely pigment blotches. The Great Basin Painted style appears to be represented. Some lithic debitage but no diagnostic artifacts were present on the surface of the shelter.

White Pine County

Heizer and Baumhoff (1962:68-71) describe six rock art sites in White Pine County; all but one site had previously been reported. Two pictograph sites were reported in the Snake Range at the Baker Creek Caves (UCB:NV-Wh-3 and NV-Wh-12; Smithsonian nos.:26WP3 and 26WP12) based on earlier descriptions by E. Harrington (1933), Lange (1952), Steward (1929:145), and Vogel (1952). Both pictograph and petroglyph elements were present at Malouf's (1946) Tunnel Canyon site (UCB:NV-Wh-11; Smithsonian no.:26WP66) in the Antelope Range near Tippett, Nevada. Kachina Rockshelter (UCB:NV-Wh-13; Smithsonian no.:26WP69) in Smith Creek Canyon contained numerous Fremont pictographs (Harrington 1932b). Reagan (1934) and Malouf (1940d) reported a pictograph site (UCB:NV-Wh-14; Smithsonian no.:26WP14) at the head of Chokecherry Creek near the Gosiute Indian Reservation at Ibapah, Utah. The only previously unreported site described by Heizer and Baumhoff (1962:71) was in Mosier Canyon just east of Ely in the Schell Creek Range. The Mosier Canyon pictographs (UCB:NV-Wh-15; Smithsonian no.:26WP159) consist of small, red triangular-bodied Fremont-like figures.

A number of rock art sites have been recently recorded in White Pine County. During a survey of eastern Nevada in 1966, Fowler (1968a:31-32) described two petroglyph sites (26WP126 and 26WP127) in Cleve Creek Canyon in the Schell Creek Range. From my own brief visit to the area, rock art styles at site 26WP126 consist of Great Basin Representational (two mountain sheep elements), Great Basin Curvilinear Abstract, and Great Basin Rectilinear Abstract. Since Fowler's (1968a:Figure 9) sketch does not portray the mountain sheep, a photo of these elements is shown in Figure 7. Earlier, Steward (1929:151 [site 291], Plate 93a, e) provided two photos of this site, but he mistakenly attributed one of the photos to a Virgin River site and the other to a site in Baker Canyon. Parenthetically, the chalked Kachina figures in Steward (1929:Plate 93c, d) are pictographs in Upper Baker Creek Rockshelter near Lehman Caves in White Pine County and not from his site 291 on the Virgin River. Schaafsma (1971:104, Figure 111) also noted this discrepancy but was not certain as to which site to assign the pictographs.

Elements present at site 26WP127 include Great Basin Curvilinear Abstract pecked on a single panel (Fowler 1968a:31). Another petroglyph site in the area at the confluence of North Fork and Cleve Creeks, shown as Indian Pictographs on USGS Connors Pass, Nev. 15' series quad (1959), was also visited by the author. The site is supposedly unrecorded, although the Forest Service may have a record of it. The elements are pecked in the Great Basin Curvilinear Abstract and Pit-and-Groove styles (Figure 8), and represents one of the few occurrences of Pit-and-Groove in eastern Nevada. This style is present at two other sites in the region, that of 26WP135 (Rusco 1970) and 26WP854 (site re-recorded by the author in 1977). Both sites are located across Spring Valley to the east in the Snake Range. All three of the Cleve Creek sites are in the Humboldt National Forest.

Two pictograph sites have also been recently recorded near Cave Lake in the Schell Creek Range, east of Ely within the Humboldt National Forest boundaries. Site 26WP654 was recorded during archaeological surveys by the Desert Research Institute (Fowler 1975, 1976). Pictograph elements at the site consist of two red Kachina figures just outside the mouth of a small cave. Upcanyon a few kilometers, the author recorded another Fremont pictograph site (BLM:CrNV-04-634) in a relatively large alcove (James 1978). The outline of a horned Kachina figure, a bird with outstretched wings, a snake, and crossed lines or stars in red and orange pigments were represented on the walls of the alcove. Thus, the elements can be placed into the Puebloan Painted, i.e. Fremont, and Great Basin Painted styles. Both of these pictograph sites are similar to the Mosier Canyon Kachina pictograph site (UCB:Wh-15; Heizer and Baumhoff 1962:71, Figure 131h), located several kilometers overland

Figure 7. Photo showing a portion of petroglyph site 26WP126, Cleve Creek Canyon, White Pine County, eastern Nevada. Two mountain sheep elements are present in the upper lefthand corner (Photo by S. R. James).

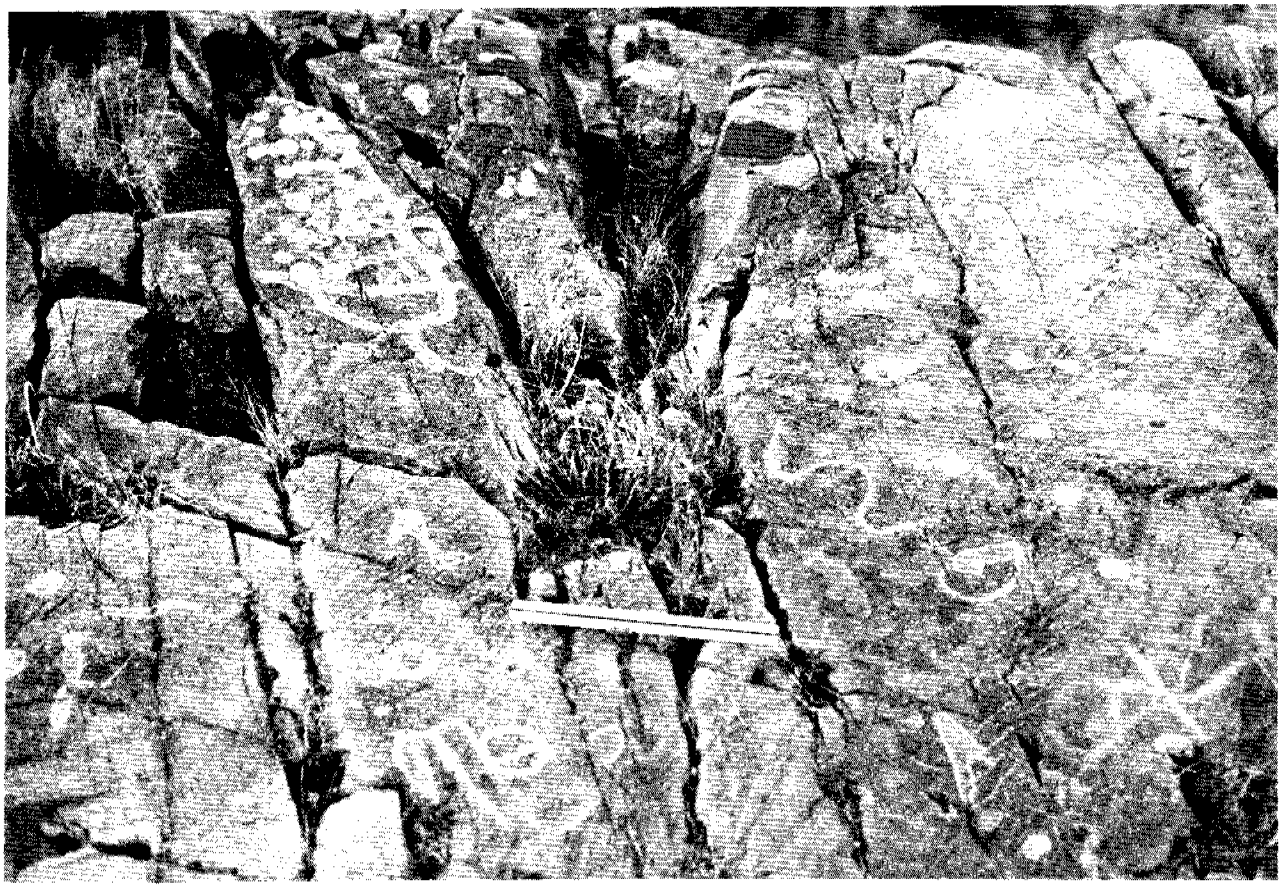


Figure 8. Pit-and-Groove and other elements at a petroglyph site along Cleve Creek in the Schell Creek Range, White Pine County, eastern Nevada (Photo by S. R. James).

in the next major drainage to the west. Furthermore, these three pictograph sites are similar to other Fremont pictographs in the Snake Range at Kachina Cave and Upper Baker Creek Cave (E. Harrington 1933; M. Harrington 1932b; Tuohy 1979) and to sites in Utah (Castleton 1978, 1979; Schaafsma 1971; Siegrist 1972; Sleight 1946; Steward 1937c:Plate 4a).

North of Ely in the Cherry Creek Range on the White Pine-Elko County line, the author recorded a rockshelter (BLM:CrNV-04-635) which had what appeared to be several recently pecked elements on one wall. These elements may or may not be prehistoric. Additionally, one Great Salt Lake Gray sherd and a large amount of naturally occurring faunal remains were recovered on the surface of the shelter. In the Egan Range north of Ely, Fremont-like pictographs have recently been recorded in a small rockshelter (BLM:CrNV-04-654) in Hercules Gap. South of Ely and also in the Egan Range, Great Basin Painted style elements are present in Deer Jay Shelter (apparently an unrecorded site).

Pictograph sites on the eastern side of the Snake Range have been known since the 1920's (E. Harrington 1933; M. Harrington 1932b; Steward 1929:145-146, Plate 93c, d). Heizer and Baumhoff (1962:68-71) and Schaafsma (1971:104-108, Figure 80) have summarized these and other sites in White Pine County. However, Pictograph Cave (26WP42), a rockshelter located above Snake Creek on the eastern side of the Snake Range, has not been previously discussed. The site was briefly described by Shutler (1961:12, Plate 21b), but the red and possibly black pictographs on the walls of the shelter are not mentioned. While the elements are rather nondescript, they are probably done in the Great Basin Painted style rather than in the Puebloan or Fremont style which is so well-represented in this area.

To the south of Snake Creek in Big Wash, two other rockshelters with pictographs have been reported, but the sites have never been fully documented (site forms for 26WP35 and 26WP37). Pictograph elements at one of the sites, 26WP35, apparently include a circle with dots and a triangle representing a woman's dress.

Other rock art locations have recently been located in the Snake Range. In 1968, Aikens (1978c) recorded a large petroglyph site (26WP134; UU site no. 26WP16) in the pinyon forest at 2134 m elevation near Wheeler Peak. The site measures ca. 400 m by 200 m and contains 81 separate petroglyph panels with 140 individual elements. The ground surface is littered with thin rock slabs upon which the petroglyphs are pecked. Great Basin Representational, Great Basin Curvilinear Abstract, Great Basin Rectilinear Abstract, and Great Basin Scratched styles are represented at the site. Also near Wheeler Peak, a similar petroglyph site was recorded by Rusco (1970) at 2590 m elevation in the pinyon vegetation zone. The petroglyphs are carved on tabular quartzite slabs. Great Basin Representational, Curvilinear Abstract, Rectilinear Abstract, and Pit-and-Groove styles were present on 12 panels containing at least 86 elements and possibly as many as 200 elements. The occurrence of Pit-and-Groove style is interesting in that until this site was recorded, it was unknown in eastern Nevada (Heizer and Baumhoff

1962:Figure 134).

In the same vicinity of the Snake Range at 2830 m elevation a small petroglyph site (26WP854; BLM:AR27-04-10) was re-recorded by the author in 1977. The site is known locally as the Black Rock Petroglyphs and Indian Trail. The majority of the petroglyph elements are on an outcrop of grayish-black shale, for which the site is named. Other panels are on smaller outcrops and loose slabs scattered around and below the main outcrop. Design elements include curvilinear meanders, circles, "vulva" forms, a representation of a man, a few scratched lines, and several pits up to 5 cm in depth in the deepest hole. With the exception of scratched lines, the elements are pecked. The styles of the elements are Great Basin Representational, Great Basin Curvilinear Abstract, Pit-and-Groove, and probably Great Basin Scratched.

North of Sacramento Pass, but still on the western side of the Snake Range, the author also recorded a pictograph site at Granite Spring. Site 26WP874 (BLM:CrNV-04-368) is a small, west-facing rockshelter at the base of a limestone outcrop. The pictographs were badly weathered with only red pigment blotches on the walls. One possible sun motif was discernible, and in some areas, the red pigment outlined the natural pits on the wall. The elements were probably those of the Great Basin Painted style. In the same vicinity, another rockshelter with pictographs is reported to be present on Negro Creek (Jack Wilcox, personal communication to S. R. James, 1977), but I was unable to visit the site at the time.

In Smith Creek Canyon in the northern Snake Range, Wylie (1974a:4) reported the presence of a single painted element on the wall of Sepia Shelter, a overhang near Smith Creek Cave high on the north side of the canyon, but no description of the pictograph element was provided. Recently, Tuohy (1979:17-25) has recorded the pictographs in and adjacent to Kachina Cave. These had previously been briefly described in the 1930's (E. Harrington 1933; M. Harrington 1932b). Many of the elements are Kachina figures, from which the rockshelter received its name. These triangular-bodied anthropomorphic figures are considered to be a Fremont trait, and their distribution appears to be limited to this region. As pointed out by Tuohy (1979:21), Schaafsma (1971:Figure 114) mistakenly assigned several anthropomorphic figures with hairbobs or earrings to a site at Kane Springs in Clark County, when, in fact, the figures are on the walls opposite Kachina Cave. It should also be mentioned that Schaafsma's (1971) Plate 52 is a chalked photo of several elements on the rear wall of Kachina Cave, including one of the most distinctive Kachinas in the shelter (cf. Tuohy 1979:Figure 4b). Similarly, her Figure 113 appears to show several more Kachinas from the shelter (cf. Tuohy 1979:Figures 3 and 4) and not from Kane Springs. Heizer and Baumhoff (1962:29-31 [site Cl-4], Figure 62b-e) also reported the presence of Kachina figures at Kane Springs and relied on the same photos used by Schaafsma, those of the Donald Scott collection at the Peabody Museum, Harvard University, to make their drawings. Most likely, the source of the discrepancies is that at some time the photos from the Donald Scott collection, which were from an unknown source, became associated with the actual photos from

Kane Springs.

Lincoln County

The highest number of new rock art sites to be recorded in eastern Nevada are in Lincoln County, with many of the sites being located within the Ely District. During several surveys of southeastern Nevada in the late 1960's, a total of 26 rock art sites were recorded in Lincoln County by the Desert Research Institute (Fowler and Sharrock 1973:117-119). Great Basin Representational, Great Basin Curvilinear Abstract, Great Basin Rectilinear Abstract, Great Basin Painted, and Puebloan Painted styles were represented at the sites. Within the Ely District, eight petroglyph sites were recorded: 26LN149, 26LN151, 26LN210, 26LN211, 26LN220, 26LN355, 26LN356, and 26LN357.

Two petroglyph localities were recorded in 1973 by a field party from the University of California at Berkeley under Robert F. Heizer (Heizer and Hester 1974; reprinted in Clewlow 1978 without the amusing preface in the 1974 edition, pp. 1-9). One petroglyph site (UCB site no. NV-Li-9) is located in the White River Narrows about 16 km north of Hiko on State Highway 38. The other site (UCB site no. NV-Li-7) is near Lower Pahranagat Lake south of Alamo, Nevada, and lies outside (south) of the Ely District.

The White River Narrows petroglyphs were previously photographed in Hubbs and Miller (1948:Figures 25 and 28). Their figures are of Locality 4 and 6 at the site (Heizer and Hester 1974:9,14). Robert L. Stephenson surveyed the area in 1967 for the Nevada Archeological Survey and designated the site NSM 26LN210. Fowler and Sharrock (1973:101, Figure A9a) show a portion of Locality 2, Panel 1 (Heizer and Hester 1974:9, Figure 4).

In the work done by Heizer and Hester, the petroglyph site was mapped by recording individual panels within general areas or localities. A total of six localities were recorded, the largest of which contained 10 petroglyph panels. The majority of the petroglyphs are of the Great Basin Representational Style with Great Basin Curvilinear Abstract Style, Great Basin Scratched Style, and Puebloan forms also present (Heizer and Hester 1974:18).

Two other sites were also mentioned by Heizer and Hester (1974:18). One site is on Mt. Irish and is briefly reported by Townley (1970), who described a "family" of mountain sheep portraying a feeling of depth on at the site. Heizer and Hester (1974:18) suggest that the mountain sheep were superimposed at different times and that the family and depth perspective were incidental. The other site is south of the Hiko Post Office on the east side of an artificial lake. A petroglyph boulder from the latter site has been removed to the Hiko Post Office.

South of the White River Narrows, petroglyphs have been recorded at the Mariah Site (26LN618; UCB:NV-Li-19), a nearly vertical cliff overhang which faces north in the Hiko Narrows. The petroglyph panel is located at ground level along the base of the cliff. Great Basin Representational, Great Basin Curvilinear Abstract, and Great Basin Rectilinear Abstract style elements at the site include parallel lines and mountain sheep. Other petroglyph elements are on boulders a short distance from the shelter. The Mariah Site was excavated in 1975 by the University of Nevada at Las Vegas as part of a cultural resources survey during the construction of State Highway 38 (Brooks et al. 1977). Occupation of the site was primarily by Fremont groups as indicated by recovery of Fremont pottery. The petroglyphs, on the other hand, contain no Fremont elements and we might infer from this that they were made at an earlier time by Archaic peoples.

In 1975, Heizer conducted another rock art survey in Lincoln County with funds provided by the National Geographic Society. Approximately 39 petroglyph and pictograph sites were recorded (UCB site nos. NV-Li-10 to NV-Li-48). The sites are clustered around Mt. Irish (NV-Li-10 to NV-Li-15, NV-Li-17), White River Narrows (NV-Li-20 to NV-Li-22), Hiko (NV-Li-18, NV-Li-46, NV-Li-48), Elgin (NV-Li-27 to NV-Li-32), Caliente (NV-Li-24 to NV-Li-26, NV-Li-33), Condor Canyon (NV-Li-37 to NV-Li-45), and Rose Valley east of Pioche (NV-Li-34 to NV-Li-36). Some of these sites were previously reported by Fowler and Sharrock (1973). Those around Mt. Irish, White River Narrows, and Hiko are situated in the Ely District. The report on the survey is still in preparation (Colin I. Busby, personal communication, 1981).

Twenty-two Lincoln County rock art sites, have been described in a manuscript compiled by Barbara S. Mathews (1972) of Panaca, Nevada. Many of the sites were recorded by the 1975 University of California survey party, and several are in the Ely District: two on Mt. Irish (Sites 14 and 15; Site No. 15 is UCB:NV-Li-12) and two in White River Narrows (Sites 16 and 17; most likely localities of UCB:NV-Li-9).

The author has visited one of the sites listed by Mathews (Site No. 10) which is apparently unrecorded. The site is located at 2340 m elevation on Reed's Cabin Summit above the north end of Spring Valley and just west of the Nevada-Utah border. Both pictographs and petroglyphs are present in a southeast facing rockshelter. The pictographs are painted in red and orange pigments, many of which are faded or have disintegrated as the friable walls of the shelter have exfoliated. Pictograph elements include circles, wavy parallel lines, and a possible outline of a Kachina figure. Great Basin Painted and possibly Puebloan painted styles are represented. Along the southern edge of the shelter, a small desert varnish surface is present onto which petroglyphs in the Great Basin Curvilinear Abstract style were pecked. Some of the petroglyph elements have also undoubtedly eroded away.

In an archaeological survey of Garden and Coal Valleys in Lincoln and Nye Counties (Busby 1978, 1979), only one out of 70 recorded sites contained rock art. Mustang Caves (26NY1253; BLM:CrNV-04-661) are three north facing limestone caves at 1828 m elevation in the Golden Gate Range. Known locally as the "Petroglyph Caves", the westernmost cave contains one red pictograph element in the Great Basin Painted style and traces of other faded elements. From the historic period, initials and a date of 1877 are drawn on some walls of the caves.

ETHNOGRAPHY/ETHNOHISTORY

Joel C. Janetski

Introduction

This section is designed to provide basic information about past ethnographic and ethnohistorical research in the study area. Admittedly, there is some overlap between these two kinds of research, since the ethnographers often include ethnohistoric information to assist in their comparative and synthesizing process. Steward (1938), for example, uses a considerable number of historical references, but the majority of his work was ethnographic in nature, so he is included in the ethnographic section. However, the goals of ethnohistorians are often very similar to those of ethnographers in that both are attempting anthropological reconstructions of traditional aboriginal lifeways at the time of European contact (cf. Steward 1941; Euler 1966).

Ethnographic Research Background

Ethnographer: Ralph V. Chamberlin

Period of Fieldwork: 1906 to 1910

Sponsoring Institution: University of Utah

Geographical Area and Group Studied: Chamberlin worked among the Gosiute located to the west of Salt Lake Valley and south of the Great Salt Lake Desert as far as eastern Nevada.

Purpose and Summary of Work: Chamberlin's interest was in compiling an ethnobotany and "ethnozoology" of the Gosiute Indians. His reports consist of lists of plant and animal species their respective Gosiute terms, and the manner in which these species were used by the Gosiute. This early study is a thorough and valuable piece of research on this aspect of Gosiute life.

References: Chamberlin (1908, 1911)

Ethnographer: Robert H. Lowie

Period of Fieldwork: Between 1906 and 1914

Sponsoring Institution: American Museum of Natural History, New York

Geographical Area and Groups Studied: According to Lowie (1924:191) he studied the Southern Paiute (Moapa and Shivwits Paiute), the Ute of southwestern Colorado and southeastern Utah, the Ute in northern

Utah (Whiterocks), the Wind River Shoshoni of Wyoming, as well as the Northern Paiute of Pyramid Lake, Fallon, and Lovelock, Nevada.

Purpose and Summary of Work: Lowie's work in the Basin had two objectives: 1) obtaining a representative sample of Great Basin material culture for the American Museum collection, and 2) documenting ethnographic information from the various groups visited in the Basin. In the course of these studies Lowie makes group to group as well as archaeological comparisons of the technologies and various cultural traits he observed. These reports, however, pertain only peripherally to the study area.

References: Lowie (1909, 1924)

Ethnographer: Edward Sapir

Period of Fieldwork: 1909 and 1910

Sponsoring Institution: Museum of the University of Pennsylvania

Geographical Area and Group Studied: Sapir's major interest was with the Southern Paiute, though he did some work with the Ute in the Uintah Basin of eastern Utah.

Purpose and Summary of Work: Sapir was a linguist, and his objective was to document the Native American Southern Paiute and Ute languages, which he did in an excellent fashion. His writings contain some ethnographic information which was incorporated into Isabel Kelly's work. Sapir's study area, however, is peripheral to the Elko-Ely districts.

References: Sapir (1930, 1931a, 1931b)

Ethnographer: Isabel Kelly

Period of Fieldwork: 1932

Sponsoring Institutions: Laboratory of Anthropology, University of California, Berkeley; and American Museum of Natural History, New York

Geographical Area and Group Studied: Kelly worked with the Southern Paiute of southern Utah and northern Arizona.

Purpose and Summary of Work: Kelly's intent was to provide an ethnographic summary of the four eastern Southern Paiute bands in which the man/land relationships would be described and some attention given to the acculturation process. Kelly points out that this information for the four groups is highly variable with the best information being that on the Kaibab band. All aspects of Southern Paiute lifeways are discussed. Of special interest is the suggestion of a rather complex band organization accompanied by a form of territoriality related to scarce springs among the Kaibab. Kelly does not supply any concluding remarks or synthesis of the material she presents. Her study is peripheral to the area under study here.

References: Kelly (1964)

Ethnographer: Julian H. Steward

Period of Fieldwork: 1935 and 1936 primarily

Sponsoring Institutions: University of California; Bureau of American Ethnology; and Social Sciences Research Council

Geographical Area and Groups Studied: Steward worked primarily with the Central Numic or Western Shoshoni of the Great Basin, but also did detailed work with the Northern Paiute in Owens Valley, California, and some work with the Ute and Southern Paiute.

Purpose and Summary of Work: Steward's (1938:ix) stated purposes for his work with the Western Shoshoni were:

1) Ethnographic reconnaissance of the Western Shoshoni and some of their Northern Paiute, Southern Paiute, and Ute neighbors.

2) Analysis of the functional relationships of the different parts of the culture to one another and to the local environment.

3) To ascertain the types of Shoshonean socio political groups and to discover their ecological and social determinants.

Julian Steward's now classic work has provided the baseline for most of the subsequent ethnographic studies in the Great Basin. Additionally, the model of hunters and gatherers implicit in his publications has had tremendous impact on the interpretation of archaeologically derived data. His bias throughout all his work has been toward the settlement and subsistence aspects of Basin cultural systems and the environmental correlates of those systems. Though subsistence activities are usually discussed first, Steward was also attentive to social forms and events, marriage patterns, warfare, religious observances, political organization, and inter-group relationships. Because of the thoroughness and excellence of his work Steward's name is inextricably linked with with the ethnography of the Great Basin.

References: Steward (1937b, 1938, 1941, 1943)

Ethnographer: Jack Harris

Period of Fieldwork: 1937

Sponsoring Institution: Columbia University

Geographical Area and Groups Studied: The study was done near Owyhee, Nevada, on the Duck Valley reservation and was directed at the Tosawi or White Knife Shoshoni. These people formerly occupied the area bounded by Winnemucca on the west, the Independence Mountains on the east, Snake River to the north, and by Austin and Eureka, Nevada, on the south.

Purpose and Summary of Work: This study is one of several (Linton 1940) designed to demonstrate the acculturation process undergone by Native American societies due to direct contact with European cultures. Harris provides a short description of subsistence and social organization and a more lengthy discussion of specific ideologies held by this group. Some ethnohistorical material is included which describes early Indian-White confrontation. Because of the acculturation emphasis the value of this work as a detailed ethnography is diminished. Also, the reporting is done in the form of a summary which does not reveal any of the variability which may have existed in the Tosawi system. No systematic pattern of movement for subsistence purposes is described; nonetheless, the study is valuable as an additional source of ethnographic data.

References: Harris (1940)

Ethnographer: Omer C. Stewart

Period of Fieldwork: 1937 to 1938

Sponsoring Institution: University of California

Geographical Area and Groups Studied: Stewart's emphasis for this study was mostly on the Ute and Southern Paiute of Utah and Colorado though he did visit some Gosiute Indians at Ibapah, Utah, one of whom was from Baker, Nevada.

Purpose and Summary of Work: The purpose of Stewart's work at this time was to compile a Culture Element Distribution list for the Ute and Southern Paiute. His stated aim in the introduction (1942:231) is "to ascertain the cultures of various groups of Goshute, Ute, Southern Paiute, and Navajo Indians as they were before the advent of European Culture..." However, except for some intriguing comments on band organization at the onset, Stewart provides no summary of any of the groups studied but allows the trait lists to stand alone. Gosiute cultural traits are included in the lists.

References: Stewart (1942)

Ethnographer: Carling Malouf

Period of Fieldwork: 1939 to 1950

Sponsoring Institution: University of Utah

Geographical Area and Group Studied: Malouf's work centered on the Gosiute of Utah and eastern Nevada among whom he did ethnographic work primarily during the late 1930's and the 1940's.

Purpose and Summary of Work: Malouf's descriptive reports contain considerable ethnographic/ethnohistoric material. His most recent article (1974) is easily the best, since it contains a good systematic summary of Gosiute lifeways and distribution at the time of contact as well as a narrative of Gosiute history from the mid-19th century to the present.

References: Malouf (1940b, 1940c, 1974)

Ethnographer: Sara Sue Price

Period of Fieldwork: 1949 and 1950

Sponsoring Institution: University of Utah

Geographical Area and Group Studied: While conducting an interesting ethno-archaeological exercise, Price documented aboriginal Gosiute lifeways through some interviews with Gosiute informants and through the study of the work of Malouf (1940, 1942), Steward (1941, 1943), and Stewart (1939, 1941, 1942).

Purpose and Summary of Work: Though most of her ethnographic work is done with secondary source material, Price's work is interesting because her problem is an early effort to reconcile ethnography and the archaeological record. The ethnographic summary is systematic and fairly detailed.

References: Price (1952)

Ethnographer: Wick Miller

Period of Fieldwork: 1965 to 1968

Sponsoring Institutions: National Science Foundation; American Philosophical Society; and University of Utah Research Committee

Geographical Area and Groups Studied: Most of Miller's efforts were with the Gosiute near the Deep Creek region, though some time was spent at the various Western Shoshoni reservations of Nevada.

Purpose and Summary of Work: As a linguist Miller's objectives were directed toward language variation and classification, although he has also made an important contribution in the area of folklore and tales. Such tales can be valuable in recovering bits of ethnographic data. Studies of language, mainly dialect distribution, are important in describing movements of people and group relationships as well as the nature of society. Such topics are ably confronted by Miller in his writings.

References: Miller (1970,1972)

Ethnohistorical Research Background

Researcher: Omer C. Stewart

Period of Research: 1950's and early 1960's

Sponsoring Institution: Legal firm of Wilkinson, Cragum, and Barker

Geographical Area and Groups Studied: Stewart's studies for this project included all Shoshoni from southeastern California, Nevada, Utah, Idaho, and Wyoming.

Purpose and Summary of Work: The series of reports offered by Stewart on the Shoshoni were largely the result of the 1946 Indian Claim Commission Act. Stewart's own research interests have contributed to the completeness of his papers on tribal lands and aboriginal social-political organization and territorial tendencies in the Great Basin. Most of Stewart's case is based on ethnohistorical materials. Several of Stewart's papers focus on regions within the study area for this Class I.

References: Stewart (1966, 1978a, 1978b)

Researcher: Robert C. Euler

Period of Research: 1956 through 1963

Sponsoring Institutions: United States Department of Justice, Indian Claims Section; American Philosophical Society; and University of Utah

Geographical Area and Groups Studied: Euler's study area entails southern Nevada, southern Utah, northern Arizona, and southeastern California, which was the homeland for the Southern Paiute.

Purpose and Summary of Work: This is an excellent systematic study of the southern Paiute, their aboriginal environment and the history of Paiute-European contact. His goals are anthropological in nature, as he attempts to describe the culture history of the Southern

Paiute, as well as discuss the process of culture change, behavior patterns, and value systems. Included in the report (1966) are many of Jack Hiller's photographs taken of the Southern Paiute in 1872-73 while Hiller was on Powell's second Colorado River Expedition. Accompanying the photos are Frederick S. Dellenbough's notes. Taken as a whole this work is an important contribution to the anthropology of the Southern Paiute, whose northwestern range is within the Ely district.

References: Euler (1966)

Researchers: Edna B. Patterson, Louise A. Ulph, and Victor Goodwin

Period of Research: 20 years prior and up to 1969

Sponsoring Institution: None

Geographical Area and Groups Studied: These scholars have focused on Elko County in northeast Nevada, making their study very important to the Elko district cultural resource summary. Local Shoshoni groups are described.

Purpose and Summary of Work: The purpose of the work by the three authors was to provide an historical overview of Elko County. In the process they have provided some descriptions of Shoshoni life and Indian-White encounters. Most of this material is from the reports of early settlers and travelers in the area, though some information comes from Shoshoni informants.

References: Patterson et al. (1969)

Researcher: Carling I. Malouf

Period of Study: 1964

Sponsoring Institution: Self

Geographical Area and Groups Studied: Malouf's 1964 work was a Basin-wide ethnohistorical study of Great Basin Indian- European contact.

Purpose and Summary of Work: Malouf's chronological narrative emphasizes the eastern Basin and focuses on the slave trade with the Spanish and change in traditional Native American lifeways due to European contact. Little attention is given to the Ely-Elko region specifically and no attempt is made to use the same material to reconstruct traditional lifeways.

References: Malouf (1966)

Researcher: Dennis Defa

Period of Research: 1978

Sponsoring Institution: University of Utah

Geographical Area and Groups Studied: Defa's work focuses on the Gosiute of western Utah and eastern Nevada.

Purpose and Summary of Work: Defa provides a good historical description of the Gosiute from contact times on. His work replicates Malouf's (1974) study, but is not as thorough and contains very little anthropological interpretation.

References: Defa (1979)

Researcher: John Alley

Period of Research: 1976-78

Sponsoring Institution: University of Utah

Geographical Area and Groups Studied: This work is Basin-wide in scope and discusses contacts between Native Americans and fur trappers.

Purpose and Summary of Work: As an historian Alley's intent was to document Indian/Fur Trapper relations and set them into their early to mid 19th century context. Alley relies on considerable ethnohistoric material for his discussions. Some references pertain to the present study area.

References: Alley (1978)

HISTORY

James A. Vlasich

Early local histories of eastern Nevada are few and suffer from a lack of professionalism and an excess of pioneer stories. They do, however, provide information that cannot be found in other sources. One of these is Lulu Belle Hurley's "The History of the Development of Elko County", B.A. Thesis, University of Nevada, 1910. Most of this report is based on local newspaper reports and chamber of commerce notes. Myron Angel's classic, History of Nevada, Berkeley, California: Howell-North, reprinted in 1958, contains a vast amount of detailed information on early Nevada history, and is supplemented to Helen J. Poulton's Index to Thompson and West's History of Nevada, Reno: University of Nevada Press, 1966.

The most significant modern work concerned with Elko County is Edna B. Patterson, Louise A. Ulph and Victor Goodwin, Nevada's Northeast Frontier, Sparks, Nevada: Western Printing and Publishing Company, 1969. Primarily based on local documents, interviews and newspaper reports, this book is essential for students of the area. Although the manuscript lacks cohesion and sometimes suffers from construction problems, it is a much needed work on a part of Nevada that is often overlooked.

Unlike its Elko counterpart, White Pine County has not received thorough attention. Some of the early works in this region include B. F. Miller's Nevada in the Making, Reno: Nevada State Historical Society, 1924, and Effie O. Read's White Pine Lang Syne, Denver: Big Mountain Press, 1965. The first concentrates on industrial development, while the latter emphasizes pioneer struggles. The best work on White Pine County is Russell R. Elliot's "The Early History of White Pine County, Nevada, 1865-1887", Pacific Northwest Quarterly 30:145-168, April 1938.

Other books which deal with the history of southeastern Nevada include James W. Hulse's Lincoln County Nevada: 1864-1909, Reno: University of Nevada Press, 1971, and John M. Townley's Conquered Provinces: Nevada Moves Southeast, 1864-1871, Provo: Brigham Young University Press, 1973.

Works on eastern Nevada's Indians are woefully lacking. While various pieces on pre-historic natives in the area have been completed, manuscripts on the post-contact period are brief. The slavery issue is dealt with in Carling and Aline Malouf's "The Effects of Spanish Slavery on the Indians of the Intermountain West" which appears in Deward E. Walker, ed., The Emergent Native Americans, Boston: Little, Brown and Company, 1972. Another important book on this subject is L. R. Bailey's Indian Slave Trade in the Southwest, Los Angeles: Westernlore Press, 1966. Other significant books on Indians include James B. Allen and Ted J. Warner's "The Gosiute Indians in Pioneer Utah", Utah Historical Quarterly 39:166-177, Spring 1971; Catherine and Don D. Fowler's

"Notes on the History of the Southern Paiutes and Western Shoshonis", Utah Historical Quarterly 39:95-113, Spring 1971; Jack S. Harris' "The White Knife Shoshoni of Nevada" in Ralph Linton's Acculturation in Seven American Indian Tribes, New York: D. Appleton-Century Company, 1940; and Carling Malouf's "The Gosiute Indians" in David Agee Horr's Shoshone Indians, New York: Garland Publishing Inc., 1974. Native efforts to keep their land base are treated in Charles C. Colley's "The Struggle of Nevada Indians to Hold their Land", The Indian Historian 6, Summer 1973.

Accounts of early exploration and emigration in eastern Nevada have received more attention. The best overall work in this area is Gloria Griffen Cline's Exploring the Great Basin, Norman: University of Oklahoma Press, 1963. British and American trappers are dealt with in Dale Morgan's classic Jedediah Smith and the Opening of the West, Lincoln: University of Nebraska Press, 1953 and Cline's Peter Skene Ogden and the Hudson's Bay Company, Norman: University of Oklahoma Press, 1974. Early emigration efforts are discussed in Victor O. Goodwin's "Development of the Emigrant Routes of Northern Nevada", Nevada Historical Society Quarterly 8:27-39, Fall-Winter 1965.

Military operations in the Ely and Elko districts are included in George Leslie Albright's Official Explorations for Pacific Railroads, 1853-1855, Berkeley: University of California Press, 1921; William H. Goetzmann's Army Exploration in the American West, 1803-1863, New Haven: Yale University Press, 1959; and Allen Nevins, ed. Narratives of Exploration and Adventure, New York: Longmans, Green and Co., 1956, which deals with the ventures of John Charles Fremont. Military installations in the area are discussed in George Ruhen's "Early Nevada Forts", Nevada Historical Society Quarterly 7:7-62, Fall-Winter 1964.

Northeastern Nevada played an important role in early transcontinental transportation and communication. The Pony Express story has been told in numerous books, such as Raymond and Mary Settle's Saddles and Spurs: The Pony Express Saga, Harrisburg, Pennsylvania, 1955. However, the Nevada Bureau of Land Management's The Pony Express in Nevada, Reno: Harrah's, 1976 is a bicentennial history that discusses specific sites for express stations throughout the state. The completion of the cross-country telegraph is the subject of Robert Luther Thompson's Wiring a Continent: The History of the Telegraph Industry in the United States, 1832-1866, Princeton: Princeton University Press, 1947. The best overall work on railroads in the state is David F. Myrick's Railroads of Nevada and Eastern California, Berkeley, Howell-North Books, 1962. The text is informative and the author includes numerous photographs that make this two volume work a necessity for railroad buffs.

Mining was the most essential occupation in the development of Nevada. Most of the writing in this area is contained in a variety of journals on mining and geology. The most complete overview of Nevada mining appears in Francis Church Lincoln's Mining Districts and Mineral Resources of Nevada, Reno: Nevada Newsletter Publishing Company, 1923. In this work the author gives a county by county account of mining districts including their location, history, geology and bibliography. James M. Hill concentrates on the Ely and Elko districts in his "Notes on Some Mining Districts in Eastern Nevada", U. S. Geological Survey Bulletin 648, Washington: Government Printing Office, 1916. The peculiar mining activity in recent times is discussed in Russell R. Elliott's Nevada's Twentieth-Century Mining Boom, Reno: University of Nevada Press, 1966.

Ranching and farming is another important topic in the economic development of Nevada. Agriculture has received less attention, but two works supply much needed information. These are C. A. Norcross, Agricultural Nevada, San Francisco: Sunset Magazine Homeweekers Bureau, 1911, and Cruz Vestrom and Howard Mason, compilers., Agricultural History of Nevada, Reno: University of Nevada, 1944. Sheep and cattle are discussed in Byrd Wall Sawyers's Nevada Nomads: A Story of the Sheep Industry, San Jose: Harlan-Young Press, 1971 and in articles in technical journals and reports of the surveyor general of the state.

Other publications deal with specific historical sites in Nevada. These include Robert P. Harris' Nevada Postal History: 1861 to 1972, Las Vegas: Nevada Publications, 1973 and Brooke D. Mordy and Donald L. McCaughey's Nevada Historical Sites, Reno: Desert Research Institute, 1968. Sometimes it is easy for people who are not familiar with the geography of the state to lose their way in the plethora of ranges and valleys that predominate throughout the state. An essential tool in this respect is Helen S. Carlson's Nevada Place Names: A Geographical Dictionary, Reno: University of Nevada Press, 1974. The author lists geographical locations alphabetically and includes locational information and some brief historical notes.

MUSEUMS AND COLLECTIONS*

Steven R. James and James A. Vlasich

American Museum of Natural History
Central Park West at 79th Street
New York, New York 10024
212-873-1300, ext. 245, 236

Ethnographic collections made for the museum by Robert Lowie (1909, 1924) among the Northern Paiute, Southern Paiute, Shoshoni, and Ute between 1906 and 1914 are probably still stored here.

Bureau of Land Management
Elko District Office
P.O. Box 831
Elko, Nevada
702-738-4071

Some of the artifacts from various cultural resource management projects in the district which have not been transferred to the Nevada State Museum are at this office.

Bureau of Land Management
Ely District Office
Star Route 5, Box 1
Ely, Nevada 89301
702-289-4865

Some of the artifacts from various cultural resource management projects in the district which have not been transferred to the Nevada State Museum are at this office.

Department of Anthropology
University of California
Davis, California 95616
916-752-0745

Cultural materials from Brian Hatoff's survey of Pine Valley and faunal remains recovered from McGuire's (1980) excavations at Mineral Hill Cave are probably stored at U. C. Davis. Materials recovered in the late 1950's by Martin Baumhoff from Freighter's Defeat (26EK20) near Jarbidge may also be here.

Desert Research Institute
University of Nevada System
Social Sciences Center
P.O. Box 60220
Reno, Nevada 89506
702-673-4750

Artifacts which were collected during archaeological investigations in eastern Nevada by the Desert Research Institute (Fowler 1968a, 1968b; Fowler, Madsen, and Hattori 1973; Fowler and Sharrock 1973) were housed at the Stead Facility as of 1978 (Don Fowler, personal communication, 1978).

Lincoln County Museum
P.O. Box 525
Pioche, Nevada 89043
702-962-5207

This museum has some artifacts and newspapers including the Pioche Record and the Caliente Herald.

Lowie Museum of Anthropology
103 Kroeber Hall
University of California
Berkeley, California 94720
415-642-3681

Archaeological materials recovered from surveys and excavations by the University of California at Berkeley, e.g., Garden and Coal Valleys (Busby 1978, 1979) and South Fork Shelter (Heizer, Baumhoff, and Clewlow 1968), are housed at the Lowie Museum.

Museum of the American Indian, Heye Foundation
Broadway at 155th Street
New York, New York 10032
212-283-2420

Archaeological collections were made in eastern Nevada during the 1920's by Harrington (various) and Schellbach (1927) under the auspices of the Museum of the American Indian, Heye Foundation. Some of these materials are undoubtedly at the museum.

Museum of Natural History
University of Nevada
Las Vegas, Nevada 89154

Archaeological collections from surveys and excavations carried out in the Ely District by the Nevada Archaeological Survey, University of Nevada at Las Vegas (e.g., Brooks et al. 1974, 1977) are stored at this museum.

Nevada State Historical Society
1650 North Virginia Street
Reno, Nevada 89503
702-784-6397

This agency is the state's largest holder of historical documents including information on mining, transportation, culture and ranching. See L. James Higgins, A Guide to the Manuscript Collections at the Nevada Historical Society, Reno: Nevada Historical Society, 1975.

Nevada State Museum
Capitol Complex
Carson City, Nevada 89710
702-885-4810

The majority of the archaeological collections from work which has been conducted in the Elko and Ely districts are stored at the Nevada State Museum. Many of the artifacts which have been collected during inhouse BLM cultural mitigation projects are also at the museum, since this facility is the repository for the Nevada Bureau of Land Management.

Northeastern Nevada Museum
P.O. Box 503
Elko, Nevada 89801
702-738-3418

This museum produces the Northeastern Nevada Historical Society Quarterly. They are also establishing the Edna Patterson collection and have all Elko County newspapers from 1869 to the present and a large set of photographs.

Smithsonian Institution
Department of Anthropology
National Museum of Natural History
Washington, D.C. 20560
202-357-2363

The archaeological materials recovered by Mathew Stirling (1931) on a brief reconnaissance through northeastern Nevada, Elko County, may be at the Smithsonian.

Southwest Museum
Highland Park
Los Angeles, California 90042

Archaeological materials recovered from excavations and surveys in eastern Nevada by Mark R. Harrington (various), Douglas Osborne (1941), and S. M. Wheeler (various) in the 1920's and 1930's are probably still housed at the Southwest Museum, although some of the materials have been dispersed to other institutions (e.g., see Fowler 1973).

Utah Museum of Natural History
University of Utah
Salt Lake City, Utah 84112
801-581-6927

Archaeological materials recovered from the work in eastern Nevada by the Department of Anthropology, University of Utah (e.g., Dalley 1977a; Jennings 1957; Rudy 1953; Taylor 1954b) are contained in this museum. Photos, excavation notes, site forms, and unpublished reports are kept in the Archeological Center, 117 Stewart Building, University of Utah.

White Pine County Development Corporation
P.O. Box 778
Ely, Nevada 89301
702-289-4439

They have sponsored a CEDA program to collect and catalogue information from the _Austin-Reese River Reveille_ (1868-69), the _Daily Inland Empire_ (1869-70), and the _Eureka Sentinel_ (1871-74).

White Pine Public Museum, Inc.
2000 Aultman Street
Ely, Nevada 89301
702-289-4710

The museum has a collection of prehistoric and historic artifacts and photographs. One of the display cases contains prehistoric artifacts either donated or on loan from private collectors. A conical Shoshoni pottery vessel is included in the collection.

* Addresses for many of the museums containing archaeological collections from eastern Nevada are taken from the _Guide to Departments of Anthropology, 1980-1981_, published by the American Anthropological Association, Washington, D.C. (1980).

CULTURAL RESOURCE NARRATIVE

PREHISTORY OF THE ELKO AND ELY DISTRICTS

Steven R. James

In this section, the prehistory of the Elko and Ely districts, essentially eastern Nevada, is summarized from the archaeological evidence recovered over the years in the central and eastern Great Basin and adjacent regions. To facilitate this discussion, the prehistoric chronology is divided into five time periods or developmental stages:

Pre-Llano (greater than 15,000 B.P.)
Paleoindian (ca. 15,000 to 10,000 B.P.)
Archaic (Desert Archaic, ca. 10,000 to 1500 B.P.)
Late Prehistoric (Fremont, ca. A.D. 500 to 1300)
Proto-Historic (Numic, ca. A.D. 1300 to 1850)

Within each period, the discussion first focuses on the general characteristics of the period as recognized throughout North American prehistory. Secondly, for each period the specific archaeological evidence from eastern Nevada, generally that of excavated sites, is then briefly examined. And thirdly, the inferred lifeway of the prehistoric inhabitants of the region during each time period is described in terms of what we understand about their subsistence, settlement patterns, social organization, and ideology.

Pre-Llano and Paleoindian Periods

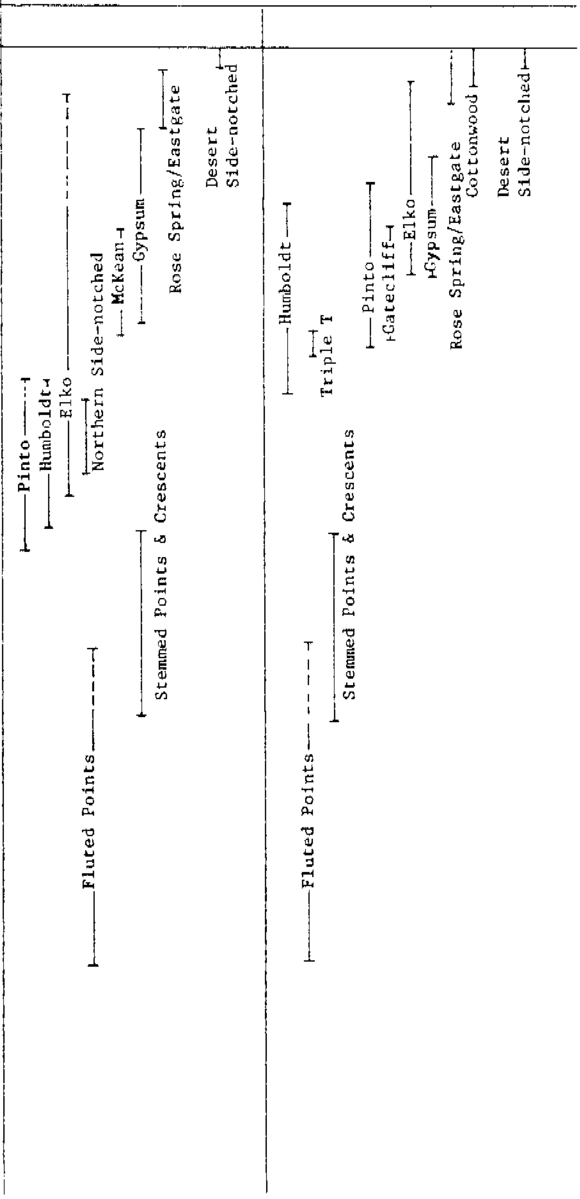
The Pre-Llano and Paleoindian periods constitute the earliest stage of cultural development in the New World. The division between these two periods is based upon their stone industries. The older and cruder of these two industries is known by several appellations: chopper-scraper horizon, pre-projectile point stage (Krieger 1964), and pre-Clovis or pre-Llano (Humphrey 1979; Stanford 1979). The younger and more-refined stone industry is referred to as the Upper Lithic substage (Willey and Phillips 1958), Paleoindian period, Big Game Hunting tradition (Willey 1966), and Llano, Folsom and Plano complexes (Sellards 1952; Jennings 1968, 1974). The terms pre-Llano and Paleoindian will be used here to refer to these older and younger stone industries, respectively.

Pre-Llano stone tool assemblages are characterized by crude, percussion flaked artifacts and the absence of projectile points. Although dates of extreme antiquity, ca. 15,000 to 70,000, are often assigned to pre-Llano sites, there is usually little or no chronological control (as in the case of surface finds), and the validity of these dates is considered questionable by many archaeologists. Another problem is that it is sometimes difficult to distinguish crude pre-Llano stone assemblages from geofacts, i.e., naturally flaked cobbles which occur in fluvial gravels.

TABLE 3. PREHISTORIC CHRONOLOGY OF THE GREAT BASIN.

AGE years B.P.	DATE A.D./B.C.	PERIOD	CULTURE
0	2000		
	1850	Historic	Anglo-European
		Proto-Historic	Numic
1000	1000	Late Prehistoric	Fremont (Eastern Basin) / Desert Culture (Western Basin)
2000	0		
3000	1000	Late Archaic	
4000	2000		Desert Culture
5000	3000		
6000	4000	Middle Archaic	
7000	5000		
8000	6000	Early Archaic	
9000	7000		
10000	8000	Proto-Archaic	Western Pluvial Lakes Tradition
11000	9000		
12000	10000		
13000	11000	Paleoindian	Paleoindian
14000	12000		
15000	13000		
16000	14000	Pre-Llano	Pre-Llano
28000	26000		

PROJECTILE POINT SEQUENCE



1 Modified from Holmer (1978) and Holmer and Weder (1980) with addition of early projectile points.

2 Modified from Hester and Heizer (1973); Heizer and Hester (1978a, 1978b); Thomas (1980).

In other instances, artifacts of supposed pre-Llano assemblages may actually represent blanks, crude bifaces, cores, and other lithic debitage quarried by more recent Indian groups. The Green River area of southwestern Wyoming is a prime example of this, for it was here that Renaud (1938, 1940) recovered his Black's Fork culture artifacts during the 1930's which he felt resembled Old World Paleolithic tools. Later work in the area has indicated that Renaud's artifacts were probably quarry blanks or geofacts (Day and Dibble 1963; Sharrock 1966).

Presently, only one pre-Llano assemblage is reported from the eastern Great Basin. The site consists of two small caves and a lithic scatter on the highest Bonneville terrace south of Salt Lake City in northwestern Utah. Clark (1975a, 1975b) estimates that the site is about 40,000 years old based on several radiocarbon dates which at one time indicated that the beach terrace was of this age. The Bonneville terrace is now estimated to be 18,000 years B.P. Furthermore, the presence of artifacts on the beach terrace does not indicate that they are the same age, for the artifacts could have been discarded on the terrace at any time in the past (see Madsen 1980b:21 for another review of Clark's data).

To the west of the study area in the BLM Tonopah District, McGonagle and Waski (1978:22, 24, Figure 10j-k) report the presence of Levallois flake tools at a site in Railroad Valley (CrNV-06-226) and one at Black Spring (CrNV-06-233) near the berg of Warm Springs. They postulate that these tools predate fluted points recovered in the area from pluvial Lake Tonopah. The Levallois technique, which began in the Acheulian, was part of the Mousterian stone-working technology used by Neanderthals in western Europe between 70,000 and 35,000 years ago. To suggest that the flakes recovered at two Great Basin sites were manufactured by the Levalloisian technique without qualifying the matter, raises several issues, e.g., how the technique was diffused from Europe to the Great Basin and why more "Levalloisian" sites have not been identified in the Great Basin and throughout North America. The problem here is a matter of semantics, and to resolve the confusion, McGonagle and Waski should have stated that the flake tools were Levallois-like. Furthermore, if these flakes are executed by the Levalloisian technique, they are more likely the result of independent invention, and as with many other supposed pre-Llano sites, the artifacts could have been manufactured at any time in the past, perhaps as recently as 150 years ago.

In contrast to the pre-Llano, the Paleoindian period is better anchored in time and more thoroughly documented. The best Paleoindian evidence comes from the High Plains of North America where numerous kill sites have been excavated. Dates on these and other Paleoindian sites in North America range between 15,000 and 7,000 years B.P. The Paleoindian period is often separated into three subdivisions or complexes: Llano, Folsom, and Plano. The Llano complex is the earliest and is generally characterized by fluted Clovis projectile points in association with mammoth remains at kill sites. Folsom sites are recognized by the presence of smaller, fluted Folsom projectile points and the remains of now-extinct large bison. The Plano complex is characterized by unfluted points and the presence of modern herbivores at kill sites. Aside from mammoths and bison, Paleoindians hunted other extinct Pleistocene megafauna such as mastodons, camels, horses, and ground sloths.

Little Paleoindian evidence has been found in eastern Nevada. In fact, the evidence for Paleoindian sites in the Great Basin as a whole is very scanty, and consists primarily of fluted projectile points in isolated occurrences (e.g., Davis and Shutler 1969; Hester 1973:Figure 14; Hester and Jameson 1977; Tuohy 1968, 1969a, 1977). In a few instances, fluted and lanceolate points have been uncovered in the lowest levels of several caves in the Great Basin. Recently, Schroedl (1977b) has summarized the Paleoindian finds in the Colorado Plateau and adjacent regions. Here again, the evidence is largely that of isolated finds. Distributional data on fluted points in the western United States are listed by Aikens (1978b:Table 4.1, Figure 4.2).

In the eastern Great Basin, Paleoindian points have been reported from the Escalante Desert around Lund, Utah (Keller and Hunt 1967). Some of the lanceolate points from this area resemble Haskett points found in southern Idaho and Lind Coulee points from Washington. Near Oak City in western Utah, several Clovis points have recently been recovered (Roberts 1979). Paleoindian points have also been noted in private collections from site 42MD300 in the Sevier Desert of western Utah. A crescent fragment has also been collected from the site (Guy King, personal communication, 1980) (see Figure 10). Two possible Folsom projectile points were recovered from Danger Cave (Smith 1942), but disappeared from the collection before they were sketched or photographed (Jennings 1957:47). A possible Agate Basin point was also identified in the earliest cultural level of Danger Cave (Aikens 1970a:49). Another Folsom point has been described from Curlew Valley near Snowville in northwestern Utah (Butler 1973). From the same region of northwestern Utah, a Clovis projectile point (labeled a "Bonneville" point in the article) was recovered at the southern end of the North Promontory Range (Van Buren 1974:190-191). In northeastern Nevada, a Folsom point was found near Carlin (26EK1), and a Clovis point has been reported from a site southwest of Contact, Nevada (26EK962; Frank Hull, personal communication, 1980). The Paleoindian sites in the study area are shown in Figure 9.

Although fluted and other lanceolate points have been found in the Great Basin, evidence of cultural remains in association with extinct megafauna is generally absent (see Baumhoff and Heizer 1965; Cressman 1966; Heizer and Baumhoff 1970; Jennings 1966a). It was once thought that Gypsum Cave near Las Vegas, Nevada, contained such an association, for ground sloth (Nothrotheriops shastense) remains were reportedly found with cultural artifacts (Harrington 1933a). However, two radiocarbon dates on the artifacts indicate that they are much later in time (Heizer and Berger 1970). Another site near Las Vegas is Tule Springs which was once also believed to contain cultural remains in association with extinct fauna dating to as early as 28,000 years ago (Harrington and Simpson 1961). Extensive excavations at the site in 1962-1963 by the Nevada State Museum, on

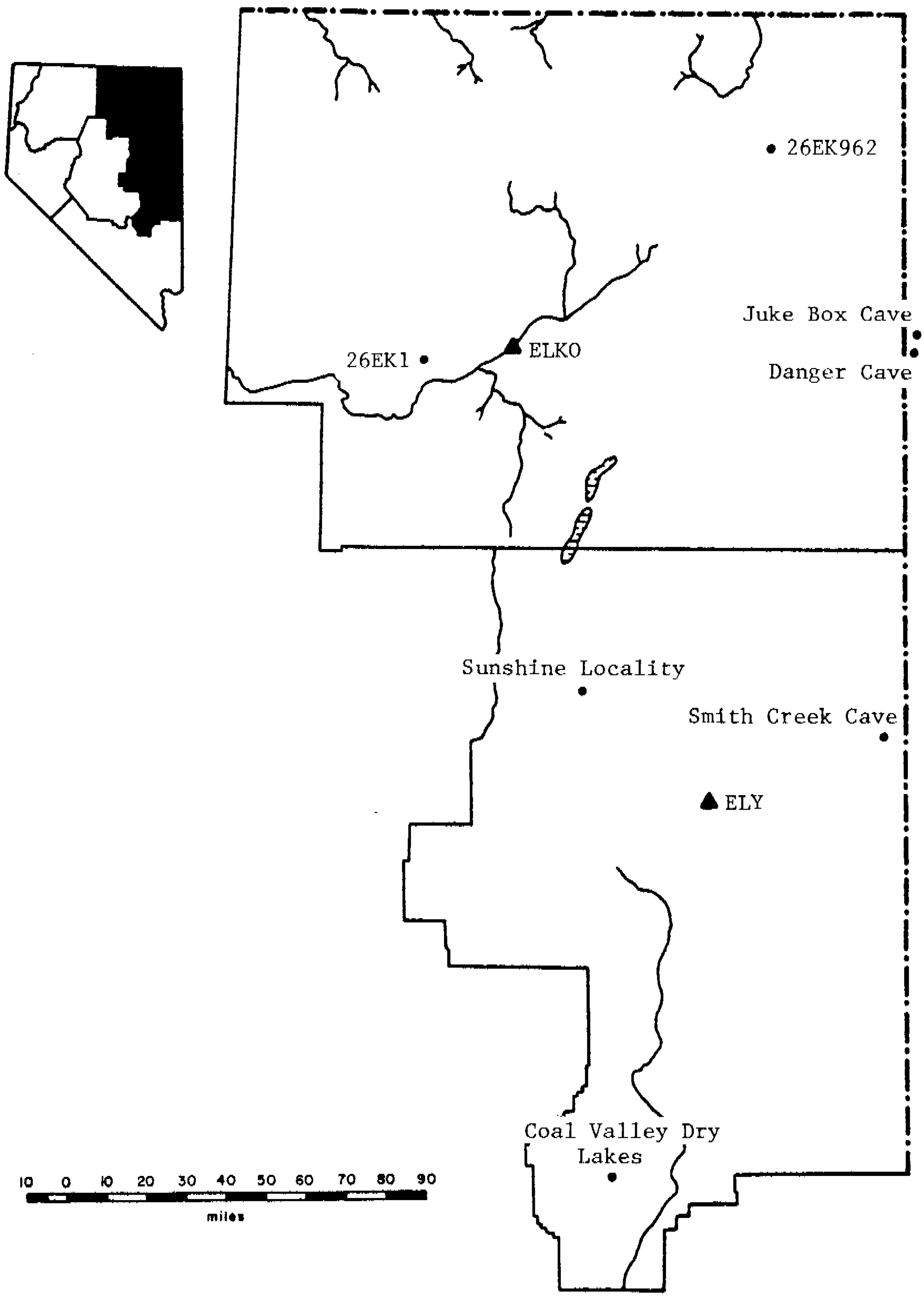


Figure 9. Distribution of Paleoindian and Western Pluvial Lakes tradition sites in the Elko and Ely districts.

the other hand, revealed that the scant cultural materials were not as old as had previously been claimed and dated, instead, between about 10,000 and 13,000 years B.P. (Haynes et al. 1966; Shutler 1965, 1967).

Fishbone Cave near Winnemucca Lake north of Reno, Nevada, supposedly yielded the bones of extinct horse, camel, and shrub ox (Euceratherium) in association with cultural materials (Orr 1956; Shutler 1961a:518; Shutler 1968b), however, poor stratigraphic control and mixing of the deposits renders this purported evidence rather questionable.

Several other sites in the Great Basin have reportedly yielded cultural materials in association with extinct fauna. The southeastern Oregon caves are one such example (Cressman 1940a, 1940b, 1966). Of these caves, Paisley Five-Mile Point Cave No. 3 yielded the most convincing evidence for the co-existence of humans and extinct fauna according to Heizer and Baumhoff (1970:5), but these researchers do not fully accept even this evidence. Juke Box Cave north of Wendover on the Nevada-Utah border is another such site. In the earliest cultural level of the cave, a partially mineralized phalange of an extinct horse was recovered (Skinner 1957). Its association with the cultural debris is unclear, however, for Jennings (1957:38) felt the phalange was washed into the cave from the outside.

North of the Great Basin on the Snake River Plain in Idaho, several extinct mammalian species have been recovered in late Pleistocene-early Holocene cultural bearing deposits of Owl Cave at the Wasden Site (Butler 1968, 1969, 1972a, 1972b, 1976; Miller and Dort 1978) and in Wilson Butte Cave (Gruhn 1961, 1965). Extinct species represented at these sites included camel (Camelops sp.), horse (Equus sp.), bison (Bison antiquus), Columbian mammoth (Mammuthus sp.), possibly ground sloth (Nothrotheriops sp.), dire wolf (Canis cf. dirus), and noble marten (Martes nobilis).

One of the few sites in the Great Basin which contained some evidence of Paleoindian occupation is Smith Creek Cave, located within the study area on the eastern slope of the Snake Range, White Pine County, eastern Nevada. This large, south-facing rockshelter is impressively perched above Smith Creek Canyon at 1950 m elevation in the pinyon-juniper zone. Smith Creek Cave and other caves in Smith Creek Canyon have long been the focus of archaeological and paleontological interest (Goodrich 1965; E. Harrington 1933; J. Harrington 1943; M. Harrington 1932a, 1932b, 1934a, 1934b, 1935, 1936; Hodge 1937; Howard 1935, 1952; Judd 1926:61; Quate 1924 [see Appendix]; Stock 1935, 1936; Wheeler 1936). In fact Smith Creek Cave has been suspected as an early man locality since Mark R. Harrington (1934a, 1934b) uncovered bones of extinct horses which appeared to have been split by humans.

In the late 1960's and early 1970's, a joint project by the University of Alberta and the Nevada State Museum re-excavated portions of Smith Creek Cave in order to determine if it had been occupied by Paleoindians (Bryan 1979b). Although the deposits in the rear of the cave were badly disturbed by earlier work, the excavations revealed an early occupation zone in the front portion of the cave radiocarbon dated between 12,000 and 10,000 B.P. The Mount Moriah occupation zone, as it was called, contained several hearths, ashy areas, scattered charcoal, and cultural debris.

While the few projectile points from the Mount Moriah occupation zone are not particularly diagnostic and consist mostly of bases and tips, which have been reused as scrapers, gravers and burins, Bryan (1979b) feels they resemble Lake Mohave points similar to specimens originally found in southeastern California (Campbell and Campbell 1937). Other stemmed projectile points have been recovered in the western Great Basin near Tonopah (Tuohy 1969b), in northwestern Nevada (Layton 1970, 1972, 1979), and in Fort Rock Valley (Bedwell 1973; Cowles 1960). Recently, Tuohy and Layton (1977) have placed the various stemmed points within a Great Basin Stemmed Series. Furthermore, Bryan (1979b:204-205) sees these stemmed projectile points as a Stemmed Point Tradition which originated in the Intermountain West around 12,000 years B.P. and then spread to the High Plains.

Aside from the projectile point fragments, the lithic assemblage included endscrapers, core scrapers, expended quartzite cores, and microtools consisting of gravers, burins and burin spalls, denticulates, spokeshaves, nosed scrapers, flake scrapers, notched flakes, and steeply retouched flakes. Bryan (1979b:215; Bryan and Gruhn 1974) places the microtools in a Small Tool Tradition which evidently persisted in Smith Creek Canyon from 12,000 to 3000 years B.P., as evidenced in the Mount Moriah occupation in Smith Creek Cave and later in the early levels of Amy's Shelter (Gruhn 1979).

Preservation in the Mount Moriah occupation zone was quite remarkable. Several worked bone fragments were revealed which Bryan believes were needles or perforaters. Other more perishable items consisted of <u>Apocynum</u> cordage, a coil of sinew, a charred wooden pointed stick, cut twig and cane (<u>Phragmites</u>) fragments, a yucca quid, wood shavings, and other plant remains. A considerable quantity of hair from rodents, lagomorphs, bison, artiodactyls, and camelid (<u>Hemiauchenia</u>) was also preserved in the Mount Moriah zone.

The faunal remains are mostly mountain sheep (<u>Ovis canadensis</u>), and with the exception of the possible camel hairs, no extinct fauna were present in this zone. However, extinct faunal remains have been recovered from other portions of Smith Creek Cave (Miller 1979), although not in any definite association with cultural materials. In the rear of the cave, bone collagen from a strata containing Late Pleistocene fauna yielded a C-14 date of 28,650 $\pm$ 760 years B.P. (TX-1639; Bryan 1979b:Table 1).

From the artifact assemblage and the presence of animal hair, Bryan (1979b) infers that the inhabitants of the Mount Moriah occupation zone were involved in scraping hides with reused Lake Mohave projectile point bases and endscrapers. The hides were then sewn into skin clothing with splinter bone needles and perforators which had been made with microtools. Furthermore, from the presence of chokecherry pits, Bryan (1979b:184) suggests that some occupation occurred in midsummer. This site interpretation, however, is based on very tenuous evidence and should be regarded with caution.

To begin with, the animal hair could have been naturally introduced into the deposits, particularly since humans and mountain sheep both utilized the cave during the Mount Moriah occupation, as evidenced by intermixing of sheep dung and cultural debris. The possibility that the animal hairs were introduced by natural processes is a matter not discussed by Bryan. Similarly, the presence of chokecherry pits in the deposits could be the result of natural introduction by animals, and unless contained in human coprolites, inferences into seasonality and human consumption of this and other plant species remain conjectural. Thirdly, from the drawings of the bone "needles" (Bryan 1979b:Figure 12d-i), it is hard to determine if the bone splinters are, indeed, bone needles and where the polished areas on the splinters are located, for this is not indicated in the drawings. While Bryan's interpretation of the site is subject to debate, the evidence does show that humans were frequenting the cave 12,000 to 10,000 years ago.

Difficult of access, Council Hall Cave faces to the north at 2133 m elevation across the canyon from Smith Creek Cave. The cave was excavated as part of the search for early humans in Smith Creek Canyon by the University of Alberta-Nevada State Museum team (Bryan 1979a). Excavations in the cave revealed little cultural material, although a long depositional sequence is indicated by the presence of bristlecone pine needle lenses, one of which in the middle of the deposits yielded a date of 23,900 years B.P. With the exception of some dubious green bone breaks in the early levels, human utilization of the cave was confined to the surficial deposits, where the scant cultural remains were recovered, including the two controversial Council Hall Cave atlatls (Fenenga and Heizer 1941, 1942; Hester and Mildner 1974:33-35; Tuohy 1979:12; see also Grosscup 1960).

Faunal remains from Council Hall Cave consisted mainly of microfauna. No extinct megafaunal remains were identified. Artiodactyls were present, but with the exception of mountain sheep, identification was questionable due to the highly fragmented and rodent- and carnivore-gnawed nature of the bones. While Bryan (1979a) feels that some of the mountain sheep fragments in the early levels may possibly represent human modification from butchering and consumption breakage patterns (i.e., green bone fractures), the evidence is equivocal and the faunal assemblage is more likely the result of natural introduction and alteration by carnivores and rodents in the course of taphonomic processes (cf. Miller 1979). In sum, no conclusive evidence for Paleoindian occupation was recovered from Council Hall Cave.

Paleoindian Lifeway

Due to the inadequacy of the evidence in eastern Nevada, the prehistoric lifeway during the Paleoindian period can only be inferred from other regions, particularly the High Plains, where more evidence is available.

Subsistence. Paleoindian subsistence strategy centered on the pursuit of extinct megafauna--ground sloths, mastodons, mammoths, camels, bison, and other large herbivores. Plant foods may have been gathered as suggested by ground stone implements from the Lindenmeier site in Colorado, although little evidence for processing wild plant foods during the Paleoindian period has been recovered.

Social Organization. Comments on the social organization of Paleoindian hunters must remain very speculative, to say the least. Wilmsen (1970:81-83) has described the possible structure of Paleoindian groups as highly mobile hunting bands. The optimum or idealized size of many historic and contemporary hunting and gathering bands has been observed to be composed of about 25 members, and perhaps Paleoindian hunting bands were similar in size. However, as opposed to Archaic and contemporary hunter-gatherers, Paleoindians may have ranged much farther over the landscape while following herds of now-extinct game. Evidence for this long-distance subsistence pattern is suggested by the presence of Paleoindian artifacts manufactured from specific quarries, such as Onandaga chert from western New York and Alibates chert from Texas, and found several hundred kilometers from their sources (cf. Aikens 1978a:75).

Most excavated Paleoindian sites are kill sites, which provide us with very little insight into the living arrangements of Paleoindians. Only a few Paleoindian camps have been identified in the archaeological record. To exacerbate the problem, the most diagnostic aspect of their material culture, i.e., projectile points, may have been highly curated (see Binford 1976, 1977 on curation), while other items, such as ad hoc bone butchering implements, may have been expediently manufactured, used, and discarded. Disregarding factors of differential preservation, this might tend to make kill sites more visible in the archaeological record, since both the bone butchering implements and the remains of the butchered animals would be left. If the projectile points were curated, then these would only be found where they were expended, such as at kill sites or in an isolated context. Many Paleoindian campsites, however, may be archaeologically invisible since they may consist of only lithic waste, and might, therefore, be indistinguishable from later superimposed Archaic occupations, particularly in deflated areas of the Great Basin. Further studies of lithic waste at the few known Paleoindian campsites may aid in recognizing other such campsites, which contain no diagnostic Paleoindian artifacts.

Archaic Period

The Archaic period or stage in the Great Basin is dated between approximately 10,000 to 1500 years ago . As the late Wisconsinan glaciers and Pleistocene lakes in the Great Basin receded, the Paleoindian lifeway gave way to the broad-spectrum hunting and gathering pattern of the Archaic. This transition was, at least in part, brought about by late Pleistocene and early Holocene environmental changes resulting in a warmer, drier climate, similar to our present climate. Another factor involved in this transition was the disappearance of the larger Pleistocene mammals, due to over-exploitation by humans, environmental changes, or a combination of these factors.

Technological changes accompanied this transition to the Archaic lifeway. Grinding implements for processing wild plants appear in increasing numbers in the archaeological record. The atlatl or spear-thrower, which enabled hunters to more effectively pursue faster game, such as deer or antelope, was probably developed at the beginning of the Archaic. Moreover, use of the atlatl may have hastened the extinction of the larger Pleistocene herbivores, and it was only as a result of these extinctions that Paleoindians or early Archaic hunters began to exploit modern species of game.

Transitional between the Paleoindian and Archaic periods, there appears to have been a Proto-Archaic phase known as the Western Pluvial Lakes tradition, dating from 11,000 to 8,000 years ago. Bedwell (1973; Bedwell and Cressman 1971) first used this term to describe a lacustrine adaptation associated with the waning Pleistocene lakes in the western Great Basin, particularly in Fort Rock Valley of southeastern Oregon. Building upon Bedwell's concept, Hester (1973:62-68, 124) has summarized the Basin-wide evidence for the Western Pluvial Lakes tradition. Diagnostic artifacts of this tradition are predominately projectile points. These include Lake Mohave, Haskett, Parman, Cougar Mountain, Black Rock Concave Base, and points similar to those from the Lind Coulee site in Washington. Crescents, also known as Great Basin Transverse points, are another diagnostic artifact (see Clewlow 1968; Hester 1977; Mitchell et al. 1977; Tadlock 1966).

Aikens (1978a:75, 1978b:148) feels that the Desert culture may have evolved out of the Paleoindian lifeway as a result of this lacustrine based adaptation.

> Keeping this argument for the distinctness of Clovis and Desert Culture economic patterns in mind, it is at the same time possible to see a point of convergence between them in the fact that Clovis points are commonly found on the lower strand lines of now-dry or ephemeral Pleistocene lakes, along with artifacts of Desert Culture types [Heizer and Baumhoff 1970; Tuohy 1968; Wilke, King, and Bettinger 1974]. In the exploitation of lake shore resources by both peoples may be seen a transitional link in economic behavior, allowing the supposition that the Clovis lifeway evolved into the Desert Culture pattern as more was learned

> of the possibilities of lacustrine situations and as post-Pleistocene environmental change and decreasing availability of large game altered the natural setting in the direction of increasing aridity and biotic sparsity. A number of archaeologists are focusing attention on this problem area, and new information will continue to appear (Aikens 1978a:75).

Clearly, more research into the Western Pluvial Lakes tradition needs to be conducted. Most of the evidence is based on surface lithic assemblages; very few stratified sites containing a Western Pluvial Lakes component have been excavated to date.

In the eastern Great Basin, the Western Pluvial Lakes tradition is not strongly represented in the artifactual remains. Hester (1973:124) has pointed out that the Archaic, as represented by Danger and Hogup caves, was well underway at an early date and apparently co-existed with the Western Pluvial Lakes tradition elsewhere in the Basin. On the other hand, although the Mount Moriah occupation zone in Smith Creek was reviewed above in the Paleoindian period, following the line of discussion presented by the excavator (Bryan 1979b), this occupation probably represents a Western Pluvial Lakes tradition component.

The apparent absence of the Western Pluvial Lakes tradition in Danger and Hogup caves may be due more to the strong emphasis that has been placed on the Desert Archaic traits from these caves than to the absence of this tradition. The early levels of both Danger and Hogup caves, particularly the latter, show indications of an adaptation to lacustrine resources. During the early Holocene prior to 7500 B.P., both sites were situated adjacent to marshes along the shore of Lake Gilbert which filled the Bonneville Basin at this time (cf. Currey 1977, 1980a, 1980b; Currey and James 1981).

Analyses of the faunal remains, plant macrofossils, and pollen data from the early levels of Hogup Cave indicate that a marsh environment was exploited by the seasonal inhabitants. Although the lithic assemblage from Hogup Cave is not necessarily representative of the Western Pluvial Lakes tradition, Black Rock Concave Base projectile points, a time-marker for this tradition in the western Great Basin, are present in the early levels. Since the initial occupation of Hogup Cave is radiocarbon dated to 8400 B.P., these projectile points do not appear here as early as they do in the western Great Basin (Hester 1973:40; Heizer and Hester 1978a:168).

The earliest level of Danger Cave (level I) contained only one projectile point, identified by Aikens (1970a:49) as a possible Agate Basin point. Levels II and III contained among other point types Lake Mohave, Silver Lake, and Black Rock Concave Base points (Aikens 1970a), which are included among those associated with the Western Pluvial Lakes tradition (Hester 1973:65). In addition, one crescent of unknown provenience was recovered from the Danger Cave deposits (Jennings 1957:Figure 156; Tadlock 1966:665). Data on the faunal remains from Danger Cave (Jennings 1957:223-224) are presented simply as a list of species and the relative numbers of bones assigned to each animal group. A more thorough analysis of the faunal remains in the future may add significantly to our knowledge of this site and may indicate that waterfowl were taken in significant numbers, as would be expected if a lacustrine adaptation were present.

Surface sites in the eastern Great Basin, such as those in the Escalante Desert of Utah (Keller and Hunt 1967) and in eastern Nevada (Tadlock 1966), have also yielded evidence of the Western Pluvial Lakes tradition. From Long and Spring Valleys in eastern Nevada, Tadlock (1966) reported the presence of a number of crescents in his review article on their distribution in the western United States. Twenty-nine crescents were described in detail from Long Valley, and several Paleoindian projectile points, apparently found in association, were mentioned.

> The writer has access to 29 crescents from the surface of Long Valley Lake playa, in east central Nevada. Eighteen are in the private collection of Victor L. Slawson of Santa Ana, California. Ten crescents are the Nevada State Museum specimens recorded by the writer in surface surveys made in 1962 and 1963. The surface artifact assemblage contains one Folsom, two Clovis (Wormington, personal conversation), three Scottsbluff, four Angostura, and two lanceolate projectile points. The lanceolate projectile points have gradual recurved blade edge shoulders, notched base, and evidence of basal edge grinding. The artifact assemblage does not appear to contain food-grinding implements. The crescents are similar to the Clovis, Folsom, and possibly the Scottsbluff projectile points in the use of materials and flaking techniques.
>
> Absence of food-grinding implements would either suggest a kill site or antedate the assemblage to the use of food-grinding implements. On the basis that the crescents show a greater similarity to the fluted points than to the Scottsbluff points in flaking techniques and use of materials, the crescents would fall into a Paleoindian stage and have a possible age in excess of 7000 B.C. If it is assumed that the lake was a kill site and that the crescents are associated with the Scottsbluff projectile points, the crescents would have a range of possible dates between 7000 B.C. and 5000 B.C., and would be assigned to a Protoarchaic stage (Tadlock 1966:664-665).

In more recent years, York (1974, 1975, 1976, 1978) has carried out work in Long Valley in an attempt to better document the Western Pluvial Lakes tradition. Fifty-five sites were recorded at the Sunshine Locality (see Figure 9) in the vicinity of Sunshine Well in the valley (York 1974, 1975). Because of its significance, the area has been designated as an archaeological district on the National Register of Historic Places.

Projectile points recovered from the Sunshine Locality sites include a complete Hell Gap point, a Scottsbluff point, a Haskett knife, Pinto Series points, and crescents. Related to the dating of the crescents, York (1974) had once thought that one of the crescents and a Pinto point had been struck from the same core, but X-ray diffraction analysis indicated that the artifacts contained different trace elements and were probably from different quarry sources, and thus, not necessarily contemporaneous (York 1978). Furthermore, as opposed to what Tadlock stated about the absence of grinding implements, ground stone was found at three sites. Test excavations were conducted at five sites (including Rabbit Hip Hill and Greenstone Site), however, little cultural debris and no datable materials were recovered.

North of Long Valley Casjens (1974:113) found one crescent during the survey of Ruby Valley. Recently, Busby (1978, 1979) has recovered several crescents from two blowout sites (Campsite Locality [26LN1518] and Porcupine Site) on the surface of Coal Valley Dry Lake, the remnant of pluvial Lake Coal in Coal Valley, southeastern Nevada. Lithic debitage, ground stone, pottery sherds, and diagnostic projectile points were also present, indicating that the Coal Valley Dry Lake sites have been the focus of intermittent cultural activities over the past 11,000 years, probably whenever water was present in the lake bed.

In summary, from the little evidence on the Proto-Archaic or Western Pluvial Lakes tradition, it appears that a lacustrine based subsistence in the Great Basin at the beginning of the Holocene may represent a transitional phase between the Paleoindian and Archaic lifeways. The Western Pluvial Lakes tradition seems to be more strongly expressed in the western Great Basin. It is less evident in the eastern Great Basin, although the early levels of Hogup Cave indicate a lacustrine-oriented adaptation based on the evidence for waterfowl and pickleweed exploitation. Future investigations in the eastern and central Great Basin should attempt to determine if a lacustrine based subsistence pattern did, indeed, exist in this region between 11,000-8,000 B.P. to the same extent that it did in the western Great Basin.

As previously noted, technological innovations characterize the transition from the Paleoindian to the Archaic. These technological innovations are represented by diagnostic artifacts of the Desert Archaic (summarized by Jennings 1957, 1964, 1966a, 1968, 1974, 1978; Aikens 1970a, 1978a, 1978b; and many others). The two important "hallmarks" of the Archaic are the flat milling stone and basketry, at first twined and later coiled (Jennings 1957:7, 1978:29). Other major Desert Archaic traits include large lanceolate or triangular projectile points, netting, fur cloth, fiber sandals or hide moccasins, atlatls, hardwood dart shafts, digging sticks, curved wooden clubs, serrated scapula saws, bone awls, and imported Oliva and Olivella shells from the California coast (cf. Jennings 1964:154, 1966a:85).

Most of these Desert Archaic traits are perishable items from dry, deeply stratified caves in the Great Basin where conditions for preservation are excellent. The more numerous Archaic sites, on the other hand, are unsheltered temporary campsites or special purpose locations. Due to their frequent proximity to springs and other

Table 4. Diagnostic Projectile Points in the Eastern Great Basin (Illustrated in Figure 10).

a. Clovis point (After Wormington 1957:Figure 68, no. 3, p. 262).

b. Folsom point (After Wormington 1957:Figure 68, no. 4, p. 262).

c. Black Rock Concave Base (After Hester and Heizer 1973:Figure 7j).

d. Silver Lake (After Campbell et al. 1937:Plate 42a, p. 82).

e. Crescent or Great Basin Transverse (Collected from surface of 42MD300, Sevier Desert, western Utah).

f. Humboldt Concave Base A (Danger Cave [42TO13], 22931/5, W8 V A8).

g. Lake Mohave (Hogup Cave [42BO36], FS 725-7).

h. Pinto Series (No Name Valley Site [26EK910], FS 81-26).

i. Northern Side-notched (Danger Cave [42TO13], 19590, W26 III-1).

j. Elko Eared (Danger Cave [42TO13], 23710/8, F39-110, W28 III).

k. Elko Corner-notched (Hogup Cave [42BO36], FS 81-26).

l. McKean Lanceolate (Sudden Shelter [42SV6], FS 397-15).

m. Rose Spring Corner-notched (Cowboy Cave [42WN420], FS 471-8).

n. Eastgate Expanding Stem (Swallow Shelter [42BO268], FS 207-5).

o. Cottonwood Triangular (Nawthis Village [42SV633]).

p. Desert Side-notched (Swallow Shelter [42BO268], FS 226-127).

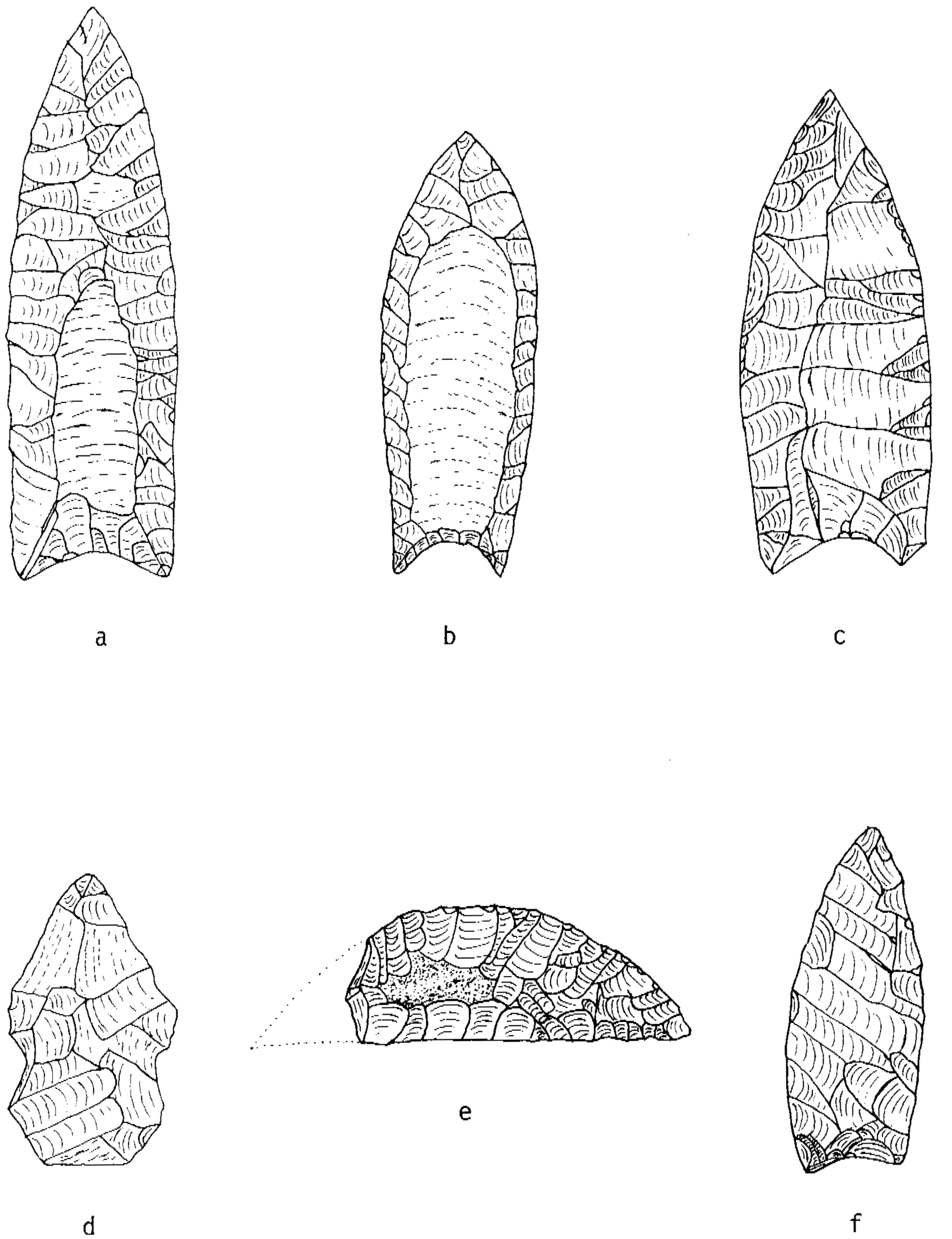
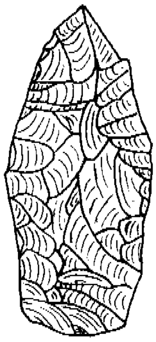


Figure 10. Diagnostic projectile points in the eastern Great Basin.



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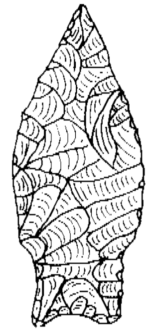

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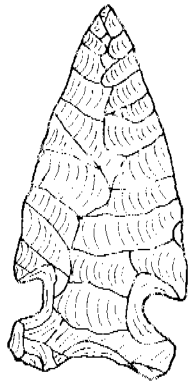

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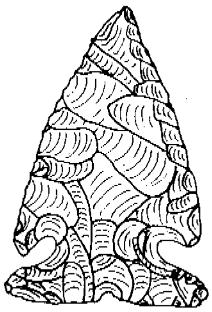

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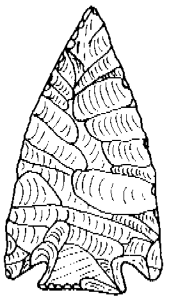

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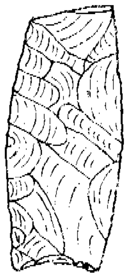

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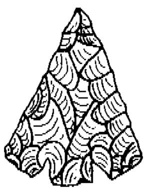

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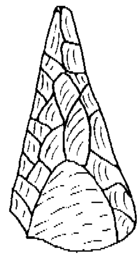

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favorable site locations, these temporary occupation loci might have been repeatedly utilized, resulting in the accumulation of midden deposits. At times throughout the depositional history of some exposed habitation areas, wind has deflated the midden sediments, leaving the cultural materials from numerous occupations on the surface. These temporary occupation sites are usually marked by only the presence of stone tools and other lithic debris, the most temporally diagnostic of which are projectile points. When found in stratigraphically controlled contexts in dated sites, projectile points can serve as time-markers or fossil directeurs for cross-dating surface sites from which similar projectile points are recovered, and thus establishing the relative age of the surface sites.

In the central and western Great Basin, several projectile point types are diagnostic of the Archaic stage (Hester and Heizer 1973; Heizer and Hester 1978a, 1978b). These include Northern Side-notched (7000-4000 B.P.), Humboldt Series (6000-3000 B.P.), Pinto Series (5300-2700 B.P.), Elko Series (ca. 4000-1000 B.P.), and Gypsum (3700-2400 B.P.). These and other points are illustrated in Figure 10.

For the northern Colorado Plateau and the eastern Great Basin, Holmer (1978) recently established an Archaic projectile point typology using a discriminant function computer program on the metric attributes of points from Sudden Shelter, Cowboy Cave, Danger Cave, and Hogup Cave. Based on the data from these four sites, diagnostic Archaic projectile points in this region are represented by virtually the same types as those in the central and western Great Basin. The dates for these point types, however, are much earlier in the northern Colorado Plateau: Pinto Series (8300-6200 B.P.), Humboldt Series (7600-6100 B.P.), Northern Side-notched (6900-6300 B.P.), McKean (4800-3700 B.P.), and Gypsum (4600-1500 B.P.). The Elko Series presents an anomalous situation in the Colorado Plateau. These projectile points occur as early as 7600 B.P. and extend into the historic period, as evidenced from a Paiute knife collected by Powell in 1873 (Fowler et al. 1973:41). Holmer (1978:62), therefore, concludes that Elko points are the least temporally diagnostic Archaic projectile points in this region (see also Aikens 1970a:56-57).

Throughout the rest of the discussion on the Archaic period, a summary of the cultural remains recovered from excavated Archaic sites in eastern Nevada is presented (see Figure 11). While the emphasis in this section is on the Archaic, cultural materials from later Fremont and Numic occupations, when present at these sites, are also mentioned and then are discussed in more detail in the Late Prehistoric and Proto-Historic sections.

Aside from the data recovered from excavated sites in the study area, several relatively large scale archaeological surveys have been conducted in portions of eastern Nevada: northwestern Elko County (Tuohy 1963); Elko, Eureka, and White Pine counties (Fowler 1968a); Winnemucca-Battle Mountain area (Stephenson and Wilkinson 1969); Goose Creek-Grouse Creek region of extreme northwestern Utah and northeastern Nevada (Dalley 1977a; Wylie 1971a, 1971b, 1971c); Lincoln County, southeastern Nevada (Fowler and Sharrock 1973); Ruby Valley, Elko and White Pine counties (Casjens 1974); Long Valley and Buck Mountain (York 1974, 1975, 1976, 1978); Mt. Wilson, northern Lincoln County (Brooks et al. 1974); Pine Valley (Brian Hatoff, personal communication, 1981); Garden and Coal Valleys, southeastern Nevada (Busby 1978, 1979); Sierra Pacific power line, northern Nevada (Napton and Greathouse 1979-1980); and Snake, Spring, and Lake Valleys (Walt Cassidy, personal communication, 1981). Since the results of these surveys are summarized elsewhere, these data will not be reviewed in this discussion. The reader should refer to the prehistoric section of the Summary of Previous Investigations and Research for more information.

By way of introduction to the Archaic stage in eastern Nevada, we can start with one of the better-known and most continuously occupied Archaic sites in western North America, that of Danger Cave, which lies just outside the study area. This site is familiar to most archaeologists, for descriptions of Danger Cave are contained in various works on North American prehistory (e.g., Jennings 1968, 1974; Willey 1966). Aside from its long cultural sequence spanning the last 10,000 years and the well-preserved cultural remains, Danger Cave is significant for a more important reason. It was on the basis of excavations at the cave that Jesse D. Jennings (1953, 1957, 1964, 1966a; Jennings and others 1956; Jennings and Norbeck 1955; see also Jennings 1973) advanced the concept of the Desert culture and the Archaic stage, a hunting and gathering lifeway from which later prehistoric cultures in North America were derived.

Located several kilometers east of the Nevada-Utah border near Wendover in northwestern Utah, Danger Cave is situated on the edge of the dry, barren Great Salt Lake Desert at about 1318 m elevation. The site was noted by Robert F. Heizer of the University of California at Berkeley in the mid-1930's (Rudy 1953; Jennings 1957:45). The first excavations were carried out by the University of Utah in the early 1940's (Smith 1942), followed by more careful work between 1949 and 1953 under the direction of Jennings (1953, 1957). During the 1949 and 1950 field seasons, several other sites in the Wendover area were also excavated: Juke Box Cave, Raven Cave (in Elko County), and Thermal Point (Jennings 1953, 1957; Price 1952; Price and Burnett 1950). Of these sites, Danger Cave contained the best cultural sequence and will be described here in some detail. However, there is another more recently excavated site in the region, that of Hogup Cave (Aikens 1970a), which has as complete a cultural record as Danger Cave.

The present setting in the vicinity of Danger Cave is very arid and barren. What little vegetation that grows on the slopes and salt flats near the cave is dominated by shadscale (*Atriplex confertifolia*), greasewood (*Sarcobatus vermiculatus*), salt grass (*Distichlis* sp.), pickleweed (*Allenrolfea occidentalis*), and other species of the shadscale zone. These vegetation conditions have changed very little during most of the human occupation of the cave; such was not the situation prior to 10,000 years ago.

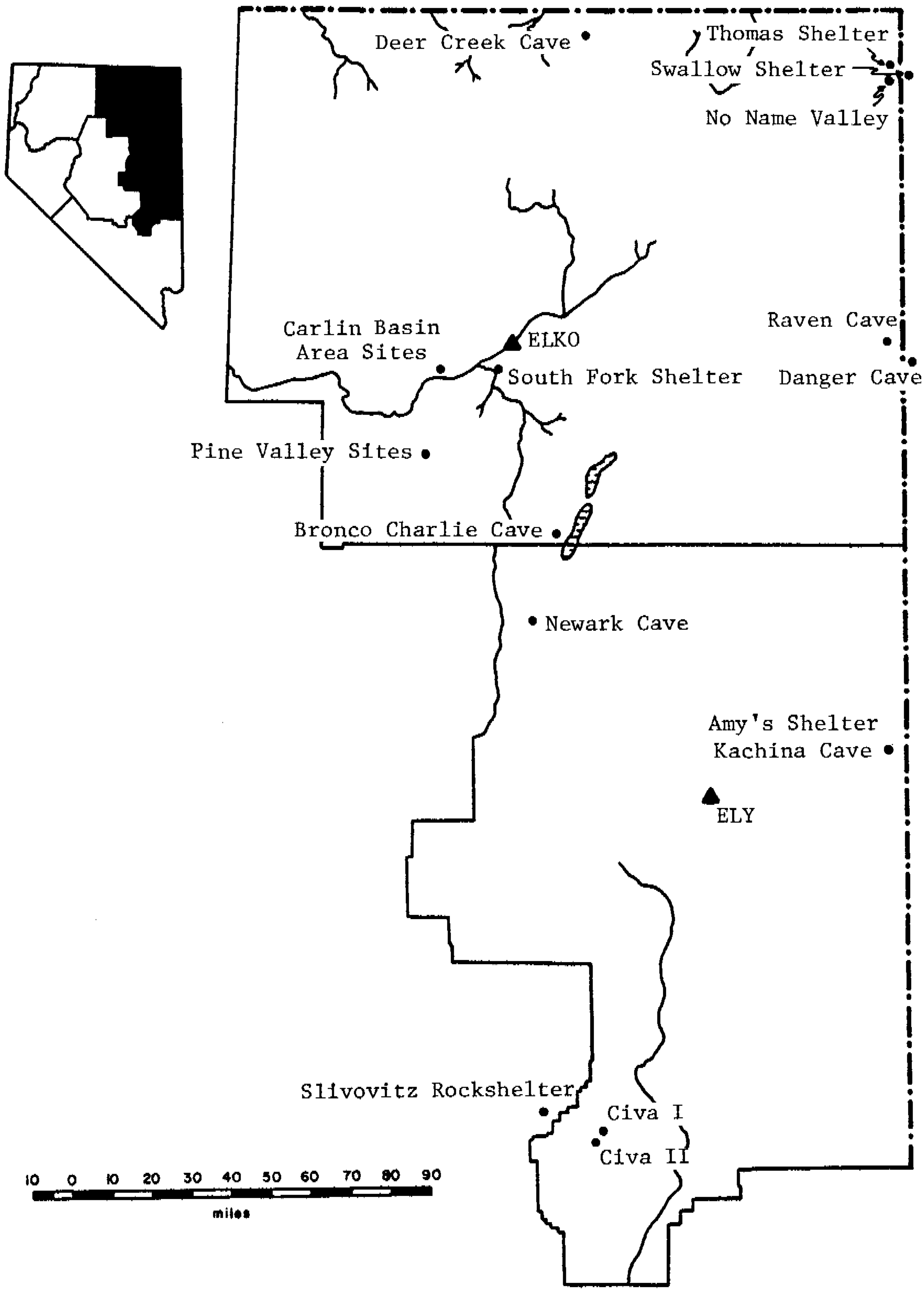


Figure 11. Distribution of excavated sites in the Elko and Ely districts containing Archaic components.

At times during the Pleistocene, Danger Cave was submerged by Lake Bonneville. Former transgressional and regressional levels of the lake are preserved as terraces and strand lines on the immediate slopes in the area, the most conspicuous of which are the Bonneville, Provo, and Stansbury levels. Clay, sand, and beach gravels deposited by Lake Bonneville underlie the cultural deposits in the cave. It was only after the lake had receded below the mouth of the cave, an event dated at 11,150 years B.P., that the cave was exposed for habitation.

Five cultural levels were discernible in the four meters of cave fill, numbered levels I through V, with a recently recognized sixth level being the uppermost stratum (Jennings 1974:157-158, 1978:32). Radiocarbon dates on these levels are: level I (10,300 years B.P.), level II (9700 years B.P.), level III (6600 years B.P.), level IV (5400 years B.P.), and level V (4000 years B.P. to A.D. 20), with the hypothesized level VI continuing to historic times.

The earliest occupation was represented by six small fires, chipping debris, a few ungulate bones, grinding slabs, and a lanceolate projectile point (W9; Jennings 1957:109, 1978:32, Figure 20) which has been classified as a possible Agate Basin type (Aikens 1970a:49). These cultural remains were recovered from a sand layer in level I just above the cemented lacustrine gravels. Charcoal from one of the fires in level I was radiocarbon dated at about 10,300 years B.P. While level I was originally included within the Desert culture, others have suggested on the basis of the lanceolate projectile point, the age of the level and the paucity of grinding implements, that level I may be part of Plano (Krieger 1964:35) or Old Cordilleran (Willey 1966:58) assemblages. With heavier use of the cave in level II around 9700 years B.P., the Desert culture lifeway is initially established, a pattern which is maintained from that date on throughout the occupation of the cave.

Due to the arid conditions in the cave and the fact that it was actually a habitation site where worn and broken artifacts were discarded [as opposed to cache or storage caves such as those around Humboldt Sink in western Nevada (e.g., Lovelock Cave and Humboldt Cave)], a wide array and abundance of both perishable and nonperishable cultural remains were recovered. These included over 2,000 chipped and 1,000 ground stone fragments, wooden implements, worked bone and horn pieces, Olivella biplicata shells from California and freshwater mussel shell (Margaritifera margaritifera) fragments, basketry casts, twined and coiled basketry, bulrush (Scirpus americanus) quids, S and Z twist plant fiber cordage tied into nets, and skin and hide fragments including moccasins.

Some artifacts persist virtually unchanged throughout the deposits; others show changes in form or disappear entirely from the early to late levels. In general, there is an increase in the variety of cultural items through time culminating in level V. Projectile points, basketry, and bone awls are artifacts which exhibited changes. Reanalysis of the Danger Cave projectile points (Aikens 1970a:Table 6) indicate that on the whole Gypsum, Silver Lake, Lake Mohave, Black Rock Concave Base, and Pinto Series occurred in the lower levels; Elko and Humboldt Series were generally present in the middle and upper levels; and Rose Spring, Eastgate, Cottonwood Triangular, and Desert Side-notched points were limited to level V. The earliest basketry technique was twining which was nearly replaced with coiling by 4000 years B.P. in level V. Similarly, L-shaped scapula bone awls, recovered in levels III and IV, were absent in level V. Another change is indicated by the presence of Great Salt Lake Gray and Knolls Gray sherds, two Fremont types, and Shoshoni ware in the uppermost layer (level VI) and on the surface.

Grinding slabs and other items at the site, on the other hand, show continuity through time. As a case in point, grinding slabs exhibited shallow, round depressions from being ground on one or both sides in a rotary motion with a mano or hand stone rather than a trough milling surface which is produced by a back-and-forth motion (Jennings 1957:209-212). Trough metates, by the way, are generally found in horticultural sites such as among the Fremont culture; none were recovered from Danger Cave.

As with the material culture, the subsistence pattern of the Danger Cave inhabitants did not change appreciably and indicated that food resources were added to the diet through time. Although the faunal remains have never been studied in any detail, a species list is available. Antelope, mountain sheep, some bison, jackrabbit, coyote, wood rat, bobcat, and kangaroo rat were represented, with apparently mountain sheep being the most common. Coprolite analysis has shown that pickleweed, prickly pear and several other plant foods were eaten by the Danger Cave inhabitants (Fry 1977, 1978).

Raven Cave, which lies north of Wendover in Elko County, was also excavated by the University of Utah about the same time as Danger Cave (Jennings 1957:12-13). This small cave is situated on a broken, jagged hogback at 1509 m elevation at the base of Pilot Peak. Eleven strata were defined in the three meters of deposit. The small amount of cultural material recovered from the cave was mainly confined to the top three strata, particularly the uppermost level, although some evidence of human occupation was present throughout most strata. Several fire hearths or burned areas were uncovered in the deposits. The cultural materials included projectile points, scrapers, worked bone, manos, Promontory pegs, and a number of unidentified faunal remains. The most interesting of these items was the Promontory pegs, which Steward (1937a) assigned to the Promontory culture, a possible Fremont people. Recent analysis of Promontory pegs indicate that they were extensively used by late Archaic, Fremont, and Shoshoni groups around the Wendover area as triggering mechanisms for deadfalls (Wylie 1974b). While on the subject, a Promontory peg has also been recovered from Rockslide Cave which is located just south of Smith Creek Canyon in Horse Canyon in the Snake Range (Wylie 1974a, 1974b:53-54).

From the scant cultural materials present in Raven Cave, the site appears to have been utilized very infrequently for temporary shelter. The occupation of the cave was divided into four cultural periods, yet, with the exception of the Promontory pegs found in the uppermost level, the time depth of these occupations could not be established because of the lack of diagnostic artifacts, and apparently no organic materials were submitted for radiocarbon dating. Nevertheless, the earliest occupations were more than likely by Archaic groups, and as indicated by the Promontory pegs, Fremont and Shoshoni peoples probably utilized the cave in the upper levels.

While the cultural inventory is not nearly as extensive as in Danger Cave, another Archaic site initially occupied about the same time is Deer Creek Cave. The cave is situated at 1770 m elevation above Deer Creek in northeastern Nevada, near the physiographic boundary between the Great Basin and Columbia Plateau. Excavated in the early 1960's (Shutler and Shutler 1963), the archaeological evidence indicates that the cave was utilized between 10,000 years B.P. and the Proto-Historic period as a hunting camp from which to exploit primarily mountain sheep, marmot, and porcupine. Artifacts recovered from the deposits show affinities to those found in Danger Cave and other sites in the eastern Great Basin and Columbia Plateau and are less similar to artifacts found in western Nevada. After A.D. 1150, Shoshoni groups utilized the cave as reflected by changes in material culture and possibly subsistence patterns.

To the northwest of Deer Creek Cave in the Owyhee Uplands of southeastern Idaho, recent excavations at Nahas Cave (Plew 1980a, 1980b, 1981) provide comparable Archaic and Numic occupations with the northeastern Great Basin. Radiocarbon dates indicate that the cave was occupied over the last 6000 years B.P. The stratified sequence of diagnostic projectile points begins with Humboldt and Elko Series points in the lower levels, followed by a transition to Rose Spring and Eastgate points in later levels. Desert Side-notched, Cottonwood Triangular, and Bliss projectile points occur in the upper levels. Other cultural remains included scrapers, knives, drills, bifaces, retouched flakes, hammerstones, cores, ground stone, a shell bead, and several pottery sherds (unidentified). Faunal remains consisted of antelope, deer, ground squirrel, muskrat, jackrabbit, marmot, cottontail, badger, porcupine, unidentified avifauna, steelhead trout (Salmo gairdnerii), and other fish. The site is inferred to have been utilized as a hunting camp in the spring.

In the Grouse Creek-Goose Creek region of extreme northeastern Nevada and northwestern Utah, the University of Utah conducted surveys and excavations between 1969 and 1973 (Dalley 1977a; Berry 1977a, 1977b). Sites excavated or tested in northeastern Nevada included No Name Valley Site (26EK910), Thomas Shelter (26EK658), and 26EK655; in northwestern Utah work was carried out at Beatty Springs (42BO200), Kimber Shelter (42BO245), Owl Springs (42BO301), Pigeon Mountain sites (42BO204 and 42BO206), Rabbit Springs (42BO161), Remnant Cave (42BO365), and Swallow Shelter (42BO268).

The deposits in Swallow Shelter provided the longest and most complete sequence in this area. Desert Archaic groups begin to occupy the site about 5410 years B.P. (RL-235) as determined by a C-14 date on charcoal recovered near the base of the deposits. More intensive use of the site did not occur until ca. 3500 years B.P., and compared to Hogup Cave and Danger Cave, the Archaic occupation at Swallow Shelter is quite late (Dalley 1977a:71). Above the Archaic levels, Fremont and Shoshoni groups occupied the shelter.

A wide range of artifacts were found throughout the Swallow Shelter deposits. Diagnostic projectile points in the Archaic levels (strata 1-8) include Humboldt Concave Base A and B, Pinto Series, Elko Eared, and Elko Corner-notched, the latter of which continue to be represented in the Fremont levels--strata 9 and 10 (Dalley 1977a:Figure 15, Table 5). Other chipped stone artifacts included many preforms and unfinished bifaces, finished bifaces, drills, scrapers, gravers, tools with chisel-like ends, tanged knives, tabular knives, blades, side-retouched blades, end retouched blades, burins, burin spalls, cores, utilized flakes, choppers, and miscellaneous worked fragments. Among the ground stone artifacts, metates, manos, pestles, polishing stones, shaft smoothers, sharpening stones, drilled stones, perforated disks, red-stained stone fragments, stone fragments with painted designs, smoothed and formed stones, and incised stones were recovered. Worked bone consisted of awls, tubes, beads, bipoints, a pendant, counters, serrated ribs, rods or flakers, scrapers, gouges, ochre-stained bone, antler flakers, and worked horn.

A number of Great Salt Lake Gray sherds from at least nine vessels, a small amount of Shoshoni ware from at least two vessels, fired clay human figurine fragments, a possible animal effigy fragment, and clay disks were present in the ceramic category. Several drilled Olivella shell beads and a shell pendant were also recovered. Perishable materials included a number of arrow and atlatl shaft fragments, Promontory pegs, fire drills, digging sticks, grooved sticks, reed fragments, a bark ring, leather fragments, fur strips, knotted and twisted juniper bark, fiber bundle basketry fragments, and two-ply S-twist cordage fragments.

Subsistence activities at Swallow Shelter in the Archaic levels indicate a major emphasis on hunting. Based on minimum numbers of individuals, marmot, rabbit, bushy-tailed wood rat, and mountain sheep were the most commonly hunted animals during the Archaic, a pattern which continued into the later Fremont and Shoshoni occupations with little change. Some exploitation of freshwater mussel (Anodonta and/or Margaritifera sp.) is indicated by the presence of several fragments in the deposits. Dampness of the Archaic deposits is suggested as the reason for the lack of plant remains which are preserved in the drier Fremont levels (Dalley 1977a:75). Although fill samples of all strata were collected, these have not been analyzed for plant macrofossils or pollen (Dalley 1977a:69).

As mentioned above, three sites were excavated or tested in Elko County during the Grouse Creek-Goose Creek research: No Name Valley Site, 26EK655, and Thomas Shelter. The No Name Valley Site, an open site on the valley floor at 2073 m elevation, yielded projectile points, other lithic debris, and several fragments of ground stone; no perishable artifacts, including faunal remains, were recovered (Berry 1977a). Site 26EK655 is a rockshelter overlooking a spring in the Goose Creek Mountains near Thomas Shelter. Test excavations at the site indicated that the deposit was very shallow and consequently produced little cultural material (Dalley 1977a:158).

Thomas Shelter was the most informative of the three sites. The site is a small, south-facing rockshelter located in the sagebrush zone at 2073 m elevation near a spring in the Goose Creek Mountains and lies just west of the Utah-Nevada border in Nevada (Dalley 1977a:79-90). The one meter deposit was relatively damp, homogeneous, and badly mixed by rodents. Perishable items, other than bone, were not preserved. Projectile points represented in the deposit are Humboldt Concave Base, Elko Corner-notched, Elko Eared, Pinto Square Shoulder, Eastgate Expanding Stem, Rose Spring Corner-notched, and Cottonwood Triangular. Only three pieces of ground stone were recovered--two quartzite fragments of slab metates and one tabular limestone slab with incised lines similar to those found at Hogup Cave and Swallow Shelter. Great Salt Lake Gray, a Fremont type, and a number of Shoshoni sherds were found, both of which co-occurred in the upper levels. Six mammalian species are identified in the faunal remains. Marmot is the most prevalent, followed by two species of ground squirrel, bighorn sheep, bushy-tailed wood rat, and pygmy rabbit.

Though no C-14 dates were obtained, diagnostic projectile points indicate an initial occupation by Desert Archaic groups prior to 2500 years B.P. Sometime between A.D. 400 and 1300, Fremont groups frequented the site, after which Shoshoni peoples used the shelter. Based on the faunal remains, abundance of chipped stone, and paucity of ground stone, Thomas Shelter is interpreted as a temporary hunting camp throughout the sequence.

To the southwest of the Goose Creek-Grouse Creek region is the upper portion of the Humboldt River. The Humboldt is the longest river in the Great Basin and is relatively abundant in both terrestrial and aquatic food resources, and therefore would seem to have been an attractive area for hunter-gatherers. The lower reaches of the river, particularly its terminus, Humboldt Sink, have been the focus of a considerable number of archaeological investigations over the years (see Loud and Harrington 1929; Heizer and Krieger 1956; Heizer and Napton 1970; Hester 1973 and references therein). Along the upper reaches of the Humboldt River in Elko County the situation is not quite the same. One of the few sites to be excavated in this region is South Fork Shelter.

Situated southwest of Elko on the South Fork of the Humboldt River near its confluence with the Humboldt, South Fork Shelter was dug in the late 1950's by the University of California at Berkeley (Heizer, Baumhoff, and Clewlow 1968). Radiocarbon dates on charcoal from the base of the 3 m deposit indicate that occupation of the site began about 4300 years B.P. and continued up until the Proto-Historic period. In the late 1840's, the canyon in which South Fork Shelter is located was part of "Hastings Cutoff", an emigrant trail to California. Since no mid-nineteenth century artifacts were recovered, the investigators assume the shelter was abandoned by then (Heizer, Baumhoff, and Clewlow 1968:5).

Many of the artifact types which were found at South Fork Shelter showed temporal and stylistic similarities to artifacts recovered from other sites in the western Great Basin, e.g., Wagon Jack Shelter (Heizer and Baumhoff 1961), Humboldt Cave (Heizer and Krieger 1956), and Rose Spring Site (Lanning 1963). Diagnostic projectile points recovered in the deposits include Humboldt, Pinto, and Elko Series, Eastgate Expanding Stem, Cottonwood Triangular, and Desert Side-notched. Of interest in the artifacts is the presence of white chert bifaces or "knives" which indicates some continuity with the ethnographic record. A major source of white chert in the region is located north of Battle Mountain. Ethnographically, the Shoshoni of this area who utilized and traded these chert knives were known as the Tosawihi or "White Knives" (Harris 1940; Steward 1938:162, 248).

Another interesting feature of the archaeological record from South Fork Shelter concerns the faunal remains. Although mountain sheep and cottontail were the most common of 11 identified mammalian species, freshwater mussel (Margaritifera margaritifera) was the most abundant of the faunal remains. Mussels were utilized at times in the early and middle levels of the site, but their heaviest occurrence was in the upper levels. Unlike the white chert knives, exploitation of freshwater mussels was not recorded ethnographically by Steward (1938, 1941) or Harris (1940), and yet mussel shells occurred in the deposit up to the most recent level (Heizer et al. 1968:Table 12). What we see here is the archaeological record filling in a gap in the ethnography, for Shoshonean groups appear to have collected the mussel shells in the upper levels, as indicated by the presence of Shoshonean sherds.

Parenthetically, it should be noted that freshwater mussel shells (Margaritifera sp.) were found in the early levels (ca. 9000 to 6700 years B.P.) of Last Supper Cave in the High Rock Country of northwestern Nevada (Layton 1979:47). This suggests that freshwater mussels were utilized as a food resource throughout most of Great Basin prehistory. For more information on the distribution of freshwater mussels in archaeological sites in the region and throughout western North America, the reader is referred to Taylor's (1970) bibliography on the subject.

Aside from South Fork Shelter, several other sites have recently been excavated along the Humboldt River. These are four open sites which were dug by the Nevada State Museum in 1975 as part of the archaeological reconnaissance of the Interstate 80 bypass around the town of Carlin in Elko County (Rusco et al. 1979). Unlike several other excavated open sites in the western Great Basin, e.g. Barrel Springs (Cowan 1972), Silent Snake Springs (Layton 1970; Layton and Thomas 1979), Surprise Valley (O'Connell 1971, 1975), and Trego Hot Springs (Davis and Elston 1972; Seck 1980), the deposits of the Carlin Basin Area sites were very shallow and cultural materials were generally confined to the upper 15 cm. Nevertheless, since few open sites have been excavated in eastern Nevada, the results of these investigations contribute to our understanding of open sites in the region. These excavations also add to the data recovered from the Nevada State Museum's Humboldt River Archaeological Project excavations at other open sites farther downstream at Treaty Hill and

Rye Patch Reservoir.

Carlin's Water Site (26EK1669), Maggie Creek Site (26EK1670), Susie Creek Site (26EK1671), and Railroad Site (26EK1672) comprise the Carlin Basin Area sites. The sites are situated east and west of Carlin on several terraces above the present Humboldt River floodplain at about 1525 m elevation, along tributaries north of the river. The Susie Creek and Railroad sites are near Susie Creek; Maggie Creek, as the name implies, is on Maggie Creek; and Carlin's Water is adjacent to lower James Creek which supplies water to Carlin. Vegetation in the vicinity of the sites is dominated by the rabbitbrush-greasewood-grass and sagebrush-grass associations.

Cultural materials from the surface and excavations at the Carlin Basin Area sites consisted of flaked and ground stone, Shoshoni sherds from two vessels, some faunal and plant remains, and historic debris. Among the features present at the sites were firecracked and soot-stained rocks, three firepits one of which was stone-lined, ash lenses with rock clusters, and flaked stone concentrations.

Diagnostic projectile points recovered at the Maggie and Susie Creek sites included Humboldt, Elko, Rose Spring, Eastgate, Cottonwood Triangular, Desert Side-notched, and two central Sierra Nevada types--Martis and Serrated Triangular. Cores, preforms, bifaces, edge modified flakes, metates, manos, mano/hammerstones, and cobble hammerstones were present as well. The raw materials utilized for many of the chipped stone items were obtained from the local Maggie Creek chert or from Tosawihi chert sources north of Battle Mountain. Rusco et al. (1979) infer that the Tosawihi chert, an ethnographically utilized material, was more costly to procure than the local chert and that artifacts manufactured from it were probably curated as a result.

Faunal and plant remains were preserved at the Maggie and Susie Creek sites. Due to the fragmented nature of the bones, identifications could only be made to family or genus in nearly all instances. The largest number of bones were artiodactyls from the Maggie Creek Site. Jackrabbits, cottontails, rodents, unidentified birds, and bobcat were also represented. The fragmented condition of the faunal remains suggest they were broken in order to extract bone grease, but poor preservation and trampling in an open site context could also account for the presence of only small fragments (Rusco et al. 1979:156). Plant macrofossils, both charred and uncharred, were recovered from several hearths at the two sites. The identified charred fragments included sagebrush, shadscale, rabbitbrush, fourwing saltbush, grasses (gramineae), and squirreltail grass (*Sitanion hystrix*). The presence of charred grass may indicate that it was used to line earth ovens or bank fires. Cheatgrass (*Bromus tectorum*), an introduced species, was also recovered in several hearths and indicated mixing of the hearth fill.

From radiocarbon dates and time-diagnostic artifacts, occupation of the Carlin Basin sites dates from 6000 years B.P. to the historic period. The radiocarbon dates are from firehearths and narrow the occupation down to between 360 B.C. and A.D. 1230.

South of the Humboldt River, the Ruby Marshes in Ruby Valley presented another resource-rich environment for Great Basin hunters and gatherers to exploit. As Steward (1938:144) wrote:

> Compared with the territory of eastern Nevada, Ruby Valley is exceptionally fertile. Long, Butte, Independence, and Goshute Valleys to the east are so barren and arid that they supported only a sparse and scattered population which lived in small encampments at the few springs and streams.

The favorableness of Ruby Valley to the Western Shoshoni is borne out ethnographically by the high population density of 1 person to 4.5 square kilometers (Steward 1938:144).

As might be expected, a number of archaeological sites have been recorded in the area (Casjens 1974), however, few sites have been excavated. One of these is Ruby Cave, which has never been fully reported (Baumhoff n.d.); the other is Bronco Charlie Cave (Casjens 1974). Facing to the west at 2134 m elevation in the pinyon-juniper zone, Bronco Charlie Cave is located in Deadman's Canyon on the eastern slope of the Ruby Mountains, Elko County, northeastern Nevada. The cave is named after Bronco Charlie, a Shoshoni Indian who took a local rancher to the cave (Casjens 1974:164). In the early 1970's, Harvard University and the Nevada State Museum jointly sponsored the excavation of the cave (Casjens 1974).

Cultural materials recovered from the Bronco Charlie Cave deposits included chipped stone, a minor amount of ground stone, Shoshoni sherds, wooden and bone implements, coiled basketry, ornaments including an Olivella shell bead, and a hematite ball. Projectile point types included Elko Corner-notched, Elko Eared, Eastgate Expanding Stem, Rose Spring Corner-notched, Cottonwood Triangular, and Desert Side-notched. The Shoshoni sherds were distributed throughout the deposits. Interestingly enough, one Snake Valley Gray sherd was recovered from the uppermost strata (Casjens 1974:154, 177, 179) and probably represents exchange with Fremont groups to the east. In the faunal remains, at least 26 mammalian species were recognized (Spiess 1974), with mountain sheep being the most prevalent artiodactyl. Of additional interest, Bison bison, an extripated species in Nevada, was also identified.

The time span for the Bronco Charlie Cave occupation is only relatively dated. Although several firehearths were encountered in the deposits and charcoal was abundant, "no carbon-14 dating was done because associations with any date recovered would be unclear" (Casjens 1974:174-175). Nevertheless, a radiocarbon date from the lower level of the deposits would have been quite useful for establishing the initial occupation of the site! Based on the presence of Elko projectile points in the lower strata, Casjens feels that occupation of Bronco Charlie Cave began about 2650 years ago and extended into the historic period. From the artifact assemblage and faunal remains, the site is inferred to have been utilized as a hunting and butchering camp. Along these same lines, Casjens suggests that the black and red pictographs on the cave walls may be connected with the use of the site as a hunting camp.

In the next valley to the south of Bronco Charlie Cave, another cave site has been excavated. Newark Cave is situated in the sagebrush zone at 1875 m elevation and overlooks the northern end of Newark Valley in White Pine County. Excavations revealed a fairly long cultural sequence of seasonal or intermittent occupation by Desert Archaic and later Shoshoni groups. Radiocarbon dates place the utilization of the site between ca. 5500 years B.P. and A.D. 1100 or later (Fowler 1968b). The presence of one Snake Valley Black-on-gray sherd on the surface (Fowler 1968a:11) suggests that there was some contact with Fremont groups, perhaps the "Conger Fremont" (Ambler 1966), to the east in western Utah. As indicated by Shoshonean ceramics in the upper levels, Western Shoshoni frequented the cave sometime after A.D. 1100.

The artifacts from Newark Cave included 70 diagnostic projectile points and other chipped stone items, yet only a small number of ground stone implements. Projectile point types were Humboldt Concave Base A, Elko Corner-notched, Elko Eared, Eastgate Expanding Stem, Rose Spring Corner-notched, Cottonwood Triangular, and Desert Side-notched. Their stratigraphic position in the deposits is consistent with the established Great Basin chronology. Over half the projectile points are basal fragments or are missing the tip (Fowler 1968b:Table 1). Although not mentioned by Fowler, this suggests that dart and arrow shafts were brought back to the cave for repair after the projectile points had been broken while hunting. Based on the artifact inventory, which is essentially a hunting assemblage, and the faunal remains, Newark Cave appears to have been a base camp for hunting primarily small mammals such as cottontail, jackrabbit, and marmot, with some emphasis on birds (unidentified) and larger mammals--antelope, deer and bison. Collecting and processing wild plant foods apparently were of minor economic importance at the site. Pine nut shells (*Pinus monophylla*) and hackberry seeds (*Celtis* sp.) were recovered in the deposits (Fowler 1968b:23), but it is hard to determine whether these were introduced by animals or humans, and if introduced by the latter, how important these seeds were in the diet.

In Smith Creek Canyon in the Snake Range of eastern Nevada, excavations at Amy's Shelter, Council Hall Cave, Kachina Cave, and Smith Creek Cave have provided a considerable amount of information on the prehistory of the area. The most recent work at these sites was conducted in the late 1960's and early 1970's by a joint University of Alberta and Nevada State Museum research team (Bryan 1979a, 1979b; Gruhn 1979; Tuohy 1979). The Paleoindian evidence from Smith Creek and Council Hall caves has previously been discussed. Archaic occupation of these caves was sporadic and produced little cultural material, particularly in the case of Council Hall Cave. Amy's Shelter and Kachina Cave, on the other hand, were both occupied intermittently during the Archaic beginning about 5000 years ago.

Amy's Shelter is situated on the south side of Smith Creek Canyon at 1850 m elevation on the valley floor directly across the canyon from Smith Creek Cave. The site was excavated in 1971 and yielded the most complete cultural sequence of the four sites excavated in Smith Creek Canyon (Gruhn 1979). While the project was initially conceived to search for evidence of early humans in the canyon, excavation of Amy's Shelter was not originally part of this research objective. And as if to decry problem-oriented research, Gruhn writes:

> The excavations in Amy's Shelter in 1971, however, were nevertheless the outcome of a problem-oriented approach. The author's problem was acrophobia which kept her from climbing the cliff face to enter Council Hall Cave; therefore, she decided to test the small rockshelter near the floor of the canyon (Gruhn 1979:101).

From the excavations, ca. 21 strata were recognized in the 3.7 m deposit which consisted of alternating stream gravels and alluvium in the lower levels followed by alternating yellow and brown alluvial silt layers in the upper levels. Human occupation of the site began in the basal deposits at about 5000 C-14 years B.P. and continued intermittently into the historic period. In all, five radiocarbon dates were obtained. These span the time period from 5000 to 1550 years B.P. and are internally consistent with the strata and diagnostic cultural material.

The Archaic habitation of Amy's Shelter has been divided into four phases: Amy phase (4500-4000 B.P.), Smith Creek phase (4000-3000 B.P.), Wheeler phase (3000-2000 B.P.), and Baker phase (A.D. 1-1000). Fremont occupation of the site occurred in the Snake Valley phase (A.D. 1000-1200), which is followed by the Historic phase (after A.D. 1850).

The earliest evidence for human habitation in Amy's Shelter consists of several obsidian and chalcedony flakes and is estimated to date to about 5000 years B.P. Intensive site utilization began about 4500 years B.P. in the Amy phase. Humboldt Concave Base projectile points characterize this occupation. Although a reworked basal fragment of a Great Basin Stemmed point was also recovered, the point is inferred to be intrusive (Gruhn 1979:154) and probably represents reuse of the point at a later time. Lithic debitage also included bifacial knives, flake scrapers, choppers, burins, spokeshaves, denticulates, and waste flakes. This tool assemblage is believed to have been used by small bands of hunters for processing meat, hides, and bone and for making tools and weapons of wood and bone. Faunal remains included mountain sheep.

Between 4000 and 3000 years B.P. in the Smith Creek phase, small bands of hunters again frequented the shelter. Based on the presence of fetal, immature, and female sheep remains, the site is inferred to have been occupied in the early spring, when the animals could be captured below the snowline on the lower slopes and in the bottom of the canyon (Gruhn 1979:110, 152). Artifacts recovered in the Smith Creek phase levels included small flake tools for working wood and bone, bifacial knives, scrapers, bone awls, and bone flakers. Waste flakes, mainly of obsidian, were abundant. Diagnostic projectile points were Gypsum and Pinto types.

In the Wheeler phase (3000-2000 years B.P.), hunting of mountain sheep in the early spring continued, but ground squirrels, cottontails, and marmots were also taken later in the year. The presence of a grinding slab and two manos indicates that plants were also processed. Elko Corner-notched projectile points, bifacial knives, scrapers, and choppers dominate the lithic assemblage with small flake tools diminishing in number.

Cultural remains from the Baker phase occupation, ca. A.D. 1 to A.D. 1000, indicate that the site was not utilized as intensively as in the preceding phase. Elko projectile points are still used, but the presence of small, corner-removed points of an unnamed type suggests that the bow and arrow was introduced during this phase. A variety of bone artifacts, including awls, beads, small rods, incised fragments, and notched scapula fragments, were recovered. Hunting of mountain sheep continued during this phase.

Kachina Cave was also excavated during the summer of 1971 (Tuohy 1979). The site is actually a rockshelter formed by a large limestone block and lies on the south side of Smith Creek at 1830 m elevation, upcanyon from Amy's Shelter. Vegetation in the vicinity of the site consists of both pinyon-juniper and sagebrush zone species. The site received its name in the early 1930's from Mark R. Harrington's wife for the Fremont style "Kachina" pictographs on the walls of the shelter (Harrington 1932b [partially reprinted in Tuohy 1979:17-18]; E. Harrington 1933). At that time, Harrington conducted excavations at the site. The 1971 excavations at the shelter uncovered evidence of Archaic, Fremont, Numic, and historic occupations in 12 depositional strata.

The initial human occupation of the site was by Desert Archaic groups and is estimated to date around 5000 years B.P. Intermittent Desert Archaic occupation continued until sometime after A.D. 600 when the Fremont culture began to frequent the shelter. Following the Fremont occupations, Numic groups apparently utilized the shelter. Only a scant amount of stone and bone tools were recovered from the seven Archaic strata. These included an Elko Side-notched projectile point, a reworked concave base obsidian point, some quartzite tools and waste flakes, ground stone fragments, a tubular bone bead, a bone flaking tool, and a serrated bone scapula which possibly functioned as a bull roarer. A slab-lined feature containing charcoal fragments and mountain sheep bones was uncovered in one Archaic level and is interpreted as an earth oven for baking mountain sheep. Other faunal remains from the Archaic occupations included antelope, cottontails, rodents, reptiles, and great horned owl and other unidentified birds.

During the mid-1970's, archaeological reconnaissance and excavations were conducted in Garden and Coal Valleys of southeastern Nevada (southern Ely District) by the University of California at Berkeley (Busby 1977, 1978, 1979; Busby and Seck 1977). The excavations at Civa Shelter I, Civa Shelter II, Avocado Shelter, and Slivovitz Shelter provided a good deal of information about an area that was virtually unknown prior to the fieldwork. Since the initial occupations at these sites are late in the Archaic sequence and are estimated to have been from early Shoshonean groups, the cultural material is more appropriately included in the Proto-Historic section.

Aside from the excavations of Civa I, Civa II, Avocado, and Slivovitz shelters, archaeological reconnaissance of Garden and Coal Valleys and the adjacent ranges yielded seventy sites (Busby 1978, 1979). Projectile points recovered from the sites include Great Basin Transverse, Humboldt, Pinto, Elko, Rose Spring, Eastgate, Cottonwood Triangular, and Desert Side-notched. These points occur throughout the Great Basin and relatively date the sites in the area from 11,000 B.P. to the historic period. Grinding implements, pottery (both Shoshonean and Fremont), non-diagnostic projectile points, bifaces, drills and scrapers were present in varying degrees at the sites. Chert and obsidian dominated the lithic debitage.

On the basis of recovered projectile point types, Garden and Coal Valleys appear to have been occupied beginning about 11,000 years ago. The presence of Great Basin Transverse points around Coal Valley Dry Lake indicates that peoples of the Western Pluvial Lakes tradition, dated between 11,000 and 8,000 years B.P. (cf. Bedwell 1973; Hester 1973), were inhabiting the area at an early time period. The area was later occupied by Desert Archaic groups on an intermittent basis. Between A.D. 600/900 to ca. 1100-1200 Parowan Fremont utilized the area and were contemporaneous with Shoshonean groups by ca. A.D. 1000. These Shoshonean groups, both Shoshoni and Southern Paiute, occupied the area until historic times (Busby 1978, 1979).

Although O'Malley Shelter near Caliente in southeastern Nevada lies outside of the Ely District, the site is important for our understanding of the regional prehistory. O'Malley Shelter is a south-facing rockshelter in Clover Valley, situated at 1615 m elevation in a mixed sagebrush-juniper biome. A pinyon-juniper woodland lies not too far from the site in the Cedar Range, thus providing the prehistoric inhabitants with game and plant foods from two nearby vegetation communities. Excavations at the site were undertaken by the Desert Research Institute, University of Nevada System in 1969 and 1970 as part of their survey and excavations in southeastern Nevada (Fowler et al. 1973; Fowler and Sharrock 1973). The deposits consisted of alternating natural and cultural strata, from which 7 cultural units were defined.

Occupation at O'Malley Shelter was initiated by Desert Archaic peoples about 7100 years B.P., as determined by a C-14 sample on charcoal from the basal stratum. These early inhabitants continued to intermittently use the site, perhaps on a seasonal basis, until 3000 years B.P. (Units I-IV). An hiatus in the occupation may have occurred between 6500 and 4600 B.P., but the hiatus may simply be a function of sampling. Characteristic traits present in the Desert Archaic levels include shallow fire basins, grinding slabs and large basin metates, cobble and shaped manos, dart projectile points, bone awls, and ground and polished slate objects possibly used for atlatl weights. The projectile points were at first Elko Series types in Unit I, followed by Lake Mohave-Silver Lake, Pinto, and Humboldt Series in Unit II, and Gypsum and Elko Series in Units III and IV.

After the Desert Archaic occupations and a 1000 to 2000 year break in the cultural sequence, Parowan Fremont and Anasazi peoples utilized the shelter in Unit V, dated between A.D. 950 and 1100. In the upper levels, Fremont, Anasazi, and Numic (probably Southern Paiute) groups may all have frequented the shelter, and sometime after A.D. 1000, Numic groups replaced the Fremont.

While changes in material culture are indicated at O'Malley Shelter over the 7000 year occupation span, subsistence activities appear to change less so. A hunting and gathering pattern is carried on throughout the occupation of the site. Of 25 identified animal species, mule deer and mountain sheep were the most common large mammals; cottontail and jackrabbit were the most abundant of the small mammals. Less is known about the plant foods consumed by the inhabitants. The scanty plant macrofossils recovered in the deposits consisted of pinyon cone fragments in Units V-VII and a yucca pod from an intrusive pit; it is not stated whether these were of cultural or natural origin. Apparently, no plant remains were found in the Fremont/Anasazi levels. Pollen analysis has been conducted on the shelter sediments, but the analysis was concerned with paleoenvironmental changes rather than subsistence (Madsen 1973).

Archaic Lifeway

Subsistence. A significant amount of evidence is available on the subsistence of hunter-gatherers during the Archaic in the eastern Great Basin. Analyses of plant and animal macrofossils, human coprolites, and fossil pollen recovered from the deposits of Danger and Hogup caves have provided most of the data for the reconstruction of eastern Great Basin Archaic subsistence patterns (Durrant 1970; Fry 1970a, 1970b, 1977, 1978; Harper and Alder 1970, 1972; Jennings 1957; Parmalee 1970). Other sites in the eastern Great Basin have also yielded some evidence concerning subsistence during this time period, but the evidence is not as complete, especially in terms of plant remains. For this reason, a detailed summary of the subsistence data from Danger and Hogup caves, particularly the latter, is presented here. Subsistence data for the excavated sites in the study area have been summarized above when each site was discussed and will not be repeated. The floral and faunal species recovered from these sites are shown in Tables 5, 6, and 7.

One of the most important plant foods consumed by the Archaic inhabitants of northwestern Utah was the chenopod pickleweed (*Allenrolfea occidentalis*). High percentages of pickleweed chaff were found in the deposits of both Danger and Hogup caves. Their presence probably indicates that processing was carried out at the sites. Pickleweed seeds were also present in a significant percentage of the human coprolites from the caves. Prickly pear (*Opuntia polyacantha*) was another important dietary item. Prickly

Table 5. Edible Plant Species Recovered from Excavated Sites in the Eastern Great Basin.

Scientific Name	Common Name
Agropyron sp.	Wheatgrass
Allenrolfea occidentalis	Pickleweed
Amaranthus sp.	Amaranth
Amelanchier sp.	Serviceberry
Artemisia	Sagebrush +
Asclepias speciosa	Showy Milkweed
Atriplex sp.	Saltbush
Atriplex confertifolia	Shadscale
Berberis sp.	Barberry
Brassica sp.	Mustard
Bromus sp.	Bromegrass
Carex sp.	Sedge
Celtis sp.	Hackberry +
Chenopodium sp.	Goosefoot
Cleome sp.	Beeplant
Comandra sp.	Bastard Toadflax
Cornus stolonifera	Redosier Dogwood
Cucurbita sp.	Squash, Pumpkin
Cyperus escidentus	Flatsedge
Echinocereus sp.	Hedgehog Cactus
Echinochloa sp.	Barnyard Grass
Elymus cinereus	Great Basin Rye
Ephedra sp.	Mormontea
Epilobium sp.	Willowherb
Equisetum sp.	Horsetail
Helianthus annuus	Common Sunflower
Juniperus sp.	Juniper +
Koeleria cristata	Junegrass
Lepidium montanum	Pepperweed
Oenothera sp.	Evening Primrose
Opuntia sp.	Prickly Pear Cactus
Opuntia polyacantha	Prickly Pear Cactus
Oryzopsis hymenoides	Indian Ricegrass
Phacelia sp.	Phacelia
Phaseolus vulgaris	Garden Bean
Phlox sp.	Phlox
Pinus edulis/monophylla	Pinyon +
Poa sp.	Bluegrass
Poa secunda	Bluegrass
Polygonum sp.	Knotweed, Smartweed
Prunus virginiana	Chokecherry +
Quercus gambelii	Gambel Oak
Rhus trilobata	Skunkbush Sumac, Squawbush
Rosa sp.	Wild Rose
Rubus sp.	Blackberry, Raspberry
Salicornia utahensis	Utah samphire
Sambucus cerulea	Blueberry Elder
Scirpus sp.	Bulrush +

Sclerocactus sp.	Fishhook Cactus
Shepherdia sp.	Buffaloberry
Sitanion hystrix	Squirreltail
Sporobolus sp.	Dropseed
Stellaria jamesiana	Tuber Starwort
Typha latifolia	Common Cattail
Yucca sp.	Yucca +
Zea sp.	Corn, Maize +

+Indicates species recovered from sites in eastern Nevada; all others are from sites in Utah.

Table 6. Identified Mammalian Fauna Recovered from Excavated Sites in Eastern Nevada and Northwestern Utah.

Scientific Name[1]	Common Name	Amy's Shelter (Miller 1979)	Avocado Shelter (Kobori & Covert 1979)	Bronco Charlie Cave (Spiess 1974)	Civa I (Busby 1977)	Civa II (Northey 1979)	Conaway Shelter (Fowler et al. 1973)	Council Hall Cave (Miller 1979)	Danger Cave (Jennings 1957)	Deer Creek Cave (Ziegler 1963)	Garrison Site (Taylor 1954b)	Hogup Cave (Durrant 1970; Parmalee 1970)	Kachina Cave (Miller 1979)	Kimber Shelter (Dalley 1979a)	Mineral Cave[2] (McGuire 1980)	Newark Cave (Fowler 1968b)	O'Malley Shelter (Fowler et al. 1973)	Remnant Cave (Berry 1977b)	Scott Site (Fowler et al. 1973)	Slivovitz Shelter (Kobori & Covert 1979)	Smith Creek Cave (Miller 1979)	South Fork Shelter (Heizer et al. 1968)	Swallow Shelter (Dalley 1977a)	Thomas Shelter (Dalley 1977a)
Class Mammalia	mammals																							
Order Insectivora	insect-eaters																							
Family Soricidae	shrews	+																			+			
Sorex merriami	Merriam shrew			?		+																		
Order Chiroptera	bats							+																
Family Phyllostomidae	leafnose bats																							
Macrotis californicus	California leafnose bat			?																				
Family Vespertilionidae	plainnose bats																							
Antrozous pallidus	pallid bat			+								+									=			
Order Lagomorpha	pikas, hares, and rabbits																							
Family Ochotonidae	pikas																							
Ochotona sp.	pika														+									
Ochotona princeps	pika			+				+		+											+			
Family Leporidae	hares and rabbits																							
Lepus sp.	jackrabbit	+			+			+		+			+		+	+		+	+		+			
Lepus townsendii	white-tailed jackrabbit			+																				
Lepus californicus	black-tailed jackrabbit					+	+		+		+	+					+			+	=	+	+	
Sylvilagus sp.	cottontail	+		?	+			+				+	+	+	+	+		+	+		+		+	
Sylvilagus nuttallii	mountain cottontail		+			+				=		?					+			+		+		
Sylvilagus audubonii	desert cottontail						+					+					+							
Sylvilagus idahoensis	pygmy rabbit			+		+	+			+		+					+			+			+	+
Order Rodentia	gnawing mammals															+								
Family Sciuridae	squirrels																							
Tamiasciurus douglassi	Douglas squirrel			?																				
Tamiasciurus hudsonicus	red squirrel																							
Marmota flaviventris	yellow-bellied marmot	+		+				+		=		+		+	+	+		+			+	+	+	+
Cynomys parvidens	prarie dog											+												
Spermophilus sp.	ground squirrel		+			+		+		+			+		+	+				+	+			
Spermophilus townsendii	Townsend ground squirrel	=				+					+	+		+						+	=		+	+
Spermophilus leucurus	antelope ground squirrel											+					+							
Spermophilus richardsoni	Richardson ground squirrel			+																				
Spermophilus variegatus	rock squirrel			+				+				+					+							
Spermophilus armatus	Uinta ground squirrel											+		+									+	+
Spermophilus beldingi	Belding ground squirrel													+										
Spermophilus beecheyi	Beechey ground squirrel																					+		
Eutamias sp.	chipmunk			+				+					+		+						+			
Family Geomyidae	pocket gophers																							
Thomomys sp.	pocket gopher							+		+		+	+		+			+			+			
Thomomys talpoides	northern pocket gopher					+						+		+						+	=		+	
Thomomys bottae	Botta pocket gopher			?			+				+	+					+							
Thomomys monticola	mountain pocket gopher			+																				
Thomomys townsendii	Townsend pocket gopher			?																				

Scientific Name [1]	Common Name	Amy's Shelter	Avocado Shelter	Bronco Charlie Cave	Civa I	Civa II	Conaway Shelter	Council Hall Cave	Danger Cave	Deer Creek Cave	Garrison Site	Hogup Cave	Kachina Cave	Kimber Shelter	Mineral Cave [2]	Newark Cave	O'Malley Shelter	Remnant Cave	Scott Site	Slivovitz Shelter	Smith Creek Cave	South Fork Shelter	Swallow Shelter	Thomas Shelter
Family Heteromyidae	pocket mice, etc.																							
Perognathus sp.	pocket mouse							+			•		+				+							
Perognathus parvus	Great Basin pocket mouse																				=		+	
Microdipodops sp.	kangaroo mouse																				+			
Dipodomys sp.	kangaroo rat											+	+											
Dipodomys ordii	Ord kangaroo rat											+					+				=			
Dipodomys microps	chisel-toothed kangaroo rat											+												
Family Castoridae	beaver																							
Castor canadensis	beaver									+										+		+	+	
Family Cricetidae	mice, rats, lemmings, and voles																							
Peromyscus sp.	white-footed mouse		+					+					+		+						+			
Peromyscus crinitus	canyon mouse											+												
Peromyscus maniculatus	deer mouse											+												
Onychomys sp.	grasshopper mouse		+																					
Neotoma sp.	wood rat	+		+								+			+	+				+				
Neotoma cinerea	bushy-tailed wood rat	+	+	+				+	+	+		+	+	+			+			+	+		+	+
Neotoma lepida	desert wood rat	+				+		+	+			+	+				+			+	+			
Synaptomys sp.	bog lemming																+							
Microtus sp.	meadow mouse	+		?				+					+		+						+			
Microtus montanus	montane meadow mouse											+					+				=			
Microtus longicaudus	long-tailed meadow mouse											+											+	
Lagurus curtatus	sagebrush vole			?																+		+		
Ondatra zibethicus	muskrat															+						+		
Family Erethizontidae	porcupine																							
Erethizon dorsatum	porcupine	+							+	+		+		+							+		+	
Order Carnivora	carnivores																							
Family Canidae	dogs, wolves, foxes		•													+								
Canis sp.	coyote or dog									+		+		+				+					+	
Canis latrans	coyote	=				+		?	+		+	+	+		+	+	+				=	+	+	
o *Canis lupus*	wolf											?					+				=		+	
Canis familiaris	dog								?		+	+												
Vulpes sp.	fox														+									
Vulpes fulva	red fox																				+			
Vulpes macrotis	kit fox					+			+			+				+					+			
Urocyon cinereoargenteus	gray fox						+					+			+		+							
Family Ursidae	bears																							
o *Ursus* sp.	bear																				?			
o *Ursus horribilis*	grizzly bear									+														

	Scientific Name[1]	Common Name	Amy's Shelter	Avocado Shelter	Bronco Charlie Cave	Civa I	Civa II	Conaway Shelter	Council Hall Cave	Danger Cave	Deer Creek Cave	Garrison Site	Hogup Cave	Kachina Cave	Kimber Shelter	Mineral Cave[2]	Newark Cave	O'Malley Shelter	Remnant Cave	Scott Site	Slivovitz Shelter	Smith Creek Cave	South Fork Shelter	Swallow Shelter	Thomas Shelter
	Family Procyonidae	raccoons																							
	<u>Bassariscus astutus</u>	ring-tailed cat																				+			
	Family Mustelidae	weasels, skunks, etc.																							
	<u>Martes</u> sp.	marten																				+			
x	<u>Martes nobilis</u>	noble marten																				+			
	<u>Martes caurina</u> (=<u>americana</u>)	western marten			+						+														
	<u>Mustela</u> sp.	weasel														+						+			
	<u>Mustela frenata</u>	long-tailed weasel			+								+		+							+		+	
	<u>Mustela vison</u>	mink																				+			
	<u>Mustela erminea</u>	ermine																				+			
	<u>Taxidea taxus</u>	badger	+										+	+		+		+				+		+	
	<u>Spilogale</u> sp.	spotted skunk														+						+			
	<u>Spilogale gracilis</u>	spotted skunk	+																						
	<u>Spilogale putorius</u>	spotted skunk					+						+											+	
	Family Felidae	cats																							
	<u>Lynx rufus</u>	bobcat	+	+			+	+		+	+		+	+		+	+	+	+		+	+		+	
	<u>Panthera atrox</u>	American lion																				?			
	<u>Felis concolor</u>	mountain lion												?								+			
	<u>Felis onca</u>	jaguar																				+			
	Order Perissodactyla																								
	Family Equidae	horses																							
x	<u>Equus</u> sp.	extinct horse														+						+			
x	<u>Equus</u> sp.	onager																				+			
	Order Artiodactyla	even-toed hoofed animals																							
	Family Camelidae	camels																							
*	<u>Camelops</u> sp.	camel																				+			
*	<u>Hemiauchenia</u> sp.	llama														+						?			
	Family Cervidae	deer																							
	<u>Cervus canadensis</u>	elk			+						?											=	+		
	<u>Odocoileus hemionus</u>	mule deer	+	?	+	+	+	+	?		+	+	+		+		+	+	+	+	+	+	+	+	
	Family Antilocapridae	pronghorn																							
*	<u>Breameryx</u> sp.	pronghorn																				+			
	<u>Antilocapra americana</u>	pronghorn antelope	=						?	+	+	+	+	+	+	+	+		+			+	+	+	
	Family Bovidae	bison, goats, sheep																							
o	<u>Bison</u> sp.	bison																				+			
o	<u>Bison bison</u>	bison			+					+		+	+					+						+	
	<u>Bos taurus</u>	domestic cow					+																		
	<u>Bison/Bos</u> sp.	bison or cow					+				+			=			+								

Scientific Name[1]	Common Name	Amy's Shelter	Avocado Shelter	Bronco Charlie Cave	Civa I	Civa II	Conaway Shelter	Council Hall Cave	Danger Cave	Deer Creek Cave	Garrison Site	Hogup Cave	Kachina Cave	Kimber Shelter	Mineral Cave[2]	Newark Cave	O'Malley Shelter	Remnant Cave	Scott Site	Slivovitz Shelter	Smith Creek Cave	South Fork Shelter	Swallow Shelter	Thomas Shelter
Ovis canadensis	mountain sheep	+	+	+		+	+	+	+	+	+	+	+		+	+	+	+	+	+	+	+	+	+
Ovis aries	domestic sheep							?																
o Oreamnos americanus	mountain goat	+						?																
Oreamnos harringtoni	Harrington's mountain goat																				+			
Oreamnos sp.	mountain goat	=																						
* Euceratherium sp.	shrub ox														+									

x extinct species
* extinct genus
o extirpated in study area
? possible identification
+ present
= present, but only identified to nearest genus or species, e.g., Microtus cf. montanus

[1] Scientific and common nomenclature are from several sources: Burt and Grossenheider (1976); Durrant (1952); Hall (1946); Kurten and Anderson (1980).
[2] The faunal remains from Mineral Cave were of natural origin and are shown here for comparison.

Table 7. Non-mammalian Fauna Recovered from Excavated Sites in the Eastern Great Basin.

BIRDS*

Scientific Name	Common Name
Waterfowl and Shore Birds	
Anas acuta	American Pintail
Anas americana	American Widgeon
Anas carolinensis	Green-winged Teal
Anas clypeata	Shoveler
Anas cyanoptera	Cinnamon Teal
Anas discors	Blue-winged Teal
Anas platyrhynchos	Mallard
Anas sp.	Gadwall
Aythya affinis	Lesser Scaup
Aythya americana	Redhead
Aythya valisineria	Canvasback
Botaurus lentiginosus	American Bittern
Branta canadensis	Canada Goose
Bucephala albeola	Bufflehead
Bucephala clangula	American Goldeneye
Capella gallinago	Common Snipe
Casmerodius albus	Great (Common) Egret
Chen caerulescens	Snow Goose
Chen rossii	Ross' Goose
Egretta thula	Snowy Egret
Mergus merganser	American Merganser
Mergus serrator	Red-breasted Merganser
Olor columbianus	Whistling Swan
Pelecanus erythrorhynchos	White Pelican
Phalacrocorax auritus	Double-crested Cormorant
Podiceps caspicus	Eared Grebe
Podilymbus podiceps	Pied-billed Grebe
Rallus limicola	Virginia Rail
Recurvirostra americana	Avocet
Upland Fowl	
Bonasa umbellus	Ruffed Grouse
Centrocercus urophasianus	Sage Grouse
Columba fasciata	Band-tailed Pigeon
Dendragapus obscurus	Blue Grouse
Lophortyx gambelii	Gambel's Quail

Raptors

Accipiter striatus	Sharp-shinned Hawk
Aquila chrysaetos	Golden Eagle
Asio flammeus	Short-eared Owl
Bubo virginianus	Great Horned Owl +
Buteo jamaicensis	Red-tailed Hawk
Falco columbarius	Pigeon Hawk
Falco mexicanus	Prairie Falcon
Falco sparverius	American Kestrel (Sparrow Hawk)
Otus sp.	Screech Owl
Speotyto cunicularia	Burrowing Owl

Woodpeckers

Dendrocopos sp.	Small Woodpecker +

BIVALVES

Scientific Name	Common Name
Anodonta oregonensis or californiensis	Freshwater Mussel +
Margaritifera margaritifera	Freshwater Mussel +
Unio sp.	Mussel +

FISHES

Scientific Name	Common Name
Catostomus fecundus	Sucker
Catostomus sp.	Sucker
Gila atraria	Utah Chub
Oncorhynchus tshawytscha	Chinook salmon +

REPTILES

Scientific Name	Common Name
Gopherus agassizi	Desert Tortoise +

+Indicates species recovered from sites in eastern Nevada; all others are from sites in Utah.

*For a more complete list of birds recovered from archaeological sites in the eastern Great Basin refer to Parmalee (1980).

pear pads were recovered in all 16 strata of Hogup Cave, and the coprolites from both caves yielded fragments of prickly pear pads and charred spines. Included in the Archaic diet were also the seeds of bulrush (Scirpus sp.), pepperweed (Lepidium montanum), Phlox sp., Poa sp., and the seeds and leaves of sagebrush (Artemisia sp.) and shadscale (Atriplex confertifolia), as indicated by their presence in coprolites (Fry 1977).

In addition to yielding evidence on the prehistoric diet, the coprolite analysis showed that the Danger and Hogup inhabitants were troubled by parasites (Fry and Hall 1969; Fry and Moore 1969; Moore, Fry, and Englert 1969). Eggs of human pinworm (Enterobius vermicularis) and thorny-headed worm (Acanthocephala) were identified in the coprolites. The earliest pinworm eggs date from 10,000 years ago in Danger Cave and represent the oldest association of humans with this parasite. Apparently, the Danger Cave populations were subject to a higher rate of infection from Acanthocephala and its possibly lethal effects than were the inhabitants of Hogup Cave (Fry 1970a:249; Fry and Hall 1969). Other parasites and insects, including lice (Pediculus humanus) and mosquitos, were identified as well (Fry 1977:21).

The diet of the Archaic inhabitants at Danger and Hogup caves included a wide variety of animals along with the plant foods. Most of the faunal data comes from Hogup Cave (Durrant 1970; Parmalee 1970), since only a brief species list of the Danger Cave fauna has been reported.

Based on the minimum number of individuals present in the Archaic levels of Hogup Cave (Strata 1 through 11), pronghorn antelope was the most abundant of the artiodactyls, but mule deer, bison (Bison bison), and bighorn mountain sheep were also hunted. Jackrabbit was the most prevalent species; other lagomorphs included cottontails and pygmy rabbits. Seventeen species of rodents were identified, the most numerous of which were kangaroo rats, wood rats, pocket gophers, and Townsend ground squirrels. Some of these rodents were undoubtedly introduced into the deposits by natural means, and it is difficult to determine which were used for food by the prehistoric inhabitants. Carnivores included coyote, wolf, dog, bobcat, badger, kit fox, long-tailed weasel, and spotted skunk. Some of these species may have been hunted for food, as well as for their fur and other economic purposes. Other species may have been naturally introduced by predators and scavengers.

Parmalee (1970) identified 33 types of avifauna from Hogup Cave. Ten of these are raptorial species, including owls, hawks, and golden eagles. As in the case of the rodents and carnivores, several of these species may have been introduced naturally into the Hogup Cave deposits. For example, the bones of smaller birds represent the remains of regurgitated hawk and owl pellets. Half of the identified birds are waterfowl, such as mallard, teal, and other aquatic and semi-aquatic birds which were associated with the lacustrine habitat present in the vicinity of the cave until 3200 B.P. (Harper and Alder 1970:230).

Both Danger and Hogup caves appear to have been occupied seasonally during the late summer or early fall (Aikens 1970a:188-189; Jennings 1978:85,91). The evidence for this seasonal occupation is based on the abundance of pickleweed (Allenrolfea occidentalis) recovered in the deposits and in human coprolites. Pickleweed was apparently a major staple which was harvested in the late summer. The abundance of jackrabbits in the sites could also be used to support a late summer or fall occupation since ethnographically the Western Shoshoni held rabbit drives in the fall (Steward 1938). The flowers, fruits, and pollen of Opuntia are absent from the coprolite samples; this also indicates a late summer and early fall occupation (Fry 1977:25). Unfortunately, the faunal remains from these caves have not been analyzed to determine the season(s) in which the animals were killed. Such data, when available, may further help in establishing the seasons when the sites were occupied.

In contrast to Danger and Hogup caves, which are located on the dry valley floor of the Great Salt Lake Desert, Swallow Shelter is situated at 1768 m elevation in the Goose Creek Mountains of extreme northwestern Utah just east of the Nevada-Utah line. Since the shelter is at a higher elevation in a mixed juniper and sagebrush vegetation community, slightly different food remains were recovered, ones which are more typical of the sites in eastern Nevada. The Archaic occupation represented by Strata 1 through 8 dates from about 5500 to 1600 years B.P. Throughout the entire sequence, including the later Fremont and Shoshoni occupations, the major subsistence activity at Swallow Shelter was hunting with the gathering of wild plants being of only minor importance. Dalley (1977a:72-73) postulates that the site was occupied by a small group of possibly six individuals who frequented the site during the late summer or early fall as part of an annual subsistence cycle.

Prickly pear pads (Opuntia sp. or Opuntia polycantha) were the most common plant foods recovered from the shelter. The next most abundant floral remains were the grasses--Great Basin rye (Elymus cinereus), junegrass (Koeleria cristata), Indian ricegrass (Oryzopsis hymenoides), and bluegrass (Poa secunda). Faunal remains recovered from the site include twenty-two mammalian species, the most common of which is mountain sheep and marmot.

The subsistence data from Swallow Shelter and other excavated sites in the Grouse Creek-Goose Creek region (Dalley 1977a; Berry 1977a, 1977b) differ from Danger and Hogup caves in several respects. As would be expected, due to the higher elevation of the area and the absence of the salt flats, pickleweed was not present in the Swallow Shelter deposits. Mountain sheep, marmot, and other mammals generally restricted to higher elevations were represented at Swallow Shelter. Although these species were also recovered in the Hogup Cave deposits, they were not as abundant as antelope and mule deer. In comparison, only a small number of antelope and mule deer were identified at Swallow Shelter.

Social Organization. Very little is known about the social organization of the Archaic peoples in the region which is not directly based upon analogy from ethnographic data on the Western Shoshoni recorded by Julian Steward in the 1930's (Steward 1938). Jennings (1957) postulated that the Archaic inhabitants of the region, those of the Desert culture, were similar to the Western Shoshoni. These Archaic hunter-gatherers were seen as being organized into small bands of about 25 individuals who moved often while foraging on a wide variety of food resources. It was supposed that the Desert culture represented a stable and uniform lifeway with little cultural change over the last 10,000 years.

The view that the Archaic populations remained essentially unchanged until the historic period is now being questioned by some Great Basin archaeologists (cf. Aikens 1978a:85; Madsen and Berry 1975; Madsen 1978; Simms 1977). In the northeastern Great Basin, Madsen and Berry (1975) suggest that the lake peripheries of the Bonneville Basin were occupied on a semi-permanent basis in the early Archaic from 10,000 to 5500 B.P., and later, between 5500 and 3500 B.P., there was a shift to exploitation of upland resources in the region. During the time span from 3500 to 2500 B.P., the lake periphery sites were abandoned, possibly as a result of the Neoglacial transgression of Great Salt Lake; upland sites continued to be utilized until 2500 B.P. Between 2500 and 1500 B.P., the northeastern Great Basin was abandoned entirely. At the end of this period, the Fremont culture appeared in this area.

The view that the early Danger and Hogup cave inhabitants were living a semi-sedentary existence by exploiting marsh resources is a remarkably different view than the one envisioned by Jennings (various) and Aikens (1970a). Although spanning a longer time period, this proposed lacustrine adaptation in the eastern Great Basin in the early Holocene is similar to the Western Pluvial Lakes tradition described by Bedwell (1973) and Hester (1973). If the model of settlement pattern and resource exploitation proposed by Madsen and Berry holds, then other sites in the region need to be examined in order to evaluate their hypotheses.

Madsen and Berry's model also has implications on the social organization of Archaic populations. Semi-sedentary settlements along the edges of an early Holocene Great Salt Lake, probably that of Lake Gilbert, might tend to support more people than the optimal 25 individuals postulated for a foraging band which is constantly on the move. This could be tested in the archaeological record by examining the spatial arrangement of sites synchronically and diachronically.

Ideology. In the Great Basin, our knowledge of the beliefs, rituals, and world view of Archaic populations in general is extremely limited. In the eastern Great Basin, a few of the artifacts recovered from Hogup Cave (Aikens 1970a) seem to have been connected with rituals. These items include feather "fetishes", incised pebbles, and a bull roarer. The bull roarer may have been used by a shaman, but it may also have functioned as a child's toy. In the study area, a possible bull roarer made from a bone scapula was found in an Archaic occupation level at Kachina Cave (Tuohy 1979:62).

Split-twig figurines are another item which may have functioned in a ritual context, perhaps as hunting magic. Most of the split-twig figurines which have been found are from the Colorado Plateau (see Schroedl 1977a for their distribution). However, one example was recovered in the 1930's from Etna Cave, which is located south of the Ely District in the Meadow Valley Wash area, Lincoln County, southeastern Nevada (Fowler 1973; Wheeler 1937b, 1939b, 1942). A radiocarbon date of 3750 years B.P. has been obtained on the specimen (Fowler 1973), thus placing the split-twig figurine within the Archaic.

Various petroglyphs and pictographs are located in the study area (refer to the section entitled "Distribution of Rock Art in Eastern Nevada" for more information). The exact function of these sites is not well known, but it has been suggested that some Great Basin rock sites, notably those with figures of game animals, were associated with hunting magic (Heizer and Baumhoff 1959, 1962; Heizer and Clewlow 1973; Heizer and Hester 1974; von Werlhof 1961, 1965). Although it is hard to establish relative dates for these sites, some rock art sites in eastern Nevada undoubtedly date from the Archaic.

Late Prehistoric Period

Throughout the above discussion on the Archaic period in eastern Nevada, mention was made of Fremont components in excavated caves and rockshelters in the region. The present section will now focus more directly on the Fremont and examine some of the sites which yielded predominately Fremont cultural materials, and thus, are considered to be Fremont sites.

The Fremont occupied most of Utah and adjacent eastern Nevada between A.D. 500 and 1300, and were, for the most part, a horticulturally based people who supplemented their diet by hunting and gathering. It should be noted, however, that there has recently been some debate as to the importance that horticulture played in the Fremont diet, a matter which is discussed further in a moment.

The Fremont culture is differentiated from the preceding Archaic by a slightly more complex material culture, which includes technological innovations presumably diffused into the region from the Southwestern cultures and, ultimately, from Mesoamerica. The Fremont built semi-subterranean pithouses, adobe and stone masonry surface storage structures, and small, circular or rectangular stone and adobe "graneries" high in the cliff faces. Their storage and cooking vessels were made of plain gray pottery, and after A.D. 1050, corrugated and painted ware. Other diagnostic Fremont traits include clay figurines, Fremont moccasins, one-rod-and-bundle coiled basketry, stone balls, Utah trough metates, and triangular-bodied anthropomorphic figures found at pictograph sites. For their subsistence, the Fremont relied on relatively frost and drought resistant Fremont Dent maize, which may have been developed in northern Utah (Winter 1973).

Another technological development at this time which was widespread throughout the Great Basin was the gradual replacement of the atlatl and dart points by the bow and arrow around A.D. 500 (Hester 1973; Madsen and Berry 1975; for a different opinion see Aikens 1976; Plew 1980b; Webster 1980). The transition to the bow and arrow is indicated by the presence of Rose Spring and Eastgate Series projectile points in the Great Basin and northern Colorado Plateau. These arrow points are diagnostic of Fremont groups and other Late Prehistoric peoples who lived west of the Fremont in the Great Basin and continued to practice a hunting-gathering lifeway. Several other arrow points have been identified as Fremont types which are restricted in their distribution: Bear River Side-notched, Bull Creek points, Nawthis Side-notched, Parowan Basal-notched, and Uinta Side-notched (Holmer and Weder 1980). In eastern Nevada, some of these Fremont points are present at the Garrison Site, O'Malley Shelter, and Thomas Shelter (Holmer and Weder 1980:Figure 7).

The Fremont culture was first identified by Morss (1931) who distinguished the Fremont from the Anasazi on the basis of his work with the Claflin-Emerson expedition on the Fremont River in southeastern Utah (Gunnerson 1969; Scott 1932). Shortly thereafter, Steward (1933b) characterized the region west of the Colorado River as the Northern Periphery of the Southwest and established four culture areas within the region: (1) Upper Colorado Plateau, including the Fremont and Uintah subareas, (2) Great Salt Lake area, (3) Western Utah area, and (4) Lower Colorado Plateau. Over twenty years later, Wormington (1955) divided the Northern Periphery into three major areas and several subareas.

Since Wormington's (1955) summary on the Fremont culture, an extensive amount of research has been conducted on this culture. Five regional Fremont variants are generally recognized, several of which are divided into phases (Marwitt 1970; Jennings 1978:162). The regional variants are: Great Salt Lake Fremont (Bear River phase, A.D. 400-1000, and Levee phase, A.D. 1000-1350); Uinta Fremont (Cub Creek phase, A.D. pre-800, and Whiterocks phase, A.D. 800-950); San Rafael Fremont (A.D. 700-1200); Sevier Fremont (A.D. 780-1260); and Parowan Fremont (Summit phase, A.D. 900-1050, and Paragonah phase, A.D. 1050-1300).

After 50 years of research on the Fremont, their origins are still not clearly established. Madsen (1979b) recently summarized three hypotheses which have been advanced to explain the origins of the Fremont. The earliest hypothesis holds that the Fremont represent an Anasazi extension into Utah north of the Colorado River which later evolved into a separate culture (Morss 1931; Steward 1933b; Gunnerson 1969; Berry 1975). The second hypothesis contends that the Fremont developed from a Desert Archaic base stimulated by the diffusion of traits from the Southwest (Wormington 1955; Jennings and others 1956; Jennings 1966b, 1978; Aikens 1970a; Marwitt 1970). In line with this view, Jennings (1978) suggests that the Fremont originated in northern Utah from the same early Mogollon or Hohokam influences that resulted in the development of the Anasazi. Adherents of the third hypothesis view the Fremont as an extension of northern Plains groups into Utah who then acquired Southwestern traits (Steward 1937a; Aikens 1966a; Sharrock 1966).

Madsen (1979b) indicates that these three hypotheses may all be correct and proposes that the Fremont can be divided into three distinct cultures: Fremont, Sevier, and an unnamed Plains-derived culture. The distinctions between these three cultures are based primarily on the apparent differences in their subsistence strategies and settlement patterns, rather than differences and similarities in other traits which have previously been used to distinguish the Fremont subareas (e.g., Ambler 1966; Marwitt 1970).

The differences between the Fremont groups recognized by Madsen (1979b) can be summarized in the following manner. The Sevier culture inhabited the eastern Great Basin. They resided in centrally located villages and depended upon the collection of wild flora and fauna, particularly cattails (Typha) and other marsh resources. The Fremont culture was more dependent on maize horticulture than the Sevier peoples and generally lived in smaller villages adjacent to streams or on knolls and hills above water sources. The unnamed Plains-derived culture occupied the area around Great Salt Lake and Uinta Basin. This culture reflects an intermingling of Plains, Sevier, and Fremont traits.

The question of Fremont origins is by no means settled by Madsen's delineation of three "Fremont" cultures nor has his scheme met with widespread acceptance (Adovasio 1979; Aikens 1979; Marwitt 1979). The distinction between the Sevier and Fremont on the basis of their subsistence and settlement patterns is an interesting approach and should be further tested.

In comparison to Utah, the Fremont are not as well represented in eastern Nevada. Only one Fremont settlement is known, that of the Garrison Site, and possibly another one is present in the same area near the town of Baker, Nevada. The bulk of the Fremont evidence is from components in rockshelters and from the presence of Fremont ceramics found on surface scatters.

The caves and rockshelters in eastern Nevada which have yielded evidence of Fremont occupations include Amy's Shelter, Civa Shelter II, Kachina Cave, Mariah Site, Slivovitz Shelter, and Thomas Shelter (Figure 12). Outside of the study area near Caliente, Fremont occupations were present at Conaway Shelter, Etna Cave, O'Malley Shelter, and the Scott Site (Fowler 1973; Fowler et al. 1973; Roberts 1944; Wheeler 1935, 1937a, 1942). In extreme northwestern

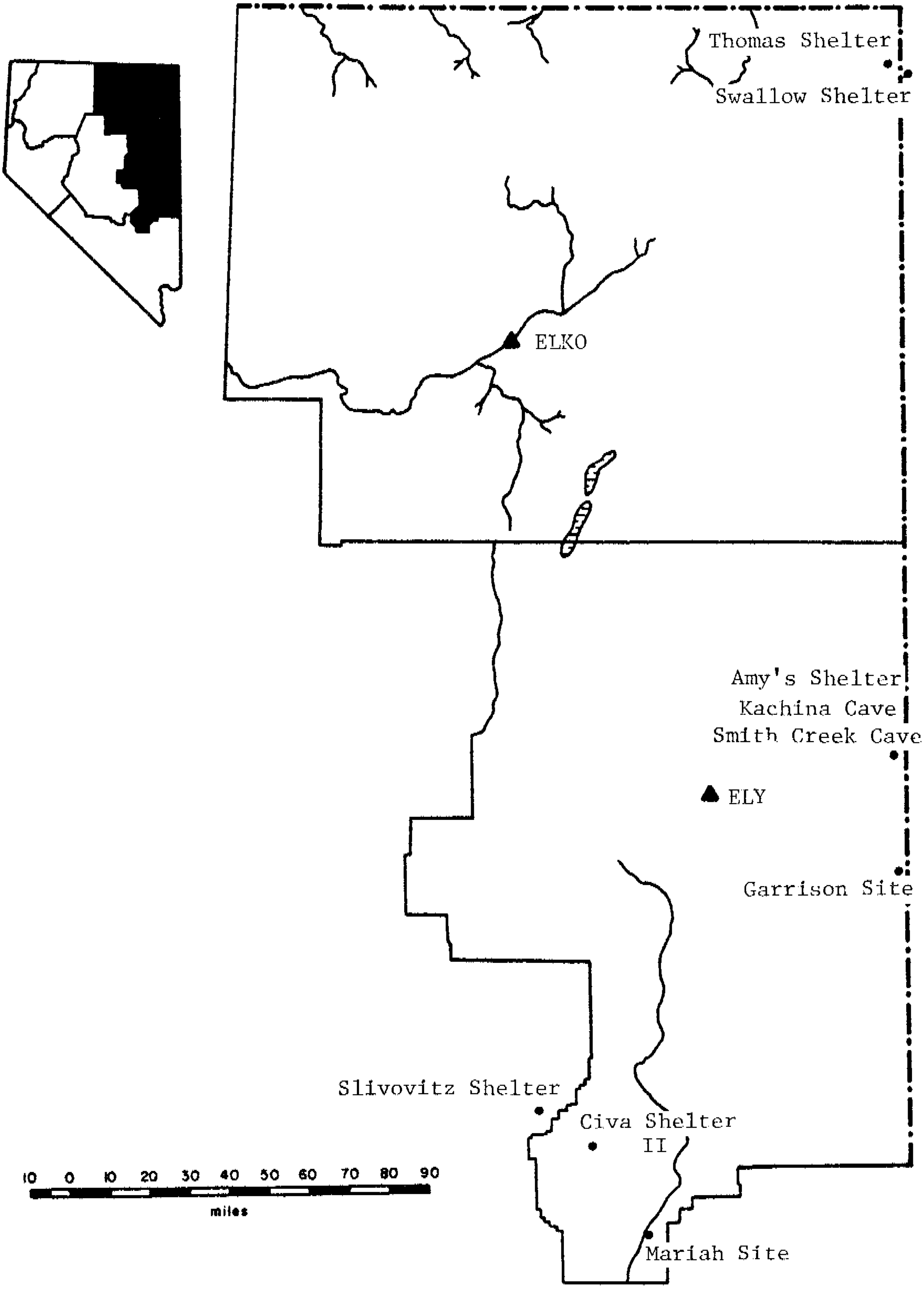


Figure 12. Distribution of excavated sites with Fremont components in the Elko and Ely districts.

Utah near the Nevada-Utah line, Fremont artifacts have also been recovered from Swallow Shelter (Dalley 1977a).

With the exception of Swallow and Thomas shelters, diagnostic Fremont artifacts at these sites are within the known distribution of Fremont or "Puebloid" ceramics in eastern Nevada established by Harrington (1926d, 1928) and shown by other researchers (Grosscup 1957; Hester 1973:Figure 12; Shutler 1961:Plate 1; Tuohy 1973:Figure 1; see Figure 13, this report). Additional Fremont evidence in eastern Nevada, west of the Fremont boundary, has been recovered from several other sites. At Newark Cave, one Snake Valley Black-on-gray sherd was found on the surface (Fowler 1968a:11, 1968b:23). North of Newark Cave in the Ruby Mountains, one Snake Valley Gray sherd was recovered in the uppermost strata of Bronco Charlie Cave (Casjens 1974:154, 177, 179). The occurrence of these sherds is probably the result of exchange with Fremont groups to the east. The finding of these two Fremont sherds in this area extends the distribution of Fremont ceramics west of Harrington's original "Puebloid" pottery boundary.

As mentioned above, the Garrison Site is the only Fremont settlement in eastern Nevada. This Fremont hamlet lies on the western edge of Snake Valley at 1622 m elevation in the sagebrush/shadscale vegetation zone. The site is located in Nevada, just over the Nevada-Utah state line between the small communities of Baker, Nevada, and Garrison, Utah. Two mound groups are present at the site. Excavations within the mound groups by the University of Utah in the early 1950's revealed nine structures containing a total of 18 rooms (Taylor 1954b).

Two structural types were present: (1) adobe-walled Kanosh style houses described by Steward (1933c), and (2) a large, rectangular single-roomed jacal structure. The Kanosh type was represented by six rectangular surface structures of coursed adobe and two semi-subterranean rectangular adobe-walled structures. Interestingly enough, one of the surface structures had seven adjoining rooms. Of the second type, only one large, rectangular semi-subterranean jacal structure with three central support posts and a number of wall posts was uncovered.

Cultural materials recovered during the excavation included 30 arrowpoints and other chipped stone debris, ground stone, Fremont pottery, worked and unworked bone, and shell beads (probably Olivella biplicata). From the drawings and photos, projectile point types appear to be Rose Spring and Eastgate Series. In the ground stone category were limestone block and slab type metates including a Utah trough metate, loaf-shaped manos, stone balls, and shaft straighteners. Fremont ceramic types were Great Salt Lake Gray, Sevier Gray, Snake Valley Gray, Snake Valley Corrugated, and Snake Valley Black-on-gray. Shoshoni ware sherds were also recovered. Worked bone included awls, gaming pieces, and beads.

Subsistence data from the site is rather limited. Antelope and mountain sheep yielded the highest number of unworked bone fragments; other identified animals were bison, mule deer, jackrabbit, rodents,

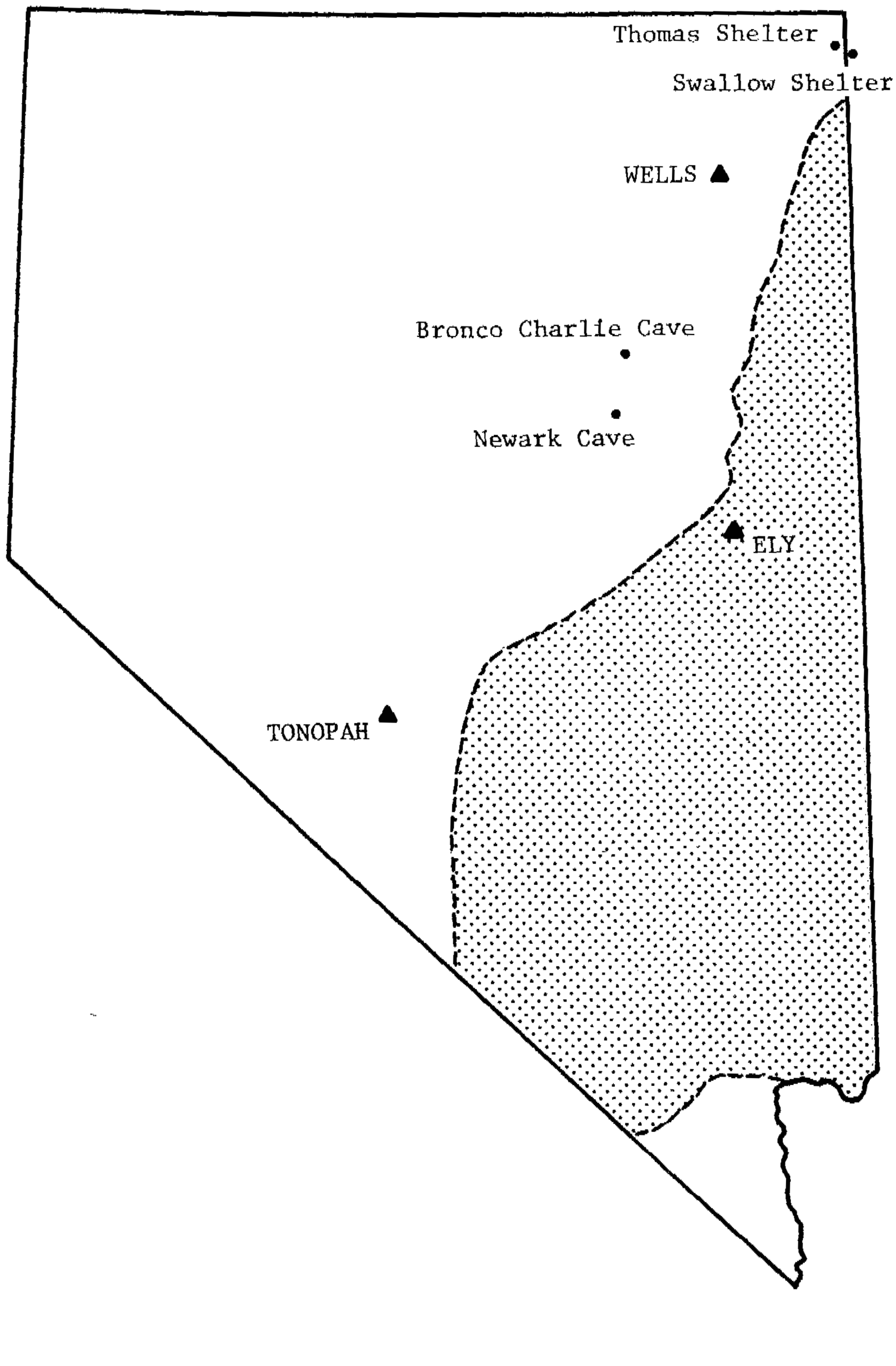


Figure 13. Distribution of "Puebloid" ceramics in eastern Nevada and sites containing Fremont pottery outside of established boundary (After Harrington 1928).

dog, coyote, birds, and fish. Plant remains consisted of corn cob fragments.

From the excavations, the Garrison Site is interpreted as a sedentary Fremont horticultural community growing maize and squash and supplementing their diet by hunting and gathering (Taylor 1954b:7-8). Dating of the site is not precise, but is inferred to have been occupied sometime after A.D. 1000.

North of the Garrison Site at Kachina Cave in Smith Creek Canyon, Fremont occupation of the site is confined to two strata (Tuohy 1979). Artifacts in these strata consist of a handful of Great Salt Lake Gray and/or Snake Valley Gray sherds; Rose Spring, Eastgate (or Parowan), Cottonwood Triangular, and Desert Side-notched projectile points; chert drill tips; several quartzite cobble choppers; flake tools; mano and metate fragments; and corn cobs. Several fire hearths were uncovered in the Fremont levels, one of which was lined with juniper bark and apparently used for roasting pinyon nuts. The faunal remains included many of the same species recovered in the earlier Archaic levels, i.e., mountain sheep, antelope, rabbits, and rodents. In addition to these species, bison was tentatively identified in one of the Fremont levels. Fremont occupation of the shelter is radiocarbon dated from about A.D. 600 to 1200-1300, but the earlier date is considered to be too early and is inconsistent with the strata (Tuohy 1979:23).

Also in Smith Creek Canyon, Fremont peoples occupied Amy's Shelter between A.D. 1000 and 1200 in the Snake Valley phase. The Fremont probably frequented the shelter and other caves in Smith Canyon on seasonal mountain sheep hunts. Artifacts recovered in the Fremont level of Amy's Shelter included a disk shell bead, a Snake Valley corrugated sherd, a Snake Valley Gray sherd, and Eastgate and Rose Spring arrow points.

The Mariah Site (26LN618) north of Hiko is one of the few rockshelters in eastern Nevada which appears to have been occupied primarily by Fremont groups. However, without the presence of Fremont pottery, the cultural debris could just as well have been deposited by Desert Archaic peoples. The site is a slight overhang of a cliff which faces north in Hiko Narrows adjacent to State Highway 38 and lies at 1280 m elevation in the sagebrush-grass zone. A petroglyph panel containing parallel lines, geometric designs, and mountain sheep elements is located just above ground level along the base of the cliff which comprises the back of the shelter. Excavation of the Mariah Site was conducted by the Nevada Archaeological Survey, University of Nevada at Las Vegas, as part of the salvage work on State Highway 38 for the Nevada Highway Department (Brooks et al. 1977).

The cultural assemblage included projectile points, bifaces, unifaces, cores, hammerstones, unmodified flakes, ground stone, and pottery. The eleven typeable projectile points were Desert Side-notched, Cottonwood Triangular, Rose Spring, Eastgate, and Elko Series. Nearly all the ceramics were two Fremont types, Snake Valley Black-on-gray and Sevier Gray; a small percentage of unnamed Virgin

Branch Anasazi wares was also recovered. Unusually enough, no Shoshonean pottery was found, although one Desert Side-notched point was present in the uppermost stratum which may indicate that Shoshonean groups frequented the site at a late date. Unfortunately, the faunal analysis has not been reported, but burned and unburned bones including burnt artiodactyl long bones were noted. From the recovered cultural remains, the site is inferred to have occupied for seasonal hunting and gathering. Two radiocarbon samples yielded dates of 30 $\pm$ 75 years B.P. or A.D. 1920 (UGa-473) and 1125 $\pm$ 75 years B.P or A.D. 825 (UGa-1474). The more recent date is interpreted as being from a historic campfire. The earlier date of A.D. 825 is consistent with the projectile points and Fremont ceramics recovered in the deposit, and supports the contention for Fremont occupation at that time. With the exception of the ceramics as noted above, the cultural materials can be attributed to Desert Archaic, as indicated by the Elko points, and later Shoshoni groups. Furthermore, the petroglyph elements are not those usually attributed to the Fremont. Rather than a Fremont occupation of the site per se, the shelter may have been first occupied by Desert Archaic peoples, followed later by Fremont and Shoshoni groups. Alternatively, the Fremont and Virgin Branch Anasazi ceramics could represent vessels exchanged with Desert Archaic and/or Shoshoni groups who occupied the region.

At Civa Shelter II in the Golden Gate Range of southeastern Nevada, a small percentage of Parowan Fremont ceramics and one North Creek Black-on-gray sherd, a Virgin Branch Anasazi ware, occurred in the deposit along with Shoshonean ware (Busby 1978, 1979). The Fremont pottery, recovered in the lower and middle levels of the site (20-80 cm), is that of Snake Valley Gray and Snake Valley Black-on-gray. One Snake Valley Black-on-gray bowl with Sosi design elements was reconstructed. Snake Valley Gray and Snake Valley Black-on-gray are dated between A.D. 900-1200 (R. Madsen 1977).

Northwest of Civa Shelter II in the Quinn Canyon Range, Slivovitz Shelter yielded evidence of Fremont occupation as represented by Fremont ceramic types (Busby 1978, 1979). These were Snake Valley Gray, Snake Valley Black-on-gray, and Snake Valley Corrugated. Ceramic artifacts included a pendant made from a Snake Valley Black-on-gray sherd, ground sherds (Snake Valley Black-on-gray and Shoshonean), and an ochre grinder made from a Snake Valley Black-on-gray sherd. While some Fremont pottery was recovered, most was that of Shoshonean ware.

O'Malley Shelter near Caliente in southeastern Nevada, which was previously discussed in the Archaic section, contained a considerable Fremont occupation. Following the Desert Archaic occupations, there appears to have been a 1000 to 2000 year hiatus after which Parowan Fremont and Anasazi peoples used the shelter between A.D. 950 and 1100 (Unit V). Diagnostic Fremont artifacts recovered in Unit V included Snake Valley Gray ceramic types, one-rod-and-bundle coiled basketry fragments, two-hand manos, and arrow points dominated by Rose Spring-Eastgate Series. Elko and Gypsum Series projectile points are heavily represented as well. Another characteristic of the Fremont occupation level is the presence of deep, rock and charcoal filled fire pits. Manufacturing of Fremont pottery may also have been carried out at the site. Anasazi groups from the south may have frequented the shelter or at least traded with the Fremont, as indicated by Virgin Branch Anasazi ceramics--two Shinarump Brown varieties, North Creek Gray, and North Creek Black-on-gray.

Fremont Lifeway

Subsistence. The Fremont are generally considered to have been essentially dependent upon the cultivation of Fremont Dent maize. This may not have totally been the case in the eastern Great Basin, where little horticultural evidence has been recovered. Rather, the subsistence pattern in this area appears to have been based on the collecting of wild plants, such as bulrush (*Scirpus* sp.), cattail (*Typha* sp.), and amaranth (*Amaranthus* sp.), and the hunting of ungulates and waterfowl. Some fishing and collecting of mollusks were probably also carried out. Maize appears to have been planted as well, though its importance in the eastern Great Basin Fremont diet is not known (e.g., see Madsen 1979b).

The little evidence relating to Fremont subsistence in eastern Nevada was discussed above for most of the sites yielding Fremont components and need not be repeated here. Data on floral and faunal species recovered from these sites are presented in Tables 5, 6, and 7. Elsewhere, comparative studies on the faunal remains from Fremont and Anasazi sites have been tabulated (Dalley 1970; Madsen 1980a).

Social Organization. Evidence indicates that the Fremont generally lived in permanent and semi-permanent hamlets or villages. We know little else about their social organization. On the classic evolutionary continuum, the Fremont were probably organized in bands. However, in southwestern Utah, a tribally based society may have been present, for two male burials in the Parowan Fremont subarea were associated with a number of grave goods (Berry 1972; Dodd 1980; Meighan et al. 1956), suggesting that there was some status differentiation among the Fremont. It is not known how widespread this practice was in the other Fremont subareas, nor is it known whether status was achieved in an individual's lifetime or ascribed from birth.

Ideology. The Fremont seem to have had a fairly elaborate ideological system. Pictographs of triangular-bodied anthropomorphic figures are generally attributed to the Fremont (see Schaafsma 1971), and a variant of this style appears to be restricted to eastern Nevada (cf. Tuohy 1979:21). [See the rock art section of this report for the distribution of Fremont pictograph sites in eastern Nevada]. The significance of these pictographs can only be surmised, and most interpretations are, at best, speculative.

As with the triangular-bodied pictographs, clay figurines found at many Fremont sites may also have served a ritualistic function.

Proto-Historic Period

The Proto-Historic period in eastern Nevada was initiated by the migration of Numic groups into the Intermountain West about A.D. 1200 to 1300 and the replacement of the Fremont culture. Numic speakers continued to occupy the region until their lifeway was disrupted by contact with explorers and Mormon settlers during the century following their initial contact with Escalante in A.D. 1776.

The reasons for the disappearance of the Fremont are not clearly understood. One explanation is that the eastern Great Basin and northern Colorado Plateau was abandoned by the Fremont prior to the arrival of the Numic due to drought and other climatic changes. Another explanation is that Numic groups were directly responsible for the disappearance of the Fremont (Euler 1964; Aikens 1970a). Resource competition between Fremont and Numic groups has also been suggested as a causal mechanism for the displacement of the Fremont (Madsen 1975).

The Numic groups in eastern Nevada are the Southern Paiute and Western Shoshoni. They are speakers of Numic, a member of the Uto-Aztecan linguistic family. Numic speaking groups are believed to have migrated from their homeland in the southwestern portion of the Great Basin beginning around A.D. 1000 (Lamb 1958; Miller 1966; Fowler 1972b; Wright 1978). Archaeological evidence tends to indicate that Numic groups reached the eastern Great Basin between A.D. 1200 and 1300 and that they were contemporaneous with the Fremont (Madsen 1975).

Archaeologically, we know very little about the Numic groups who occupied the study area. In fact, what Steward (1937a:121) wrote over 40 years ago still holds to some extent: "The writer has examined many caves known to have been used by Shoshoni but he failed to find any identifiable Shoshoni (sic) objects. The scarcity of objects at most Shoshoni sites is striking."

In many instances, the presence of Numic groups throughout the Great Basin is only indicated by Shoshonean tradition pottery and Cottonwood Triangular and Desert Side-notched projectile points; however, the latter may not even be solely diagnostic of the Numic. Based on radiocarbon dates in association with these points, Cottonwood Triangular projectile points date from about A.D. 900 to the historic period, and Desert Side-notched points appear sometime after A.D. 1100 (Heizer and Hester 1978a, 1978b; Hester and Heizer 1973). Several descriptions of Shoshoni and Southern Paiute pottery are available in the literature (Baldwin 1950; Coale 1963; Harrington 1926d, 1937c:24-25; Opler 1939; Rudy 1953:94-98; Tuohy 1956, 1973).

While remains of Numic material culture are generally not well-represented in Great Basin archaeological sites, several excavated caves and rockshelters in eastern Nevada have yielded some evidence of Numic occupations, as indicated by the presence of Shoshonean pottery and Desert Side-notched projectile points in the upper levels of the deposits. These sites include Amy's Shelter, Bronco Charlie Cave, Civa Shelter I and II, Deer Creek Cave, Kachina Cave, Newark Cave, Slivovitz Shelter, South Fork Shelter, and Thomas Shelter, as well as Danger Cave, O'Malley Shelter, and Swallow Shelter which are slightly outside the Elko and Ely districts (see Figure 14). Since Numic occupations at some of the excavated sites mentioned above are more extensive than at others, a review of the evidence from these sites is in order.

Before discussing the Numic evidence from these caves and rockshelters, it should be noted that several Shoshoni ethnographic accounts mentioned that caves were occupied at times. Steward (1937a; see also 1937d:92) writes:

> In the course of ethnographic research during 1935 and 1936 among the Shoshoni who, a century ago, occupied the country on all sides of Great Salt Lake, an informant was found at Washakie, Utah, who claimed to have been born in a cave on the western side of Promontory Point a few miles north of [Promontory] Cave No. 1 and to have lived in Cave No. 1 at various times during his youth...there is little question that the Shoshoni occasionally wintered in suitable caves instead of building their customary conical pole lodges and that caves also frequently served as temporary shelters (Steward 1937a:7).

At Deer Creek after A.D. 1150, a change in material culture is evidenced by the appearance of Shoshoni ceramics and Desert Side-notched projectile points in the upper levels of the cave. Changes in subsistence are also noted at this same time by the first appearance of grinding slabs and a decrease in split and charred animal bone, suggesting that the Shoshoni emphasized gathering and processing wild plants more than the earlier inhabitants (Shutler and Shutler 1963:53).

The post-Fremont levels (Stratum I-III) of Kachina Cave in Smith Creek Canyon contained evidence of Numic peoples, probably Gosiute, who visited the site (Tuohy 1979). Projectile point types recovered in these levels were Desert Side-notched, Rose Spring, and Eastgate (or Parowan). A juniper bark lined cache pit in one of the Numic levels continued a twill-twined tule bag, pine nut hulls (Pinus monophylla), cut Phragmites fragments, juniper berries, and rope or cordage of juniper bark. Another cache pit yielded folded stems of mountain dogbane (Apocynum androsaemifolium). Among the historic artifacts in the uppermost level was a piece of a milk glass lid which appeared to have been flaked for use as a graver. While no Shoshoni sherds were recovered from these levels, two such sherds were found on a trail near the shelter.

Also in Smith Creek Canyon, the upper 10 cm of the Amy's Shelter deposits yielded several historic artifacts (Gruhn 1979). Two scrapers flaked out of clear bottle glass suggest that Numic groups, such as the Gosiute, probably visited the shelter in the Historic phase (ca. A.D. 1850). Modern camping debris and bullets/cartridges were also recovered, some of which may be from S. M. Wheeler's camp, while he excavated Smith Creek Cave for the

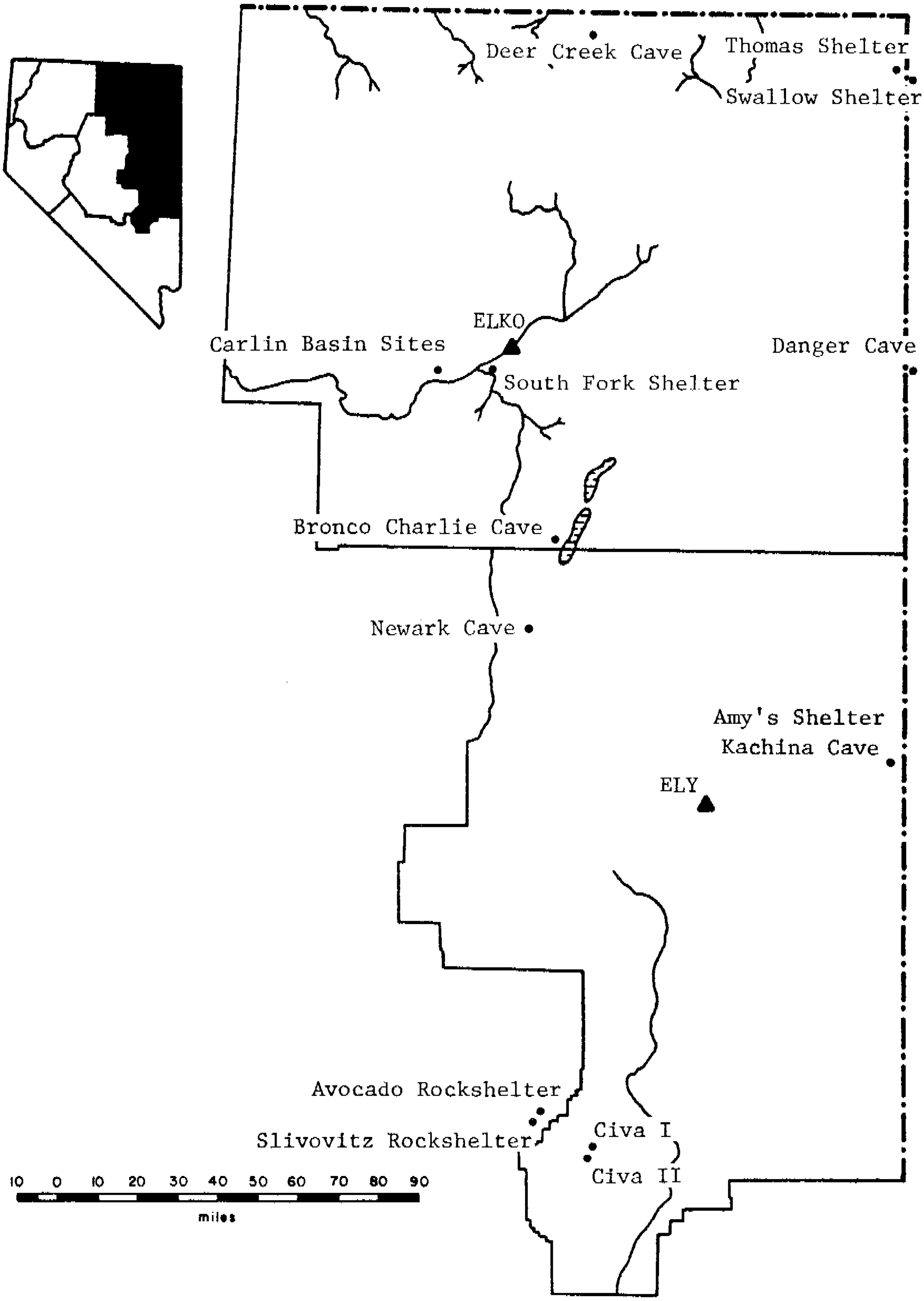


Figure 14. Distribution of excavated sites in the Elko and Ely districts containing Shoshoni components.

Southwest Museum in the 1930's.

South of Smith Creek Canyon near Baker, Nevada, human remains have been described from Lehman Caves (Brooks and Brooks 1964; Rozaire 1964; see also J. Harrington 1938 for a brief note). Rather than having been dropped through the vertical opening of the cave, as in the case of some ethnographically reported burial practices, the remains may be the result of secondary reburial or token burial, i.e., burial of selected skeletal elements (Brooks and Brooks 1964:27-28). While no diagnostic prehistoric cultural materials were recovered, some of the bones may represent Numic burials, probably that of the Gosiute. In the nearby vicinity, human remains found with the fragments of a handmade pack saddle were briefly reported from what appears to be Snake Creek Burial Cave, site 26WP23 (J. Harrington 1939; see also Rudy 1953:26, UU site 26WP4; and Taylor 1954b:13). As with Lehman Caves, the cultural affiliation is not known, but the remains are probably also from Gosiute burials (cf. Taylor 1954b:13).

Civa Shelter I is a small, south-facing rockshelter located at the northern end of the Golden Gate Range overlooking Coal Valley (Busby 1977). The site is situated in the sagebrush-grass zone at an elevation of 1800 m. Projectile points recovered from the deposit are Rose Spring Corner-notched, Cottonwood Triangular, and Desert Side-notched. Six large, crudely shaped limestone metates were found on the surface; however, no manos were recovered on the surface or in the deposit. Ceramics were also absent. Perishable items included seven fragments of two ply "S" twist fiber cordage (*Apocynum* sp. ?) and two ply "Z" twisted bark (*Artemisia* sp. ?), three single overhand knots of sagebrush bark and reed or rushes, a leather strip, and one human or animal coprolite. Features encountered in the deposit consisted of several fire hearths and a concentration of grasses, twigs, and bark which may represent matting or bedding. The small amount of faunal remains are identified as deer, jackrabbit, cottontail, and wood rat, much of which is considered to have been introduced naturally. While no radiocarbon dates have been reported, the site is interpreted as a temporary campsite for hunting and gathering by Shoshoni or Southern Paiute groups between A.D. 600-700 and the historic period (A.D. 1850) based on the diagnostic projectile points.

About eight air kilometers southwest of Civa Shelter I on the western slope of the Golden Gate Range is another rockshelter that was excavated by the University of California at Berkeley (Busby 1978, 1979; Busby and Seck 1977). Civa Shelter II faces to the west above Garden Valley at 1768 m elevation. The 80 cm deposit contained a sizable quantity of cultural material, but due to the dampness of the fill, little perishable items other than bone were preserved. The 104 typeable projectile points consisted of Humboldt, Elko Series, Cottonwood Triangular, Rose Spring Series, and Desert Side-notched, with the latter two types constituting 60% of the points. Other chipped stone artifacts include bifaces, cores, retouched flakes, choppers, and drills, all predominately of chert with some obsidian and basalt. Ground stone consisted of shaped and unshaped manos, slab and block metates, pestle fragments, and battered stones. Bone awls, flaking tools, tubular and Type B bone beads, incised and worked bone, gaming counters, and a bone pendant were present. Shell artifacts included a clam shell bead (Tivela sp.?), an Olivella biplicata bead, and a shell bead/pendant (Haliotus sp.). Ceramics occurred throughout the deposit. Most of the pottery was of the Shoshonean Tradition with some Fremont pottery and one Virgin Branch Anasazi sherd. Several Shoshonean ware pottery scrapers and a scoop were also found.

Of additional interest, two small deposits of culturally introduced montmorillonite clay mixed with sand and fragments of lithic debitage were recovered at the site. This evidence, coupled with the presence of pottery scrapers and the ashy nature of the deposit perhaps due to pottery firing, suggests that pottery may have been manufactured during a Shoshonean occupation of the site (Busby 1979:53-54). Similarly, at O'Malley Shelter in Meadow Valley Wash to the southeast, Fremont pottery is inferred to have been manufactured locally (Fowler, Madsen, and Hattori 1973:19). These two sites are the only ones in the region to indicate evidence of local ceramic manufacture.

Due to the dampness of the deposit, very few perishables were recovered. A slightly charred rim fragment of a coiled basket was found in the 0-10 cm level. A leather fragment was also recovered in this level. The other perishable item was a length of vegetal material tied in a single overhand knot.

Two bone fragments from this site have been identified as human. One fragment is a burnt femoral head of a juvenile individual between 4-6 years. The other is a human phalange. These two specimens could represent a cremated burial. Due to the fragmentary nature of the vertebrate faunal remains, only about one-sixth of the 42,515 bone fragments were identified (Northey 1979). These included jackrabbit, bighorn sheep, mule deer, possibly bison (Bison bison), and several carnivores. The high percentage of jackrabbit indicates that the prehistoric inhabitants relied quite heavily upon this species for their subsistence. Ethnographically, Steward (1938) observed a similar pattern among the Western Shoshoni who hunted jackrabbits in communal drives during the late fall. Since the size of Civa Shelter II is fairly small, Northey (1979) interprets the site as a camp occupied by one or two families in the late fall or early winter for communal rabbit drives. Bighorn sheep, on the other hand, were usually stalked by lone hunters and could have been brought to the site from higher elevations.

The archaeological evidence recovered from Civa Shelter II indicates that the site was intermittently occupied as a seasonal base camp by Shoshoni and Southern Paiute groups from A.D. 600-700 to historic times. Fremont groups from Meadow Valley Wash and possibly Pahranagat Valley may have occupied the site earlier or contemporaneously with the Shoshoni and Southern Paiute. Trade or contact with the Fremont is another possibility rather than actual occupation. A radiocarbon date of 865 $\pm$ 80 years or A.D. 1085 (I-9795) was obtained on charcoal from a hearth in the middle of the deposit and correlates with the pottery and projectile point types.

Pottery may have been manufactured during one occupation of the site. Plant processing and the hunting of jackrabbit were the primary subsistence activities.

Slivovitz Shelter is situated in the Quinn Canyon Range overlooking Pine Creek at 2194 m elevation, about 24 air kilometers northwest of Civa Shelter II. Cultural materials included Humboldt, Elko, Eastgate, Rose Spring, Cottonwood Triangular, and Desert Side-notched projectile points, various ground stone artifacts, bone awls (Ovis canadensis), tubular bone beads (mostly Lepus sp.), Type B bone beads, bone flakers, worked and utilized bone, bone gaming counters, an abalone pendant, and an Olivella biplicata shell bead. The majority of the pottery was Shoshonean ware with some Fremont sherds. Faunal remains consist of mainly mountain sheep, as well as bobcat, beaver, cottontail, and squirrel (Kobori and Covert 1979).

The cultural assemblage from Slivovitz Shelter is similar to Civa Shelter II though the faunal assemblage differs. Slivovitz appears to have been a seasonal temporary occupation campsite, utilized by both Shoshonean and Southern Paiute groups. The occupation spans the time from A.D. 600-700 to the historic period, with more use after A.D. 900. Contemporaneous occupation or trade with Fremont groups is also indicated. Seasonal occupation in the fall for the gathering of pinyon nuts and the hunting of mountain sheep constituted the major subsistence activities.

At O'Malley Shelter above the Fremont-Anasazi occupation level (Unit V), Shoshonean ceramics and Desert Side-notched projectile points occurred together with Fremont and Anasazi ceramics in Unit VI. The presence of Numic traits in this unit suggests alternating use or co-occupation of the shelter by Fremont and Numic peoples (probably Southern Paiute) and supports the contention that Numic groups migrated into the region after A.D. 1000 and eventually replaced the Fremont. Aside from the Numic items mentioned above, a twined basketry fragment made with open diagonal twining was found in an intrusive pit (in Unit VII) and is apparently of Southern Paiute origin. Unit VII, the uppermost cultural unit, contained an Olivella shell, an arrow fragment (Phragmites), and other prehistoric items from the Numic occupation mixed with a large amount of historic debris left by cowboys, railroad crews, and hunters.

Archaeological surveys in eastern Nevada have also recorded Shoshonean tradition pottery at surface sites. For instance, in the reconnaissance of Garden and Coal Valleys in southeastern Nevada. Shoshonean pottery was present at 20 of 22 pottery bearing sites, and Fremont and Shoshonean types co-occurred at seven of these sites (Busby 1978, 1979). In Elko County from site 26EK514 (originally recorded on the survey by Stephenson and Wilkinson [1969]), Rusco (1978) has reported a partially restored Shoshonean ware vessel found on the surface. Other Shoshonean ware vessels, perforated sherds, and a baked clay horse figurine have been described from surface sites in central Nevada to the west of the study area (Magee 1964, 1966, 1967; Tuohy and Palombi 1972). Fowler (1968a:10-13) has summarized the distribution of Shoshoni and Southern Paiute pottery in eastern Nevada and throughout western North America, although more

Shoshonean pottery sites have now been recorded since Fowler's study.

ETHNOHISTORY/ETHNOGRAPHY OF THE ELKO AND ELY DISTRICTS

Joel C. Janetski

Introduction

Approach

Ethnohistory and ethnography are two anthropological endeavors which are allied by common goals, although the means by which these ends are accomplished differ considerably. Both strive to reconstruct past aboriginal lifeways and to obtain some understanding of the cultural-historical process. Additionally, both focus on Native American adaptations in response to changes in the natural and cultural environments. The ethnohistorian and ethnographer each deal with primary material. The ethnohistorian searches early historical documents written by non-anthropologists for descriptions and observations of the group under study. The ethnographer, on the other hand, gathers his materials directly from interviews with Native Americans and from participant/observation. In combination, these two data sources produce a wealth of information which can, in turn, provide rich insight into past aboriginal lifeways. Such will be the approach in this report; that is, to depend on both ethnohistory and ethnography for its raw data. The summaries and conclusions will be drawn after considering both kinds of resource materials.

Objectives

This ethnohistorical-ethnographic overview attempts to: 1) provide a documentation of the condition and distribution of the Native Americans within the study area at the time of European contact, and 2) provide an anthropological summary of traditional aboriginal lifeways. The scope of these summaries is limited to the political boundaries of the study area in eastern and northeastern Nevada. This report is intended to be descriptive, and no systematic attempt is made to explain the lifeways of central Great Basin native Americans, although a tendency to view environment and technology as primary cultural influences is admitted.

The Ethnohistoric Data Base

The ethnohistorical material which will be utilized for this overview falls into four roughly chronological categories:

1. Reports of Fur Traders.
2. Reports of U.S. Exploring Expeditions.
3. Journals of Emigrants and Travelers.
4. Records of Indian Agents.

The period of time covered by these accounts is relatively brief, beginning in the late 1820's and ending by the middle 1870's.

When considering these observations it is important to maintain an awareness of the historical context in which they occurred. The mid-nineteenth century attitude could be described as the epitome of ethnocentricity with an overlay of "Manifest Destiny". The desert-like environments of much of the Great Basin and the sparse material culture of the Basin Native Americans suggested to travelers fresh from the bison-rich plains and richer eastern woodlands that these people were continually near starvation and not far removed from animals in their cultural development. Viewed in this way, exploitation even to the point of extermination was justifiable, since those being pushed aside were barely human. Some sense of this attitude can be obtained from a quote by John S. Calhoun, the Indian Agent at Santa Fe in 1849:

> Let me remark, that the Pah Utahs, who inhabit the country east of the Sierra Nevada, are Utahs proper; benumbed by cold, and enfeebled, intellectually and physically, by the food upon which they subsist; it consisting only of roots, vermin, insects of all kinds, and everything that creeps, crawls, swims, flies, or bounds, they may chance to overtake; and when these resources fail them, and they can find no stranger, they feed upon their own children. Such a people should not be permitted to live within the limits of the United States, and must be elevated in the scale of human existence, or exterminated (Calhoun 1849:99).

This "barren" view of the Great Basin and its native peoples certainly affected the manner in which these people and their country were treated and described (cf. Alley 1978).

Interestingly, the accounts of the Spanish explorers who visited the eastern edge of the Basin in 1776 do not describe the Indians as starved, wretched and pitiful as do the American and British explorers and trappers of the early to mid-19th century. For example, the Dominguez-Escalante journal describes the Pahvant Utes of the Sevier Lake region near modern Delta, Utah, as follows:

> A little later those who had gone in search of water arrived with some Indians, into whose camps they had stumbled, these being located at the edge of El Rio de Santa Isabel (Sevier River) ... These were from among the full-bearded and pierced-nosed ones, who called themselves Tirangapui in their language. The five of them who came first with their chief were so fully bearded that they looked like Capuchin padres or Bethlehemites. The chief was already advanced in years, yet not aged, and of very good appearance (Warner 1977:66).

Fifty years later an American trapper, Daniel Potts, describes Indians in the same vicinity:

> This river is inhabited by a numerous tribe of miserable Indians. Their clothing consists of a breechcloth of goat or deer skin, and a robe of rabbit skins, cut in strips, sewed together after the manner of rag carpets, with the bark or milk weed twisted into twine for the chain. These wretched creatures go out barefoot in the coldest days of winter. Their diet consists of roots, grass seeds, and grass, so you may judge they are not gross in their habit. They call themselves Pie-Utaws, and I suppose are derived from the same stock (Bagley 1964:137).

This account by Potts typifies the impression of Basin Indians offered by early American and British visitors, and perhaps represents an attitudinal and motivational contrast between the Spanish Friars and the English. The reason for mentioning these contrasts in description is simply to draw attention to potential pitfalls awaiting those drawing anthropological conclusions from ethnohistoric materials and the importance of understanding the context of those materials.

Great Basin Culture Area

Prehistory

At the time of European contact the Great Basin was inhabited by hunters and gatherers who were related culturally and linguistically. Language studies (Lamb 1958) as well as archaeological evidence (Madsen 1975) suggest that these people expanded from a southeastern California homeland into the Great Basin within the last 1500 to 1000 years (see Goss 1977 for a contrasting view). Human occupation of the Basin, however, is much older, with dates in excess of 10,000 years from several prehistoric sites (Aikens 1978b). A complete description of prehistoric evidence in the area is found elsewhere in this report and will not be presented here.

Linguistic Relationships

With the exception of the Hokan speaking Washo in extreme western Nevada-eastern California, the Great Basin was occupied by peoples speaking languages belonging to the Uto-Aztekan family. Following Lamb's (1958) suggestion, these related languages are called Numic, a term derived from the words Basin peoples used to refer to themselves, e.g., <u>numu</u> in Northern Paiute, <u>nuwu</u> in Southern Paiute and <u>newe</u> in Western Shoshoni, all meaning person or native speaker (C. Fowler and D. Fowler 1971:97; Wheeler 1879:408). The Numic speakers are grouped into one of three major language groups, the Western, Southern, and Central Numic (see Figure 15). Taken as a whole these three groups fan out to the north and east from the southeastern California region into the Great Basin and eventually spill into the Snake River Drainage, western Wyoming, and the

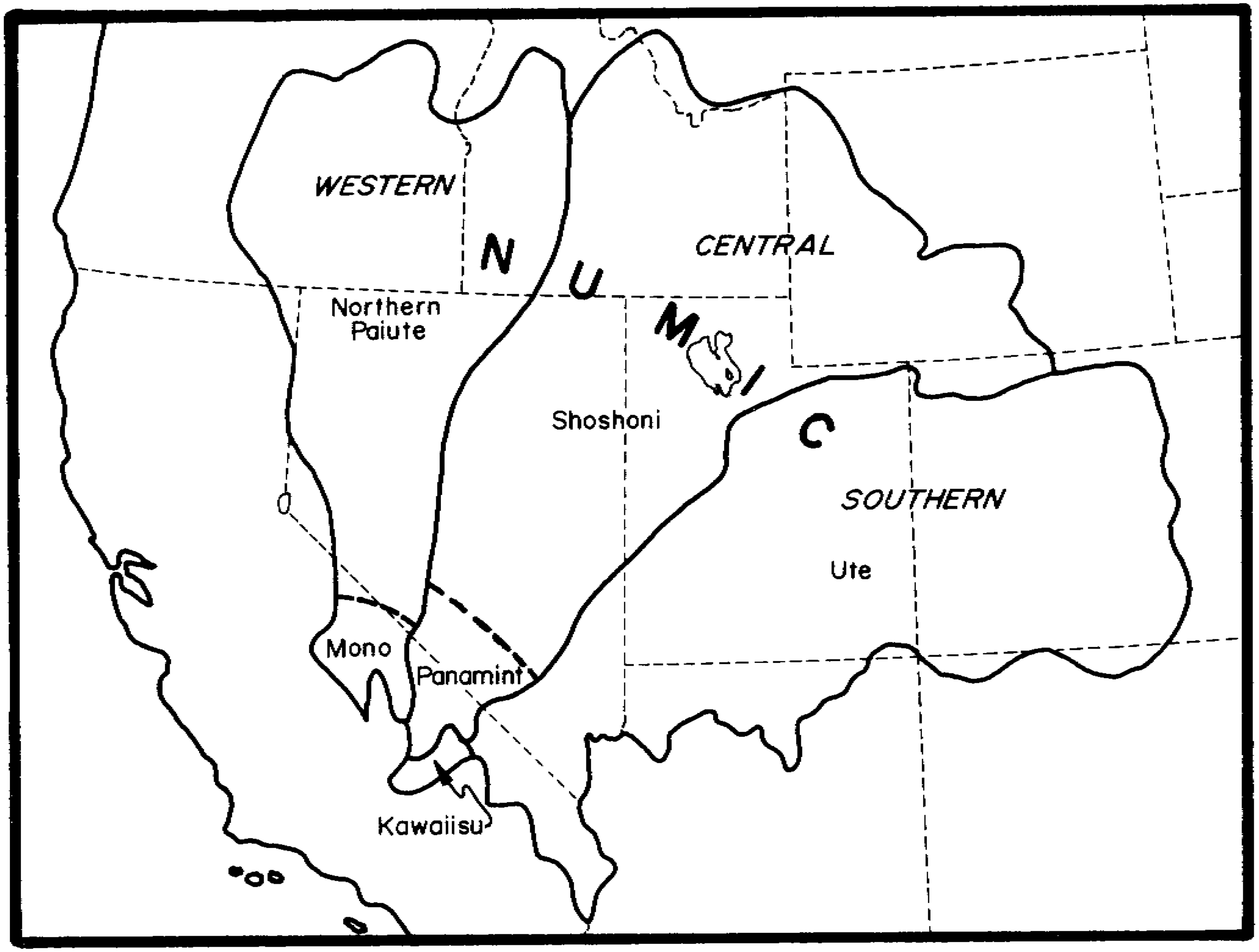


Figure 15. Distribution of Numic speakers (After Fowler 1972:106).

plateaus of eastern Utah and Colorado. Each major group is further divided in two, i.e., Western Numic into Mono and Northern Paiute, Central Numic into Panamint and Shoshoni, and Southern Numic into Kawaiisu and Ute. As one moves from the postulated California homeland into the Basin, dialect boundaries become less distinct and further apart, thereby suggesting that the Numic speakers are recent arrivals (Miller 1966).

For historical reasons references to the various Great Basin aboriginal groups take several forms, some following linguistic affiliation, others referring to the region habitually occupied or to foods commonly used by people living in that region. This lack of parallel terminology can be confusing to those unfamiliar with the area. For example, the present study area, which is for the most part within the Central Numic-Shoshoni linguistic region, contains people referred to as Ruby Valley Shoshoni, White Knife Shoshoni and Gosiute. The first term is a regional label, the second comes from a translation of the Shoshoni term Tosawihineen, meaning white knife people, so-called because of the fine white chert found in the region occupied by that group, while the last, Gosiute, is a highly variable name with an uncertain origin (cf. Steward 1938:132; Malouf 1940b). Traditionally, all spoke a mutually intelligible language, all had a common culture, and all are, or should be, subsumed under the more general term Western Shoshoni. Some of these groups were also referred to by "eater" labels, after foods which were abundant in their area. Ruby Valley Shoshoni, for example, were called rye grass eaters and those near Halleck, Nevada, were called root eaters (Steward 1938). To the north of our study area were salmon eaters and sheep eaters, while pine nut eaters and rabbit eaters were found to the east (Steward 1938). Compounding the nomenclature problem, the term "Snakes" has been used to refer to any Shoshoni Indian; unmounted Shoshoni speakers were sometimes called Shoshokoes or "walkers", while those who were mounted were called Shoshoni (Wilson 1849). In addition, generalized terms for all poor, unmounted Indians in the Basin area were called variously "diggers" or "root eaters" or "shuckers" (Leonard 1978; Steward 1938:264).

A similar problem exists for the Southern Paiute who inhabit the southern portion of the Ely District. They have been referred to as Paiute, Pah-Ute, Pi-Ute, Pautch, Pa-Ulche, Piede, and Pah-edes as well as Diggers.

For this report all the aboriginal groups of eastern and northern Nevada will be subsumed under three generic headings divided on the basis of linguistic differences: 1) the Western Shoshoni, 2) the Southern Paiute, and 3) the Northern Paiute. Mention will be made of the traditional sub-groups of each (see Figure 16), which should not be confused with these more general linguistic labels.

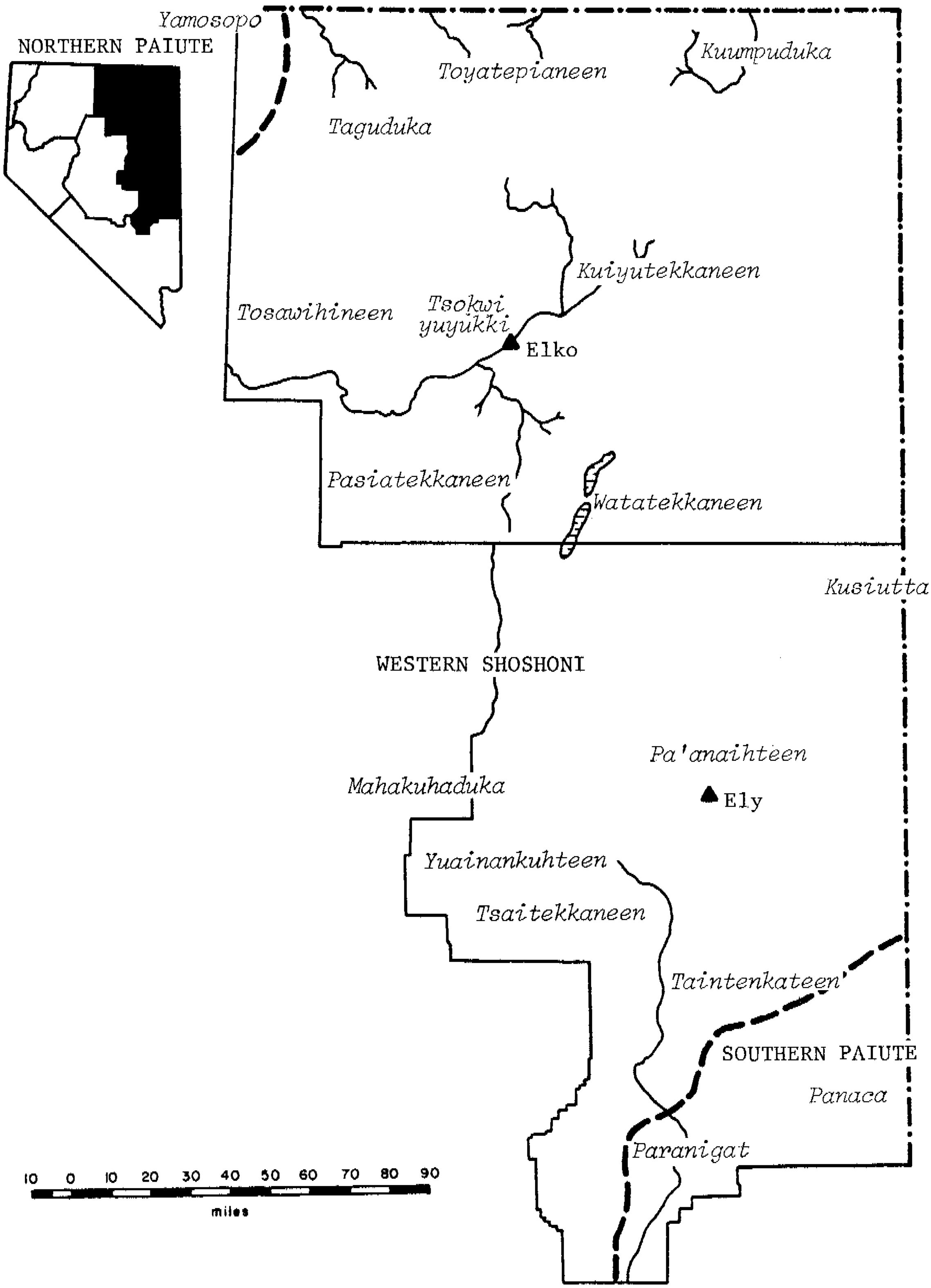


Figure 16. Distribution of known Numic groups in the study area (After Inter-Tribal Council of Nevada 1976; Steward 1938; Stewart 1939; Kelly 1934; B. Crum, personal communication, 1981).

The Steward Ethnographic Model of the Great Basin

Reliance on ethnographic models in understanding or interpreting archaeological remains and aboriginal lifeways is fundamental in studies of Great Basin prehistory (cf. Fowler 1977). Despite a lengthening history of anthropological work, the ethnographic monograph produced by Julian H. Steward (1938) remains the "cornerstone for analogy" (Fowler 1977:37) in Great Basin research. The Western Shoshoni are the classic example of Great Basin hunters and gatherers and were the primary focus of Steward's study in the 1930's. His ethnographic description of small groups living in a food-poor environment, dispersing for much of the year in a patterned seasonal round, and coalescing briefly during times of food abundance is the standard for summaries of Great Basin prehistoric life (cf. Spencer, Jennings et al. 1977). However, such summaries have often extended Steward's cultural-ecological model of the central Great Basin to groups occupying portions of the Basin with resources and a social organization very unlike that of the central region (Steward 1933; Bettinger 1978; Janetski 1980b). Others (Heizer and Napton 1970; Adovasio and Fry 1972), noting these cultural and environmental variations, have divided Great Basin environments and associated aboriginal subsistence/settlement systems into an eastern "desertic" adaptation and western "lacustrine" adaptation. However, this east-west dichotomy does not fit the data. A more realistic ecological depiction of the Basin is one which contrasts the better watered peripheries, both east and west, with the more arid internal regions. Even this scheme, however, ignores the environmental variation in the central Basin, including such areas as Ruby Valley, labeled by Stewart (1978b) as an "oasis" in the Nevada desert.

These conflicting views of the Great Basin lead to the logical conclusion that it is a region of environmental and cultural diversity. The simplistic or normative descriptions commonly offered in the past do not provide the empirical basis necessary for a complete understanding of Great Basin aboriginal man/land relationships. However, Steward's model of mobile hunters and gatherers is considered broadly applicable to the Western Shoshoni who occupied the present study area, although some revisions in detail will be suggested in this report.

Initial Impressions of the Great Basin and Its Inhabitants

Although the eastern and southern periphery of the Great Basin was visited by the Spanish in the 1700's, no Europeans penetrated the central portion of the Basin until well into the 1820's. However, Shoshoni and Northern Paiute groups were encountered by the Astorians under Wilson P. Hunt in 1811 in southern Idaho. These "Snakes" were described as "entirely naked excepting small mantles of hare skins over their shoulders" and as very shy of white men and their canoes (Irving 1881:370). Earlier, near Ft. Henry they encountered "a poor, half-naked Snake Indian, one of that forlorn caste called the Shuckers, or Diggers, [who] made his appearance at the camp. He came from some lurking place among the rocks and cliffs and presented a picture of that famishing wretchedness to which these lonely fugitives among the mountains are sometimes reduced" (Irving 1881:370). Since Ft. Henry was very close to the mountain home of the Sheep eaters, it is probable that this individual belonged to that group rather than to the Basin Shoshoni, but the image presented is the same for both.

The first penetration of the interior and of our study area was finally accomplished by the intrepid American mountain man Jedediah S. Smith in 1827. Smith, representing his own fur company of Jackson, Sublette, and Smith, left the Great Salt Lake area in 1826 and traveled along the eastern edge of the Great Basin to California, where he wintered. The following year he travelled through the Sierra Nevada and the heart of the Great Basin, thereby becoming the first White man to do so. Smith's path as described by Wheat and Morgan (1954:69) probably crossed the heart of the Ely District. He entered the study area along the eastern slopes of the Pancake Range, crossed the White Pine Range near Currant Summit and traveled just south of Ely. Smith then crossed the Schell Creek Range at Conners Pass, and the Snake Range just north of Wheeler Peak, where he turned north, following the western edge of Snake Valley and entering Utah near Gandy. From here Smith traversed the south end of Great Salt Lake to a rendezvous at Bear Lake that summer. Unfortunately, his descriptions of the region and its inhabitants are very sparse, although he does describe them as "nearly naked", "unintelligent", but "friendly" (G. Brooks 1977:184-185). In a letter written in 1827, Smith states in part:

> After traveling twenty days from the east side of Mount Joseph [in California], I struck the southwest corner of the Great Salt Lake, traveling over a country completely barren and destitute of game. We frequently traveled without water, sometimes for two days, over sandy deserts, where there was no sign of vegetation, and when we found water in some of the rocky hills, we most generally found some Indians who appeared the most miserable of the human race, having nothing to subsist on (nor any clothing), except grass seed, grasshoppers, etc. (Kelly 1930:25).

Late the following year, in the spring of 1829, Peter Skene Ogden and his brigade of trappers visited the upper reaches of the Owyhee and Humboldt drainages, where they met with the local Indians on many occasions. In December of 1828, they encountered "three tents" of Indians camped in the "cedars" near Snow Water Lake in Clover Valley. In describing them, Ogden said, "...these poor creatures were men, women and children with the exception of small hare skin blankets entirely naked." (Williams 1971:115). The next spring on his return trip, Ogden comments on the barren nature of the country just to the east of the Humboldt region, yet, while near Flowery Lake in Steptoe Valley, he mentions that the Indians are very numerous but are "as wild as deer" (Williams 1971:139). Once he reached the richer country of the Humboldt River, Ogden's encounters with the Indians were frequent; he mentions camps of 30, 15, and 60 along the river (Williams 1971:140). Indians were also very numerous on the headwaters of the Owyhee River and were responsible for stealing many of the brigade's traps, much to the chagrin of Ogden and his trappers. Unfortunately, Ogden does not provide us with detailed descriptions of those Indians, nor does John Work, who traveled through the Humboldt region in 1831.

In 1833 the Walker-Bonneville Party, with Zenas Leonard as clerk, traveled down the Humboldt en route to California. Leonard's description of the natives follows the established pattern: "The natives we occasionally met with still continued to be of the most poor and dejected kind--being entirely naked and filthy" (Leonard 1978:110). In fact, the party named the Humboldt the Barren River, "...a name which we thought would be quite appropriate as the country, natives and everything belonging to it, justly deserves the name" (Leonard 1978:111).

By the 1840's accounts of trappers and explorers describing the people of the Basin were being picked up and enhanced by people who had not really visited the region. For example, Father DeSmet's (1931:25) description of the "Shoshoni" root diggers, was based more on hearsay than observation. He calls these groups Snakes "because in their indigence they are reduced, like such reptiles to burrow in the earth and live upon roots". A similar report based on hearsay is recorded in the journal of Rev. Joseph William during the early 1840's while camped on the Green River near Hams Fork:

> Here I heard the mountain men tell of the miserable state of the Indian root-diggers. Numbers of them would be found dead from pure starvation; having no guns to kill game with, and poor shelters to live in, and no clothing except some few skins. These creaters (sic) have been known, when pressed with hunger, to kill their children and eat them! and to gather up crickets and ants, dry them in the sun, and pound them into dust, and make bread of it to eat! These creatures, when traveling in a hurry, will leave their lame and blind to perish in the wilderness (Hafen and Hafen 1955:273).

John Charles Fremont, who traversed various portions of the Great Basin in the 1840's and 1850's, crossed the study area in 1845, at which time he described the Indians of the Basin as follows:

> In this region the condition of the Indian is nearly akin to that of the lower animals. Here they are really <u>wild men</u>. In his wild state the Indian lives to get food. <u>This is</u> his business. The superfluous part of his life, that portion which can be otherwise employed, is devoted to some kind of warfare (Fremont 1887:438).

The 1840's also marked the onset of the great migration of peoples to the promised lands of Oregon and California. In 1846 Edwin Bryant traveled the Humboldt "highway" and kept a journal rich in detail and often lacking the ethnocentric prejudice so common in other journals of the period. In August of 1846, on the headwaters of Mary's River (the Humboldt), Bryant describes the natives thusly:

> All the Digger Indians of this valley (Humboldt) claim to be Shoshonees. The bodies of two or three of them were partially covered with skins of hares sewn together. The others were entirely naked. Their skins are dark--nearly as dark as that of the negro. The distinguishing features between these Indians and the negro, are in the nose, which is aquiline, the long hair, and their handsome Arabian-shaped feet. Their average stature is about five feet six or seven inches in height (Bryant 1967:194).

Encounters with these "Shoshonees" were nearly continuous as Bryant's party moved down the Humboldt. He comments, "...the valley and the canadas of the mountains seem to teem (with Indians), judging from the numerous trails, footprints, and signal-fires..." (Bryant 1967:198); and, further down the river, he saw "a large body of Indians, some two or three hundred...They were naked, and armed with bows and arrows" (Bryant 1967:205). Delano's description of Western Shoshoni just north of Elko in 1849 is very similar to Bryant's:

> They were entirely naked, except a breach-cloth - of a dark complexion, nearly as dark as a negro, and showed considerable obesity - their stature was about five feet six to five feet eight inches, with well-formed limbs. Each was armed with a bow and a quiver of arrows, neatly made, tipped with iron (Delano 1936:68-69).

In the 1850's, U.S. survey and reconnaissance work resulted in reports sometimes quite graphic in their detailed depiction of the Shoshoni. Jacob Schiel, a German geologist and physician traveling with the Gunnison Expedition in 1854, described Indians visiting their camp near the "Goshoot" Mountains in eastern Nevada:

> We then received the visit of the expected guests, who were almost completely without clothing, dirty, and emaciated by starvation. In summer rats, lizards, and crickets serve as their nourishment, but in winter this game is lost to them or at least is very rare, and they are dependent for their subsistence upon some bulbous plants and seeds of smaller plants, thus being reduced to the greatest extreme of want (Bonner 1959:94).

Schiel went on to describe a group, perhaps Bannocks from Idaho, who were somewhat better off than these just mentioned.

> We met a group of about twenty Shoshonee Indians with their wives and children west of the Goshoot Mountains. They were well provided with buffalo hides and blankets, although they complained a great deal of hunger (Bonner

1959:97).

Further to the west near present day Ruby Valley along the East Humboldt Range, Schiel described the squalid condition of the Shoshoni which was so offensive to whites.

> About noon of the day we reached the base of the Humboldt Mountains, we saw smoke curling up in the neighborhood of a spring. It came from a Digger wickeyup (wigwam) or hut, which consisted of nothing else but a stunted cedar bush. The inhabitants of this nature-hut were a man and a rather young woman. The former ran off in fright when he saw us, but the squaw noticed us only after it was too late to run away, and she was caught by one of our party and brought into the camp...A more hideous picture of ugliness and dirt than this squaw cannot be imagined. Covered only by squirrel skins and dirt, discharges ran out of her mouth, nose, and eyes onto her body (Bonner 1959:97).

Reports of Shoshoni and Southern Paiute groups in the central and southern portions of the study area are few, since these regions were not in the path of the beaver trappers, the explorers, or the California-bound emigrants. However, two exploring parties sent out by the Mormon leader Brigham Young in 1855 and 1858 did travel through several valleys of eastern Nevada. The journal of the 1855 party, led by Elder David Evans, reports encounters with "Koonepanger or Snake" Indians who "talk altogether another language", in contrast with the "Parvante" Ute guides (Jensen n.d., entry for June 2 and 3, 1855). This particular encounter with the Indians probably occurred along the eastern slopes of the Snake Range, as the journal describes a "number of small streams coming down from the mountains" (Jensen n.d., entry for June 2, 1855). No detailed descriptions of these Shoshoni are offered by these two expeditions, however. It was not until the reports of the Indian Agents and the large-scale government surveys that some of these regions were explored and described. By that time, settlers and miners were moving into the area and the image of the Basin Indian was well established.

Summary

The early descriptions of central Basin Indians provided here are a representative sample of many such reports. The image of the Shoshoni or Digger is consistent almost without exception. He is described as a poor, starving wretch, living in a state barely above the animal in a barren land. Both the man and the land he occupied were viewed as expendable to the majority of the 19th century travelers on their way to more prosperous regions.

Certain aspects of this image were accurate. The Shoshoni and Southern Paiute were not rich in material culture, and their semi-arid central Basin home did not contain vast herds of bison or unlimited supplies of salmon. The technology of the Shoshoni, however, was adequate and the resources he sought, though less impressive than those found on the prairies and along the coast, were diverse and abundant in season. The comment of a 60 year old "Digger" Indian in response to a question by Captain J. H. Simpson in 1859 is appropriate here, as it sets 19th century ethnocentricity in perspective:

> I asked him if his country was a good one. He said it was; he liked it a good deal better than any other. I asked him why. Because, he said, it had a good many rats (Simpson 1869:54).

Distribution of Aboriginal Groups

Introduction

The Ely and Elko BLM districts were occupied prehistorically by Native Americans who were for the most part culturally homogeneous. Certainly some organizational variation may have existed in areas such as Ruby Valley and the Humboldt drainage, where resources were more concentrated, but all who occupied this region were mobile hunters and gatherers moving seasonally to expedite efficient exploitation of their respective regions. In the southern portion of the study area, among the Southern Paiute, there was a proto-historic adoption of horticulture, probably borrowed from the Hopi and early settlers, but the effect of horticulture on the Southern Paiute subsistence pattern was minimal (Steward 1938:180; see Euler 1966:112 for an opposing view).

Though cultural variation was slight there was a degree of linguistic diversity in the region. At the extreme western edge of the Elko District, Stewart (1966:207) shows Central Numic speaking Shoshoni mixed with Western Numic Northern Paiute. In southern Ely District, Shoshoni mixed with and gave way to Southern Paiute who spoke a Southern Numic language. These languages spoken by the three branches of the Numic linguistic family were not mutually intelligible, yet their respective speakers at the borders were usually amiable and cooperative (Steward 1938; Kelly 1934).

It should be kept in mind that the transition zones between these languages were not hard and fixed but broad, in some cases 100 miles wide. These gray zones were characterized by bilingualism and intermarriage of Northern Paiute and Shoshoni or Southern Paiute and Shoshoni (Steward 1970:124). When these transition zones are taken into consideration, it becomes clear that the political limitations of this report preclude intrusion into either Northern Paiute or Southern Paiute country; therefore, our focus is for the most part on the Western Shoshoni.

Northern Paiute

As mentioned above, few Northern Paiute speakers occupied the study area, although some mixture of Shoshoni and Northern Paiute is suggested by Stewart's maps (1966:207-218). The territory of the Yamosopo group of Northern Paiute, for example, is shown by Stewart (1941) as intruding into the Elko District from the west, north of the Humboldt River. Steward's (1938:161) discussion of the middle Humboldt River area places the Shoshoni-Northern Paiute border just west of Battle Mountain near Iron Point, which is outside the study area.

The Bannock, an enclave of Northern Paiute speakers located in Southern Idaho, are occasionally reported in northern and central Nevada along the Humboldt River (Simpson 1869:47; Holeman 1853:447). The term Bannock was also a loosely applied term meaning "robbers", referring to any Indians who besieged emigrant trains between Ft. Hall and the Sierras (Steward 1938:264). However, the traditional territory of these horse riding Bannock was not northern Nevada but the Snake River country of southern Idaho and eastern Oregon (Steward 1938:263-271; Wilkes 1845).

Western Shoshoni

With the exception of the southern end of the Ely District, the Western Shoshoni were found throughout the study area in prehistoric times. The ethnohistoric and ethnographic data both suggest that certain areas were regions of habitual use by named groups, although both the region exploited and the group membership were constantly fluctuating. Steward (1938) cautions that none of these named groups should be considered anything but a series of occasionally cooperating extended family units with no permanent political superstructure and no set territorial boundaries. The dispersed nature of the resources in the central Basin demanded the kind of structural flexibility described for the Shoshoni socio-political organization (Steward 1938:230-236; however, see the Social and Political Organization portion of this report). It seems clear that through developments during the historic period some of these named groups have become better known than others and are perceived of as more of a political unit than was the case prehistorically. Examples of this are the previously mentioned White Knife Shoshoni (Tosawihineen) and the Gosiute (Kusiutta), neither of whom were more of a cohesive entity socially or politically than any other group in the region, yet they are often named on distribution maps, while other groups are not, simply because the Gosiute and White Knife groups have been the specific focus of anthropological or other kinds of inquiry, thereby reinforcing their separateness. Others, whose names are obscured, now have no reality as separate groups because of displacement or other historical events. This situation as it stands at present is misleading and very difficult to reverse. Figure 16 of this report attempts to reconstruct the habitual locale of the various known groups who occupied the study area based on information in Steward (1938), Inter-Tribal Council of Nevada (1976a) and valuable assistance from Mrs. Beverly Crum, a Western Shoshoni woman with a graduate level background in anthropological linguistics from the University of Utah. Further attention will be paid to the problem of groups and their territories in the section on Social and Political Organization.

Although data are not equally available on all portions of the study area, three regions stand out as areas of population concentration: 1) the headwaters of the Owyhee River, 2) the valley of the Humboldt River, and 3) Ruby Valley and vicinity. Each of these areas is characterized by a substantial permanent water supply which, along with the associated resources, allowed for greater aggregations of people.

The Owyhee headwaters area was visited in the spring of 1829 by Peter Skene Ogden and his trappers on their way back to the Columbia River. On April the 20th, they crossed out of the Basin into the Snake River drainage as they moved from Maggie Creek to the South Fork of the Owyhee (William 1921:143). The journal entry for the date states, "...it is very evident from the numbers of fires in all directions that we are discovered by the natives. Late in the evening the trappers arrived and report favorably of the river as regards beaver, but again Indians most numerous" (William 1921:143). Later, on the 23rd of April, still in the South Fork region, Ogden again comments, "Indians very numerous about us" (William 1921:144). The reason for the aggregation of Indians at this time of year is not made clear, although they may have been gathering bitterroot (Valeriana edulis) or camas (Quamasia quamash). Some support for this suggestion is contained in the journal of John Work. His party traveled down the Humboldt into the same general area in late May and June of 1831 and reported trading with the Indians for roots (Work 1913:300-301). Early runs of steelhead (Salmo gairdnerii) are available at this time of year also (Plew 1980a:129). Interestingly, Ogden had been through the same region the previous December and did not mention seeing Indians until they had reached Clover Valley, beyond the headwaters of the Humboldt. According to Steward (1938:168) the Owyhee was a wintering area, since there was considerable timber and fish could be taken through the ice.

The upper Humboldt River Valley was another region heavily used by the Western Shoshoni. The groups occupying the region near Battle Mountain included the Tosawihineen or White Knives, while further upstream near Halleck and Deeth were groups called Kuiyutekkaneen or root eaters (Steward 1938:156). Considerable numbers of Indians were observed along the Humboldt by Ogden in 1828 (1971:140-141), Walker in 1833 (Leonard 1978:111-113), and later in 1846 by Bryant (1967).

Ruby Valley, to the south of the Deeth-Halleck area, has been studied quite intensively (Stewart various; Casjens 1974). It is considered one of the richest valleys in eastern Nevada and is often described as more heavily populated than surrounding areas (Steward 1938:144; Simpson 1876:64; Beckwith 1855:27; Stewart 1978b). Indian Agent Levi Gheen (in Stewart 1978b:11-12) is quoted as stating that "Ruby Valley is considered by the Indians their capitol or center place--their great chief resides there". Ruby Valley, termed an oasis by Stewart (1978b), differs from surrounding valleys in that it contains a series of springs which provide a predictable water supply for the human and animal inhabitants and are the basis for the extensive Ruby marshes. The groups living in Ruby Valley, Huntington Valley, portions of Gosiute Valley and probably Secret Valley were all called Watatekkaneen or rye grass eaters (Steward 1938:144; B. Crum, personal communication, 1981). However, Patterson et al. (1969), often refer to the Shoshoni in this area as the "Temoke band" after a "Chief" Temoke who participated in the signing of the 1863 Treaty and whose family continued as influential spokesmen for the Shoshoni in subsequent political affairs. A short biographical sketch of Temoke or Tumuko is found in Steward (1938:149).

Although these three areas just discussed were more intensely occupied than other regions, the Western Shoshoni were undoubtedly located in each of the valleys of the study area on at least a seasonal basis.

Southern Paiute

In the southern portion of the Ely BLM District is the traditional boundary between Western Shoshoni and Southern Paiute. Steward (1938:125) shows the Shoshoni and Southern Paiute mixed in southern Spring and Snake Valleys and in Lake and Dry Lake Valleys. The region south of this transition zone was all Southern Paiute. Kelly (1934) maintains that the Southern Paiute were divided into sub-groups which she calls "dialectic units with political concomitants" (1934:550). The reality of these "bands" and their associated territories has been questioned (esp. Manners 1974), but most (see Steward 1938; Stewart 1966) are in agreement that this area was Southern Paiute country. The northern portion of two of Kelly's bands, the Panaca and the Paranigat, falls within the Ely District. The Panaca is to the east of the Paranigat and includes, "Practically all of Snake (White Rock Mountains), Cedar, and Bristol ranges", with the northern boundary "more or less arbitrarily...near the northern limits of these ranges" (Kelly 1934:55). The smaller Paranigat territory was bounded on the east "by Pahroc range, on the west by Desert Valley", while the northern limits are "best described as passing between Irish Mountain and Golden Gate Ranges, thence northeast to Pahroc range" (Kelly 1934:554).

Population

It is impossible to estimate prehistoric aboriginal populations of the Great Basin or any area of North America in anything but relative terms. Regardless, obtaining some sense of numbers of people has occupied a good portion of anthropologists' and Indian Agents' time. Steward (1938:47), for example, produced a density map which shows his estimate of the number of square miles per person within the respective valleys of the Basin-Plateau region. He agrees with Kroeber's (1934:3) estimate of an average of one person per every 15.6 square miles but points out that there was tremendous local variation contingent on "the fertility of the natural environment" (Steward 1938:48). Large areas of the map are blank (see Figure 17), but it is clear that the Humboldt region and Ruby

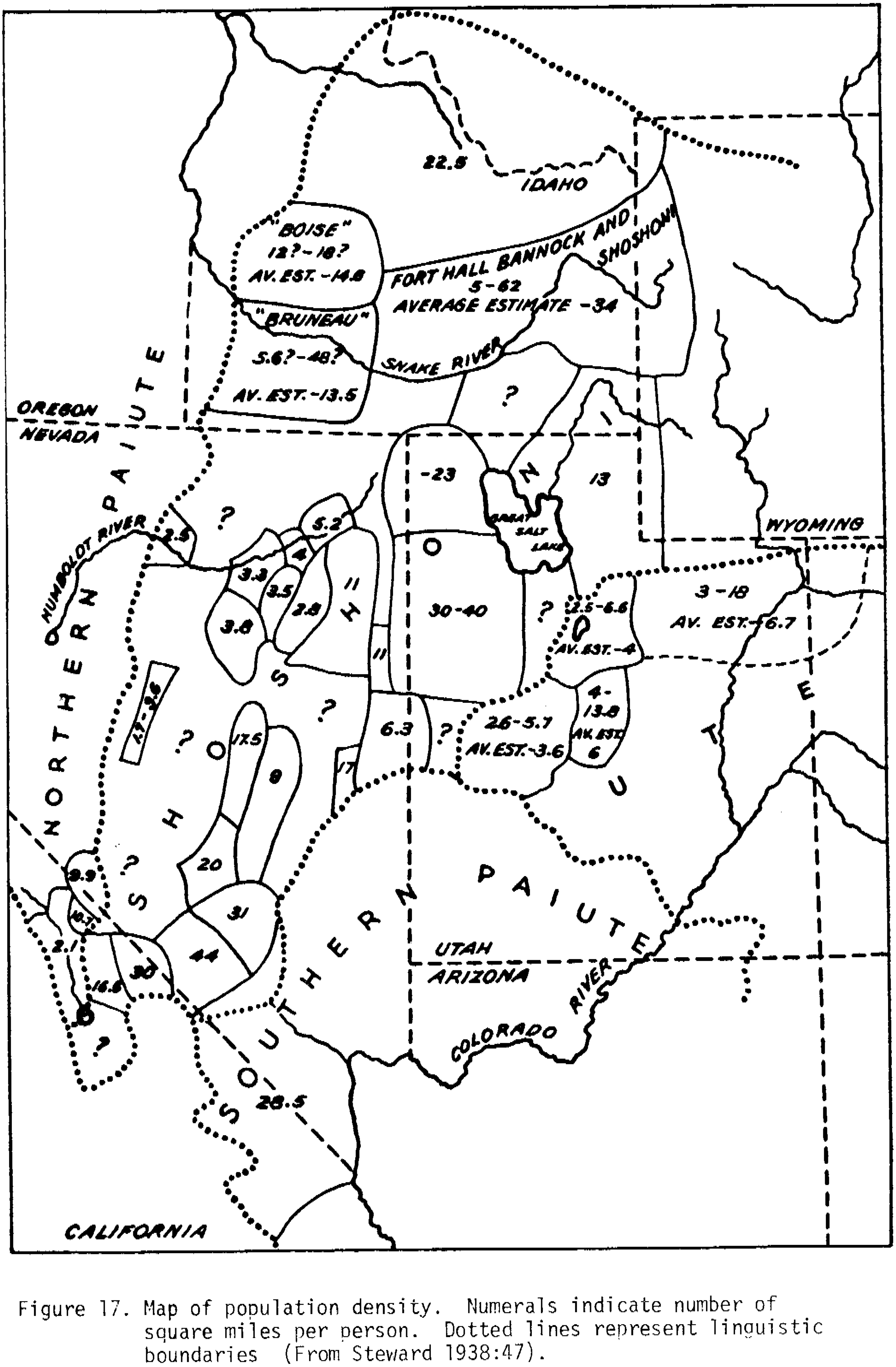


Figure 17. Map of population density. Numerals indicate number of square miles per person. Dotted lines represent linguistic boundaries (From Steward 1938:47).

Valley contained relatively more people than other regions of the Basin.

One of the prime responsibilities of the Indian Agents was to estimate Indian numbers. These figures, frequently little more than guesses, were a common inclusion in the Bureau of Indian Affairs Annual Reports. For example, Holeman (1853) on a trip down the Humboldt to assess the Indian condition reports a band of 600 under Too-ke-mah in the Thousand Springs Valley area, a band of about 500 under Ne-me-te-kah on the upper Humboldt River, another band of 200 under Paut-wa-a-raute on the Upper Humboldt, and a band of 450 under Oh-hah-quah in the vicinity of Stony Point on the Humboldt. Garland Hurt (1856), reporting a similar trip down the Humboldt River in May of 1856, records seeing few Indians until they reached Thousand Springs Valley. Here they encountered "a small band of about sixty men, women, and children", though a local settler reported a "large band" (about 150) of Indians at the upper end of the Valley (Hurt 1856: 228). Moving down the Humboldt Hurt's party "found the road thronged with Indians everyday, who would flock to our camp by hundreds at night" (Hurt 1856:228). In 1867 Head provides a summary table of numbers of Indians wherein he suggests there were 2000 Western Shoshoni and 700 Pah Ranagots. These numbers agree fairly well with Powell and Ingalls' (1874:11-13) estimation of 1,945 for all Western Shoshoni of Nevada and 1,031 for Pai-Utes of southern Nevada.

Patterson et al. (1969:30-42) provides some population information in addition to that supplied by Steward. For example: on the South Fork of the Humboldt an early settler recalls a winter village of 200 people camped near his ranch in 1867. On the North Fork of the Humboldt an old timer estimates there were 500 to 600 people; Patterson considers this excessive. Near Halleck was a village of Kuiyutekkaneen containing 100 persons. East of the East Humboldt Range prior to 1880 ten families (50 to 75 people) lived in Clover Valley.

Of course, this kind of data is difficult to evaluate, since there is no way these numbers can be reconciled in time or in space. From such information, however, Steward (1938:46) derived his estimates, which are acceptable, although they perhaps reflect a spurious degree of accuracy . In summary, it is best to conceive of this portion of the Great Basin as thinly inhabited. Variation from valley to valley in the kinds and quantities of resources available as well as the seasonal variation in the availability of those resources caused the density of population in any one valley to be in a constant state of flux. It is apparent that there was a tremendous contrast in numbers of people per square mile as one moved from the poorer regions, such as the Gosiute Country south of the Great Salt Lake Desert, where there was one person per 30-40 square miles, to the more fertile regions, such as Ruby Valley where Steward estimates one person per 2.8 square miles (Figure 17).

Subsistence

Annual Round

The Western Shoshoni and Southern Paiute of the central Great Basin exploited their environment through a series of patterned movements from season to season based on information derived from traditional knowledge, current or recently acquired input from their neighbors, and observations from individuals within the group. Utilizing this information a schedule of subsistence events was conceptualized and followed by members of the family or camp groups. This pattern is defined by Flannery's (1968) concepts of "seasonality" and "scheduling" which state that hunters and gatherers know when desirable resources become available in their country and, after setting up subsistence priorities, lay out logistics to harvest those resources efficiently. The distance traveled in the course of the annual round was variable but Steward (1938:232) suggests that a radius of 20 miles from the winter village location was not uncommon.

The Great Basin annual subsistence-settlement round could be described in three segments: 1) the winter village usually located in the lower fringes of the pinyon-juniper forest, 2) the spring and summer dispersal for collecting small animals, grass seeds, and roots in valley bottoms, and 3) the fall communal hunts for rabbit and antelope and pinyon harvests. There were, of course, exceptions to this pattern. Steward (1938:161), for example, describes a winter dispersal pattern in the vicinity of Battle Mountain, although he can offer no explanation. Also in the spring along the Humboldt we note from Ogden's journal that the Indians seemed to be gathered together for fishing, since this was the time for the native trout (*Salmo clarkii*) and suckers (*Catostomus* sp.) to spawn. Spring gatherings were also the pattern to the north of the headwaters of the rivers in the Pacific watershed, where there were runs of salmon (*Oncorhynchus tshawytscha*) and steelhead (*Salmo gairdnerii*). In fact, the pattern holds best south of the Humboldt River where spring spawning runs are not available to disrupt it. Some specific descriptions of subsistence activities among the Western Shoshoni are presented below.

Hunting

Probably the most important animal in the western Shoshoni diet was the rabbit, primarily the black-tailed jackrabbit (*Lepus californicus*). Although cottontails (*Sylvilagus* sp.) and white tailed jackrabbits (*L. townsendii*) occurred, and were hunted, their numbers were not as great nor did their habits make them as susceptible to rabbit drives, the most productive means of rabbit procurement. These drives took several forms. Simpson (1869:52) describes the use of nets in rabbit drives by the Gosiute.

> The Go-shoots, as well as the Diggers, constantly carry about with them these instruments (deadfall triggers and rodent skewers), which with the bow and arrow and net, constitute their chief means for the capture of game. The

nets, made of excellent twine fabricated of a species of flax which grows in certain localities in this region, are three feet wide and of very considerable length. With this kind of net they catch the rabbit, as follows. A fence or barrier made of the wild-sage bush plucked up by the roots, or cedar-branches, is laid across the paths of the rabbits, and on this fence the net is hung vertically. The rabbits are then driven from their lairs, and, in running along their usual paths, are intercepted by the net and caught in its meshes.

The use of fire in a rabbit drive by Deep Creek Gosiute is reported by Egan (1917:235):

About the middle of the forenoon next day I was at their camp. Most of the hunters had already started. Going about three or four miles, we came to the place selected for the drive--a piece of sage and rabbit brush land about a mile in diameter. The party I was with stopped, when we saw a fire about a half mile to our right and soon another about the same distance to the left, and then we could see the smoke rising a mile ahead of us. My party soon had their torches at work and the drive was on.

Working all around the circle and towards the center was a continuous ring of fire and smoke, which was gradually closing in and the rabbits were being crowded together thicker and thicker. Each Indian, squaw and pappose had a stick about four feet long, the only weapon they carried. A small boy or girl was just as good as a man, and oh, the fun of it--all laughing and hollering and making as much noise as possible. The rabbits got so dazed by the fire, smoke and tumult that they simply could not run. They would jump a few jumps and sit up trying to see a way out. I saw dozens of them stop within reach of the sticks and many of them were picked up that had not been hit. When a rabbit was seen to pass out of the human ring, someone would follow him in the smoke and put his body in one of the piles of rabbits they made as they proceeded towards the center, for they could not carry much of the game and do their work at the same time.

When the drive was over the field was a black, fire-swept, but still smoking patch of ground. Talk about rabbits, I am sure there were more caught on that drive than could be packed in a large wagon bed.

Fire was not the preferred method of obtaining rabbits, however, as it took years for the brush to grow back (Egan 1917:236).

A means of trapping rabbits as they came to water is reported by Huntington who traversed the central Basin in November of 1854.

They had the spring fenced with brush stuck, as if by nature made, with only 3 openings to the water and in these openings

> were deep perpendicular holes dug and covered with grass so ingeniously as to deceive either man or beast, and the grass being so arranged that it closed over the rabbit or hare that should fall in the pit so natural that half a dozen might fall in one after another (Huntington n.d.:86).

Cottontails were shot with arrows, snared, or retrieved from their burrows by digging or with special "rodent skewers" which, when twisted into the animals den, caught the fur and enabled the hunter to pull the rabbit out. Rabbits were important not only for their meat which was eaten broiled or dried, pounded, and mixed with seed mushes, but also for their skin. Rabbit skin robes were the primary form of clothing in the Basin and on the Columbia and Colorado Plateaus.

Antelope (Antilocapra americana) were also an important food animal to Western Shoshoni and were observed in considerable numbers by early travelers (see Work 1913; Kelly 1930:51). Like rabbits they were taken in rather elaborate, communal drives under the direction of a special leader. In the case of the antelope a shaman was called upon to charm the animals into the wings of the trap as described in detail by Egan (1917:238-239).

> I had sent word to the old chief (White Horse) that I would make him a visit in a few days, and to make it interesting to me he planned an antelope catch. For a few days before I came the squaws and bucks were busy repairing and extending the flanking arms of the old corral, or trap pen, which was located near the north end of antelope valley and about twenty miles northwest of Deep Creek. It was pretty cold weather, but no snow on the ground. The Indians thought it a good time and expected a good catch.
>
> This valley has a good many hills or knolls along the base of the mountains and a few of them scattered more to the center of the level ground in the middle of the valley. An antelope, which started up, will always run directly for one of these, that lay opposite from where he gets his scare from, and they run from hill to hill. They see no one ahead of them but the party behind being constantly increased, and if they undertake to pass around the drivers a buck or squaw is sure to raise his feet, and that sends them off to the center again.
>
> Thus it goes till they come to the line between the outer ends of the arms, which, there, are about four miles apart, but gradually closing in as they get nearer the pen. The arms or leads are started at the extreme ends by simply prying or pulling up a large sagebrush and standing it roots up on the top of another brush, thus making a tall, black object visible for miles. The standing of these brush were at first some ten to twenty feet apart, but were placed more and more near together the nearer towards the pen, and when the two lines came to about one hundred yards apart they were built so the buts of the brush were as

close as the tops would allow them to be joined and by this time both wings had swung to the east side of the valley, where there were many ravines to cross and plenty of cedar and pine to use for fencing.

There were many turns to the lane thus formed, but was getting narrower and stronger till finally, around a sharp turn through a large, thick bunch of cedars, the game were in the corral, which was about two hundred feet in diameter and built strong and high enough to withstand the charges of a herd of buffalo. The pine and cedar trees had not been removed from the inside of the pen, and not many from the runway, for a mile back.

Well, White Horse and myself rode the only two horses in the drive and we went to about half the distance to the ends of the runs and were soon back as fast as possible on the outside to take advantage of the bends and turns and to try and keep abreast of the drivers, who were all on a fast run yelling like a pack of coyotes. The drive came to an end with a rush and everyone working desperately closing up the entrance, a few small children appearing on the wall at different points around the pen. By the time we had tied our horses and climbed to the top of the wall the entrance had been closed.

Then began the killing of as many as were wanted that day, the killing was done with arrow and seldom missed piercing the heart. The catch was about twenty-five, mostly all bucks or does, there being only five or six yearlings in the bunch. There were five or six bucks killed that day and one of which had tried to jump the fence, but got entangled in the fence and was killed by having his throat cut with a knife. The reason they were not all killed in one day was to give the squaws time to cut up in thin strips the flesh and dry it on a rack built over a small fire, thus curing it so it would keep for a long time if kept dry...

The Indians told me that the last drive, before this one at this place, was nearly twelve years ago and the old men never expected to see another at this place for it would take many years for the animals to increase in sufficient numbers to make it pay to drive. These drives are mostly in the desert valleys, where the poor horseless natives live.

Bryant (1967:188-189) described a similar extensive trap to the west of the Great Salt Lake Desert which he was told was used for rabbit drives, although the wings were like those of an antelope trap. Simpson reported a simpler antelope trap apparently designed to capture individual animals.

> The only large game they have is the antelope, and this they are seldom able to kill. Their mode of taking him is as follows. They make a sort of trap enclosure of a V-shape, formed by two fences of indefinite lengths, composed of cedar branches, and converging from a wide open mouth to a point. Within the enclosure and near the vertex of the angle a hole is dug, and in this the Indian secretes himself with his bow and arrow. The antelope, being driven into the mouth of the trap, is naturally directed by the fence on either side to make his escape at this angle. Reaching this point, the Indian, whom he has just passed, pops up from his hiding place and shoots him (Simpson 1869:52-53).

Patterson et al. (1969:6-7) describes the use of disguises in antelope hunting. "The hunter wore a skin and a mask made of a male antelope head with horns. Holding his bow in one hand and a stick in the other to resemble front legs, he stalked the herd until he was within shooting distance." Communal antelope hunts, however, were the most successful. One informant recalls seeing 2500 antelope several times in an antelope trap located in Ruby Valley near Dry Lake (Patterson et al. 1969:7). Steward (1941:221, Figure 1f.) pictures an antelope corral as described by a Ruby Valley Shoshoni (see Figure 18).

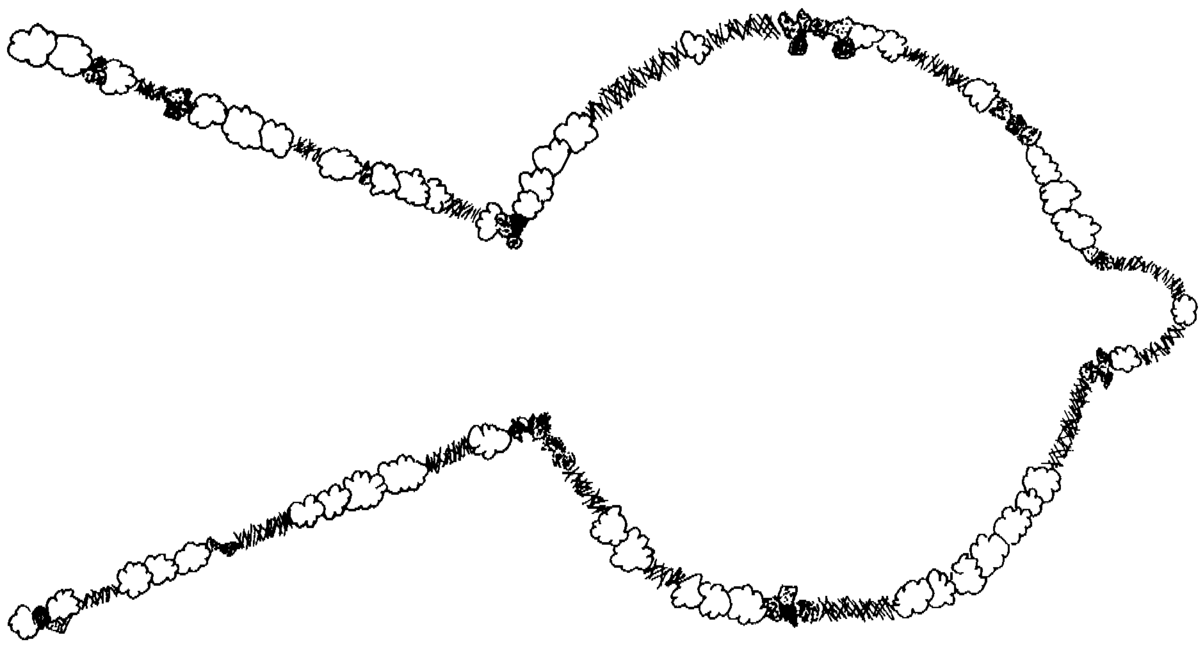


Figure 18. Ruby Valley antelope trap (After Steward 1941:221)

Other large game animals that occurred with some frequency in the study area were bighorn sheep (Ovis canadensis) and mule deer (Odocoileus hemionus). Deer were usually hunted individually in the fall or spring when they were in the foothills. Steward (1938:36) reports drives for deer using V-shaped traps and, in some cases, deer shamans. Some specialized means of hunting deer using fire and a specially constructed "deer shuttle" [sic] is recorded in Patterson et al. (1969:6) (See Figure 19):

> On deer hunts, Indians started fires for the purpose of driving the animals out of the brush. Fires often burned for weeks with no attempt to suppress them. A deer shute was located about halfway up Spruce Mountain. It had wings on both ends with one side being a cliff or rock and the other side made of logs. They speared deer in the narrow part of the shute, and as a deer was killed it was pulled out of the shute under one of the logs.

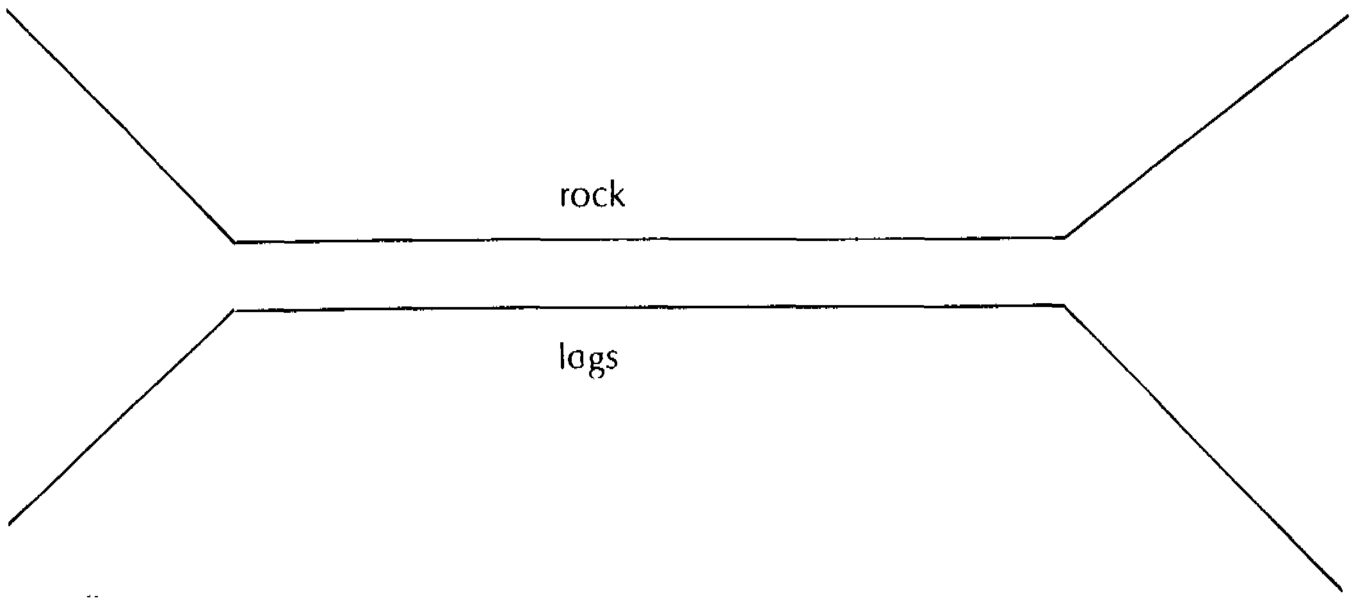


Figure 19. An example of shute construction (From Patterson et al. 1969:6)

Communal deer hunts are described by a Shoshoni from the region west of Ely (Steward 1941:218).

> [Shoshoni from the Hamilton region] sometimes hunted cooperatively, several men making brush wings converging to a hurdle which concealed a hole, placed on a trail where deer traveled south in the fall, north in the spring. They

were frightened (or attracted?) by a fire, jumped over the barrier and were killed in the hole by a man watching it.

Mountain sheep, though extinct in the region today, were once quite common and were hunted from blinds or pursued with the aid of dogs. Informants from Ruby Valley report sheep hunters using a hole for a blind and building a fire to keep warm while waiting for his quarry (Steward 1941:329).

Buffalo (Bison bison) were not found in the study area at contact times, although there is archeological and ethnographic evidence to suggest that they roamed the central Basin in earlier times and were hunted (cf. Fowler et al. 1973; Patterson et al. 1969:8, 36; Steward 1938:37).

Small mammals, such as pocket gophers (Thomomys sp.), ground squirrels (Citellus sp.), and wood or pack rats (Neotoma sp.) were also an important food source for the Western Shoshoni. Though they were sometimes hunted with bow and arrow they were most efficiently "harvested" by a "trap line" of deadfalls and snares or by drowning. While traveling west of the Humboldt Mountains (probably the East Humboldt Range) in 1854, Schiel (Bonner 1959:100) describes a ground squirrel hunt in May:

> Several days after crossing the Humboldt Mountains, we met some Indians who were busy catching ground squirrels. The animals were numerous and fat at this season. They are killed with blunt arrows, caught in traps which have almost the shape of the Figure 4, or else dug out. Some had forty to fifty of them hanging from their sides, the harvest of a single day.

Egan (1917:237) describes the means of taking "mountain rats" with dead falls.

> On one of my days out I came across an old Indian going home with his day's catch of rats. He had a large sheet iron camp kettle nearly filled with them. They had all been caught the night before by dead falls, as we call them, which consists of two sticks about three and a half or four inches long fastened together at their centers by a string that will allow them to spread apart about four or five inches in the shape of the letter "H". One of these, with any convenient flat rock heavy enough to smash or kill a rat, is one dead fall. This Indian had over a hundred of the triggers that he hadn't used, but said that he had set most of them.
>
> His plan was to go up one side of the canyon, setting the traps wherever he saw the sign of rats, and the same down the other side. The next day, taking the same route, gathering the catch and resetting the traps. The rats the Indian had were six to eight inches long, two and a half inches wide and half an inch thick. They were packed as close as he could pack them in the kettle and were quite

heavy for the old man to pack to camp, so I carried them for him.

Other deadfall designs, in addition to that described here by Egan, are found in Steward (1941:229, Figure 6n, also 224) and in Wheat (1967:73) for the Northern Paiute (see Figure 20).

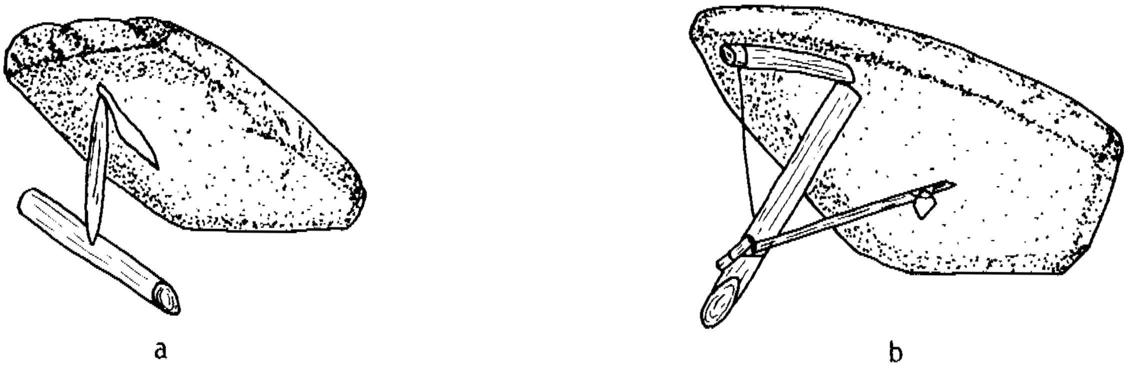


Figure 20. Deadfall traps used by Great Basin peoples: a) Western Shoshoni (Steward 1941:229) b) Northern Paiute (Wheat1967:73).

Egan also describes a method used for drowning out gophers:

> We followed along the ditch until it came out onto the flat, where there was a division making two streams. A little lower they were again divided. Then we could see about eight or ten squaws very busy, each with a stout stick, digging a trench and leading water to a gopher hole. The gopher would soon make his appearance in a half-drowned state, a rap on the head, then put in the sack at the back of the squaw, who would then turn the water into the next nearest hole, with the same result.
>
> All of the squaws were hard at work the same way, making a very clean job of it, and very few would be left for future drowning out. Muncey said he was going to time the young squaw. We saw her divide part of the water into two streams, thus running it in two holes at the same time. Sometimes she would have three or four streams and then again but one, and according to Muncie's time she had caught between twenty-five and thirty in the half hour. (Egan 1917:245-246).

These rodents probably supplied a significant portion of the Basin Indian diet, especially in the spring of the year when they were most abundant (Janetski 1980a).

Upland birds, such as sage hens, were also hunted using a rather elaborate net and brush trap as described in Steward for the Battle Mountain and Egan Canyon areas (see Figure 21).

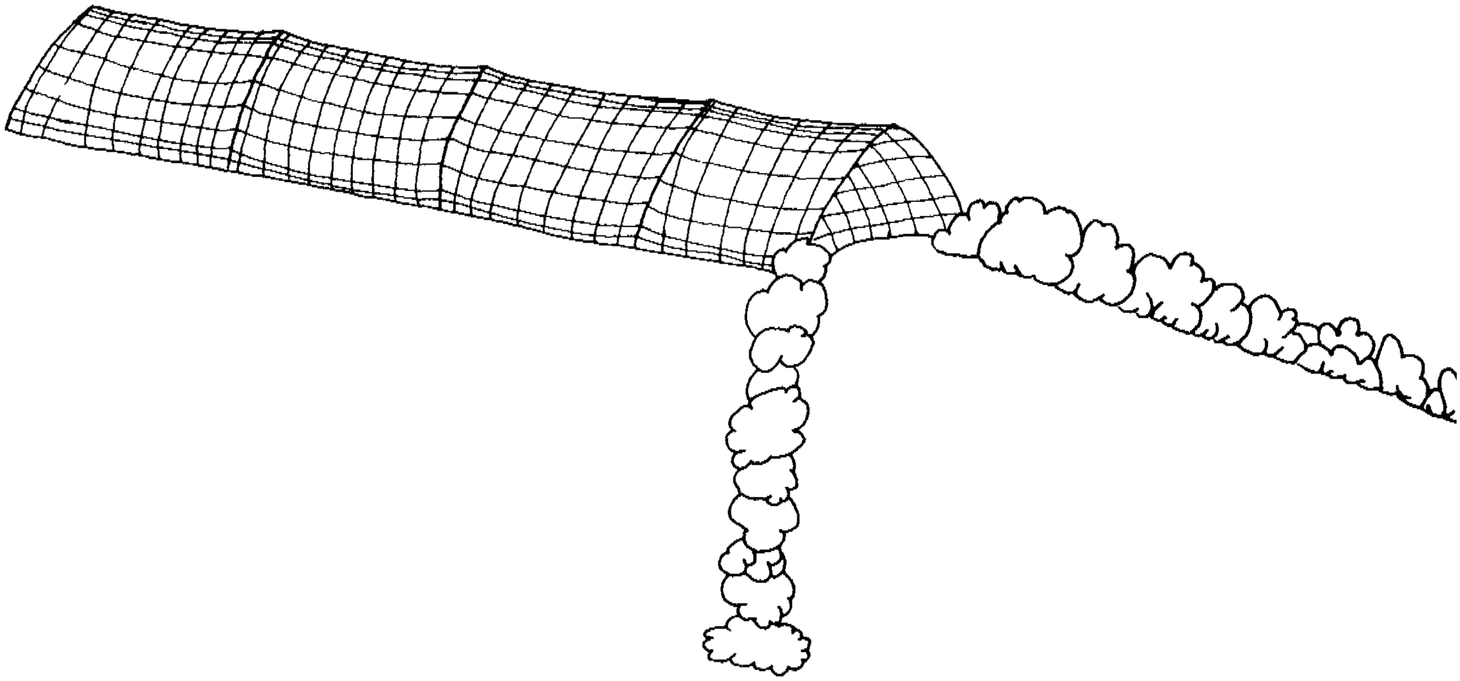


Figure 21. Sage grouse trap or net with brush wings (After Steward 1941:221).

Other "harvested" animals included waterfowl and crickets or grasshoppers. Waterfowl drives were restricted to extensive marshy areas such as Ruby and Franklin Lakes: some of the same methods employed in rabbit drives were utilized (Scott 1966:24-25). Scott describes a mud hen drive which took place at Humboldt Lakes, and similar drives were probably carried out in the Ruby Valley region. According to Scott, nets were strung across a narrow portion of the lake or at the mouth of a river and the mud hens, which would rather swim than fly, were "shooed" or driven into the nets.

Crickets were obtained in tremendous numbers through communal drives. Egan's description of a Gosiute cricket harvest is excellent.

> They had been a number of days at the work, but were now ready for their cricket drive, having five or six of the trenches strung across the bench, the end of each trench joined, or was very close to another. They covered these with a thin layer of stiff wheat grass straw, for what purpose I did not know then, but I though they were making a mistake, for crickets would crawl over the ditch

on it, but I must wait and see...

> These trenches ran in a north and south direction, the land sloping to the west. The Indians, men, women and children, divided into two parties, one going to the north end and the other to the south end, all carrying a bunch of grass in each hand. They went single file towards the foothills, and making the distance between the parties wider than the length of the trenches. When they had gone, what they thought far enough, as judged by the scarcity of grass left by the black insects, the party closed in and, walking back and forth swinging their grass bunches they gradually worked down toward the trenches.
>
> We followed them on horseback and I noticed that there were but very few crickets left behind. As they went down, the line of crickets grew thicker and thicker till the ground ahead of the drivers was as black as coal with the excited, tumbling mass of crickets...
>
> When all had been driven in the Indians set fire to the grass they had in their hands and scattered it along on top of that they had over the trenches, causing a big blaze and smoke, which soon left the crickets powerless to crawl out, if any were left alive when the grass had all burned up, which did not take many minutes. I rode along the line and in some places the trenches were over half full of the dead and legless crickets. I went down below the trenches and I venture to say there were not one out of a thousand crickets that passed those trenches....(Egan 1917:230-231).

From the above drive Egan estimates that the women involved took from two to four bushels of crickets each and left several bushels to gather later. Crickets and grasshoppers were dried, pounded into a flour and mixed with berries to make what Bryant called "Desert Fruitcake" (1967:141).

Grasshoppers were obtained in similar drives as described by Hoffman (1878:465):

> Their mode of preparing grasshoppers is in this wise: a fire is built covering an area of from 20 to 30 feet square, and as the material is consumed to coals and ashes, all the Indians start out and form an extensive circle, driving the grasshoppers with blankets or bunches of brush toward the center, where they are scorched or disabled, when they are collected, dried, and ground into meal. With the addition of a small quantity of water this is worked and kneaded into dough, formed into small cakes, and baked in the sand under a fire.

These accounts describe only a few of the many animals that were hunted, but these were probably the predominant prey within the region. Hunting activities, especially the hunting of large game, was accomplished by men, although in communal hunts, e.g., antelope drives, women and children were also involved. Men and women were both involved in small mammal trapping, waterfowl drives, and cricket drives (Kelly 1932; Steward 1938; Egan 1917).

Considering the Western Shoshoni economy as a whole, hunting contributed less in terms of total calories than did plant foods (Steward 1938: 230-231). Both plant and animal foods were dried and stored in caches for future use (cf. Chamberlin 1911:336).

Gathering

Much has been made of the importance of plant foods in the subsistence economy of the Western Shoshoni (e.g., Steward 1938; Chamberlin 1911). Chamberlin (1911), in his ethnobotany of the Gosiute, lists 81 species of utilized plants and provides some description of how they were used. Steward (1938) organizes these important gathering activities into four periods: 1) early spring, 2) early summer, 3) late summer, and 4) fall, as described below.

Spring was a time when people were tired of the diet of bland seed mushes and were looking forward to gathering the first greens of the season. The young leaves, stems, and rhizomes of early sprouting plants were generally boiled. Among the more important in this regard Chamberlin (1911:338) lists arrow-root (Balsamorrhiza sagittata), Indian parsnip (Cymopteris sp.), bulrush (Scirpus sp.), and thistle (Cnicus eatoni). Many, such as sego (Calochortus sp.) roots, and cattail (Typha sp.) roots and stems, were also eaten raw (Inter-Tribal Council of Nevada 1976a:6). Very little in the way of special paraphernalia was necessary in gathering these greens, although the common conical burden baskets would have been used to transport them to camp.

The early summer generally marked the first ripening of grass seeds in the valley bottoms. As the summer progressed, the same plants matured slightly later on the gradually rising slopes of the surrounding hillsides. Timing was all-important in the harvesting of these seeds as the fragile rachis of wild grass held the ripe seeds only a few days after maturation. Gathering and threshing of grass and other small seeds are described by Chamberlin (1911:341-342) for the Gosiute.

> The seeds of all these and the other plants were collected in approximately the same way. They were first gathered in large baskets, commonly about two and a half feet wide by three feet deep, and designated by the name na'-pi-o-sa or sometimes wu'-tsi-nump. These baskets were closely woven and were made tight by means of the gum or pitch of the pine by which the meshes were thoroughly filled, as with water-jugs. The ripe heads of grasses, or the seed containing portions of other plants, were knocked or swept into this small basket (ta'-ni-kum-ma-wu"-ti-ga) by means of a second smaller basket about the size of a three- or four-quart milk-pan and known as da'-niq. Often this da'-niq was provided with a handle with a flat piece of wood sharpened to an edge like the blade of a knife, its

use being to strike against and cut off the fruiting portions of the plants. The large basket might be held in convenient position beneath taller plants with the left hand while in the right the smaller one was used to sweep across the tops of plants; but more frequently the na'-pi-o-sa was carried beneath the left arm or swung upon the back. When in the last position a quick sweep of the da'-niq was made from right to left across the plants and up over the left shoulder so as to carry the loosened material into the receptacle.

The materials gathered in the baskets in they way were carried to some convenient and suitable place near the encampment and piled upon the ground preparatory to threshing. This operation, man-gop'-ma"-wu-pain ("to beat seed vessels", "to thresh"), was performed simply by beating thoroughly with sticks or paddles until the chaff, pods, and other accessory parts were fully loosened from the seeds. The separation of the seeds from the chaff and other waste parts--the winnowing--was next attained by slowly shaking the threshed material from a special winnowing basket or fan held at a height when a wind was blowing which could away the chaff while allowing the heavier seeds to fall more directly to the ground or upon skins spread for the purpose (ma-wi'-a-nin, "to winnow"). The winnowing-basket (li"-u-wa) was circular or ovate in form, and was shallow, being but gently and gradually depressed from the margin toward the center. Larger or heavier materials were separated by hand.

Following this the seeds were stored in baskets in subterranean pits for future use. Prior to consumption the seeds were ground with milling stones and made into a sort of mush which was often baked like a "crude cake" (Chamberlin 1911:343). According to Hoffman (1878:467), "Baking is done under a layer of sand, upon which a fire is built..."

A few of the more important small seed plants as described by Chamberlin (1911:340-341) and Steward (1938:21-32) are listed below.

Small seed plants

<u>Agrostis</u>, redtop grass. People in Pine Valley south of Carlin were called redtop grass eaters, emphasizing the importance of this grass there.
<u>Agropyron</u>, blue joint or wheat grass.
<u>Artemisia</u> sp., sage. Seeds were eaten throughout the study area in times of scarcity.
<u>Atriplex</u> sp., saltbrush. <u>A. argentea</u> was a species commonly broadcast or sown by some Western Shoshoni groups.
<u>Chenopodium</u> sp., goosefoot or Lambs quarter. Thought by Steward to be introduced. This and other chenopods were also important as greens.
<u>Descurainia</u> sp., tansy mustard.
<u>Elymus</u> sp., wild rye. A grass common in Ruby Valley.

Helianthus sp. A sunflower. Sunflower seeds were a common item of diet.

Mentzelia dispensa, blazing star. These seeds were also broadcast or sown.

Oryzopsis hymenoides, Indian rice grass or sand grass. Most important in the southern portion of the study area.

Poa sp., bluegrass. Seeds important everywhere.

Salicornia sp., samphire or pickleweed. Seeds important to Gosiute especially.

Sisymbrium canescens, hedge mustard.

Later in the summer berries and mature roots replaced the small seeds in the gathering activities. Important at this time were:

Tubers

Balsamorrhiza sagittata, arrow-root.

Calochortus nuttallii, sego.

Carum gairdnerii, yamp.

Quamasia quamash, camas.

Valeriana edulis, tobacco root or bitterroot.

Berries

Amelanchier utahensis, service berry. These berries were eaten plain or mixed with seed mushes, or with cricket flour and stored.

Prunus sp., chokecherry. Chokecherries were mixed with other more bland foods for flavoring and were also stored after being mashed and dried.

Rhus trilobata, squaw berry.

Ribes aureum, currant.

Rosa ultramontana, wild rose.

Sambucus sp., elderberry.

The first frost of fall, which usually occurred by late September, meant the pine nuts (Pinus monophylla) were ripe and ready for harvesting. Pine nuts were a very important food item when they were available, but, as trees only produced once every three to four years, crops were erratic and years of extreme abundance were followed by very poor crops. Pinyon trees were not plentiful north of the Humboldt River except in the Grouse Creek area in the northeast corner of the state. South of the Humboldt good stands occurred in the Ruby Mountains, the Deep Creek Mountains, and the Snake Range, although trees are found in most ranges above the 6000 foot level. When they were plentiful, several hundred pounds of nuts could be procured by an individual in a week to ten days (Steward 1938:27). Egan (1917) and Chamberlin (1911) provide similar descriptions of pine nut harvesting and procurement. Egan's more detailed account describes a pine nut harvest in the Schell Creek range of eastern Nevada.

Jack and I were taking a scouting trip high up in the Schell Creek range of mountains, when we came across an Indian who, with his squaw and children, were busily engaged gathering pine-nuts. The man had a long pole with a strong hook fastened to one end. He would reach up in the tree to the pine cones, hook the crook around the branch on which they hung and pull branch and all down, the squaw and children carrying them to a place and piling them up in a heap. When they had collected as many as they wanted that day, the buck had finished his part of the work and could pass the rest of the time sleeping or hunting squirrels just as he pleased.

> The squaws and children gathered a little dry brush, which was thrown loosely over the pile of cones and set fire to. The cones are thickly covered all over with pitch, for this reason they make a hot fire, the squaw watching and stirring it up as needed to keep the nuts from burning, as all she wants is to burn the pitch off. When this is done she rakes them back from the fire as a man would do when drawing charcoal.

> When the pitch was all burned off the burs, or cones, the squaw spreads a blanket down close to the pile, then taking up one cone at a time, would press them end ways between her hands, which opens the leaves, under which there were two nuts to every leaf. Then shaking the cone over the blanket the nuts would all fall out as clean as you please.

> When the nuts had all been cleaned from the cones they were put in a large basket that would hold over two bushels and was nearly full, the squaw carrying that on her back to a place where they were placed all through the pine-nut grove to save carrying them too far and save time, for the harvest does not last long, for a heavy frost will cause the cones to open and the nuts to fall to the ground (1917:241-242).

The cooked pine nut meats were removed by mulling and winnowing to crack and remove the thin shells. Afterwards the clean nuts could be eaten whole but were most often ground into a flour which was used to make pine nut soup, a dish sometimes flavored with meat or berries (Miller 1972:45; Wheat 1967:16).

Additional insight into storing procedures is obtained from Hoffman whose observation occurred in the early 1870's near Eureka, Nevada.

> On the trail leading from Eureka southward towards Hot Spring Canyon and Belmont, Nev., I saw at various localities the remains of stone circles which had been placed there by the Shoshonees. The ranges of mountains and foothills generally are covered with pinyon pines (Pinus edulis [sic], Engelm.), and the Indians who occupy

> small patches of soil for permanent encampments are in the habit of selecting suitable places along the foot-trails for gathering the fruit of this tree and storing it for future use, as well as for such of the tribe as may be unable to reach camp, or in want of food. All the Shoshonees in the southern interior of Nevada provide for one another in this manner. Their mode of doing is in this wise: a number of stones are collected, each of them from one-half to one cubic foot in bulk, which are arranged in the shape of a circle having a diameter of from 2 to 4 feet. When the fruit is abundant (which happens but once in three years in respective localities), it is collected and piled into this circle, covered over with sticks and leaves, and finally a layer of earth, so as to secure them from rodents and birds (Hoffman 1878:473).

The importance of pine nuts, like grass seeds, derives not only from their sweet flavor and nutritional content (Farris 1980), but also from their abundance and storability. Nuts cached as described above by Egan and Hoffman sometimes lasted up to two years before spoiling (Steward 1938:27). Stores were commonly depleted, however, by late winter or early spring.

Steward describes the importance of pinyon crops as follows:

> The pine nut, which was without question the major food (for the Nevada Shoshone) was erratic in its yield from year to year. A given locality yielded a crop only once in two, three or four years, but when it did yield, the abundance was many times what the local population could have harvested. People having poor crops in their own region therefore travelled to places of plenty and it would have been absurd for the residents of the favored locality to repel them for poaching (Steward 1937:629).

Because of the occasional nature of pine nut crops they were probably only one in a series of important seed-food plants whose fruits were harvested and stored in subterranean caches for winter use. Total dependence on any one of these crops could have spelled disaster to the Shoshoni.

To increase the gathering yields environmental manipulation by burning and by sowing wild seeds was practiced in the Great Basin (cf. Downs 1966b). The former is referred to by a South Fork or Huntington Valley Shoshoni woman in the following quote:

> Shoshone Indians always here. They camped near the springs in the mountains and at night their campfires could be seen glowing....They used to burn an area of sagebrush so that plants would grow where they burned. These plants, they would then harvest...but they no longer grow any more (Inter-Tribal Council of Nevada 1976a:3).

Burning to improve the wild seed and tobacco crops is recorded by Steward (1941:281) for nearly all the valleys within the study area.

Sowing of wild seeds was also widely practiced by the Western Shoshoni. The primary seeds broadcast were Chenopodium album, Atriplex argentea, Oryzopsis hymenoides, and Mentzelia sp. (Steward 1941:333). Irrigation of these plants is reported for prehistoric times in Snake, Spring and Diamond Valleys (Steward 1941:333).

Fishing

Fish as an important food item in the study area is restricted to the Elko District which contains the Humboldt River and its tributaries and the headwaters of several rivers contributing to the Columbia-Snake River system. The latter participated in the several annual salmon (Oncorhynchus sp.) and steelhead (Salmo gairdnerii) runs. Basin fishes important to the economy of the Western Shoshoni included the native cutthroat trout (Salmo clarkii), several species of suckers (Catostomus sp.), one species of chub (Siphateles obesus), and perhaps the small red-sided shiner (Richardsonius egregius) and black minnow (Agosia robusta). All of these species are recorded for the Humboldt River (Steward 1938:41). To the south of the Humboldt fish were restricted to perennial streams emerging from the higher ranges, such as Snake Creek near Garrison, Utah, although the desert springs and marshes sometimes contained small fish in large numbers (see Simpson 1876:50). Patterson et al. (1969:8) also report that "Fish were taken in the mountain lakes and streams as well as Franklin Lake and the marshes."

All of the Humboldt River fish spawned during the spring or early summer, a fact which may account for the rather large gatherings of Indians seen at that time by early travelers. Ogden (Williams 1971), for example, on the Humboldt River in April of 1829 encounters several groups of Indians fishing. In the vicinity of Halleck he notes, "...we found thirty Indians employed in fishing salmon trout [undoubtedly Salmo clarkii], about eight inches in length, remarkably fine. They gave us all they had, about fifteen." (Williams 1971:140). Though these numbers or sizes do not seem impressive Steward (1938:41) suggests that fish may have been quite important to the economy of those Shoshoni along the Humboldt.

The importance of fish to the economy of Shoshoni living along the Snake River tributaries is suggested by archeological work in southern Idaho (see Plew 1980a and Follett 1963). Patterson et al. (1969:47, 53) describe the use of fish by Indians at Owyhee: "Families at Owyhee procured food from small streams using nets to take small fish. Families caught salmon and spent summers gathering roots and berries, often remaining on Jack Creek until fall..." Of the Bruneau River Indians they state, "other times Indians roamed the Bruneau country to take salmon in the summer, drying the fish and packing them away like bales of hay."

Means for taking fish by Humboldt River Indians are described by Steward (1938:159).

> Individuals took fish in summer and winter with nets and hooks. Communal fishing involved stone dams or willow weirs equipped with baskets...

> The maker of a trap or dam was director of fishing operations. He called for assistance to drag out the baskets full of fish every 2 to 4 days, as each weighed up to 200 pounds. The fish were then distributed among the various families...
>
> Ownership or even habitual utilization of fishing places was not strongly if at all developed.

Bryant (1967:202) on the Humboldt in August of 1846, describes a fish trap near a deserted dwelling. "We discovered, on the bank of the river, a fish-trap ingeniously constructed of willows interwoven. It was about ten or twelve feet in length, and shaped like the cornucopia." Such a device may have been used in the manner depicted in Steward (1941:221) and reproduced in Figure 22 below.

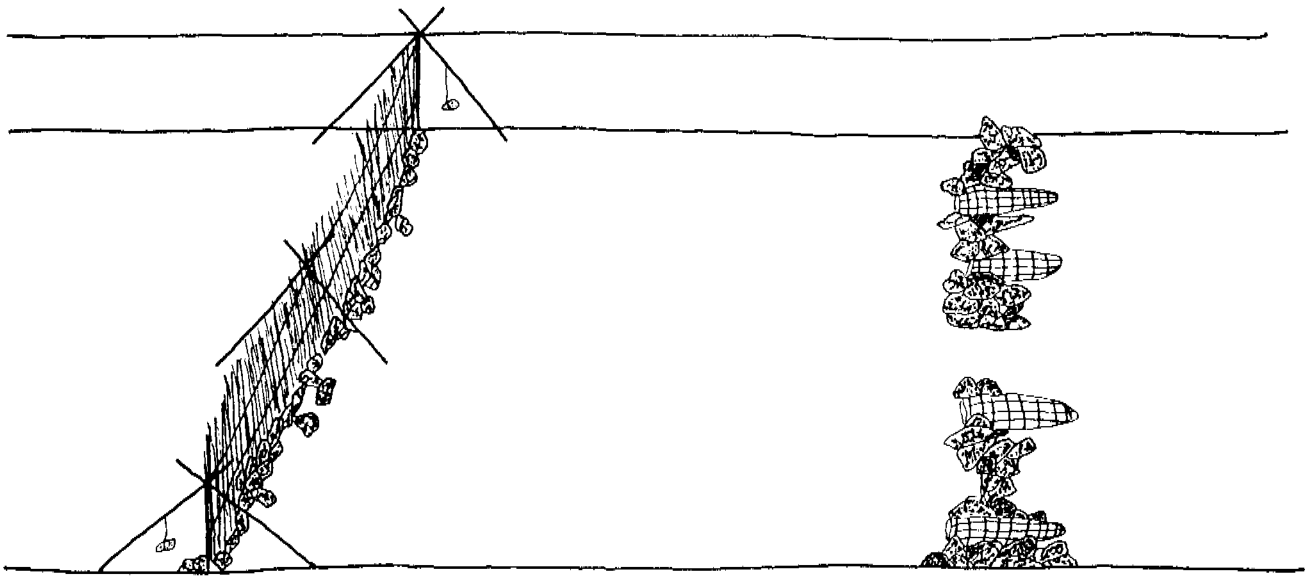


Figure 22. Fish trap used by Battle Mountain Shoshoni (After Steward 1941:221).

Steward (1938:159) mentions a stone dam observed in the Humboldt River thirteen miles west of Elko, one on "Susie Creek not far from its junction with the Humboldt", and one on the South Fork twelve miles from the Humboldt River. In addition to the communal fishing activities individuals fished with nets and hooks (Steward 1938:159), willow weirs, harpoons and arrows (Rostland 1952:171-192).

A method of Shoshoni fishhook manufacture is supplied by Hoffman:

> The Shoshonees sometimes manufacture their own fishhooks by

> taking a splinter of bone and attaching another and smaller piece at one end, at an angle of about 40 degrees, by means of silver threads. For catching the larger salmon trout with which Maggie Creek, Independence Creek, and the Owyhee abound they answer very well (Hoffman 1878:469).

Even though there were resident fishes available in the local streams year around, fishing activities were generally seasonal, increasing with the predictable spawning runs, and decreasing as the numbers of fish dropped. For the interior draining streams the fishing season was in the spring to early summer, while in the north runs occurred in the late summer and fall as well (Steward 1938:168). Winter fishing was also practiced and, according to Rustland (1952:206), was very important along the Humboldt where fish were taken through the ice. A Shoshoni from Elko recalls fishing through ice with a "long line" rigged with 200 hooks baited with worms (Steward 1941:330). Nets were used for ice fishing by Humboldt River Shoshoni (Steward 1941:232).

Locating Water

In an arid land such as the central Great Basin, water was a critical and apparently scarce resource. Supplies of water, in addition to verifiable springs and streams, were available to those intimate with the environment; the ability to locate those supplies was another important survival tool of the Western Shoshoni. Insight into these practices is preserved by Egan who relates several means of finding water in the vicinity of Gosiute Valley as demonstrated by Jack, a Gosiute Indian.

> We were about the middle of the valley, facing south-easterly, and were among the sand-dunes, which spread a few miles in width and many miles in length through the valley. We had not gone far after this talk when Jack said, "Wait," and pointing to some rat or gopher holes in the side of the sand-dunes, said, "They must have water, I see." Dismounting, he picked a place between the dunes and with his hands scraped off the loose sand to a depth of about six or eight inches to water. He then made the hole nearly a foot deeper and a foot wide, which quickly filled to the water level. Waiting for it to settle, we then tested it and found it to be a little brackish, but still nice and cool and quite drinkable...
>
> Towards evening we were traveling along the foothills, going in the direction of where we knew there was a water hole five or six miles distance. Where we were the limestone formation lay very flat and in some places was washed clean of all soil for large areas and but few cracks or breaks all along the lower edge of these limestone beds.
>
> I noticed that the grass and brush was thicker and stronger than farther down. I asked Jack if he thought we could get water near the edge by digging. "No," he said,

"too deep; but wait, see the coyote tracks. They get water somewhere close to here." So hunting around a while I got off my horse and sat on a little raise watching Jack. He zig-zagged around till he had worked off about one hundred yards from me. I went to where he was standing and said, "Did you find water?" he said, smiling; "Come and see," leading the way to the bottom of a large saucer shaped swag, and what I saw was an oblong hole about four feet across the narrowest way and about twelve feet deep. There was eight or nine feet of water in it and so clear that we could see the bottom and sides very plainly and all the walls were solid limestone...

The next day we, having crossed the summit of the desert range of mountains, about noon, as we were riding along the base of the mountain or about half a mile above the white alkali desert (the most desolate and dreary country I ever saw) seeing a poor, pretty near hairless coyote. I asked Jack what he was doing so far from water. "Maybe not far," he said. "We will try and find his drinking hole." So in riding along he pointed up the mountain a little way and farther along our way to where the limestone ledges dipped at a very steep angle into the mountains, he said, "We will go along that way."

We came to a place where a thick ledge about thirty feet high hung over a thinner one that was about eight or ten feet high and from two to six feet from the higher one, that hung completely over it. Jack went to one end of the ledge, or to where he could get on top of the smaller ledge, gave a whoop and said, "Plenty of water." I was soon at his side and saw a pool of clear water (no scum or dirt) that extended from ledge to ledge and some thirty feet long. At the ends the bottom sloped toward the center, at which place there was no way to judge the depth, as the bottom could be seen only a few feet from the ends, but there was thousands of gallons of water held there, as good, too, as any you ever tasted. But let me tell you, a person might ride or walk within six feet of it and still think it was miles, and hot ones, to the nearest water (Egan 1917:243-244).

In each case after locating water, Egan and his Gosiute guide camped in the vicinity of the "invisible" water supply. The implications of these "waterless" camps for understanding archeological settlement patterns is obvious. Apparently waterless camps in dune fields and other desert locales may not have been waterless at all, though, as mentioned, camps were not made immediately adjacent to the exposed water, but "a little way off so the wild animals can come and drink" (Egan 1917:243). Indian wells perhaps similar to those dug by Egan and his Gosiute guide were observed by Kern (1876:480) in the vicinity of Walker Lake. To understand prehistoric settlement in the Great BAsin archaeologists must continue to become better acquainted with the land and its resources (see also Heizer 1964; Steward 1937:105).

Introduction

Shoshoni material culture has been described as "...simple and drab... concern(ed) with the utilitarian rather than the aesthetic" (Spencer and Jennings et al. 1977:188). Function was certainly a primary ingredient of Shoshoni material items, since few purely decorative or non-subsistence related items are noted in either the ethnographic or ethnohistorical sources. The usual explanation for this sparse material culture is that the necessity for mobility in order to follow changing seasons and available foods kept material culture to a minimum in the absence of transportation other than by foot. Steward feels that this explanation falls short and suggests that the material poverty of the central Basin may result from a lack of raw materials needed for manufacture and/or the failure of the Shoshoni to borrow the activities, either economic or social, which required additional material culture items. He further cautions that his observations must be viewed with the knowledge that the use of many of the objects described was abandoned as soon as superior items of Euro-American manufacture were made available (1941:235).

Houses

Gosiute Shoshoni dwellings are described by Simpson (1869:50) as "habitations which, summer and winter, are nothing more than circular enclosures, about four feet high, without roof, made of the Artemisia or sage brush, or branches of the cedar, thrown around on the circumference of a circle, and which serve only to break off the wind." Stewart (1942:261) also notes the lack of Gosiute dwellings other than this enclosure. This is probably what Steward (1941:334) has called a windbreak (see Figure 23a) and may be similar to those photographed by Hiller among the Southern Paiute in 1872-73 (Euler 1966:Appendix I, p. 26, Figure 33). Stansbury (1852a:111), however, describes a more substantial dwelling located in Skull Valley, Utah, most likely erected by the Gosiute.

> In a nook of mountains, some Indian lodges were seen, which had apparently been finished but a short time. They were constructed in the usual form, of cedar poles and logs of considerable size, thatched with bark and branches, and were quite warm and comfortable. The odor of the cedar was sweet and refreshing.

Steward (1941:334) describes domed wickiups and conical houses both of which were probably winter houses, the former (see Figure 23b) were built of willows and the latter were constructed of cedar or cottonwood poles. Steward (1941:233) describes the wickiups as follows:

> The domed willow house is easily constructed and is an effective shelter, especially from the sun. It is generally distinguished from the conical lodge by its name...It is built of large willows, planted in a circle

(or a portion of a circle); the willows are bent over and tied to others from the opposite side to form a dome or portion of a dome. The covering may be grass, brush, mats, recently canvas, sheets of tin, and odds and ends; even an earth covering in rare instances. It is common in the western part of the Shoshoni area and among adjoining Northern Paiute.

Domed houses such as these are described by Beckwith (1855:32) in May in Huntington Valley:

> Their [Shoshoni] wigwams--wick-ey-ups, as they call them--are superior to those we have recently seen. They are bee-hive shaped, four feet high, and partially covered with grass. The opening of every one that I have seen in the Basin is towards the northeast, an indication of the prevalent direction of the storms.

House floors were lined with grass and mats; in fact, the word "Shoshoni" may derive from their practice of laying abundant grass on the house floors, so (much) sonip (grass) (Steward 1941:334). Steward (1941:335) also describes a gabled house for the southwestern portion of the Great Basin; however, none are reported in the study area.

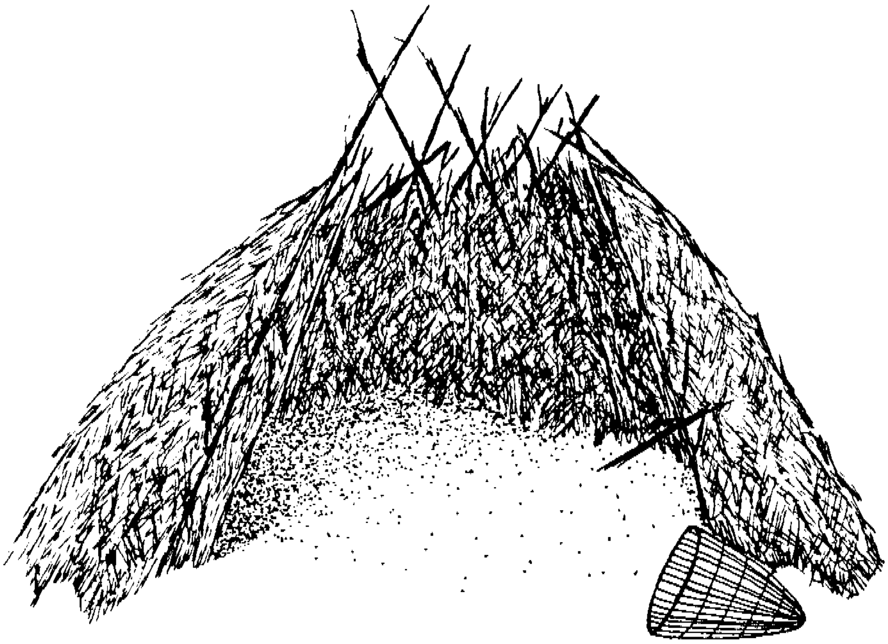
Other structures include four-post sunshades from southern Nevada and sweat houses which were found throughout the Basin. Steward (1941:335) describes a willow wickiup sweat house built much like the dwelling which was apparently the most common type in the study area. Also common were menstrual huts similar to dwellings (Stewart 1942:261; Steward 1943:307, 1941:285).

The use of caves and rockshelters in the winter is recorded by Stewart (1942:261) for the Gosiute and by Remy (1861:129) and Steward (1937a:7, 1937d:92) for the Shoshoni. Delano (1936:74) on the Humboldt River in 1849 describes a cave apparently used by the "Diggers".

> We passed through a narrow valley, made by the approach of the mountains to the river where we saw the palace of a "merry mountain Digger". It was simply a cleft in the rocks--kind of cave, strewn with wild grass, and might have served equally well for the habitation of a Digger king, or a grizzly bear.

Clothing

The most common item of clothing among the Great Basin Indian was a robe of woven rabbit skin strips. Simpson (1876:36) says of the Gosiute, "Their dress, summer and winter, is a rabbit skin tunic or cape, which comes down to just below the knee, and seldom have they leggins (sic) or moccasins." Later in Butte Valley Simpson (1876:61) met five Shoshoni on the road "clothed in rabbit-skins like the Go-shoots, but all had leggings." Bryant (1967:194-195) says of Mary's River (Humboldt) Indians, "The bodies of two or three of them



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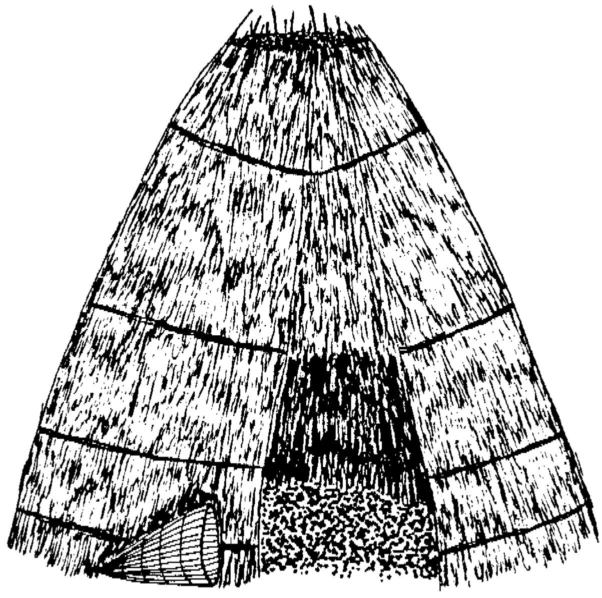

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Figure 23. Great Basin aboriginal house types: a) Windbreak (From Euler 1966, App. 1, p. 26, Figure 33), b) Domed willow house (From Wheat 1967:111, Figure 19).

were partially covered with the skins of hares sewn together." Some also had "small pouches or bags made of hare skins".

Generally clothing was scarce among the Western Shoshoni. Leonard's (1978:110) description of Humboldt River groups as "being entirely naked and very filthy" is often repeated in early accounts (see quotes from Ogden, Smith, Irving cited above). Both men and women commonly went naked except for a sort of genital apron for the women and a breech cloth for the men (Steward 1941:245; Simpson 1869:50-51). Young children seldom wore clothing.

Other forms of clothing include shirts and leggings of tanned deer or antelope skins manufactured in "Plains" style and hats of fur and twined sage bark (Steward 1941:245). Footgear was apparently not common but when found was made of skin or sage bark. Cold weather moccasins were manufactured with the fur on the inside. Ogden (Williams 1971:148), however, mentions shoes of beaver skin worn by Humboldt River Indians.

> I have already observed the Indians in this river destroy a great number of beaver, and I am correct in saying so for scarcely one have I seen but his shoes are made of beaver skin, and when I consider how numerous they are the number destroyed must be great.

Circular snowshoes were also manufactured by the Shoshoni for winter travel. Steward (1941:343-344) describes and illustrates the regional variation in both moccasins and snowshoes.

Basketry

Because of its light weight and durability basketry was a well-developed art among the mobile Western Shoshoni. Steward (1941:238-241) lists nearly a dozen functionally different items made of basketry (see Figure 24 for common basketry forms). These include seed beaters, winnowing trays, conical baskets, hats, fishing baskets, water jugs, bowls, sifters, ladles, cradles, and twined bags. Manufacturing techniques include both coiling and twining throughout the study area though the latter is more common in northern Nevada. Steward (1941:238) suggests that such may be the case because twining is easier, yet the product is as durable for utilitarian use as those made by coiling. Materials used in Western Shoshoni basketry manufacture are limited by Steward (1941:238) to willow (<u>Salix</u> sp.), although Stewart (1942:269) also reports squawbush (<u>Rhus trilobata</u>) as being used by the Deep Creek Gosiute.

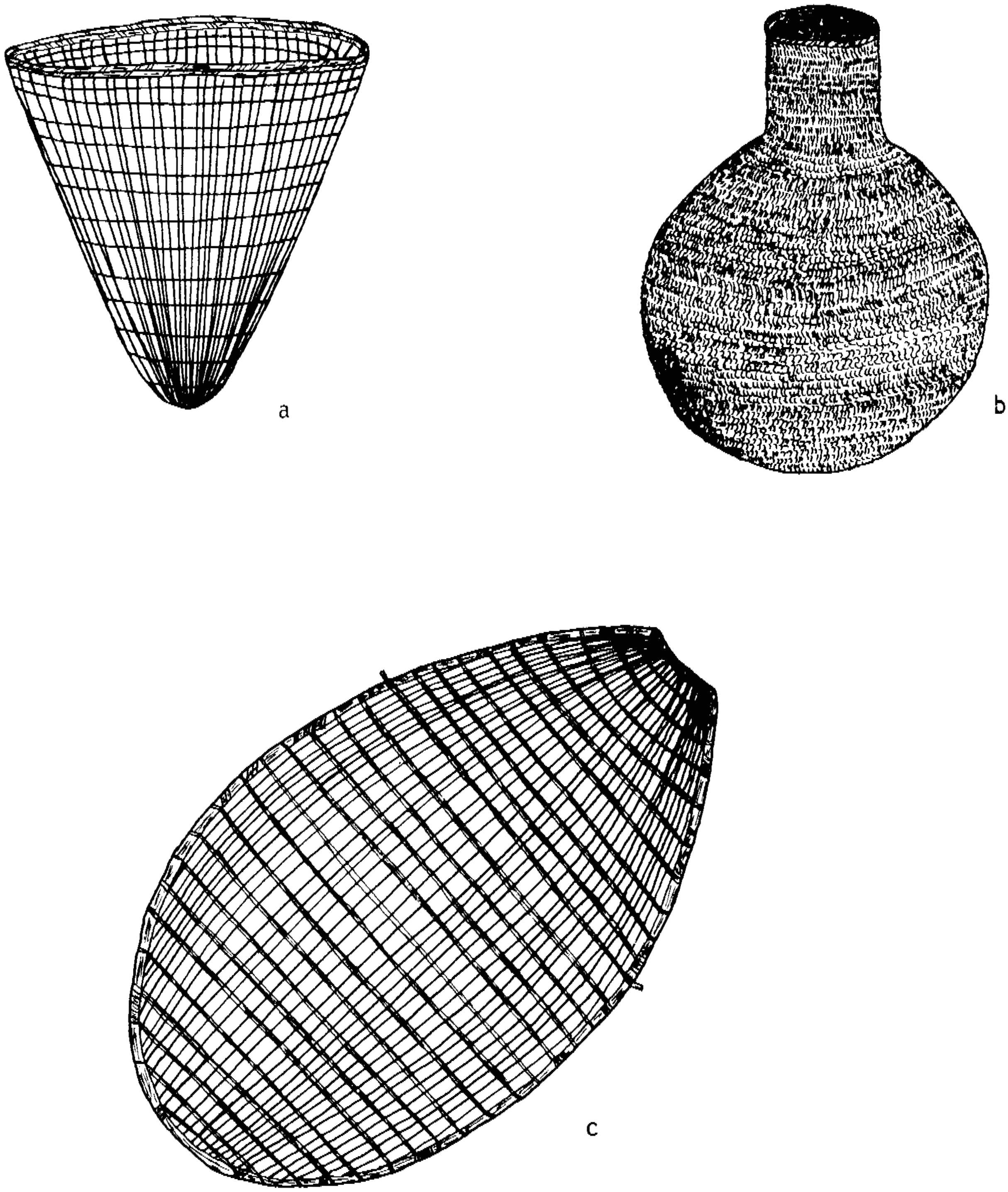


Figure 24. Common Shoshoni basketry forms: a) conical carrying basket, b) water jar, c) winnowing tray.

Pottery

Pottery production was not a common craft in the Great Basin at the time of contact, though it was certainly known prehistorically. Metal containers available through trade were far superior to clay pots and quickly replaced them. Consequently, techniques of manufacture and vessel forms are poorly known for the Western Shoshoni except via archeological sources (Steward 1941:242). However, conical pottery vessels were observed among the Southern Paiute of Utah in historic times by Mormon missionaries (Euler 1966:115). Also, Fremont (1887:435) traveling in the vicinity of Elko observed the use of a ceramic vessel by a Shoshoni.

> Travelling along the foot of a mountain on one of these trails we discovered a light smoke rising from a ravine, and riding quietly up, found a single Indian standing before a little sage-brush fire over which was hanging a small earthern pot filled with sage-brush and squirrels.

Reconstructed Shoshoni wares from the study area contrast markedly in form and construction with the older Fremont wares from the same region. Flat bottomed and conical pots are the classic Shoshoni and Southern Paiute forms though Steward (1941:340, Figure 11, p. 8) also pictures a handled, flat-bottomed bowl from Ruby Valley and a three legged bowl from Spring Valley. Shoshoni vessel forms are shown in Figure 25.

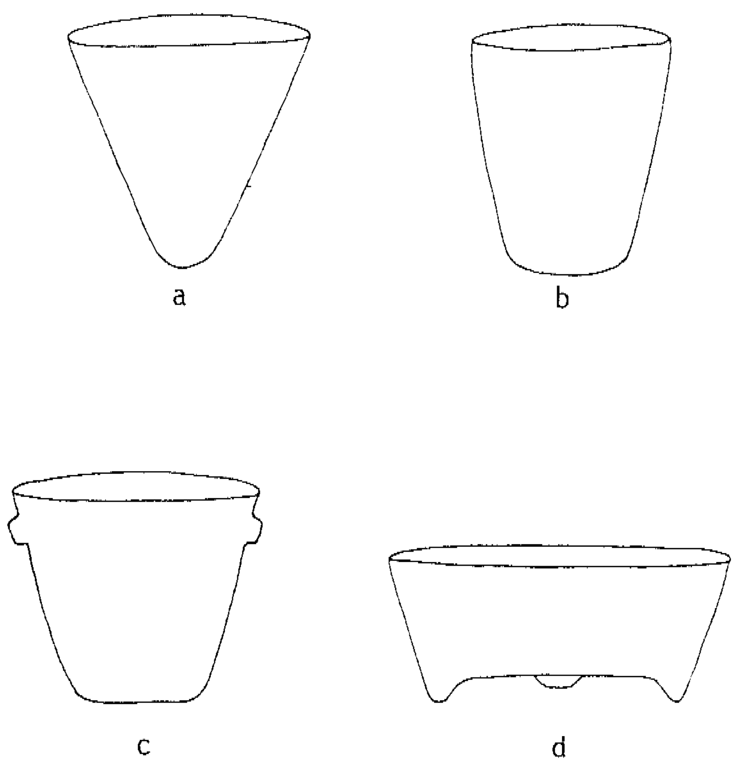


Figure 25. Shoshoni pottery types: a) Hamilton-Morley area, b) Elko area, c) Ruby Valley, d) Spring Valley (After Steward 1941:340).

Shoshoni pottery was typically crudely made by the paddle and anvil or build-up technique. The temper was generally coarse and decoration is usually restricted to finger nail incising (Euler 1964; Steward 1941).

Weapons and Hunting Implements

Specialized portable hunting instruments include the bow and arrow, snares and traps, nets, and sticks or clubs.

Bows. Bows were of three types, the self, the sinew-backed wood, and the sinew-backed horn. All three were used in the study area according to Steward (1941:289), although Stewart (1942:266) suggests the latter two were historic among the Gosiute. Wooden bows were most commonly of juniper or occasionally of willow or service berry, while horn bows were of mountain sheep (Ovis canadensis) horn only. Horn bows were made from horn strips cut from a sheep horn that had been softened by burying in hot dirt and then straightened (Steward 1941:337). A horn bow, belonging to a Pahvant Ute living among the Gosiute, was observed by Simpson (1876:52); Beckwith (1855:22) describes horn bows used by the Gosiute as "powerful elastic bows, made from the horns of mountain sheep". Sinew-backed wood bows were wrapped with deer leg sinew or backed with three or four layers of sinew glued in place with deer horn (Steward 1941:337).

Arrows. Two kinds of arrows were made by the Western Shoshoni, composite arrows with a main and a foreshaft, and simple arrows with a main shaft only. Composite arrows usually consisted of a cane (Phragmites sp.) main shaft with a small wooden plug as a nock, and a foreshaft tipped with a stone, bone, horn, or simply a wooden (usually greasewood, Sarcobatus sp.) point. The cane mainshaft was hollowed out at the distal end to receive the foreshaft and the joint wrapped tightly with sinew. The foreshaft was notched, and the point fitted and bound with pitch and sinew. Simple arrows were made of willow (Salix sp.), rosebush, or serviceberry (Amelanchier utahensis) and usually required some finishing. Straightening was accomplished using a mountain sheep horn wrench or with hand and teeth while the smoothing was done with a stone (Steward 1941:338). Arrows were tipped variously with stone, bone, or wood according to function; for example, small crossed sticks were bound to the tip for bird hunting, and an unfeathered, 2-pronged arrow used for shooting fish. With the exception of the fish arrow, all arrows were feathered at the proximal end with wing or tail feathers of the sage hen or eagle tail feathers (Steward 1941:337). By the mid-19th century trade goods were available to the Nevada Shoshoni who began using metal to tip their arrows. Jedediah Smith saw "some iron arrow points and some beads" among either Southern Paiute or Shoshoni on the east slopes of the Snake mountains in 1827 (G. Brooks 1977:184). In 1846 Bryant (1967:195) encountered Shoshoni on the Humboldt "armed with bows and well-filled quivers of iron pointed arrows". Arrows were occasionally decorated by painting and were carried in a quiver made from the whole skin of a medium-sized animal such as a fox, wildcat, fawn, etc. (Steward 1941:291).

Nets, Snares, and Traps. Nets were employed in the hunting of birds, sage grouse and waterfowl, and especially jackrabbits as previously described. These nets represented a considerable labor and material investment as they often measured 150 to 200 yards long by 30 inches wide with a mesh measuring 2 inches or smaller. Several of these nets were used for a large rabbit drive (Egan 1917:236). The raw material for nets was vegetable fiber (*Apocynum* sp.) which was twisted into cordage and woven into the net. A net similar to that used for rabbit drives was used for waterfowl. Sage hens were trapped with nets manufactured of the same materials but in the shape of large domes, tunnels, or socks (Steward 1941:222) (see Figure 21). Vegetable cordage was also used to make nooses and to a lesser degree, deadfalls. The latter consist primarily of short sticks appropriately fashioned to release a heavy stone when the trigger was released (see Figure 20).

Spears and Clubs. Few spears are reported for the Western Shoshoni and, when they do occur, are probably imports from the more warlike Ute to the east (Steward 1941:237). Clubs were used for dispatching waterfowl, rabbits or antelope at the end of a drive (Egan 1917:235-236; Steward 1941:222, 224).

Lithics

Stone provided an important raw material for tool manufacture throughout prehistoric times. The two primary methods for altering stone to the desired shape and size were flaking and grinding. Certainly one of the hallmarks of prehistoric peoples is the stone arrowhead which was fashioned out of stone amenable to chipping such as chert or obsidian. Arrowhead types for the Shoshoni are pictured by Steward (1941:221, Figure 2c,d) as "side-notched" and "corner-notched". Subsequent refinement of Shoshoni arrowhead types has settled on the term "Desert side-notched" for the characteristic point type in eastern Nevada during the proto-historic period (see Prehistoric Section this report).

Other chipped tools fall into multi-functional categories such as scrapers, drills, knives, burins, etc. These tools were manufactured via specialized flint-knapping techniques utilizing a percussion tool, such as bone, antler, or stone baton for rough shaping, and flakers of stone or antler tip for the finer pressure flaking. Heat treatment of chert was sometimes used to aid in the manufacturing process.

Ground stone can be divided into two functional categories: mortars and pestles, and manos and metates. Although the former were scarce in the study area, they were occasionally used for pounding food or paints. They consist of a bowl-shaped mortar to hold the ingredients and a cylindrical pestle held at one end to pound them. Steward (1941:235) suggests the distribution of the mortar and pestle is determined in large part by the occurrence of mesquite and acorns which are found mostly to the west and south of our study area. Metates are flat stones with a shallow depression in which small seeds, pine nuts, or berries were ground with the mano. Metates were both portable and non-portable and were made of a fine grained sandstone or coarse basalt. An additional functional category for ground stone is the arrow shaft smoother or straighter mentioned previously. These were also of sandstone or basalt.

Decoration

Although decorative items increased with the availability of European trade goods, they also were found in traditional times. The common item was the necklace or pendant of shells or claws, and beads of seed, stone, or bone. Shell could have been obtained from the Snake and Humboldt River regions but some, e.g., Haliotus and Olivella, were traded from the west. Painting the face and body with colored pigments made from minerals was practiced throughout the study area. Hair was likewise colored with white or red pigment on festive occasions (Steward 1941:298, 341). Beards and eyebrows were commonly plucked in the interest of vanity, and hair was cut to taste by both men and women as described by Remy (1861:127), "...according to their fancy; they generally cut it straight across the forehead, leaving it fall from the temples to the neck, and adorn it with all sorts of pieces of old iron."

Smoking

Wild tobacco (Nicotiana attenuata) was gathered and smoked at special gatherings or informally by men, especially shamans. Pipes, generally tubular, although L-shapes or platform pipes were known in the north, were made of wood, stone, or pottery with wooden stems. Remy (1861:130) comments that "...earthenware pipes are exceedingly valuable, and Indians have been known to give a horse in exchange for one of them." Pipe stone of the red variety was quarried in the Owyhee area (Steward 1941:347).

Fire Implements

An important survival implement utilized by peoples throughout the Basin was the fire drill and hearth. This usually consisted of two pieces of hardwood, a long pencil like stick which was the drill, and a flat piece with holes drilled in it which acted as a hearth. Simpson (1869:53) provides a good description of a Shoshoni's fire-making tools:

> They consisted simply of a piece of hard "grease-wood" about two feet long, and of the size or smaller than one's little finger, in cross- section. This was rounded at the butt. Then a second flat piece of the same kind of wood, six inches long by one broad and one-half thick. This second piece had a number of semispherical cavities on one face of it. With this laid on the ground, the cavities uppermost, he placed the other stick between the palms of his hands, and with one end of the latter in the cavity, and holding the stick in a vertical position, he would roll it rapidly forward and back till (sic) the friction would cause the tinder, which he had placed against the foot of the stick in the cavity, to ignite. In this way I saw him produce fire in a few seconds.

Steward (1941:234) points out that a compound drill of cane and wood was typical of the Shoshoni area. Foreshafts and hearths were commonly of sage (Artemisia tridentata). Once made fires were kept burning even when moving camp through use of a bark bundle "slow match" or torch (Steward 1941:234; Hoffman 1878:467).

Games

Games played by the Shoshoni sometimes required use of a specially made item. The ball race and shinny, for example, both employed a stuffed-skin ball. Hoop and pole or ring and dart required a wooden or tule hoop (with netting for ring and dart) and a throwing stick. Darts were smaller than the pole and were feathered (Steward 1941:249). Other recreational items were stilts, tops of wood and stone, slings, bull-roarers, and dolls (Steward 1941:249-250). The consuming leisure time activity for both men and women, however, was gambling. This activity generally involved the use of wood or cane dice marked by incising, painting or burning. These were generally thrown and bets made on the result, or hidden with bets made on the whereabouts of the specially marked stick or dice.

Reagan has described a gambling game, commonly called the "hand game", which he apparently observed among the Gosiute on the Deep Creek reserve.

> The NI-AY-WAY, or Two-Stick Game of the Goshute Indians.
>
> In this game two sticks about two and one-half inches long and one-eighth of an inch in diameter and some tally sticks are used. One of the game-sticks has a thread or a buckskin band around its center. When playing the player holds one of the game sticks in each hand behind his back, under a blanket or behind an apron (if the player is a woman), or at any place out of sight of the guesser, his opponent, though he faces his opponent in the open throughout the whole time he is playing. When playing, the players are two in number and sit opposite and about six feet from each other, though each may be joined by many helpers and may even represent a whole clan or tribe. (In one of the games the writer saw, one side were the Skull Valley Indians, the other side Nevada Indians.) In this game the player, having changed the game-sticks to suit himself, brings his hands before him and swings them back and forth from left to right and the reverse as he changes the sticks in sight or out of sight (concealed) from hand to hand by sleight-of-hand performance to disconcert his opponent, as his colleagues sing a vigorous song in a monotonous minor key. A "good" player will change the sticks after the guess is made. As the player is thus acting, the guesser is preparing to make his guess. He makes false motions with his hands, points to this hand and then that hand of his opponent while he argues and jokes to see if he can decide from his actions where the valuable

> stick is, in which hand it is held. Having decided in his own mind, he makes his guess (calls it) by slapping his hands together in a vigorous manner and then pointing his right hand toward the hand he has decided holds the mystic, winning stick. If he loses, his opponents begin the vigorous song of triumph and commence to hide the sticks again. It he wins, the sticks are turned over to him. Below are the rules for playing the game. 1. The unmarked stick is the winning stick. 2. If the guesser guesses in which hand the unmarked stick is, he gets the game-sticks, but no tally. And the other side begins to guess. 3. The tallies are kept by an agreed number of tally sticks, each side at the beginning of the game having the same number. 4. For every time a guesser misses he loses a tally and a tally stick of his passes over to the winner and is placed with his pile of tally sticks. 5. When all the tally sticks have passed to the possession of either of the contestants, that side has won the game.
>
> When playing this game, all squat Indian style on the ground and the playing side pounds chunks or boards with long sticks, or stick-like clubs, to make the most noise possible. And when winning, they pound the more vigorously and sing with greater accent (Reagan 1934:53).

The Shoshoni love of gambling is described by Remy (1861:130) in 1855. "The Shoshonees pass a great deal of their time, especially in nights, in games of chance, of which they are passionately fond, they stake all they possess, even their wives, and so pay their gambling debts."

Musical Instruments

> The Shoshones have an accurate perception of musical cadence, which is exceedingly rare among savage nations; but their music consists, with the exception of two or three airs, in imitating the howling of wild-beasts, and it is generally in the middle of the night that they indulge in their frightful concerts and enjoy their dances; then one is roused from sleep by the noise of their powerful voices imitating the bellowing of buffalo, the roaring of tigers, the bleating of mountain sheep, the howling of wolves, the cry of cayotes [sic], the neigh of the horse, the croaking of raven, the barking of dogs, the yelping of foxes, in a word, the cries of all animals, imitated with amazing accuracy (Remy 1861:132).

The most common musical instruments made by the Shoshoni were rattles, drums, and a simple flute. The rattles were made with deer or antelope hooves bound together in the form of tinklers, or with rawhide of rabbit or deer's ears sewn with pebbles inside (Stewart 1942:251). Skin drums and tambourines Steward believes were recently introduced from the Utes to the east. Four holed flutes were made from a twig of elderberry (Steward 1941:251).

The Family

The fundamental social and economic unit among the Western Shoshoni was the biological family or household (Steward 1938). Included in this unit were a married couple, their children and commonly an unmarried relative or the grandparents from either side of the family. According to Steward (1938:230) the household formed an independent unit which was able to provide for its economic needs. The organizational prescription which made such independence possible was the division of labor by sex. Generally speaking men hunted larger game and women gathered plant foods. Both participated in supra-family communal activities such as fishing, rabbit drives, and pine nut harvesting, although in the latter the men knocked down the cones and the women picked them up, carried them back to camp, and processed them (Steward 1941:313). Women did the cooking while men cared for and maintained items associated with hunting such as bows, arrows, and rabbit nets, and to some extent, carried out skin preparation. In a land of occasional food scarcity these complementary duties insured survival; few individuals remained unmarried for long during their adult lives (Steward 1938). In addition to these economic ends the family functioned to provide an educational setting for the rearing of children and sexual privileges for the parents.

Camp Groups

The extent to which families or households consistently cooperated in economic pursuits and whether these groups of families formed a supra-familial structure is a topic of debate among Great Basin scholars (cf. Steward various; Stewart 1978a; 1942). Certainly there were many circumstances that required communal effort. Rabbit drives, antelope drives, cricket and waterfowl drives all necessarily involved individuals from several cooperating families. Steward (1938:231) suggests that with activities such as grass seed harvesting individual effort was more efficient than group effort; in fact, though group effort provided companionship, it might have decreased the harvest. The reason offered for this is environmental; few plant foods other than pinyon grew in stands dense or extensive enough to warrant gathering by more than one or two women (Steward 1938:231). Since plants provided the major portion of the food supply, this individual gathering pattern would have been of some importance to Shoshoni economy. Steward is supported in his contention by summary remarks on the Basin Indian offered by Fremont (1887:438):

> In the Great Basin, where nearly naked he traveled on foot and lived in the sage-brush, I found him in the most elementary form; the men living alone, the women living alone, but all after food. Sometimes one man cooking by his solitary fire in the sage-brush which was his home, his bow and arrows and a bunch of squirrels by his side; sometimes on the shore of a lake or river where food was

more abundant a little band of men might be found occupied in fishing; miles away a few women would be met gathering seeds and insects or huddled up in a shelter of sage-brush to keep off the snow.

Domenech (Steward 1938:9) also stresses the solitary nature of Great Basin aboriginal existence but to him living "solitarily" was to live "either in families or in little societies". Other ethnohistoric sources which offer specific descriptions of groups encountered seem also to suggest that the Shoshoni west of Great Salt Lake were commonly operating in groups larger than a single family. On August, 1846, on the Humboldt River, Bryant (1967:194) encountered two groups of Shoshoni, one of six and one of five who, by the description offered, seemed to be all male. Subsequent encounters on 11 August and 15 August are with four men and a "large body of Indians--some two or three hundred". Similarly, Ogden (Williams 1971:115) in Clover Valley encountered three tents of Indians in December of 1828 containing men, women, and children, although he doesn't say how many. The following spring he met groups of 30, 15, and 60 Indians on the Humboldt. As Simpson traveled across central Utah and Nevada in 1859 on his way from Camp Floyd, Utah, to Genoa, Nevada, he encountered several groups of Gosiute and other Shoshoni. In Deep Creek Valley he visited a Gosiute camp consisting of a "number of men, women, and children" (1869:51). In Butte Valley he met five Shoshoni, apparently all male (1876:61); on a pass between Pine Valley and Huntington Valley he was joined by several Shoshoni including Cho-kup "the chief of the Sho-sho-nees south of the Humboldt" (1876:67). Further on in Kobeh Valley they were visited by several families of Diggers who were chased away by Simpson's cooks (1876:71); and "some 15 or 20 Diggers" who were a "lively, jocose" group (1876:75). On a similar trip in 1854 just to the north of Simpson's route Beckwith met several Indians and "a score of their friends" near the Ruby marshes. Only one woman and child were with this group (1854:31). In Huntington Valley Beckwith was visited by forty male "Diggers" one evening, a number that increased to fifty by the following morning (1854:32).

The impact of these accounts is to suggest that, although the household was in theory an independent social and economic unit operating within "the domestic mode of production" (Sahlins 1972), in practice, the Western Shoshoni most often functioned in groups consisting of several families. This social and economic unit is called a "camp group" by (Fowler 1980; C. Fowler and D. Fowler 1971:100) or "family cluster" by Steward (1970:131) in a more recent paper. The camp group (nogadi in Northern Paiute) "consisted of from 3 or 4 to as many as 10 families who habitually foraged together during most of the year but at a minimum wintered together at some fixed location within its tebiwa [tepia in Shoshoni (Miller 1972:162)] or "home district" (Fowler 1980:4). Tepia were defined from "ridge to ridge" and commonly included areas for hunting and pinyon gathering, as well as suitable sites for winter encampments (Fowler 1980:7). The fact that such concepts as "home district" and "camp group" were referred to by Numic terms leaves little doubt of their reality. Groups consisted of people related by blood or through marriage (Fowler 1980:4), although group size or composition may have varied from season to season. Camp group size and size of _tepia_ may have also varied with the distribution of resources; that is, as resources were more abundant and compacted, group size increased and _tepia_ size decreased (Harpending and Davis 1977).

The suggestion that there were consistently cooperating groups composed of several families seems at odds with Steward's (1970:115) statements that in Basin-Plateau Shoshonean society there was no "traditional institution other than nuclear families" and that "Western Shoshoni cooperative hunts did not permit permanent association of families or villages..." (Steward 1938:233). However, Steward did not perceive the "camp group" or "family cluster" as an institution comparable to secret societies, clans, moieties, lineages, age grade societies, or women's societies (Steward 1970:115) since it was not a "permanent" institution. Camp groups were bilateral and highly flexible in composition. However, it seems clear from the ethnohistorical material that many subsistence tasks were accomplished within these camp groups.

Villages

Steward does not define the term village, though he uses it continually in a way which could be considered synonymous with camp group (see Steward 1938:50). In a mobile, hunting and gathering society a village formed when the people halted, however briefly, in their quest for food, and erected shelters. The most permanent gathering was the winter village, which involved at least one camp group, and was located in the sheltered pinyon-juniper ecozone near water, fuel, and caches of seed or other foods gathered during the year. Households were usually scattered within the pinyon-juniper zone where they remained until the cessation of severe weather and the beginning of the growing season signalled the spring dispersal. The exact location and composition of winter or summer villages could vary, although certain general areas were visited year after year. Ruby Valley, for example, contained a winter Shoshoni population estimated at about 1500 by Simpson in 1859 (1876:64). Summer camps or villages were also revisited each year and the same houses lived in with only a new covering of branches necessary before the shelter was again habitable (Inter-tribal Council of Nevada 1976a:7). A village was often named after "some salient feature of its locality" such as a spring or creek (Steward 1938:247). Some known village locations, either winter or summer were recorded by Steward (1938), Patterson et al. (1969), and the Inter-Tribal Council of Nevada (1976a).

Food Named Groups

Throughout the Great Basin there was a tendency to label certain geographical areas, and by extension, the people living there, after a locally abundant food. This pattern is perhaps most developed amongst the Northern Paiute of western Nevada and southern Oregon but was also common among the Shoshoni of Nevada, southern Idaho and northwestern Utah, and to some extent the Utah Ute. For example, the Pyramid Lake Paiute were called _Kuyuidikadi_ or "black sucker eaters"

(Fowler 1980) and the Shoshoni of the Duckwater area were called Tsaitekkaneen or "tule eaters" (R. Crum, personal communication, 1981; Inter-Tribal Council of Nevada 1976a). The native term was formed by adding a form of the verb "to eat" to a common food name (Fowler 1980:8) which was then suffixed with neen, meaning "people" (B. Crum, personal communication, 1981).

These "eater" labels were not exclusive as Shoshoni from the Deeth/Halleck area as well as Smith Creek Valley were called Kuiyutekkaneen. Similarly, among the Northern Paiute, agaidikadi or "trout eaters" were known from the Walker River area in west central Nevada as well as from Summit Lake in northwestern Nevada (Fowler 1980:9).

For the present study area several food named groups as well as names derived from other sources are known for certain locales. The Western Shoshoni groups are listed below with their probable translation and are located geographically on Figure 16.

1. Taguduka. "(no translation given) eaters", from the Owyhee drainage (Inter-Tribal Council of Nevada 1976a:4).

2. Kuumpuduka. "(no translation given) eaters", from Salmon Falls Creek area of northeast Nevada (Inter-Tribal Council of Nevada 1976a:4).

3. Tosawihineen. "White Knife people", referred to people living in the vicinity of Battle Mountain; the term derives from the white flint available in the area (Steward 1938:154; B. Crum, personal communication, 1981).

4. Kuiyutekkaneen. "Root eaters", lived in the vicinity of the Humboldt headwaters near Wells (Steward 1938:154; Inter-Tribal Council of Nevada 1976a:100; B. Crum, personal communication, 1981).

5. Watatekkaneen. "Rye grass eaters", (Steward 1938:144) or "Artemisia seed eaters" (Miller 1972:147; B. Crum, personal communication, 1981) from Ruby Valley Shoshoni.

6. Kusiutta or Gosiute. From the Shoshoni term Gutsipupiutsi meaning "desert people" or "dust something"; lived in the vicinity of the Deep Creek Mountain east to Tooele Valley of Utah (Inter-Tribal Council of Nevada 1976a:78; B. Crum, personal communication, 1981).

7. Pasiatekkaneen. "Redtop grass eaters", from Pine Valley area (Steward 1938:154; B. Crum, personal communication, 1981).

8. Yuainankuhteen. Translated as "the south or warm side"; refers to people living just north and west of Duckwater. (Miller, personal communication; B. Crum, personal communication, 1981; Inter-Tribal Council of Nevada 1976a:4)

9. Tsaitekkaneen. "Tule eaters", the people living in the vicinity of Duckwater (Inter-Tribal Council of Nevada 1976a:92; Steward 1938:121; B. Crum, personal communication, 1981).

10. Pa'anaihteen. "The people from up above", referring to people from Steptoe Valley (Inter-Tribal Council of Nevada 1976a:4; Steward 1938:121; B. Crum , personal communication, 1981).

11. Taintenkateen. Refers to the people living in Cave Valley (Steward 1938:131; Inter-Tribal Council of Nevada 1976a:4), from Tainten "hole" or "cave" (Miller 1972:136; B. Crum, personal communication, 1981).

12. Mahakuhaduka. "(No translation given) eaters", refers to people north and west of Duckwater area (Inter-Tribal Council of Nevada 1976a:4).

13. Tsokwi yuyukki. Refers to people living in the vicinity of Elko. Translated as "root, shakes, like jelly" (Steward 1938:154; B. Crum, personal communication, 1981).

14. Toyatepianeen. "Mountain country people", refers to Shoshoni living in the mountainous region on the headwaters of the Jarbidge and Bruneau Rivers (B. Crum , personal communication, 1981).

Characterizing the political, social and economic nature of food-named and other groups has been a challenge for Great Basin anthropologists (see Steward 1938, 1955; Stewart 1939, 1941; Fowler 1980). It is probable that certain dialectical differences occurred from group to group (B. Crum, personal communication, 1981); however, more basic to the debate is whether food-named groups represented "bands" which exhibited some degree of political unity and organization and whose territorial boundaries as set by Stewart (1939; 1941) were real. A recent paper by Fowler (1980) suggests that the socio-political importance of food-named groups has been over-emphasized and that the primary significance of such labels was economic. They served as signals to outsiders that people living in a "rye-grass eater" area, for example, had that commodity to share. This conclusion is supported in the literature (see Steward 1938:154) where we note that the names of the groups are obtained not from group members but from individuals living outside a food-named area. The resulting process of economic exchange could have produced a network of social and economic ties between home districts and insured their respective occupants a recourse in times of need (Fowler 1980).

Leadership

The concept of a permanent "chief" was foreign to aboriginal Western Shoshoni society. For example, Shoshoni Indians in "Ko-bah" Valley told Simpson (1876:71, 77) that they had no chief, although Simpson had met Cho-kup or Sho-cop-it-see (Stewart 1978:9) only a few days earlier who claimed to be chief of all the "Shoshonee" south of the Humboldt River. The emergence of such "chiefs" was a response to the onslaught of white travelers and settlers. Chokup was most likely the same individual called Sokopits who was met by Remy and Brenchley at Haws' Ranch on the upper Humboldt in 1855. Though he had two wives and was probably better off materially than others, our travelers remark that "the other Indians did not appear to show any deference whatever to him" (Remy 1861:146).

Leadership in an egalitarian society such as the Western Shoshoni was transient, being limited to a successful hunter taking charge of an antelope or rabbit drive or similar communal activity. Age, personality, wealth, and hunting ability all contributed to a person's standing in the group, but no formal position of leadership existed prior to European contact and the onset of Indian-White hostilities (Stewart 1978:9; Steward 1938:249). Even with these changes the Shoshoni paid little attention to their chiefs except in time of war (Remy 1861:128). Steward (1938:247) does suggest that larger villages, such as might have been found in the more heavily populated areas along the Humboldt River, in Ruby Valley or in western Snake Valley, did have a recognized headman or talker who kept the village informed about the day's activities or the status of economic plants. The headman was someone who was experienced and successful, but his directions were suggestions only, and no recourse was available against those who didn't follow his advice. The camp groups discussed earlier probably were led in this informal way by an individual with a strong personality who was experienced and successful in hunting and other facets of Shoshoni life.

Territoriality and Property

Concepts of property rights, though not strongly developed among the Western Shoshoni, fall into two categories: ownership of a material item by an individual and usufruct rights of a resource within a geographical region. In general, natural resources were free to all to use until some investment involving the resources was made. For example, a grove of willows belonged to anyone, but once made into a basket, they became the property of the maker (Steward 1938:253). Manufactured items, therefore, belonged to the person who provided the labor to collect the raw materials and fashion them into a useful object. An extension of this would be exclusive rights to seed patches resulting from sowing the seeds and the claim of ownership of all rabbits caught in a net owned by an individual (Steward 1938:253-254). Communal property was limited to items constructed by the camp group such as an antelope trap, fish dam, etc. (Steward 1938:253).

Usufruct rights to economic resources as a result of habitual use are denied by Steward (1938:73, 254; 1955:108) for the Western Shoshoni and for the Basin as a whole, although admitted for richer areas such as Owens Valley. The ethnographic data gathered by Park in the 30's for the Northern Paiute north of Owen's Valley contrasts somewhat with Steward's conclusions (Fowler 1980). According to Park, families held use rights to "pinyon groves [and] small mammal trapping areas... " (Fowler 1980:5). Simpson (1869:54) reports a similar notion expressed by a Shoshoni in "Ko-bah" Valley who, when asked if they ever "quarreled about their rat country", replied that they did. Rights to resources did not imply that the land was owned, although such was the case with eagle aeries which were owned by individuals throughout the study area (Steward 1941:275), but simply that they had the first claim on certain resources within their "home district" or tepia . These tendencies toward territoriality intensified in areas of specific resource abundance such as at the fisheries of Walker, Pyramid, and Utah Lake (Fowler 1980; Janetski 1980b). The resources to which exclusive rights were claimed were those found in the home district. Foods were more likely to be defended in lean times, whereas, in times of abundance, groups from neighboring districts were allowed to gather, but permission was required (Fowler 1980:6; Stewart 1942:440). For example, should a highly seasonal and highly abundant resource become available within a single tepia several neighboring groups might converge to harvest it with no protest by the home group. Resources which were not highly seasonal were usually gathered within one's own district and borrowing of these was more like to generate protest. However, both cases were recognized as borrowing and some form of reciprocity was expected (B. Crum , personal communication, 1981).

Rites of Passage

Birth. Typically babies were born in a special willow house constructed for that purpose. When delivery was near, the expectant mother retired to the hut where the ground had been warmed and covered with grass. A midwife commonly assisted in delivery, which was accomplished while the mother either squatted or lay on her side. After giving birth the mother was bathed and required to drink warm water and observe taboos on eating meat, working and scratching herself for up to 90 days (Steward 1941:315). The father also often observed certain prescriptions such as bathing after the baby is born, running daily, and avoiding meat, scratching, gambling and smoking for several days. Usually the father was responsible for bringing firewood to his wife. At the end of these observances the father received new clothes, gave away his old ones, and went hunting.

The baby was bathed immediately after birth, the umbilical cord tied off, and the child placed in a cradle made by the grandmother. New cradles were made as the baby outgrew the old ones (Steward 1941:315). Both abortion and infanticide are reported among the Western Shoshoni. These were practiced when babies were unwanted, illegitimate or deformed. Twins were often separated and one given to the mother's sister (Steward 1941:316).

Girls' Puberty Rites. The onset of menstruation signaled a change in a girl's physical and social status: she was now an adult woman ready for marriage and child bearing. Girl's puberty rites were found throughout the study area and required that she be confined or isolated in a special hut for approximately a month. While confined the girl was not allowed to scratch herself with her fingers or comb her hair and observed various food taboos, e.g., abstaining from meat, fish and cold water. During this period an assistant attended the girl's needs and saw that she rose early and worked hard performing such tasks as running daily and gathering firewood, so she would not be a lazy wife. At the end of her isolation her new status was marked by red paint, bathing, perhaps a haircut and a new set of clothes (Steward 1941:317-318). The normal period of confinement for subsequent menstrual periods was five days.

Boys' Puberty Rites. Boys' puberty rites were almost non-existent. According to Steward (1941:318) a boy may be lectured by his father and exhorted not to be lazy. The only food taboo observed was the meat of the first large game animal killed by a boy (Steward 1941:256). Stewart (1942:312) reports a ritual ceremony among the Deep Creek Gosiute to prepare a young man to eat his first big game. In this the boy was bathed by an experienced male hunter, painted red, and gave game to an old man to insure his own long life.

Marriage. Marriage partners were not tightly defined in Shoshoni society, although the incest taboo generally forbade cousin marriages. Where this was allowed, a bilateral cross-cousin or pseudo-cross cousin pattern was preferred (Steward 1941:311). Marriage was formalized by an exchange of presents to both sides of the family. Though there was a tendency toward matrilocality, permanent residence was determined by food supply, and is probably best summarized as neolocal (Steward 1941:252). Both polygyny and polyandry were practiced by the Western Shoshoni. The former usually involved sororal marriages; that is, marriage by a male of two or more sisters. Both the sororate and levirate were practiced in the study area. Steward (1936b) was able to document polyandry in several valleys of eastern Nevada among the Shoshoni and Southern Paiute. If a pattern existed, polyandry was usually fraternal with a woman marrying two brothers, one of whom was generally away hunting. Steward (1936b:561) perceives the existence of polyandry among the Western Shoshoni as a function of the equal economic status of the sexes and as a result of the lack of cultural factors designed to exalt the male position.

An additional means for obtaining a wife was through abduction. A man could break into the house where the desired female, either married or unmarried, lived and carry her off. Usually a man was assisted in this abduction by his friends. Though fights sometimes occurred between the abductors and the woman's present husband, they were not serious and the most harm was often sustained by the woman (Steward 1941:252). In circumstances such as these, marriages were relatively unstable. Divorces were simply a cessation of co-habitation, and extramarital sex, although disapproved of, was not seriously punished (Steward 1941:252). As mentioned earlier, however, most individuals found it economically prudent to be married throughout their adult life.

Death. The imminent death of an individual acted as a summons for his relatives to gather near his home until the death occurred and the funeral was held. Disposal of the deceased took several forms including interment in the ground, covering the corpse with rocks; occasionally the body was left in the house and the house burned or simply abandoned (Steward 1941:256-257; Hoffman 1878:471). Simpson (1876:48) mentions the Gosiute use of springs for burial purposes. Property of the deceased was destroyed or distributed among relatives following a funeral eulogy; in general more valuable items, such as a bow and arrow or a rabbit net, were not destroyed, whereas clot¦clothing might be burned or buried, and metates broken. Individuals of prominence were sometimes accompanied in death by horses and/or wives as starkly depicted in Remy (1861:131) at Haws' ranch in 1855.

> During our stay with Haws, we were present at the burial of a petty chief. According to usage, they slew one of his wives and two of his best horses on his tomb, to keep him company, the Indians say, in "the happy hunting-grounds", the distant land whither his soul had fled to the chase of unknown game. The deceased had selected his prettiest wife to accompany him on his last journey. After two horses had been sacrificed, the unfortunate young woman stepped without flinching on the tomb of her husband, whose brother forthwith cut off her hair, and then shot her through the heart. We shuddered at the spectacle, but the Indians remained unmoved; so thoroughly does habit, aided by prejudice, render us indifferent to everything, even death itself! Earth was heaped over the two bodies, the horses were buried beside them, and, after hiding the victim's hair at some distance, all was over.

Mourning practices involved individualistic displays such as grieving over the deceased's grave and cutting the hair. Spouses of the dead usually waited a year before remarriage though this taboo could be lifted should the levirate or sororate be the case (Steward 1941:257; Stewart 1942:313). The Deep Creek Gosiute allowed marriage for both men and women within a month after the death of a spouse (Stewart 1942:314).

Social Events

The primary social events in Western Shoshoni life were the annual festivals, or fandangos, usually held in the fall near a major village site. Although these festivals were occasionally held in the spring, it was usually the abundance of food from fall hunts and pinyon harvests that made such gatherings possible. Two activities, dancing and gambling, dominated the festivals, which lasted from three days up to perhaps a week depending on food, weather, etc. (Steward 1941:353; 1938:237). Gambling, which was described earlier in this report, was popular among the older set while dances provided a prime medium for interaction of those of courting age. Steward (1941:265) mentions that spring dances functioned also to insure productivity of food, plants and animals. Likewise fall dances were often held prior to the pinyon harvest so that the harvest would be good (Inter-Tribal Council of Nevada 1976a:7). For the most part, however, festivals were non-economic in nature and allowed people to visit with seldom seen friends and relatives who came from a relatively large area.

Prehistorically the circle dance or round dance was probably the only type held (Steward 1941:265). Other dance forms such as the Bear or back-and-forth Dance, the South Dance and the Sun Dance are post-contact and were borrowed from the Ute or, in the case of the

South Dance, from the southern Great Basin. The Ghost Dance, which spread out of the Basin in 1890, was not practiced among the Western Shoshoni with the same fervor with which it was adopted by the Plains tribes.

Ideology

Concept of Power

No formal system of supernatural beliefs or dieties existed among the Shoshoni other than a tendency towards animism regarding "nature" or "the sun." Most fundamental to Shoshoni metaphysical life was the presence or absence of power, how it was obtained, and how it was used. Power was often obtained through dreams and was intimately interwoven with Shamanism and curing. Steward (1941:257) identifies three types of power-possessing persons: "One, general practitioners or shamans of general curing ability. Two, specialists, or shamans able to cure only specific ailments. Three, individuals whose powers are solely for their own benefit." Also, power obtained in dreams was of two types: 1) Power derived from a sort of spiritual helper such as an animal or even an object. These helpers can be invoked to assist in a variety of circumstances and could be described as a guardian spirit. 2) A specific capability may be revealed in a dream giving the dreamer the power to do whatever he had envisioned. For example, if a person should dream of curing rattlesnake bites he then has the ability to cure such bites (Steward 1941:257). It was thought that those who received such dreams did so through no fault of their own; they were chosen, you might say, to be a shaman and did not seek this position. Usually men were chosen, although there were no restrictions against women being shamans (Steward 1941:258).

Power also came from supernatural beings called "water babies" who were thought to live in springs and could, if treated properly, assist individuals or, if interested, do them harm. The concept of "water babies" seemed to have been more developed to the west among the Washo and Northern Paiute (Downs 1966a:62; Malouf and Smith 1947:377).

Shamans were not called in cases of cuts, bruises or mild disorders. These ailments and colds, sores, rheumatisms were treated with native herbs of which the Shoshoni gathered many (Inter-Tribal Council of Nevada 1976a:6). They were, however, invited when the disease was perceived to be supernatural in origin. Such was thought to be the case if the symptoms were: 1) a sharp pain presumed to have been caused by the intrusion of some foreign objects, 2) unconsciousness due to the loss of soul, or 3) depression, which was caused by witchcraft (Steward 1941:260). Shamans restored the health of the individual by sucking out the foreign object, going into a trance to recover the soul, or by "sucking out disease stuff intruded by the witch" (Steward 1941:260). Also involved was casting the blame on someone. Neighboring groups or even some angry relative such as a mother-in-law were thought of as witches who could cast spells through ill wishes or by more formal behavior such as grinding a dead man's bones and telling them to go into another person to make him sick (Steward 1941:262). For their services Shamans were generally given gifts.

Hoffman (1878:470) provides some notion of the curing process as performed by a Southern Paiute shaman who attempts to relieve a Mohave of a pain caused by an evil spirit:

> A Pah-Ute, from Rio Virgen, presented himself as a "medicine-man" who, for the fee of one blanket, offered to remove the evil spirit. The patient was laid upon the sand face downwards, when the Pah-Ute placed one of his feet upon the former's back, over the afflicted spot; then pressing it gently as if he were kneading it, he would accompany the movement with a mournful chant, grasping the while at an imaginary object near his patient and pretending to throw it violently into the air. After this had been continued for nearly an hour, he rolled the patient over on his back, taking the head and shoulders into his arms and sang, rocking himself from side to side, repeating short phrases, and exorcising the spirit to leave; then after a time, he would return to his former manner of treatment with renewed vigor until about three hours had been consumed. When the Mojave considered himself relieved, the Pah Ute received his pay and departed.

There were also powers associated with other facets of life. For instance, individuals could receive power to control weather, to assist in childbirth, to climb cliffs, be impervious to bullets, to have good luck in gambling, to have a long life, etc. (Steward 1941:264).

The belief in ghosts and afterlife was not particularly common. Whirlwinds were thought by most to be a ghost or evil spirit which could turn into a person (Steward 1941:325; Stewart 1942:319). To counteract the potency of a whirlwind the Gosiute "held up their" hand as a stop signal and told the spirit to go away, or threw a handful of dirt toward the whirlwind (Malouf and Smith 1947:372). Most believed souls went to an afterworld much like this one, located somewhere in the heavens.

Sacred Sites.

A few specific locales of mythological or traditional importance are known in the study area. North of Deeth along the Mary's River Stirling (1931) has recorded a large "geyser cone" filled with boiling water which, according to legend was the recipient of enemy captives in the "old days." Several miles south of Owyhee is "an upwelling of ground water known to the Indians as Water Baby Springs..." which, according to tradition, has been frequented by the mythical water baby (Osborne 1941:193). A well-known sacred site is Snake Creek burial cave near Garrison, Utah (Taylor 1954b:13). This cave has been investigated in an informal way by archaeologists and by local "pot-hunters" but no systematic exploration of the cave or its contents has been attempted. The cave is rumored to be a preferred burial spot for the local Southern Paiute and Shoshoni Indians. Steward (1938:131) mentioned a cave in Cave Valley which was rumored to lead to another world.

Certainly other sacred sites are known to living Native Americans although their exact location is not general knowledge; a situation perceived as being in the best interest of the Shoshoni and Southern Paiute (C. Fowler, personal communication, 1981). It is known that sacred sites are associated with certain classes of environmental features. For example, hot springs are still visited for medicinal purposes (C. Fowler, personal communication, 1981) and power is sometimes sought in caves or in the mountains (Malouf and Smith 1947:375).

Myths and Stories

The wolf and especially the coyote were commonly the central character in Shoshoni myths. The former was characterized as having positive attributes while coyote was seen as a trickster and sometimes evil (Steward 1941:263). Myths and stories were an important means of transmitting Shoshoni tradition from generation to generation. The long winters were the times for older storytellers to relate how people were created, present proper Shoshoni behaviors, and provide explanations for natural and historical phenomena (Inter-Tribal Council of Nevada 1976a:11). One such myth features <u>Ijapu</u> (coyote) and provides an explanation of the permanence of death.

> <u>Ijapu</u> (coyote) and his brother were discussing the death of people. Big brother said that the people should have two chances or they should die two times. As usual, however, <u>Ijapu</u> opposed the idea and won the argument. It was decided that people would die one time. Soon after the discussion, <u>Ijapu's</u> son died. <u>Ijapu</u> ran crying to his big brother, saying, "Did you not say that we should die twice?" His big brother reminded him that they had decided that people would only have one death. And that is the way it remains (Inter-Tribal Council of Nevada 1976a:11).

Malouf and Smith (1947) have documented various myths and legends of the Gosiute regarding the origin of the Deep Creek Mountains, the moon, and the twelve months of the year. All of these involved the coyote or some other animal from the Gosiute world. Another important Gosiute mythical character is "Little Man" or "Little Man of the Mountains" who is "about three feet high and lives in the earth" (Malouf and Smith 1947:375). Other mythical characters in order of their importance were the hawk, the eagle, the cottontail, the elk, the water baby, and the frog (Malouf and Smith 1947:377).

Also important to Gosiute folklore were hero legends which glorified the Gosiute group, or an individual, at the expense of their enemies, especially the White Man. The following such a legend, which probably originates with the raids of Colonel Edward Conner designed to stop the Indian outbreaks along the Overland Mail

Route:

A long time ago the people in Spring Valley were having a circle dance; in those days it was not held with the Bear Dance. One of the participants, unknown to the others, had stolen an army horse, or mule, from some soldiers in Steptoe Valley. Some soldiers, guided by Nevada Indians familiar with the territory, went to the camp in Spring Valley. Everyone was killed. The soldiers went back to Elko after the massacre and the Gosiutes went to the dancing grounds and found everyone dead. One man was lying on the ground and his body was covered with bruises. These were caused by bullets as the man was so tough that the bullets would not penetrate his flesh. The man had been killed by strangulation and several soldiers were required to subdue him. Some Gosiutes are tough (Malouf and Smith 1947:373-374).

A story recorded by Miller (1972:44-46) which documents some traditional economic patterns among the Deep Creek Gosiute, notes the transition pains experienced by traditional folks as younger generations depart from the old ways. This story is repeated below.

THE PICKLEWEED WINTER

Maude Moon, 1967

Long ago, Indians had everything they needed. They ate these things which grew on this earth. They gathered from this earth everything that was planted on it. The Indians' father made this mother earth for Indians and scattered everything on it. Everything. All kinds of seeds. This pickleweed, and also ones such as sunflower seeds, bunch grass seeds, rye grass, and just any kind like keppisappeh, like wild onions, like Indian balsam, like carrots, like wild potatoes, like thistle, like (other kinds of) thistle, any kind that was planted. And also here on the salt flats. Also there were seeds in the meadow. Those seeds used to be gathered. And the kind people called wihyuumpi. It grew among the meadow hay. It tastes good, they say. I have never tried it. I haven't tried it, but my grandmother used to gather pickleweed. It doesn't grow here (at Gosiute), just down there. It grows this side of what the white people call Bonimont Ranch. Also on the other side of the mountains. The pickleweed grows there at the edge of the salt flats. The earth is salt. Only there it grows well. Not here, it won't grow well.

In the winter time they used to live on it. It grew this tall. There were just seeds. One winter when the (snow) melted, it did like this (produced waves). The water did thus (to the seeds), and they (seeds) came over there to rest. Just its seeds (i.e. the waves would deposit the seeds at the edge of the salt flats). The people then gathered it, pushing it into their burden baskets with their basketry scoopers. Just the seeds. It was like that, and they gathered just the seeds. The pickleweed had very tiny seeds.

During the winter, one ate all he wanted. It was over there at Big Springs (Blue Lake, between Wendover and Gosiute), they called it the pickleweed winter. They ate it with pine nuts, they say. They ate it with jackrabbits. Times were good, they say. They didn't go hungry. When they did not bear fruit, they starved in the winter. Also if the pine nuts did not bear fruit they would starve, and they would just be sad until spring. They would live by means of just pincushion cactus (mammillaria?) in the spring. They would live well on early (spring) grass. They would eat just anything. One eats that which he knows is edible. That is the way it has been told.

But now you modern people, girls and other modern Indians, they don't know anything. If they were gathered, they wouldn't eat them. They taste bad, they say. The sweetness has killed their mouths. They eat and drink canned sweet things. Only these taste good (to them today). Indian food doesn't taste good anymore. It tastes too strong. It just tastes bad. It can't be swallowed. This is how it is.

Long ago my maternal and paternal grandmothers and my mothers made gruel, and it sure tasted good. They all tasted good. There is just one I thought wasn't good: mustard seed. It tastes bitter and can't be swallowed. The old men would say "mmm" and they ate it. It just tasted good to them. They would laugh while eating, and just tell stories while eating. It just tasted good to them. That is how Indians were in the old days. They lived on the pickleweed in the winter time, made sacks, put it inside, and dug a hole in the ground. That was their storehouse. It would not get wet. They did like this (i.e. covered) here with any kinds of seeds. All seeds. That's it, the rat's tail (came off).

Summary

The research here has focused on the condition, distribution and traditional cultural patterns of the Native Americans within the central Great Basin at the time of European contact. This portion of the Basin is characterized as a semi-arid steppe, although the presence of high mountain ranges, springs, and occasional perennial streams provide oases in an otherwise dry environment. At the time of the arrival of the first trappers and explorers in the second quarter of the 19th century the study area was the home of groups of Western Shoshoni Indians, a hunting and gathering people speaking a language of Uto-Aztekan derivation called Central Numic. While the area as a whole could be described as thinly inhabited in recent prehistoric times, certain environmentally-favored regions, such as the Ruby-Huntington valleys, the Humboldt River Valley , and the headwaters of the Owyhee drainage contained greater concentrations of people. Steward's estimates of population in the study area varies from 5 persons per 100 square miles in the Gosiute region to as high as 35 persons per 100 square miles in the Ruby Valley (Thomas 1972:140).

The Western Shoshoni followed an established annual pattern of resource utilization as they moved in a time-proven seasonal round. This subsistence year can be described in terms of the four seasons. Spring was a time of dispersal of people from the winter villages to gather early greens and root plants and to hunt small mammals. During the late spring and early summer people gathered for fishing as this was the spawning season for native fishes and the beginning of the anadromous salmon and steelhead runs in the Pacific drainages to the north. Middle to late summer was the time to gather the rapidly ripening grass seeds and early-maturing berries. Plants continued to be important in the early fall as rye grass seeds, sunflowers, currants, brushberries, and chokeberries were all ripe. In the late fall people gathered together for festivals and dancing prior to the important pine nut harvest and the communal hunts of summer-fattened rabbits and antelope. As winter settled in the Shoshoni moved to their winter village locations along the edge of the pinyon-juniper forest where fuel and water were available and where food gathered during the year was cached.

This annual subsistence round was probably followed by individual camp groups composed of several families each under the informal direction of group headmen. The yearly round generally stayed within familiar territory called the tepia or home district. Leadership among the Shoshoni was limited to the group headmen and temporary positions of authority during communal activities such as rabbit and antelope drives, the pine nut harvest, and festivals. These communal activities maintained valley to valley social and economic ties which were important in a region where occasional food shortages were not uncommon. Although the material culture and ritual life of the Western Shoshoni were not elaborate, the persistence of this Central Great Basin hunting and gathering lifeway is evidence of the success of their socio-economic patterns.

The Shoshoni philosophy or "rules for living", as succinctly expressed below, provides an attitudinal dimension to this overly environmental-technological description of Western Shoshoni (Newe) life.

> In all areas of their life, the Newe had respect for nature and concern for the people around them. Unlike people in European cultures, the Newe did not find it necessary to separate life into distinct categories. Religion, family life, rules for living, and the world around them were inseparable parts of life. The Newe viewed all things as part of a whole. This was the Newe way (Inter-Tribal Council of Nevada 1976a:13).

HISTORY OF THE ELKO AND ELY DISTRICTS

James A. Vlasich

Slave Traders and Fur Trappers

The Western Shoshoni (including the Gosiutes) occupied the majority of the Ely and Elko districts, but the Southern Paiutes also lived in the southern part of the Ely district. Because of geographic and climatic factors in the area, these two Indian groups were the last native Americans to come into continuous contact with whites. For some of these people sustained contact did not occur until the 1870's (C. Fowler and D. Fowler 1971:98). This isolation meant that European innovations such as the horse were not adopted by some of the Western Shoshoni and Southern Paiutes until the latter part of the nineteenth century.

Although the famous expedition of Dominguez and Escalante is generally recognized as the first official group to enter the Great Basin, there is no evidence that their mission entered the State of Nevada. However, their ambitious project, designed to establish a road connecting New Mexico and California, helped to increase Spanish awareness of the region.

Trade between Spaniards and Indians increased toward the end of the eighteenth century, even though it was often clandestine. Numerous adventurers wandered into Utah to barter with the natives. Trade items initially included beads, knives and cloth, but eventually the Utes and Navajos began to acquire weapons and horses. Fearing Indian violence, the Spanish government tried to license traders, but its efforts were in vain (Bailey 1966:142-143).

Slavery was promoted throughout Spain's possessions in the New World and it became an integral part of the social system in the northern frontier. Wealthy landowners in the Rio Grande Valley and southern California sought women and children to perform menial tasks around the house and men to tend animals in the pastures. Indian groups in the Great Basin became prey to the Ute and Navajo slave raiders. The earliest account of slave trade in the Great Basin occurred in 1813 near Utah Lake, and documentation of this account demonstrates that the practice was widespread by this time (Bailey 1966:144-145; C. Fowler and D. Fowler 1971:103; Malouf and Malouf 1972:427-428). Because of their proximity to those tribes actively involved in the acquisition of slaves, the Southern Paiutes were more affected by this activity than the Western Shoshoni.

By 1830 the Old Spanish Trail, which partially followed the Escalante route and connected Santa Fe and Los Angeles, became an established thoroughfare. Organized caravans traveled along this trail and carried on extensive trade operations. The peak period of the Great Basin slave trade on this route occurred from 1830 to the mid-1840's. California officials and the Mormon hierarchy in Utah attempted to put an end to the practice, but their initial efforts were thwarted by a lack of manpower to enforce these anti-slavery policies (Bailey 1966:147, 157-161). It was not until the 1850's that the Mormon militia was able to halt the practice.

Despite the devastating effects of slave raiding, the Western Shoshoni and Southern Paiutes acquired numerous trade items from whites and Indians who intruded into their territory. Sometimes they were willing to trade offspring for food and supplies. In this manner, they acquired horses, tipis, guns, kettles, metal knives, dogs, potatoes and beans. In addition, their aboriginal leadership patterns changed as these groups began to develop the idea of formal chiefs (C. Fowler and D. Fowler 1971:105).

The first white intervention into the Western Shoshoni territory was the result of fur trapping expeditions. Stiff competition between British and American fur companies led the Hudson's Bay Company to send a company of men under the leadership of Peter Skene Ogden to trap the Snake River and adjacent areas. George Simpson, Hudson's Bay governor, hoped to exterminate the beaver in the area before the Rocky Mountain Fur Company got there. In this manner, American efforts to gain control of an area shared jointly with England would suffer a serious setback (Alley 1978:39-40).

Exploring parties often utilized previously developed Indian trails, and the Ogden expedition was no exception. Central Nevada's Shoshonis had little contact with neighboring tribes and therefore did not establish a network of trails running from east to west in the Great Basin. They did, however, use trails within their own territorial confines; this was especially true in the Ruby and Reese River Valleys. Ogden also mentioned the abundance of trails in the northern part of the state that were probably established by Bannocks or Snakes who traveled to the Humboldt River region (Cline 1963:15-16).

The first penetration into Nevada occurred during the Second Snake River Expedition in 1826. Ogden led his company into northern Elko County, where they trapped along the headwaters of the East and West Forks of the Bruneau River, the Jarbidge River, and the South Fork of the Owyhee River (Patterson et al. 1969:72).

In the fall of 1828, Ogden led the Fifth Snake Country Expedition, which resulted in the first exploration of the Humboldt Basin. He entered Nevada from southeastern Oregon and encountered the Little Humboldt River, which he followed to the Humboldt proper. Ogden was not very impressed with his discovery and dubbed his find the Unknown River. However, it was the only river in this semi-arid desert region that flowed in an east-west direction and became the main guide and water source for future emigrants (Cline 1974:87).

Ogden entered the Elko District in early December and passed through modern day Elko on the twelfth (see Figure 26a). His party traveled over the Ruby Mountains via Secret Pass, then northeast past Great Salt Lake, where the company wintered at Ogden's Hole. In the spring, they retraced their steps and reached the Humboldt on the ninth of April, near Halleck. After three days of trapping between Elko and Carlin, they went north up Maggie Creek, then over to the South Fork of the Owyhee. From here they traveled along Willow Creek and through Squaw Valley to the headwaters of the Little Humboldt's South Fork. He then left the Elko District, and eventually reached the Humboldt River, near Winnemucca (Cline 1974:87-89; Patterson et al. 1969:73-74).

Another British expedition into the Humboldt region was launched in April 1831. Under the leadership of John Work, who succeeded Ogden, the Snake Country Brigade proceeded into Nevada near Montello and crossed the Pequop Range through Shafter Pass, located south of Pequop Summit. Work's group proceeded northwest toward the Wells vicinity, where they encountered the Humboldt. Eventually, they traveled to Beowawe, trapped along various rivers and headed north, where they left the state by way of Ogden's 1828 route. (Patterson et al. 1969:74-75)

Although Ogden's journey was extremely important in terms of beaver trapping and geographical exploration of the Elko District, he also had an American counterpart who traversed the Ely District in 1827. Jedediah Smith became part owner of the Rocky Mountain Fur Company in 1826 and proceeded to lead a group of trappers on a trek to the west coast through unknown territory in the southwest. When he encountered resistance from local Mexican officials in California, he left the area and crossed Nevada on his return trip. It is not possible to determine his exact route, but it probably approximated the line of modern Highway 6; it is known that during half of the trip, he journeyed north of this route by thirty or forty miles (Morgan 1953:210). His party entered the Ely District near the base of the Pancake Range and camped south of Lund after traveling through the White River Valley. Then they crossed the Egan Range, went through the Steptoe Valley and camped in the Schell Creek Mountains near Connors Canyon. The next day they came into Spring Valley near Majors Place, and then passed through Sacramento Pass before before leaving Nevada (G. Brooks 1977:180-185; Cline 1963:158).

Although fur trapping expeditions in eastern Nevada did not prove to be lucrative ventures compared to those in other regions, parties continued to explore the area. In 1831 Captain B. L. E. Bonneville requested leave to lead a western fur trapping expedition. The party split up into several companies, and one of these, led by Joseph R. Walker, entered the Elko District in 1833. They entered Nevada north of Pilot Peak and ventured west to the Humboldt River, which they followed to the sink. On October 5th, Walker's men had an encounter with some Paiutes marking the first white-Indian conflict in the Great Basin. Previously, there had been skirmishes near the headwaters of the Humboldt River because the Indians took traps from the party (Wagner 1904:157-158; Mordy and McCaughey 1968:223).

The Walker party returned from California the next year by retracing the Humboldt to Bishop Creek near Wells. They left the Humboldt Basin, entered Thousand Springs Valley and left Nevada by way of Goose Creek. In the last part of the journey, Walker established a route that later became a major part of the California

Trail that was used by emigrant parties traveling from Fort Hall to the Humboldt River (Patterson et al. 1969:75-76; Elliot 1973:38-40).

Exploration and Emigration

In order to facilitate American interests in the Far West, exploration parties were sent to study the geography and the possibility for settlement of the region (Figure 26a). As part of the rising tide of manifest destiny, the federal government sponsored various surveys to study the area belonging to Mexico. The most important of these ventures was headed by Captain John Charles Fremont, who led five major expeditions between 1842 and 1854.

The third expedition of 1845 was concerned with the Great Basin. Previously, Fremont had explored western portions of the state, but this was his first trip through northern Nevada. Ostensibly, he was returning to continue his field work, but he may have wanted to further American interests against Mexico, since he took along several marksmen who had little interest in topography (Nevins 1939: 207).

Fremont gained notoriety as a path namer rather than a trail blazer; he gave titles to various geographical features heretofore unnamed or bearing a variety of designations. One of his major purposes on this venture was to explore unknown regions of the Great Basin and determine the feasibility of a road between Great Salt Lake and eastern Nevada (Patterson et al. 1969:81).

His party entered the state near Pilot Peak, which he named, and camped at McKellar Springs at the base of the mountain. In later years, travelers going along the Hastings Cutoff used this location as a stopover point on this desolate road. Later, Fremont suggested to Lansford Hastings that this new route be used as a cutoff trail; it was employed by emigrants the next year. Next, his party left the Toana Range, crossed Steptoe Valley and Flowery Pass, and stopped in Independence Valley at a mineral pool which he named Whitton Spring (Patterson et al. 1969:83-84).

At this point Fremont decided to split his forces. The main body of about fifty men, guided by Joseph Walker, were ordered to map the course of the Humboldt, named earlier by Fremont, and rendezvous with the smaller group at Walker Lake. The Captain hoped to double his information on the area by leading his small group across central Nevada. Fremont's party traveled southwest from Franklin Lake, across the Ruby Mountains via Harrison Pass and left the Ely District by way of the Diamond Valley. Walker's group crossed Spruce Mountain, descended into Clover Valley and went over Secret Pass before encountering the Humboldt (Patterson et al. 1969:82-85; Elliott 1973:44; Nevins 1939:209-213).

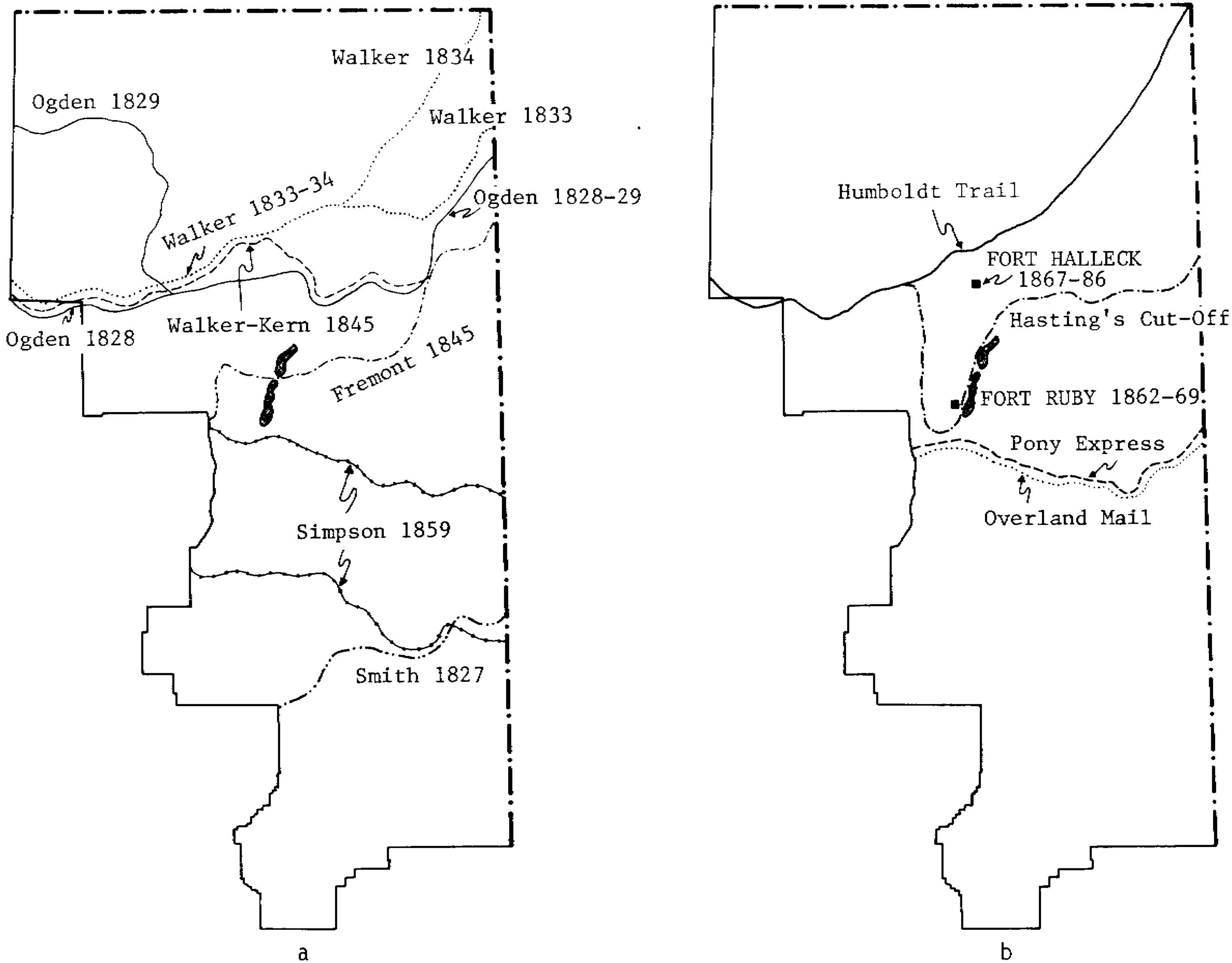


Figure 26. (a) Major exploring expedition routes through the Elko and Ely districts. (b) Early transportation routes and military forts in the two districts (After Mordy and McCaughey 1968:228,238; Prucha 1964).

Fremont was a member of the Army's Corps of Topographical Engineers, a group whose responsibility included the surveying and mapping of the Far West. Following the acquisition of the Mexican Cession in 1848, the federal government became interested in the construction of a transcontinental railroad. Fremont's fifth expedition in 1853 was concerned with the feasibility of a route along the thirty-eighth parallel (Nevins 1939:408-412). During this unsuccessful venture, Fremont crossed Nevada, and probably reached the southern tip of the Ely District, which he entered near Pioche (Elliott 1973:45).

Another expedition concerned with the transcontinental rail route was led by Captain John W. Gunnison in 1853. Following his death in a battle with some Paiutes, his position was filled by Lieutenant E. G. Beckwith. After wintering in Salt Lake City, the company set out for the Great Basin in 1854, when they obtained clearance from the federal government (Goetzmann 1967:287-288). Beckwith entered Nevada by way of the Fremont-Hastings route and then headed for the Gosiute Mountains. He turned northwest and moved across Independence Valley to Secret Pass at the north end of the Ruby Mountains. From here, Beckwith reversed his party and traveled south through Ruby Valley crossing the Rubies at Overland Pass. He traversed Pine Valley and left the Elko District north of Mount Tenabo, probably near Crescent Valley. From here the group struck a course to the northwest, where they met the Humboldt near Rye Patch Reservoir (Patterson et al. 1969:85-86; Morgan 1943:223).

During the same year Lieutenant Colonel E. J. Steptoe decided to winter in Salt Lake City, but he sent a detachment into Nevada to search for a possible route for his troops the following spring. One member of this group, John Reese, explored the valley of the Humboldt tributary which was named after him (Patterson et al. 1969:86-87; Morgan 1943:224-227).

In 1859 Captain James H. Simpson led yet another reconnaissance mission into Nevada for the purpose of finding an adequate military road to connect Camp Floyd near Provo, Utah, with Genoa in the Carson Valley. However, Simpson was instructed to find a shortcut which would avoid the lengthy path paralleling the Humboldt River. In the previous year, Simpson had found a practical wagon road running about eighty-five miles west to the Thomas Mountains. During that winter, Howard Egan, a Mormon scout who explored for Chorpenning's California Mail Company, continued this route to the Ruby Mountains (Morgan 1943:232-233; Mordy and McCaughey 1968:226).

Simpson followed this path to Huntington Valley, west of Hastings Pass, and from here he traveled to the southwest, crossing the Diamond Range at Cho-Kup Pass; he left the Elko District through Diamond Valley. From this point the new road paralleled the modern Route 50 from the Eureka area to near Fallon. Although Simpson cut almost three hundred miles off the Humboldt path, his report on the new road was shelved during the Civil War. In spite of this lack of recognition, many travelers adopted the new route, and it became part of the Overland Stage or Central Route (Patterson et al. 1969:87-88).

As part of a general scientific reconnaissance in the latter part of the nineteenth century, exploratory missions began to concentrate on the biological and geological aspects of the Far West. The first major survey of this kind was headed by Clarence King, who was assigned the task of examining a 100 mile strip along the 40th parallel from the Sierra Nevada to the Great Plains. Accompanying him were selected assistants in the fields of topography, geology, zoology and botany. His project was similar to those of previous years, but its scope was broader than the others (Hafen et al. 1970:390-391).

King's systematic reconnaissance included large portions of central and northern Nevada. In addition to exploring a possible path for a transcontinental railroad, he also hoped to examine economic possibilities along this route, especially those involving mining. In addition, there was the military aspect of subduing the Indians in the area in the hope that settlement of the region would follow (Goetzmann 1967:437-438). After their initial exploration of the western part of the state, the King forces turned their attention to the Elko District in 1868. The major focus was in a triangular area bounded by Pilot Peak, Franklin Lake and Humboldt Wells. In addition, the party explored the Ruby Range and Ruby Valley, and finished their work in the extreme northeast corner of Nevada; here they concluded that the Goose Creek region would not be a good coal producing area (Goetzmann 1967:444-445; Bartlett 1962:174-175).

The final military survey was conducted by Lieutenant George M. Wheeler in the 1870's. Wheeler was not unfamiliar with Nevada, since he had previously conducted a reconnaissance south from Fort Halleck through the eastern part of the state. The purpose of this mission was to establish a military road for movement into potential trouble spots where contact between Indians and miners might lead to conflict. In 1871 Wheeler led his largest survey to date. In addition to preparing accurate maps of eastern Nevada, he was to record the presence of Indians, probable sites for future military operations, possible railroad routes, mineral resources, geological formations, vegetation, weather and the possibility of agriculture in the region.

Arriving at Halleck Station in May, Wheeler moved his thirty men to Carlin and then divided his forces into several survey parties. These groups followed tortuous routes north and south and visited various mining districts in or near the Ely and Elko districts; these included those at Battle Mountain, Bull Run, Eureka, Pioche and Pahranagat Valley. Wheeler's efforts were the last major military explorations in the state. Aware of the necessity of preserving the vast resources in the West, he suggested that they be subject to federal supervision. However, his work was largely ignored, and such policies were postponed for decades (Goetzmann 1967:399, 468-471, 487; Bartlett 1962:339-340).

Accompanying these surveys of Nevada were emigrant parties who began to enter the state in the 1840's. The first of these expeditions was the Bartleson-Bidwell group of 1841. Like many of the first parties, they looked upon Nevada only as a place through which they must pass. The leader of this group was a Missouri school teacher named John Bidwell, who formed the Western Emigration Society. Inspired by the stories of mountain man, Antoine Robidoux, and the letters of California landowner Dr. John Marsh, Bidwell joined forces with John Bartleson, who became secretary and historian of the group (Elliott 1973:40-41). Following the Oregon Trail to Soda Springs in southern Idaho, they then headed southwest and entered Nevada along trails previously pioneered by Ogden and Work during their exploration for the Hudson's Bay Company. Part of their unique journey led them along sections of the future Hastings Cutoff and the main route from Fort Hall to the Humboldt River.

While camped at Johnson Springs in Toana Valley near the Utah-Nevada border, the group decided to abandon their wagons which they felt were hindering progress. Leaving behind precious family hierlooms, the party packed goods on their animals and struck out for the Humboldt, still known as Mary's River. Supposing that they could locate the mythical Buenaventura River, which allegedly flowed from the Great Salt Lake to the Pacific, they had brought boat building tools. Crossing the rugged Ruby Mountains through Secret Pass, the group found that pack animals were a more useful form of transportation. After intercepting the Humboldt, they followed it out of the Elko District. Not only was this the first emigrant group to cross Nevada, it also included the first white women to make the journey (Goodwin 1965:35-36).

One of the members of the Bartleson-Bidwell party played an important role in the development of the Fort Hall Trail between the Oregon Trail cutoff and the Humboldt. J. B. Chiles, who returned from California in 1842, teamed with Joseph Walker the next year and used the latters's 1834 route to lay out a wagon trail for a new emigrant party. Part of this newly developed road included a bypass of Palisade Canyon, which was unfeasible to negotiate by wagon. The new route left the Humboldt at Carlin, crossed the Tuscarora Mountains in Emigrant Pass and connected with the river at Gravelly Ford above Beowawe (Goodwin 1965:28-29). The Chiles-Walker group was the first organized wagon train to traverse this path which was followed by later groups who ventured to California; thus, they firmly fixed this route for future travelers (Patterson et al. 1969:93).

In 1845 an important bypass of the Fort Hall Trail originated with the passage of the Grisby-Ide party. They struck off from the main road and crossed a divide between Thousand Springs Valley and the Humboldt River and camped at Humboldt Wells, near the present city of Wells. Thus, this party had bypassed the route via Bishop Creek whose narrow canyon and sparse meadows made traveling difficult. Gradually the Humboldt Bypass became the preferred passage to the river and the Wells was established as an important stopover used for recuperation and preparation for the long journey ahead (Goodwin 1965:32).

Lansford W. Hastings was not satisfied with the Fort Hall Trail and recommended a shorter route which would cut off from the Oregon Trail at Fort Bridger, cross the Wasatch Mountains to Great Salt

Lake, and continue across the desert to the Humboldt (Figure 26b). To further his ambitions as a colonizer, Hastings wrote a manual for emigrants in which he confidently described his shortcut, which he claimed would save more than 200 miles, although he had never traveled it.

His misinformation caused emigrants to arduously toil their way into Salt Lake Valley, thus losing precious time needed to cross the Sierra Nevada before the first snow. The tragedy that followed was at least partially caused by Hastings' blundering along his Nevada route. Instead of employing Secret Pass to cross the Ruby Mountains, he led his group south through Ruby Valley, across those mountains via Overland Pass, and up Huntington Creek and the South Fork to the Humboldt. Thus, the party lost an additional week's time (Patterson et al. 1969:94; Hafen et al. 1970:235).

The Donner Party's misfortunes delayed future use of the cutoff until events in 1848 caused it to be utilized again. In that year the Treaty of Guadalupe-Hidalgo was signed, by which the United States gained all of Mexico's possessions north of the Gila River. At the same time, word spread about the discovery of gold in California. These two occurrences meant that traffic along the Humboldt Trail and particularly the Hastings Cutoff would increase dramatically during the next two years. After 1850, however, the hardships of the shortcut and the end of the initial gold rush caused it to be abandoned (Patterson et al. 1969:95; Elliot 1973:47).

The Humboldt Trail remained an important artery for westward immigration until the construction of the transcontinental railroad in 1869. Pioneers who had endured the hardships of the trail sought to improve the road through federal programs. The Secretary of the Interior authorized private engineering firms to survey the route so that construction of new roads and improvement of old ones could be implemented. In 1858 John Kirk headed a party of laborers, mechanics and teamsters from California into the Nevada Territory to establish a permanent road. Their first project in the Elko District was to relocate the road between Stony Point and Fremont's Canyon in order to avoid the sharp turn of the river at Gravelly Ford. They continued to survey the route into the Goose Creek Mountains. A further reconnaissance in the next year confirmed that the construction of a new road between Humboldt Wells and Lassen's Meadows was unfeasible. Because of the high construction costs, the old Humboldt River road remained the major route across north central Nevada (Jackson 1964:191-213).

The aboriginal groups in the Ely and Elko districts were primarily the Western Shoshoni and, in lesser numbers, the Southern Paiute. For both, the arid climate of the Great Basin may have served to limit their numbers. In the fertile portions of eastern Nevada, there may have been one person per five square miles, while in the desert regions, the size of the area may have been ten or twenty times as high. Under these conditions the natives relied predominately on hunting and gathering techniques to secure their food supply. Instead of living in a single location with a large population, they tended to move seasonally through the north-south mountain ranges making up eastern Nevada (Steward 1967:242).

Both of these groups were close to the much utilized Old Spanish Trail and the Humboldt Trail; therefore, they were probably contacted by early explorers in these areas. Undoubtedly, Jedediah Smith encountered the Paiutes in his early journey through Nevada, and the exploring parties of Peter Skene Ogden in the Humboldt region also met native bands (C. Fowler and D. Fowler 1971:105). The Smith party was probably the first to visit the Gosiutes who lived along the Utah-Nevada border (Defa 1979:26).

The early accounts of Nevada natives by explorers depicted a very low class of people, usually referred to by non-Indians as "diggers" since they frequently dug up roots for food. For example, Zenas Leonard of the Bonneville-Walker party which traversed the Humboldt River in 1833-34 remarked on the wretched conditions in which the Indians were living. Perhaps their lack of material goods led the natives to steal traps belonging to the intruding party; this incident led to a clash in which several of the Shoshoni were killed (Harris 1940:73-74).

Because of the heavy traffic along the Humboldt during the years immediately following the Mexican War, the Shoshoni in this area were constantly aware of the presence of intruding Americans. Conflicts between the two groups were inevitable. After the creation of the Utah Territory (of which Nevada was a part) in 1850, Governor Brigham Young became its ex-officio Superintendent of Indian Affairs. He established the Paravan Indian Agency to govern most of the area that later became Nevada (Patterson et al. 1969:3).

Young appointed Major John H. Holeman as the Indian agent in charge of the Nevada region. His task was hampered by increased disturbances between the emigrants and Shoshoni along the Humboldt Trail. Not only were the Indians losing lives, but they were suffering from ecological problems caused by the numerous wagon trains and the stock that accompanied them. The scant resources available to the Indians were constantly being destroyed; because of want and revenge, the Shoshoni increased their raiding activities against the Americans. Holeman lamented this condition, but cautioned that the situation would not improve until the natives were given provisions or moved out of the reach of the emigrants path

(Harris 1940:74-75).

Complicating this already threatening atmosphere were the activities of the Haws family, who settled in northeastern Nevada in 1854. Peter Haws established a farm on a tributary of the Humboldt's South Fork. He obtained implements and seeds from agent Garland Hurt, and, with the help of a band of Indians, successfully farmed about 15 acres. His son Albert and brother-in-law Carlos Murry established a trading post near Wells, and the Haws family, who were former members of the Mormon Church, quickly befriended the natives. They banded with the Shoshoni in plunderous raids against emigrant wagon trains in the Humboldt region (Patterson et al. 1969:4-5).

Mormon officials were aware of the Indian depredations inspired by the Haws, and they tried to deal with this situation in a fashion beneficial to their own needs. Having entered a previously unsettled area, they established unique policies to govern Indian affairs on the frontier. The church's methods evolved from a combination of its peculiar beliefs concerning Indians and its American cultural background. The former preached that the natives were lost Israelites, cursed with a dark skin, who would eventually become "white and delightsome" again (Malouf 1966:14). On the other hand, the Mormons held typical Anglo views, and saw the Indians as culturally, physically, and spiritually inferior to whites. It should not be surprising that actions taken by Mormons toward the natives were ambivalent.

The Mormon policy concerning Indians was fairly well established by the early 1850's. The church encouraged the establishment of a fort near new settlements, warned their members to guard their property from invaders, and asked them to keep promises made to the natives. In order to stop the atrocities of the slave traders, they required their members to purchase Indian children. (Actually, this only helped to encourage the trade). Gambling and individual trading with the Indians were discouraged, and the members attempted to stop the native's practice of blood revenge. In addition, the Indians were to be treated kindly, but this did not imply that they were to be considered equals. Finally, Mormon settlers were told that it was "cheaper to feed the Indians than to fight them" (Malouf 1966:19). The motivation of this last statement was at least as much economic as altruistic.

During the 1850's, Mormon colonies began to spread to the south and west. Naturally, this movement came into conflict with established Indian bands who had utilized this land in the past. The displacement of Southern Paiutes and unmounted Shoshonis from their traditional hunting and gathering areas forced the Indians to rob, beg for handouts, move to another area or settle on lands adjacent to Mormon colonies. Some of the Gosiutes learned to perform farm and ranch chores at this time. They were, however, never integrated into the mainstream of Mormon life. Rather, they remained an unskilled labor force that could be tapped when needed (C. Fowler and D. Fowler 1971:106-107). There was no treaty governing Mormon intrusion on Gosiute areas and the Indians were completely unaccustomed to exclusive private rights to natural resources (Allen and Warner

1971:164).

Farming was practiced to a limited extent by the Shoshoni and Paiute Indians, but it was not a mainstay of their economy. The Mormons, like many other Americans, felt that by acquiring agricultural skills, Indians could become industrious and settled people. The church's farm program, usually under the direction of the local bishop, was designed to accomplish this task. For example, Howard Egan settled near the Gosiutes and gave them instructions in farming (Malouf 1974:86; Defa 1979:45-46; Egan 1917:222-223).

Unfortunately, the Mormon farm program was a failure. While encouraging the Indians to adopt cultivation methods, they did not lend much tangible support to the program. In general, they merely gave the Indians the crops they grew, which made the Indians more reliant than independent. Actually, the farm concept had little chance for success, since the Mormons controlled most of the arable land and irrigation water (Smaby 1975:42-43).

Brigham Young decided that control of the farm program should pass from the church to federally employed Indian agents and the farm agents who worked for them (Malouf 1966:21). In 1859 agent Robert Jarvis was instructed to initiate farms for the Indians in Deep Creek and Ruby Valley in order to halt raids by the natives on wagon trains and mail stations. He met with various bands of Gosiutes in Pleasant Valley and induced them to develop a farm program. He warned the Indians that if they should revert to their old raiding patterns, military force would be employed to control them. Jarvis was assisted by Egan and Chorpenning, who helped to convince the natives to give up their old lifestyles. One band of about 100 members was anxious to receive instructions and implements, but federal aid was not forthcoming, and the Deep Creek farm was abandoned (Allen and Warner 1971:165-166; Malouf 1974:120-123).

As Mormon and other settlers began to move into Nevada, they invariably encountered Paiutes in Lincoln County, Gosiutes in White Pine and Elko counties, and Shoshonis throughout eastern Nevada. In 1855 and 1858, several Mormon parties were sent into the region to find a retreat from the oncoming federal troops who were allegedly sent to discipline the recalcitrants in Utah. These Mormon expeditions penetrated the western deserts of Utah and the southern valleys of Nevada in search of a "place of refuge" (Roberts 1965:362-363). Temporary farms were set up in Snake Valley on the Utah-Nevada border (Bean 1945:133), in White River Valley (Roberts 1965:362-363), and in Meadow Valley (Angel 1881:476). The party that entered Meadow Valley in Lincoln County planted the ground and constructed irrigation ditches before turning over their fields to the Indians. This project was abandoned until 1863, when the Mormons returned and also sent parties into Eagle and Spring Valleys (Angel 1881:476).

Mormon settlers in Panaca had conflicts with the natives, and the Utah militia under John D. Pearce was called in to control the situation. Disturbed by these events, some of the Mormons moved into Spring and Eagle Valleys, where they constructed a fort (James

1979:65). Some of the settlers in White Pine County took Indian brides, and their relationships were successful. A few of the natives went to work on Anglo farms and ranches; these activities helped to encourage cooperation between the races as the Indians proved to be helpful in the development of new settlements. Native women were also employed to help with chores (Read 1965:53, 60, 74, 79).

In March 1861 Congress created the Nevada Territory which extended east to the 116th parallel. This area expanded by one degree in 1862 and was extended to near the 114th parallel in 1866 (Hulse 1971:16; 1972:135). These extensions were granted in part because Nevada residents were fearful of new mining discoveries coming under the control of a distant and biased Mormon government in Utah.

With the advent of territorial status, Indian affairs in eastern Nevada came under the jurisdiction of Governor James W. Nye. The Nevada Indian headquarters was located in Carson City, and local agents were scattered throughout the state. The Western Shoshoni did not come under Nevada jurisdiction until 1870 (Allen and Warner 1971:172).

Recognizing the inevitable conflict between native and immigrant groups, the federal government hoped to end depredations through peace treaties and the establishment of reservations. For example, William Rogers, the first settler of Elko County in 1859, became the local Indian agent and was assigned the duty of selecting a reservation for the Shoshoni. This area, later known as Overland Farm, was rejected by the federal government, even though Rogers demonstrated that crops could be grown there (Hurley 1910:12; Angel 1881:389).

The government's reservation program in Nevada developed slowly. The natives, who had relied on an adequate land base to support their hunting and gathering culture, lacked sufficient implements, seeds, and instructions to be successful at farming. In addition, many Indians lost land and water to White groups who possessed the legal wherewithal to obtain claims to those basic necessities (Harris 1940:81-82). Consequently, the old native techniques of obtaining food were replaced by wage work or theft in order to survive. They were ill paid, socially segregated, uneducated and dependent on a foreign government which lacked the means, and often the concern, to help them adjust to the new society of the late nineteenth century (Forbes 1966:18).

Faced with a steal or starve situation, many Indians were attracted to the Overland Mail route as a place to carry on their attacks. In 1862 Chief Buck lead a band of 100 Indians in raids on the mail company and nearby residents (Patterson et al. 1969:15). During the same year, Amos Reed complained to the Office of Indian Affairs that due to loss of land and game, the Gosiutes threatened the mail route and the telegraph system. By this time, the farm program had been abandoned, and the mail company built stations and fed their horses on the limited amount of arable land in the region

(Allen and Warner 1971:167; Forbes 1967:80).

In the 1850's the Shoshoni along the Humboldt River increased their raids on emigrant trains and obtained many horses in the process. Gradually, those animals became more important as a means of transportation than as a food supply. Also, their resentment of the intruders acted as a common bond that helped to unify the natives into band-like organizations. Horses not only aided the raiding process, but also allowed for greater communication and cooperation, furthering the consolidation process. White soldiers and agents favored this system because they preferred to negotiate with a representative of a group rather than with individual Indians (Harris 1940:76-77). For example, in 1855 agent Garland Hunt negotiated a treaty with various Shoshoni chiefs in the Humboldt region. However, Washington authorities disputed the agreement and eventually, it was discarded (Colley 1973:7; Inter-Tribal Council of Nevada 1976a:33-37).

After the discovery of the Comstock Lode in 1859, Nevada's white population rapidly increased and Indian raids drew even greater protest from the settlers. In the same year, Jacob Forney, superintendent of the Utah agency, initiated the reservation policy for the Gosiutes and Shoshonis. After meeting with these Indians in eastern Nevada, he arranged for them to be placed on farms in Deep Creek Valley, but this program failed (Colley 1973:7). In order to placate the natives, agents began to distribute what goods their budgets would allow. This amount was limited, since most of the federal budget went for the salaries of the superintendent and his agents (Patterson et al. 1969:15). However, the government and the Overland Mail company combined their resources in order to distribute provisions among the Indians who were raiding the company's stations.

In 1863 the federal government concluded a series of treaties with various Indian groups in the Great Basin. Among the conditions that were settled with the Gosiutes was a cessation of hostilities with Whites, the unobstructed use of travel routes, the unhindered construction of military forts, telegraph lines, stage lines, railroads, mines, mills and ranches throughout the region, and an agreement by the Indians to give up their lifeway and become settled ranchers and farmers on reservations. Finally, the United States agreed to finance the Gosiutes at a rate of $1000 per year for the next twenty years (Defa 1979:80-81).

Although the treaty was concluded with a few selected leaders, and did not call for the Indians to lose sovereignty over their land, they were given no choice concerning removal. However, authorities argued for decades over the location of their reservation, and the Gosiutes became a forgotten people. It was not until 1912 that President Taft assigned them eighty acres in Skull Valley. Two years later, the Deep Creek Reservation was established in western Utah and eastern White Pine County. In 1919 their original reserve was enlarged by President Wilson (Allen and Warner 1971:168-177).

A similar treaty was signed with the Western Shoshoni in 1863. As compensation for the loss of game and natural vegetation, the Indians were to be paid $5,000 annually for the next twenty years. This agreement was the only official treaty that Nevada Indians ever signed. Unlike similar documents which were conducted for other Native Americans, this one did not cede the Indian's land claims to the federal government (Colley 1973:9-10; Inter-Tribal Council of Nevada 1976a:51-52).

In 1873 a special commission headed by John Wesley Powell and George W. Ingalls traveled to Utah and Nevada to investigate possible relocation sites for the Southern Paiutes and some of the Shoshoni. After meeting with Indian delegations in both states, they recommended areas for removal. Initially, they suggested that both Indian groups be moved to Fort Hall or Wind River, but, recognizing the traditional animosity between the Utes and Southern Paiutes, they changed their recommendation to move the latter group to Moapa in Clark County. The Paiutes' reservation was established that year, and others were set up outside Santa Clara, Utah (Shivwits Southern Paiute) in 1891 and on the Arizona Strip (Kaibab Southern Paiute) in 1907 (C. Fowler and D. Fowler 1971:108-111; Inter-Tribal Council of Nevada 1976b:142).

The problem of establishing a reservation for the Shoshonis of Nevada was set aside. Benjamin Davies, the new Utah superintendent of Indian affairs, reported in 1861 that increased hunting in the area (mostly by the Overland Mail Company) had deprived the Indians of their normal food supply (Inter-Tribal Council of Nevada 1976a:47). At the same time, the Indian farm program deteriorated due to a lack of implements and the usurpation of water and land by the White settlers. Faced with the possibility of losing their farm colonies to encroaching ranchers and farmers, the Indians urged that a reservation be set aside in Duck Valley near Owyhee. After several similar recommendations by Nevada agents, Colonel E. C. Watkins met with various Indian leaders to discuss the problem. He authorized agent Levi A. Gheen to proceed to Duck Valley and appraise the situation. For years Gheen had lived among the Shoshoni, helped to improve their farming methods, and tried to establish their land rights. After his report to the Commissioner of Indian Affairs, President Hayes set aside a large reservation in 1877.

Not all of the Indians in the Elko District went immediately to the Duck Valley Reservation. By another executive order in 1877, 521 acres were reserved for Indians at Carlin Farms. Less than two years later, the reservation was revoked, Indian developed land was sold to Anglo settlers, and the natives were moved to Duck Valley.

For many years, Indians under Temoak felt that they had a legitimate claim to a six square mile tract of land in Ruby Valley. After several delegates were sent to Washington to plead the Indian's case, the Bureau of Indian Affairs informed them that while a reservation had been planned for the area in 1859, it was abandoned. Since it was not made permanent by executive order, the land was opened up to White settlers. Between 1910 and 1915, twelve individual allotments in the valley were finally issued to the

Indians (Patterson et al. 1969:24, 45-48; Harris 1940:86-87; Inter-Tribal Council of Nevada 1976a:39, 43-45, 59-68, 74).

The establishment of the Duck Valley Reservation failed to bring about any immediate stability for the Shoshoni. Early mismanagement encouraged some of them to return to their former homes. In 1884, Indian Commissioner Hiram Price suggested that the Duck Valley Shoshoni be removed to Fort Hall, but complaints by Indian leaders forced the government to abandon their plans. During the next summer, a small group of Paiutes arrived at the reservation and requested an area to farm under the supervision of the local agent. President Cleveland's executive order, which expanded the reservation to the north in 1886, made room for the Paiutes. A small strip in the northeast corner was added by President Taft in 1910. The Two Indian groups were combined into one tribe in 1938 through the Indian Reorganization Act (Inter-Tribal Council of Nevada 1976a:75-76; U.S. Department of Commerce 1974:303).

In addition to reservation land, smaller colonies were also established for Nevada's natives. One of these was located northwest of Battle Mountain where an executive order of 1917 had set aside 688 acres. Another presidential decree in the following year setup a 160 acre colony near Elko and a small amount of additional acreage was purchased in 1931. Finally, the Ely colony was established in 1931 when the Federal government purchased nearly ten acres of land near that city for Indians who did not have tribal rights on any reservation (Inter-Tribal Council of Nevada 1976a:82-89).

Additional reservations were established for the Shoshoni in the early 1940's. As white settlers began to gain control of the best lands near Duckwater in the late nineteenth century, many of the natives began to move to other areas. In 1940 the Department of the Interior approved the purchase of the Angelo Florio Ranch for the Duckwater Shoshoni and other Indians from southern Nevada. In the year following the purchase of the Duckwater Reservation, an executive order officially set aside the South Fork Reservation on the Humboldt's tributary. This area was mostly inhabited by natives whose ancestors had refused to move to the Duck Valley Reservation. Also, there is a small group of Shoshoni who live in an Indian village in Wells which they have inhabited since the late nineteenth century (Inter-Tribal Council of Nevada 1976a:92-101).

In order to facilitate military operations in the area, the army established local installations. Some of these were forts which were intended to be permanent accommodations. Others were designated as camps, which served as temporary facilities in the immediate area of hostilities. Before 1862, the region was served by outside establishments, including Camp Floyd in Utah and Fort Churchill in Lyon County. However, in that year Fort Ruby was constructed on the western side of Ruby Valley near the Overland Mail and Telegraph station. The main purpose of this fort was to protect mail, stage and emigrant traffic from Indian depredation. The 600 mile route between Salt Lake City and Carson Valley lacked military protection, and Fort Ruby was chosen as a mid-point from which troops could be dispatched. Originally established as a camp during the Pyramid Lake

War of 1860, it was returned to that status in 1867 and was abandoned two years later (Ruhlen 1964:48-50; Patterson et al. 1969:100-110).

The most significant military establishment in eastern Nevada was Fort Halleck (see Figure 26b). Originally designated as a camp in 1867, it was located twelve miles south of Halleck's railroad station on the east bank of Soldier Creek. Its main purpose was to protect construction workers on the Central Pacific Railroad and emigrants on the Hastings Cutoff and Humboldt River route from Indian forays. When Fort Ruby was abandoned, its garrison was temporarily transferred here before being moved to the Department of the Platte.

The installation was designated as a fort in 1879, and by that time its troops had been used in various Indian uprisings throughout the West. For example, Captain Jack led the Modoc Indians into battle in 1873, and a company of soldiers from Halleck were sent out to help stabilize the situation. Fighting by the Nez Perce Indians in Idaho during 1877 required cavalry troops from this Nevada post. During the next year, more of Halleck's soldiers were required for the Bannock campaign in Oregon. Finally, its troops were used against the Arizona Apaches in 1883.

The most consistent complaint against the fort concerned its location. As early as 1872, Major General H. W. Halleck stated that since the camp was established before the location of the Central Pacific was determined, its remoteness from the railroad made it less efficient and more expensive to operate. Because of the good condition of its buildings and the cost of moving the fort closer to the railroad, he did not encourage its transfer. Three years later, Major General John M. Schofield lamented the camp's location, but having failed for three years to move it closer to the railroad, he reversed his position and urged that it be enlarged and improved.

In 1882 General William T. Sherman suggested that the fort was obsolete and should be abandoned. His recommendations were echoed by Major Generals John Pope and O. O. Howard in subsequent years. Howard felt that since there were too few Indians in the area, the fort had become obsolete. He also believed that the small number of local settlers desired to keep the fort in order to have a nearby market for their grain. Finally, after almost twenty years of service, Fort Halleck was closed in 1886 (Ruhlen 1964:29-34; Patterson et al. 1969:121).

Other military installations were planned for the Elko District, but none of them actually became established. General Halleck anticipated that a new stage and mail route would be opened along Maggie Creek from Carlin to settlements in Idaho. He felt that this construction would require the development of a military post. Although the road was opened, military leaders continued to rely on Fort Halleck for protection. In 1871 plans were initiated for the construction of a camp at Elko, but no area was ever specifically designated and the post was never built. Only one other installation existed in the region; Camp Lyon was located on Rock Creek, about twenty miles northeast of Battle Mountain (Ruhlen 1964:11, 25, 36).

As mining activity in California boomed in the early 1850's, transportation to that state became a major concern. In the minds of most people, Nevada remained a vast desert range hampering communications between California and the rest of the country. In 1851 the first express company to traverse the state began operations. Dubbed the "Jackass Mail" because of its mule train, the company was awarded a contract to carry mail from Sacramento to Salt Lake City. Its route through the Elko District paralleled the Humboldt River and went through Thousand Springs and Goose Creek Valleys. The company, originated by Major George Chorpenning and Absalom Woodward, scheduled a round trip every month and received $14,000 per year from the federal government (Patterson et al. 1969:133).

After Woodward's death at the hands of the Shoshoni following an attack near Gravelly Ford, Chorpenning continued to carry the mail until his contract expired in 1853. The next year he signed another agreement with the government, but he changed the route to the southwest in order to avoid Indian depredation and inclement weather conditions along the Humboldt Trail. Recognizing that the pack mule express was not sufficient for the job, the Major initiated another agreement to run a semi-monthly wagon service between Salt Lake City and Sacramento via the Humboldt route. Passage over the northern route, however, proved to be a formidable task. The wagon road was undeveloped in certain areas and the route was often blocked by snow during the winter.

A more feasible route across Nevada was needed for the mail service to succeed. In 1855 Major Howard Egan of the Mormon Battalion traversed a new route across central Nevada, and three years later he surveyed the road for Chorpenning. Another reconnaissance mission was conducted by Captain James Simpson in 1859, and from this expedition the central route got its name. This new road described in a previous section, was a forerunner for stage, freight, mail, telegraph and express service between Camp Floyd, Utah and Genoa, Nevada (Mordy and McCaughey 1968:234-235; Hungerford 1949:74).

With the increase in mining activity in western Nevada and California, the Simpson or Central Route became more significant. In 1860 the Central Overland California and Pike's Peak Express Company, whose officers included the famous freighting team of Russell, Majors and Waddell, was chartered. Chorpenning's service proved to be inefficient compared to this company, and the new contract for passenger and mail service went to Central Overland (Figure 26b). Originally, mail and passenger service went along the southern road, but threatened by the secession of the South, this route was abandoned for fear of military disturbances along the line. Encouraged by such influential men as Horace Greeley and Schuyler Colfax, Congress passed the Overland Mail Bill in 1861. Based on this legislation, the Central Overland Company arranged a deal with the Butterfield Overland Mail Company. By this agreement, Central Overland would carry mail east of Salt Lake City and the Butterfield concern would carry it to California (Winther 1945:137-138; Angel 1881:105).

After the establishment of the Central Route as the major artery to California, mail facilities and transportation services improved rapidly. New roads were developed and old ones were repaired in order to expedite the transportation of heavy loads of merchandise. New stations were constructed and more horses and coaches were added. Between Salt Lake City and Austin, Nevada there were thirty six stations. Still, many of the stations along the Central Route, which were later employed by the Overland Stage and Pony Express, were built by Chorpenning (Patterson et al. 1969:135). Because of the exorbitant prices charged by the Mormons, the Central Overland Company established its own ranch for raising fodder in Ruby Valley. They employed one hundred men and sowed 90,000 pounds of grain. Their experiment, in which they raised barley, oats, potatoes, turnips, carrots and beets, was a major step towards initiating Anglo farming in eastern Nevada (Angel 1881:105-106).

Before the Austin silver strike of 1862, the Central Route was responsible for the settlement of central and eastern Nevada. Along the Overland Stage Road, men employed by the company established their homes and maintained their stations, animals and equipment. In 1866 Wells, Fargo and Company purchased John Butterfield's interest in the Overland Stage Line. They continued in operation until the transcontinental railroad was completed three years later (Patterson et al. 1969:136-137).

The most dramatic and romantic means of communication was the Pony Express. This overland mail service from St. Joseph, Missouri to Sacramento, California was the idea of William H. Russell. He sought to publicize the concept that the Central Route was feasible in the winter months, and enlisted the support of Senator William M. Gwin of California, who wished to decrease the time required to deliver mail to his home state via the southern route. Undaunted by his partners' opinion that the project could not be profitable, Russell convinced them that the senator could supply them with a government subsidy to meet their losses (Settle and Settle 1966:110-111).

Financing this venture proved to be an enormous task for the Russell, Majors and Waddell firm. Although many of the Overland Stage Line stations were utilized by the Express, new ones had to be constructed west of Salt Lake City. Usually these stations, which numbered about 190, were located ten to fifteen miles apart. The company purchased 500 horses and recruited 80 riders for the job. They also hired superintendents to administer the five divisions of the route. One of these sections, which ran from Salt Lake City to Robert's Creek, was administered by Howard Egan (Settle and Settle 1955:38-39; Mack and Sawyer 1965:186).

The westward route of the Pony Express entered White Pine County in the present Gosiute reservation and nearly followed the modern Highway Route 2. The first station inside Nevada was Antelope Springs, located on the west side of Antelope Valley. Indians burned it down in 1860, but it was soon rebuilt. The site, which is privately owned today, was also used by the Overland Stage. The route continued southwesterly to the Spring Valley Station, which was not one of the original way stops. Although its exact location is not known, this station was probably located on the Henroid Ranch. It was primarily used as a stage stop, as was the next station, Schell Creek. Located northeast of the intersection of Highway Routes 2 and 93, this latter stop was probably established by Egan for the Chorpenning mail service.

Across Highway 93 and toward the northwest was Egan Station, located southwest of Cherry Creek on the west side of the Egan Range. Another Overland stop, this site was the scene of a number of Indian skirmishes. Today, its foundation is still standing on privately owned land. The Express route continued to the northwest, across Butte Valley to Butte Station, which was located on the east side of the mountains of the same name. It was formerly part of the Chorpenning service and is on public land today. This station was also known to be the object of Indian depredations. Continuing to the northwest, the Express road encountered another site in the Maverick Springs Range called Mountain Spring. This station was not an original one, and was probably built in July 1861 for the Overland Stage. No site remains for this station which would now be on private land.

A short distance to the northeast was the Ruby Valley Station, located south of Ruby Lake. This was another of the former Chorpenning stops. Because of troubles with the Indians, troops from Camp Floyd were often called to protect the area. A commemorative plaque mounted on a stone marker designates the location of this station, now on private land. The actual station house was moved to Elko, where it is on display at the Northern Nevada Museum. The final station, located in Huntington Valley southwest of Ruby Valley station in the Ely District, was called Jacob's Well. This site was not part of the original Express system, but it became a stop for the Overland Stage system. It was built just west of modern Highway 892, and today only a few stones of its foundation remain. From here the Express trail continued to the southwest across the Diamond Mountains to the Diamond Springs Station, just east of Highway 46 (Nevada Bureau of Land Management 1976:38-58; Settle and Settle 1955:140-141).

The Pony Express lasted only eighteen months and resulted in financial disaster. The major cause of its collapse was the construction of the transcontinental telegraph. Some people were reluctant to invest in this grand scheme because they feared that maintenance costs over uninhabited regions could not be paid for by the limited amount of business that was anticipated in the West. However, the need to strengthen communications between the nation's capital and the Pacific Coast required its construction. The Overland Telegraph Company was organized in April 1861 to build the line from Carson City to Salt Lake City.

The federal government helped to subsidize this venture, which took less than four months to construct. An arrangement with the Pony Express allowed for messages to be carried across the narrowing gap that had not yet been bridged. The distance was divided into two projects, with Ruby Valley as the center point; the Central Route was used as its path. Geographical obstacles required that some of the wire and insulators be sent to the west coast via Cape Horn. The construction crew ran out of poles between Ruby Valley and Schell Creek and trees had to be cut on a high mountain about fifteen miles from Egan Canyon. After its completion, extensions were made to most of Nevada's mining camps along the Humboldt River. When the transcontinental railroad was completed in 1869, Western Union constructed another telegraph line along its path, and the older line was abandoned. Nearby ranchers cut up the disused poles and utilized them as fence posts (Thompson 1947:356-367; Mack and Sawyer 1965:190-191).

Communications within individual communities were fulfilled by local newspapers. Elko had four newspapers including the Elko Independent (1869), the Elko Chronicle (1870), the Elko Weekly Post (1875) and the Elko Free Press (1883). The Eureka Sentinel (1870), the Daily Leader (1878) and the Republican (1878) serviced that mining community while miners in Tuscarora and Gold Creek read the Tuscarora Times-Review and The Gold Creek News. Other newspapers in Elko County included the Wells Index (1896), the Nevada State Herald (1897), the Wells Progress (1936) and the Deeth Commonwealth (1910). Carlin had two early publications which were short lived: The Commonwealth (1909) and the Nevada Democrat (1917). Metropolis, a small town built near an ambitious reclamation project, published the local Chronical. Lander County was serviced by the Reese River Reveille (1863), Battle Mountain's Measure for Measure (1873) and the Battle Mountain Messenger which appeared four years later (Patterson et al. 1969:554-556, 583, 597, 612, 615, 630, 659; Angel 1881:293-295, 298-300, 304).

Many towns in the Ely District were also serviced by the press. The Pioche Daily Record (1872) was that town's first newspaper and it was followed by the Review (1872) and the Journal (1874). Residents in Nye County read the Nye County News (1864), the Weekly Silver Bend Reporter (1867) and the Mountain Champion (1868). The first newspaper in White Pine County was the White Pine News (1868) and it was followed by the Daily Inland Empire (1869) and the Evening Telegram (1869). Other papers in the county were the Schell Creek Prospect (1872) and the Independent of Cherry Creek which came out six years later (Angel 1881:307-311, 330-332).

Stage lines continued to flourish in eastern Nevada before the coming of the railroad. They followed wagon roads connecting major communities in the region and maintained various stations along the way. These stops were used for toll payment, animal changes and merely resting. These routes included one that went northeast from Elko and connected this community with Tuscarora and Mountain City (Figure 27). This road had a branch that went southwest of Tuscarora

Figure 27. Parks Station. William Martin, father of Jewell Martin, on his stage line from the Dennis Station in Gold Creek, Nevada. At left is the Elko-Tuscarora Stagecoach (Courtesy of Nevada State Museum, neg. no. 2571).

and met with Battle Mountain. A north-south system linked Wells with Ely and Pioche, while another went from Ely to Eureka (Mack and Sawyer 1965:190-191). Some of the remote communities did not receive mail service immediately. Hiko, for example, remained isolated until a stage line was completed in 1867 (Townley 1973:31). In 1871 Pioche had six stages going daily to Palisade where passengers could connect with rail service, but the arduous journey to the railhead required several days (Hulse 1971:29).

Elko became the transportation center for eastern Nevada. The mining boom, which stretched from southern Idaho to southeastern Nevada, made it the hub of activity. In 1869 William C. Beachey opened his first Railroad Stage Lines road between Elko and the White Pine Mining District. In addition, Len Wines, former Superintendent of the Overland Stage Lines, opened up a stage line from Hamilton to Austin and the future site of Elko. Other toll roads were opened as the competition for stage and express business between the White Pine mines and the railroad became very keen. This included stage operations from Carlin to Eureka and Hamilton.

By 1870 Beachey and his associates had opened a toll road north to the Idaho mines. Starting at Elko, the route went over Adobe Summit and the Humboldt's North Fork to the East Fork of the Owyhee and then to Mountain City, where it joined the Idaho Central Wagon Road from Silver City to Boise City. However, the Northwestern Stage Company acquired U.S. Mail contracts formerly held by Beachey, and they slightly altered the route to Idaho. In 1871 service between Elko and southwest Idaho was terminated, and three years later much of the toll road had fallen into decay.

As mining activity increased in eastern Nevada, Elko became increasingly important as a transportation center. The discovery of silver and gold at Cornucopia in northern Elko County created new stage and freight traffic to that region in 1873 and some of the road utilized was the former Beachey route to Idaho. Two years later, a mining boom at Tuscarora led to the development of a road to that region. Smith Van Drellen operated stages along this line until the turn of the century.

South of Elko, other toll roads extended to the White Pine mines around 1870. One, known as the Hill Beachey Road, ran across Lamoille Summit, down the east side of Huntington Valley and crossed the Overland Road east of Jacob's Well Station. The other, constructed by George Shepherd and Frank Denver in 1868, went along the west side of Huntington Valley, and was the first road connecting Elko and the mines to the south. In 1882, part of this route was made a public highway.

Following the Eureka silver boom of 1869, Elko began to compete with the railroad towns of Carlin and Palisade for traffic to the new bonanza. This necessitated a cutoff road for stage and freight traffic which ran from Robinson Station on Huntington Creek south to Diamond Valley, thence to the Overland's Diamond Spring Station and over to Eureka. The route from there to Hamilton generally coincided with Highway 50.

Other towns attempted to challenge Elko for supremacy in the freight and stage industry. Carlin rivaled Elko, Winnemucca and Battle Mountain as a railroad shipping point for ore from the mines of Cornucopia and Tuscarora. In 1872 a toll road was constructed along Maggie Creek for this purpose. The Central Pacific, which earlier had ignored the site of Palisade as a terminus, constructed loading platforms there after ore discoveries in the Eureka district in 1868. Wells became an increasingly important stopover by 1871 and serviced mining communities to the south. When Ely began to develop as a mining center in the late 1880's, Wells became even more significant as the closest railroad shipping point. East of this town, Toana serviced mines in Idaho and carried on a large freighting business with the mines near Pioche (Patterson et al. 1969:137-167).

Toll roads, as necessary as they were for personal and freight transportation, were not always reliable, safe, comfortable and rapid. Train service was needed to overcome these problems, but the necessary facilities were difficult and expensive to construct. The most prominent of the railroads in Nevada was the Central Pacific, later renamed the Southern Pacific, which was part of the nation's first transcontinental railroad. It was built in the late 1860's mostly by immigrant Chinese laborers, many of whom later settled in various Nevada mining communities. In order to placate the Indians whose land was traversed by the railroad, the company often allowed them to ride for free.

The completion of the Central Pacific in 1869 brought many changes in transportation to the Elko District (Figure 28). Numerous stage and freight lines were put out of business, but at the same time, others changed their locations so that they could offer service between outlying villages and the railroad before connecting lines were established. Various towns were established along the tracks, the most important of which was Elko. Through mining, cattle and sheep industries, Elko became the trade and business center of the eastern part of the state. So much freight came into this town that four large warehouses had to be constructed to hold quantities for later shipment. Hotels were built near the depots and nearby farmers found a ready market for their crops. Elko began to decline as a trade center in the late nineteenth century. The construction of new railroad systems and the decline of the mines due to falling silver prices contributed to the end of the early boom. However, a revival of mining activity around 1900 helped to bring about more prosperous times (Mack and Sawyer 1965:194-198, 227).

The Central Pacific Railroad ended the isolation of eastern Nevada and helped to settle and develop various towns along its path, such as Carlin, Palisade and Wells. These towns were established by railroad surveyors and Carlin was designated as the eastern terminus of the railroad's Humboldt Division. When construction reached the Wells area, the company utilized a dismantled boxcar as its freight and passenger station. Later this townsite was moved about a mile eastward to be closer to the mountain grade between Wells and Toana. This latter town was located in Gosiute Valley between the Pequop Mountains and the Toana Range.

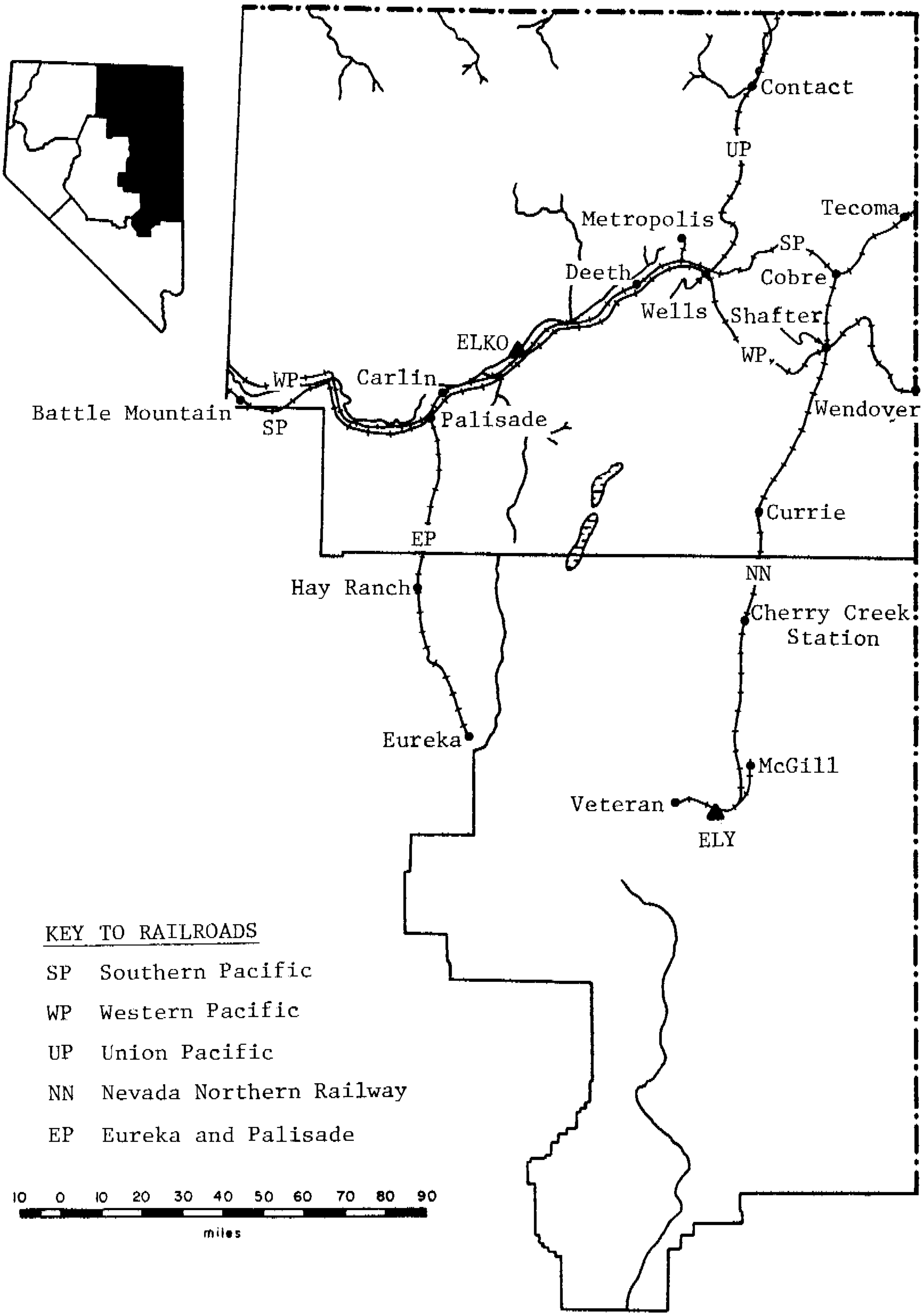


Figure 28. Location of former and existing railroad lines in Elko and Ely districts (After Myrick 1962).

The Central Pacific was heavily subsidized by the federal government. The amount of financing varied according to the roughness of terrain, with most of Nevada being classified as moderately rough ground which required more money per mile than flatland trackage. The amount awarded to the company for the section between Sacramento and Promontory was approximately twenty million dollars. The government also granted alternate sections of land to the railroad builders in this area; this amount totaled almost eight million acres. At first this land seemed to be of little value, but the company prospered through sales and natural resources. Through its inheritance from the original owners, the Southern Pacific is the largest private landowner in the Humboldt Basin (Patterson et al. 1969:173-176,190-191).

Southern Pacific leased the Central Pacific in 1884 and embarked on a renovation project around the turn of the century. They held a monopoly over rail transportation in the Humboldt Basin until the Western Pacific Railroad was completed in 1909. As one of the largest railroads constructed in the twentieth century, the Western Pacific had the advantage of modern equipment and techniques. They were also able to utilize the existing tracks of the Southern Pacific and other nearby railroads to ship various supplies needed for construction. In this manner, work was carried on at four sections simultaneously.

The Western Pacific ran from Oakland to Salt Lake City and basically paralleled the Southern Pacific along the Humboldt River. The two railroads split at Wells with the Southern Pacific going through Cobre and then northeast to Montello where it continued in this direction for about ten miles and crossed into Utah. The Western Pacific headed southeast from Wells and tunneled through the Pequop Mountains near Flowery Lake. From here it went northeast, crossed the Toana Range at Silver Zone Pass and followed the modern day Interstate 80 out of the state. The financiers of the Western Pacific feared squandering money on branches which they considered to be non-productive. Since this action limited the amount of traffic on the line, the company was forced to change its policy. In 1916 the railroad was refinanced and an additional 230 miles of track were built (Myrick 1962:316-317; Mordy and McCaughey 1968:243).

Mining activity in Nevada helped to increase railroad construction in the state. For example, the boom in the Eureka area in 1869-70 meant that rail transportation was an instant necessity. Elko, Carlin and Palisade competed to become the point of departure from the Central Pacific for the proposed railroad. Elko entrepreneurs incorporated the Eastern Nevada Railroad, a narrow gauge line that was designed to run to Eureka, Hamilton and Pioche. Eventually, it was discovered that some of the men involved were merely stalling while a Utah railroad company attempted to reach the Pioche and the White Pine mines before anyone else. Accordingly, the Eureka and Palisade Railroad was incorporated in 1873 and the Eastern Nevada Railroad became defunct (Patterson et al. 1969:194-195).

Palisade became the contact point for the new narrow gauge line, and construction work began from there immediately after the company was formed. The route went south along Pine Creek and crossed Garden Pass and the edge of Diamond Valley before reaching Eureka. Other spur routes existed in the area, but when the Eureka and Palisade Railroad was completed in 1875, the town was finally linked to a major railhead. By 1885 the ore bodies became exhausted, and early in the next decade the local smelters were shut down. Consideration was given to extending the line to mining operations in Ely and Tonopah, but rugged topographical features prevented this action. There was a rebirth of mining activity in Eureka by 1905, but disastrous floods five years later curtailed the railroad revival. Some people tried to instigate the old Eastern Nevada project, but this idea fell through. Finally, it was decided to restore the old line, and when this project was completed in 1912, rail service was restored. After the highways in the area were improved in 1927, railroad activity gradually declined until the road was abandoned in 1938 (Myrick 1962:90-111).

In 1903 the White Pine Copper Company was formed in Ely after tests for ore deposits proved to be encouraging. The large scale mining operations that commenced required rail service, and engineering reports determined that the most feasible route would run from Ely to the Wells area. A standard gauge railroad was surveyed to be constructed through the Gosiute and Steptoe Valleys and connected with the Southern Pacific line at Cobre (the Spanish word for copper).

The Utah Construction Company was awarded the contract to build the new railway line in 1905; the 140 mile project was completed the following year. Instead of the traditional golden spike used to commemorate the completion of the transcontinental line, this one was sealed with a spike forged of copper taken from the local Ruth mine. Unlike other major projects, the Nevada Northern was built for less than the estimated cost and it was completed on time. Surveyors on the job did such accurate work that only a few minor corrections were made to the original track. Branch lines were constructed, such as the one at Copper Flat that extended through Egan Canyon to the Ruth line. Some were extended to areas of new mining activity while those connecting exhausted mines were abandoned.

In 1906 the Guggenheim interests gained control of the line through their purchase of the Nevada Consolidated Copper Company. After a mill, reduction plant, and processor were built at McGill to handle the ore, a nine mile branch line was constructed. Passenger service was brisk between Ely and Cobre. From there people could use the Southern Pacific or Western Pacific to connect with other cities. This activity continued until 1941, when passenger service was discontinued between the two towns. In 1933 Kennecott Copper Company gained control of the Nevada Consolidated; ten years later the name was changed to Kennecott Copper Corporation, but the railroad continued under the older name (Allen 1964:1-34).

Other short lines were connected to the major rails that traversed northern Nevada. Although some were planned to run north of the Humboldt River, and a few even attained various stages of development, none were completed until the 1920's. While rails were originally scheduled to run north from Winnemucca, Battle Mountain, Carlin, Elko and Wells, the plan eventually utilized involved an Idaho line extending southward. The Oregon Short Line, a subsidiary of the Union Pacific, was built in this direction around the turn of the century. Business slumps halted construction efforts on numerous occasions until 1920 when the Idaho Central Railroad was incorporated to bridge the gap between Rogerson, Idaho, and Wells. In addition to facilitating mining operations in the region, its construction appealed to local farmers and ranchers who wanted to take advantage of a shorter, and therefore cheaper, shipping route to San Francisco markets.

The Idaho Central received a major financial boost from the Union Pacific in 1923 after initial efforts were hampered. The parent company felt that the increased traffic caused by the new line would help to benefit their entire system. Work on Nevada's last major railroad was contracted to the Utah Construction Company which was responsible for many other Nevada lines. Two years later an additional 6,000 feet of track were laid so that the new line could be connected with the Western Pacific. Its route essentially follows that of the modern Highway 93 between Wells and Twin Falls.

Another short line which deserves mention is the Deep Creek Railroad, a subsidiary project of the Western Pacific. The Deep Creek extended from the main line at Wendover to Gold Hill, Utah, where it serviced two gold mining districts of that region. The line ran generally along the Utah-Nevada border and extended for 46 miles. Construction on the project began in 1916 and the road was opened the next year. It ceased operations in 1939 after mining activity ceased in the area (Myrick 1962:333-337).

After the construction of the San Pedro, Los Angeles and Salt Lake City Railroad in 1905, the town of Caliente, located 25 miles south of Pioche, was born and named the railroad's division point. A standard gauge short line railroad connected the two towns, and the Pioche and Pacific Railroad ran twenty miles northwest of the town to the Jackrabbit Mining District. Although the major line remained Pioche's lifeline to outside rail service, the narrow gauge was discontinued when mining activity declined (Beebe and Clegg 1949:144-145; Myrick 1962:643, 685). In addition, the Pioche and Bullionville Railroad was built to the stamp mills ten miles southeast of Pioche in 1874. Seven years later this spur was abandoned (Carlson 1974:63).

Highway transportation in Nevada (see Figure 29) began with the individual toll road operations that were authorized by the state government. People who obtained a legal franchise were obligated to build at least a crude road between two designated points; they were entitled to collect remuneration from the travelers who used it. During the depression of the late nineteenth century, interest in these activities declined as transportation to mining communities

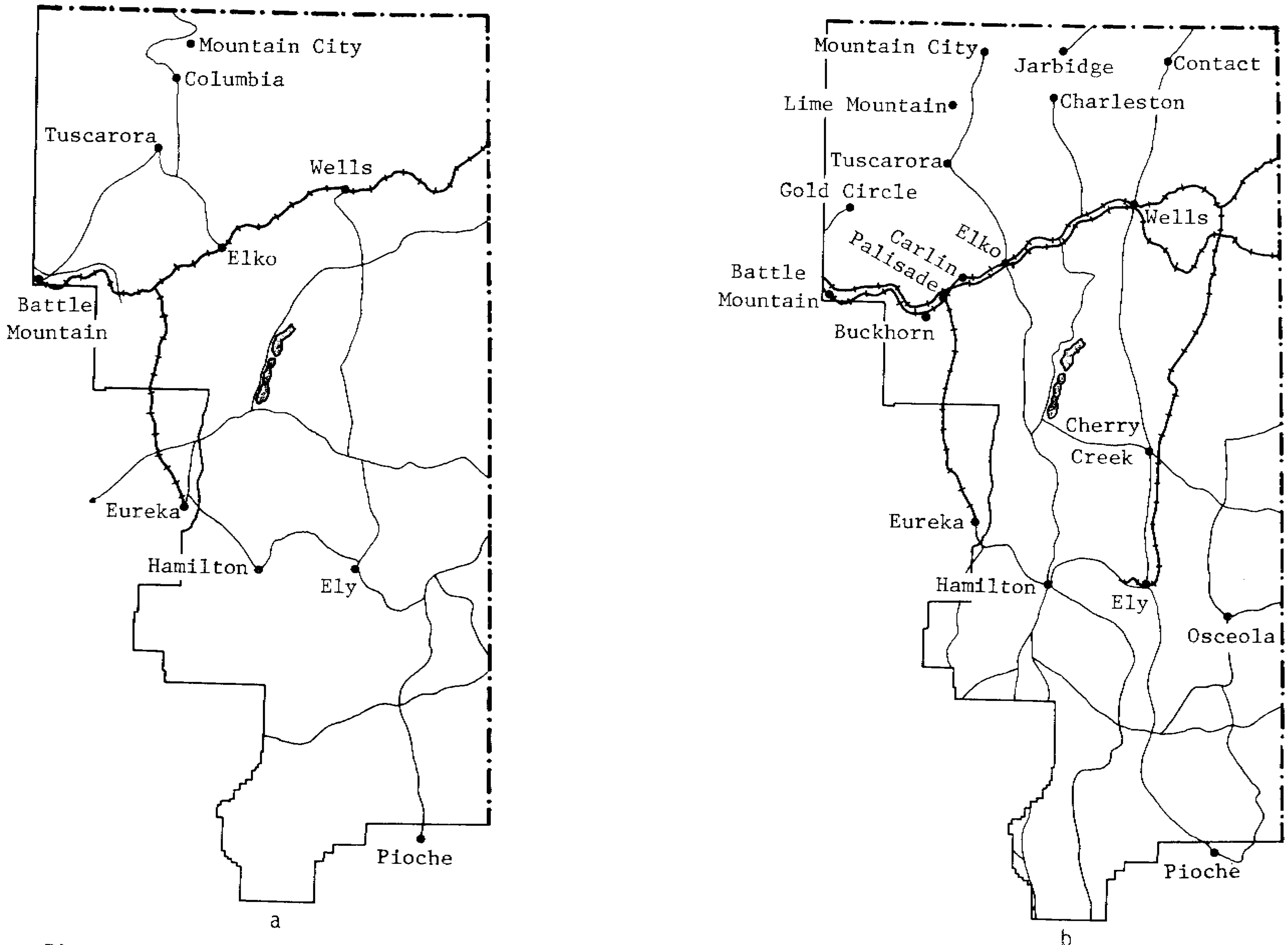


Figure 29. Maps comparing the increase in transportation routes in the Elko and Ely districts between (a) 1865-1900 and (b) 1910 (After Mack and Sawyer 1965).

became less important.

With the introduction of automobiles in Nevada, highway improvement gained statewide support. The man most responsible for this campaign was Tasker L. Oddie, who became governor in 1911. His election ushered in a new era of highway construction. A legislative act in his first year of office authorized the State Engineer to utilize convicts from the state prison for road construction. However, this plan had limited success since the appropriations were quickly exhausted and the prisoners proved to be less than diligent workers and often escaped.

By 1914 only 262 miles of Nevada highway were paved out of a total of 12,812 miles of existing roadway. It was difficult for the state to expand its paved highway system since the area to be covered was large and the number of taxpayers to support this system was few. In 1916 Congress passed a law providing federal aid to subsidize state highway programs. The act stipulated that the state provide matching funds and that a highway department be initiated to cooperate with federal authorities. At the time only six states, including Nevada, did not have one of these agencies.

Nevada received almost one million dollars for a five year highway program which began in 1917. World War I diverted attention from this plan and construction was delayed for two years. At first only a few roads were actually paved; others were merely leveled and covered with gravel. Automobiles became more popular in the 1920's, and this decade witnessed tremendous progress in Nevada's highway program. Construction was aided by another piece of federal legislation passed in 1921 which designated certain interstate systems as part of the Federal Aid Highway System and stipulated that they be financed entirely by federal funds. In addition, the act provided that states in which the Federal Government owned large sections of land would receive a higher proportion of national funding for roads (Hulse 1972:212-215; Nevada Highways and Parks 1953:10-14).

After the Nevada State Highway Department was created in 1917, the legislature established local offices to administer highway development in their regions. This included installations in Elko and East Ely (Mack and Sawyer 1965:201). Travelers in the early twentieth century, like the emigrants of the 1840's, were anxious to develop Nevada's highway systems in order to facilitate travel to California. Consequently, the east-west systems received more attention than the north-south ones. The most important road was Highway 40 which paralleled the old Humboldt River route and was part of a major transportation system. Highway 50, which sometimes approximates the old Central Overland route, is also part of a major national highway. Another route that belongs to this class is Highway 6. The major north-south road in the Ely and Elko districts is Highway 93, which extends from Pioche to Ely, Wells and southern Idaho. Auxiliary roads were added later, such as Routes 225 and 226, which were constructed in the mid-1930's (Patterson et al. 1969:154).

Although the federal government paid a large share of Nevada's highway costs, the state still had to find sources of revenue to support its share. Motor vehicle licenses were a method of financing road construction and maintenance, but the major source of income came from a gasoline tax. Sometimes highways and railroads intersected, and this required the building of grade separation structures. Each transportation system agreed to share equally the cost of constructing overhead crossings and underpasses (W. Harrington 1927:89).

Mining Activity

The development of eastern Nevada, indeed that of the entire state, is closely associated with mining. The boom in this industry, which produced the fabulous Comstock Lode, helped to convince Congress to create a new territory from the western section of Utah in 1861. By the next year, the territorial legislature requested that the new region receive statehood status. The basis of this claim was the vast wealth of Virginia City and the promise of more mining development in the area. President Lincoln, anxious to secure Nevada's underground riches for the Union cause, proclaimed statehood in 1864 (Hulse 1972:99-104). In later years, when the mining boom subsided, outsiders complained that Nevada's population was too small to warrant representation in the Senate, but those sentiments were dispelled when mining was revived in the twentieth century.

Most of the area encompassed by the Ely and Elko districts was not included in the original territory of Nevada. As mining interests began to spread east, additional regions were taken from the Utah and Arizona territories and annexed to Nevada. Sometimes this meant that Mormon communities which been created during the church's expansion program were now outside its realm of ecclesiastical jurisdiction.

An example of this phenomenon occurred in Lincoln County in the 1860's. In 1863 silver was discovered near the present town of Pioche and, shortly thereafter, an LDS missionary, William Hamblin, was led to silver outcrops by an Indian contact. Lacking the mining experience to recognize the value of his find, Hamblin did not file a claim. Around the same time, a Mormon family headed by Francis Lee, the founder of Panaca, arrived in Meadow Valley to establish ranching and farming operations. Eventually, rumors concerning the silver deposits became common knowledge and a party of gentile miners moved into the area. Conflict between these two groups was inevitable.

The Mormons, who had settled in the West in order to escape harassment by outsiders, now found that the enemy had moved into their own territory. In order to establish their rights, they occupied all of the arable lands in the area, laid claim to water rights, and tried to deny miners any claims by staking out the land. The church authorities hoped to discourage gentile intrusion and create a buffer state between Utah's settlements and Nevada's mining towns (Townley 1973:5-8).

Typically, stories of exaggerated wealth kept interest in the area alive. In 1865 a cooperative effort by Mormons and gentiles led to the discovery of the Pahranagat District. A group of prospectors in Panaca were visited by an Indian who claimed knowledge of mineral outcrops near Pahranagat Valley. The party followed him to the eastern slopes of Mount Irish, where silver was discovered. As miners began to move into the region they demanded the establishment of a county government. After the founding of Lincoln County by the state legislature in February 1866, the region was enlarged by an act of Congress which moved the state's eastern boundary to its present location. A major argument for this alteration was that Nevada could provide a more favorable framework for miners, while Utah was allegedly a non-progressive area whose religious leaders discouraged mining activity (Townley 1973:10-12; Hulse 1957:65-69).

The Pahranagat region developed slowly, with three camps established at Logan Springs, Hatfield's Springs and Crescent City. Local miners kept searching for new areas rather than developing their claims because they hoped to sell them to large companies who could exploit them. There were also problems with local Paiutes who had lost irrigated plots and meadowlands to the miners. After the Indians were defeated, they became dependent on local settlements for their existence.

The introduction of a stamp mill in 1866 and the development of a wagon road between Austin and nearby Hiko encouraged miners in the area. However, in spite of the construction of larger mills, production remained at a standstill and outside capital dried up. In 1867 miners began to search for more promising regions and the county seat was moved from Crystal Springs to Hiko. By 1869 work on the Mount Irish mines had ceased and miners began to concentrate on the ore discoveries in the Pioche District. Although the ore in the Pahranagat District never proved to be significant, its political consequences were important in the formation of the state (Townley 1973:17-46; Hulse 1957:70).

The rich ores near Pioche were discovered in 1864, but development did not begin for six years. It soon became one of the most notorious communities in Nevada. The boom in the Pioche District caused this town to grow bigger than the nearby Mormon community of Panaca. The two communities thrived off each other, since Mormon farmers supplied the miners with meat and produce rather than competing with their diggings (Palmer 1958:354-355).

The production peak in the mining district occurred between 1870 and 1873 when the population allegedly reached 6000. After the peak year of 1872, production declined rapidly for the next three years and dwindled to nothing by the middle of the next decade. However, during its high point, mining operations produced over twelve million dollars worth of silver (Paul 1963:105-106).

Other mining districts were set up in the Lincoln County portion of the Ely BLM District. The Atlanta District was located just south of the Lincoln-White Pine county line in the Fortification Range. It was discovered in 1869; within three years its rich silver ore was being processed in two local mills, but this find was quickly depleted. The Freiberg District, situated at the north end of the Worthington Mountains, was discovered in 1865 by two miners who were led to the area by an Indian. The Jackrabbit District was located in the Ely Range, sixteen miles northeast of Pioche. It was organized in 1876 and the mine of the same name became such an important producer of various ores that the Pioche-Pacific Railroad was built to haul out the diggings. The Patterson District, which was shown to its founder by an Indian in 1869, was located in the south end of the Schell Creek Range. Some 250 claims were located north of Patterson Pass, but the rich ores played out quickly. Finally, the Silverhorn District, which adjoins the Jackrabbit District on the west, was discovered in the fall of 1920. A boom took place in the next year, but it subsided quickly (Lincoln 1923:118-128).

In the northeastern portion of Nye County that lies within the BLM Ely District, there are two mining districts. Butterfield Marsh was located in northern Railroad Valley about eighty miles south of Ely. This region was a source of salt for the silver mills of Tybo. In 1912 and 1913 Railroad Valley was unsuccessful in attempting to find commercial amounts of potash salts. The Current District, located east of the town of the same name, was the second mining district. In 1914 gold ore, which contained traces of lead and copper, was mined on the Shepherd property. Two years later, the Sunrise Mine produced lead ore with some silver and copper (Lincoln 1923:163-166). The Willow Creek District, located in the southern end of the Railroad Valley, lies just outside of the BLM Ely District. It was discovered in 1911 and produced gold and silver ore in the following years (Lincoln 1923:108).

Although no mining districts were formed in the northeastern section of Lander County that lies within the BLM Elko District confines, three such mining areas became established in adjacent regions. The Battle Mountain District, organized in 1866, embraced the Battle Mountain Range in northwestern Lander County and southeastern Humboldt County. Located 20 miles southeast of Beowawe on the eastern slope of the Shoshone Range, the Bullion District contained Marysville, Grey Eagle Mine and Mud Springs. Adjoining this region on the northwest was the Hilltop District on the northeast slope of Shoshone Peak. It was discovered in 1906 and a boom occurred there two years later (Lincoln 1923:106-111).

Like Lincoln County, Eureka County was created by local miners who wanted to set up their own government. Although mining development started in 1863, Eureka County was not established until 1873. The state legislature carved out Eureka County from the eastern section of Lander County (Hulse 1972:144). Two years later, the Mineral Strip area of Elko County was annexed to the Eureka region (Wier 1940:293).

The first mining district in the county was Cortez, which was founded in 1863 by prospectors from Austin. One of these men, Simeon Wenban, went into partnership with George Hearst; their discovery helped to create the Hearst fortune. Cortez was located on the southwest slope of Mount Tenabo in the southern end of the Cortez

Range and became one of the most productive mines in north central Nevada. In addition, numerous mines were located on Tenabo's north slope in Mill Canyon. Rich ore from these discoveries was shipped to Austin, where it was processed. In 1864 a small stamp mill was built in Mill Canyon; three years later it was purchased by Wenban. This operation lasted until 1886, when a larger mill was constructed at Cortez. It was estimated that the value of production totaled almost ten million dollars, with the Garrison Mine accounting for a large percent of this amount (Emmons 1910:100-101; Lincoln 1923:86).

The Buckhorn District, discovered in the winter of 1908-1909, was located northeast of Mount Tenabo on the southeast side of the Cortez Range and adjoined the Cortez District on the northeast. Claims to gold, silver and lead ore were purchased by the Buckhorn Company in 1910. The company constructed an electric power plant at Beowawe and a cyanide mill at Buckhorn in 1914. Operations shut down in 1914 due to a lack of ore. Another 20th century find was the Lynn District, located at Goldville in the Tuscarora Mountains of northern Eureka County. Placer deposits were discovered in 1907, and a brief boom followed. They were worked intermittently from that time and produced almost $100,000 worth of gold between 1909 and 1921. The Maggie Creek District was another modern discovery. Located southwest of Maggie Canyon where the Carlin Peaks of the Tuscarora Range meet with Maggie Peak of the Independent Range, it produced silver, lead, copper and gold between 1906 and 1909 (Lincoln 1923:85, 94-95).

Another early mining district in northern Eureka County was Mineral Hill, located in 1869 on the western slope of the Sulfur Springs Range. The region was previously occupied by the wester Shoshoni, who were employed as miners in the early days (Carlson 1974:168). The mining camp was located five miles southeast of the town of the same name which served as a station for the Eureka and Palisade Railroad. The operation was sold to an English corporation in the early seventies, and they constructed a twenty stamp mill. In 1880 it was again sold and continued in operation until 1887 (Lincoln 1923:95; Emmons 1910:95-96).

The Diamond District was located on the western slope of the Diamond Range, twenty-five miles north of Eureka. This early find was discovered in 1864; within a decade a smelter was erected at the Champion Mine, the main property in the region. However, only a small amount of bullion was produced, and the area was abandoned. A revival occurred in 1922, when the Eureka Silver Mining Company redeveloped the property. Salt mining took place in the Diamond Marsh District, located in the Diamond Valley about forty miles north of Eureka (Lincoln 1923:87-88), during the 1860's and 1870's to supply the silver mines of Eureka, Mineral Hill and Hamilton.

Initial interest in the Stafford District, on the western slope of the Cortez Range in Stafford Canyon, came about when the West iron mine was located by members of the Fortieth Parallel Survey. However, in 1881 the Onondaga silver mine was discovered; along with the Zenoli silver mine. It became the major producer of the mining district. The American Smelting and Regining Company renewed interest in the iron mine around 1907 when it leased these workings from the Central Pacific Railroad and worked the area for a number of years (Lincoln 1923:96).

The most spectacular discovery in the county was the Eureka District, which is sometimes subdivided into smaller districts: (1) the Ruby Hill District, near Eureka and Ruby Hill, (2) the Secret Canyon District, toward the south, (3) the Pinto District, on the southeast, and (4) the Spring Valley District, on the southwest. Although located outside the study area, these discoveries were important to the development of eastern Nevada in general. In addition to being the first important silver-lead finds in the United States, the mining boom lead to the construction of the Eureka-Palisade Railroad and the creation of Eureka County in 1873 (Mack and Sawyer 1965:78; Lincoln 1923:88).

Although the initial discoveries of oxidized ore were made in 1864, Eureka miners did not know how to refine them properly, and initial attempts at smelting were unsuccessful. Before the ore was successfully processed, mining engineers experimented with a variety of techniques. Miners were used to ore veins, but here they had to contend with silver-lead deposits in the limestone so common in the Great Basin. However, the Eureka deposits were particularly extensive, valuable, and arranged in an unusual fashion.

After some successful experiments, the Eureka Consolidated Mining Company of San Francisco and the Richmond Consolidated Mining Company of London were incorporated in the early 1870's. Metallurgists W. S. Keyes and Albert Arents were hired to design large furnaces to aid in the smelting process. The result of their experiments was an exceedingly large output of precious metals, which allowed Eureka to be a more established mining town than most of its Nevada contemporaries. The United States Geological Survey estimated that in 1882 the Eureka mines produced sixty million dollars worth of precious metals and almost a quarter of a million tons of lead (Paul 1963:103-105).

In addition to the innovations connected with the unique ore bodies in the region, the Eureka District had another impact on mining in Nevada. Because the peculiar structure of the limestone replacement deposits differed vastly from the usual veins of gold-quartz, new mining laws were required to control its development. Litigation involving the Richmond and Eureka mining companies became the first apex case to challenge the Federal Mining Law of 1871 (Nolan 1962:54).

The Eureka mining company operations continued into the 1880's, after other Nevada strikes had played themselves out. In 1885 when major ore bodies were exhausted, leasers became the main producers. However, the Richmond smelter was closed in 1890 and the Eureka smelter followed suit the next year. A revival did take place in 1905, but past production totals have never been equaled (Lincoln 1923:89).

A major impetus to the widespread mining activity in eastern Nevada was the discoveries in the Reese River District in 1862. Elko County felt the impact of this find and experienced a boom period from 1867 to 1873. Most of the county's mining districts were discovered during this time. Early production came from enriched near-surface zones, since operation costs prohibited the extraction of ore from far beneath the ground. By 1890 the easily mined ores had been exhausted, and more sophisticated metallurgical methods were required. After a drought of two decades, better transportation facilities, cheap power and improved techniques helped to foster a period of high production which lasted from 1910 to 1948 (Granger et al. 1957:20-22).

The earliest find in Elko County was the Carlin District, which was discovered in 1859 and located at the town of the same name. Considerable coal production was carried on until 1874 and continued into the twentieth century. The area was also noted for gold, which was produced in 1908, and again in 1934 (Lincoln 1923:38-39; Granger et al. 1957:31). Other areas that were early producers included the Kinsley District at the southern end of Kinsley Mountain, discovered in 1862, and the Tuscarora District, founded in 1867. The former produced silver, copper and lead until 1872, and was revived in 1909 (Lincoln 1923:50; Hill 1916:92). The latter, located on the southeastern slope of Mount Blitzen, produced large quantities of silver after the six silver mines produced large quantities of gold until 1898 (Emmons 1910:58; Granger et al. 1957:151).

The year 1869 witnessed the discovery of five more mining districts in Elko County. The Aura District, located on the east slope of the Centennial Range near the old town of Columbia, produced gold and silver. Mining declined in the eighties and was not revived until 1906 (Granger et al. 1957:27; Lincoln 1923:38). Silver-lead minerals were in the Dolly Varden District, about sixteen miles northeast of Currie. In 1872 copper ores were mined and processed locally, but this activity lasted only two years. A short-lived rebirth occurred in 1905, when veins of gold were discovered (Granger et al. 1957:50; Hill 1916:80). Mountain City, situated on the north fork of the Owyhee River, produced over a million dollars worth of silver prior to 1881 (Figure 30). Three silver mills were in operation at that time, and later, three gold mills were constructed (Emmons 1910:80; Granger et al. 1957:112). Spruce Mountain, located about 25 miles south of Tobar in southeastern Elko County, was the site of lead-silver ore discoveries. In the early seventies the Ingot Mining Company constructed a small smelter, but it was not successful. There was a brief revival in 1907, and total production in the mining district by 1930 was over 1.7 million dollars (Schrader 1931:9-10; Hill 1916:71; Granger et al. 1957:137). Finally, the Railroad District produced silver-lead mines, copper finds and some gold. Located 12 miles southeast of Palisade at the headwaters of the Dixie Creek's west fork, this area yielded three million dollars worth of ore by 1884 and continued to be a small producer in the early twentieth century (Granger et al. 1957:126).

Figure 30. Mountain City, northeastern Nevada (Courtesy of Nevada State Museum, neg. no. 1555).

Eight more districts were located in Elko County in the 1870's. In the early part of the decade, the Cornucopia, Contact and Island Mountain Districts were founded. The first was predominantly a silver producing area, and was situated 20 miles north of Tuscarora. The second, located on highway 93 in the northeastern part of the county, produced both copper and silver. The third, founded in 1873 near Gold Creek, was the site of gold placers (Lincoln 1923:40-41, 47; Granger et al. 1957:33, 41, 75). Alder was situated in north-central Elko County and confined mostly to placer mining. Gold Hope, located about twelve miles southwest of Cornucopia on Chino Creek, and Rock Creek, which lies about ten miles west of Tuscarora, were silver producing areas (Granger et al. 1957:26, 72, 133). The last was located on Lone Mountain, 28 miles northwest of Elko. It produced about 1,000 tons of ore by 1908 (Lincoln 1923:51).

Later on in the decade, the Charleston, Good Hope and Rock-Creek districts were discovered. In 1876, Rock Creek was founded about ten miles west of Tuscarora and produced silver (Granger et al. 1957:133; Lincoln 1923:54). About the same time, Charleston was located near Copper Mountain in northern Elko County. Gold placers were discovered near the town; the area has also yielded silver, copper, lead and antimony (Granger et al. 1957:32; Lincoln 1923:39). Two years later, Good Hope was founded twelve miles southwest of Cornucopia; this mining district continued to produce silver into the next decade (Lincoln 1923:46; Granger et al. 1957:72).

Only two new mining districts were located in the 1880's--an indication of the general slump in Nevada's mining activity at this time. The Ferber District was founded around 1880 in the Toana Range, 16 miles west of Gold Hill, Utah. It produced copper, lead, silver and some gold (Lincoln 1923:44; Granger et al. 1957:60). The Burner District, located ten miles west of Good Hope, produced $30,000 of lead-silver ore before operations were halted in 1893 (Lincoln 1923:38; Granger et al. 1957:31).

Four more mining districts were developed in Elko County during the 1890's. Two of these areas, Delker, founded in 1894, and Elk Mountain, discovered in 1890, were locations of small copper reserves. Delker, located on the northeast side of Delker Hill east of Ruby Lake, reported shipments of copper in 1916 and 1917 (Lincoln 1923:42; Granger et al. 1957:48; Hill 1916:66). The Elk Mountain District, which comprised a small area near the Idaho border north of Contact, had no recorded production (Granger et al. 1957:57). The Delano District, which is 37 miles north of Montello, may have been discovered in 1890, but there was no significant production until 1918. From that time until 1949, it produced over 53,000 tons of gold, silver, lead, zinc and copper ore, valued at more than 2.1 million dollars (Granger et al. 1957:43). Located on the west side of the Bull Run Mountains in northern Elko County, the Edgemont District was discovered in the 1890's. Silver and gold ores from the Lucky Girl Mine made it the county's biggest producer from 1905 to 1909 (Lincoln 1923:43; Granger et al. 1957:53).

The Elko District remained productive in the first decade of the twentieth century. Gold Basin, situated 14 miles west of Jarbidge, was a minor district that existed in the early part of the century, but little is known of its history (Granger et al. 1957:64). In 1903 the Ruby Valley District was discovered on the east slope of the Ruby Range approximately eleven miles north of the valley's post office. Zinc and led ores were mined during the next fourteen years (Lincoln 1923:54; Granger et al. 1957:134; Hill 1916:60-62). The Tecoma District, located in the southwestern part of the Goose Creek Range about ten miles north of Tecoma, was discovered in 1906 and produced 3,000 tons of gold, silver, copper and lead until 1947 (Granger et al. 1957:148; Hill 1916:102-103). Situated at Midas on the southeastern slope of the Owyhee Bluffs, the Gold Circle District was the site of a gold rush in 1907-1908. A mill was erected in 1915 and remained in operation until 1922. The Jarbidge District, discovered in 1909, was located eight miles south of the Idaho border on the north side of the Bruneau Range. After the Goldfield decline in southern Nevada, Jarbidge was the major gold camp in Nevada and was Elko County's largest gold producer from 1916 to 1932 (Lincoln 1923:48; Granger et al. 1957:84-85; Emmons 1910:48).

Mining districts increased during the next decade with the discovery of nine new areas. In 1910 the Mud Springs District was formed on the north end of the Ruby Hills near the southeastern side of the Ruby Valley. By 1950 the district had produced almost 2,500 tons of gold, silver and lead ore (Granger et al. 1957:123; Hill 1916:64-65; Lincoln 1923:52-53). Two years later the Warm Creek District was located in the southern part of the East Humboldt Range, and the next year the Valley View District was set established on the eastern side of the Ruby Range opposite Franklin Lake's southern end. The first was predominantly a lead-zinc area, while the latter was known for its tungsten (Hill 1916:60-63; Granger et al. 1957:166-168). The Elko District was opened up in 1914 when an oil shale property was developed (Lincoln 1923:43). During the next two years, the Ivanhoe and Harrison Districts were opened. The first was located at Ivanhoe Springs and produced mercury, while the latter, situated two miles east of Harrison Pass in the Ruby Mountains, was a source of tungsten (Lincoln 1923:47; Granger et al. 1957:73). In 1917 the Proctor District produced some silver ore, and the Ferguson Spring District at Don Don Pass yielded oxidized copper and lead ores (Lincoln 1923:45,53). During the next year, small amounts of gold and silver ore were recorded in the Divide District, eight miles northwest of Tuscarora. Finally, the White Horse District, located at White Horse Springs in the Toana Range, produced some copper and lead (Lincoln 1923:57-59; Granger et al. 1957:168).

In general, mining activity in White Pine County, which was organized in 1869, occurred earlier than that of the Elko area. The first region to be established was the Eagle District in 1859. It encompassed the Kern Mountains and the Red Hills in eastern White Pine County on the Utah border. Discovered by Overland Mail Company employees, Eagle supplied lead, silver, gold and copper in its early days. Tungsten was discovered in 1910 and remained an important metal until the 1940's (Smith 1976a:52; Lincoln 1923:245; Hill 1916:202-205).

Another early district in the county, site of the first mill constructed in eastern Nevada (1864), was Cherry Creek District, located around the town of that name in the Egan Range in northern White Pine County (Figure 31). The county's first mined ore deposit was discovered in Egan Canyon by some volunteer soldiers who were traveling along the Overland Stage Route. Two years later the Gold Canyon District was formed and became part of the Cherry Creek District when it was set up in 1872. A twenty stamp mill had been constructed near Egan Canyon's Pony Express Station three years previously. The most active period was from 1872 to 1883, but following the demonetization of silver in 1893, production practically ceased (Schrader 1931:28-29; Lincoln 1923:242-243; Smith 1976a:47-48; Hill 1916:161-164).

One of the most sensational mining rushes in the West occurred in the White Pine District with the discovery of silver ore at Treasure Hill in 1868. The first ore in the district was found in 1865 on the western slope of White Pine Mountain. However, the wealth of the area was not revealed until 1867, when prospectors were led by an Indian to rich silver chloride deposits atop Treasure Hill. The rush to White Pine was so tremendous that the area became Nevada's second largest population center (Paul 1963:106-107). During a two year span, 13,000 mining claims were recorded and 195 mining companies were organized. At one time there were twenty three stamp mills in operation, and nine smelters had been constructed in the region.

In spite of this bustling atmosphere, mining activity decreased as rapidly as it came. The peak was hit in 1870 with an ore production of over two million dollars. By mid-decade, most of the work had ceased, although silver ore mining continued until 1887. A disastrous fire in 1885 destroyed Hamilton and caused the county seat to be moved to Ely (Lincoln 1923:257; Smith 1976a:81; Humphrey 1960:2-5).

Another important mining district was Ely, first organized as the Robinson District in 1868. The area, which was shown to prospectors by an Indian in the previous year, included the towns of Ely, East Ely, Kimberly, Reipetown, and Ruth (Figures 32 and 33). Activity was sporadic during the latter part of the nineteenth century, but the recognition of the potential value of local copper deposits in 1902 brought dynamic changes in the mining district. Original claims at the Ruth copper mine were located in 1905 by D. C. McDonald, who named the find for his daughter. By the next year, the claim was sold to the Nevada Consolidated Copper Company, the majority of whose stock was controlled by the Guggenheim family. Mark L. Requa, head of the company, also built the Nevada Northern Railroad and constructed the McGill concentrating plant and smelter by 1908. It was remodeled as a flotation plant and enlarged so that, by 1926, it could treat 15,000 tons of ore per day. The first copper was produced in 1908, and production in the district jumped from about two thousand dollars in 1907 to more than two million dollars the next year. Manganese ore was mined during World War I, and molybdenite was first recovered in 1941. The latter was shipped to the Kennecott Copper Corporation, which had become a major concern in

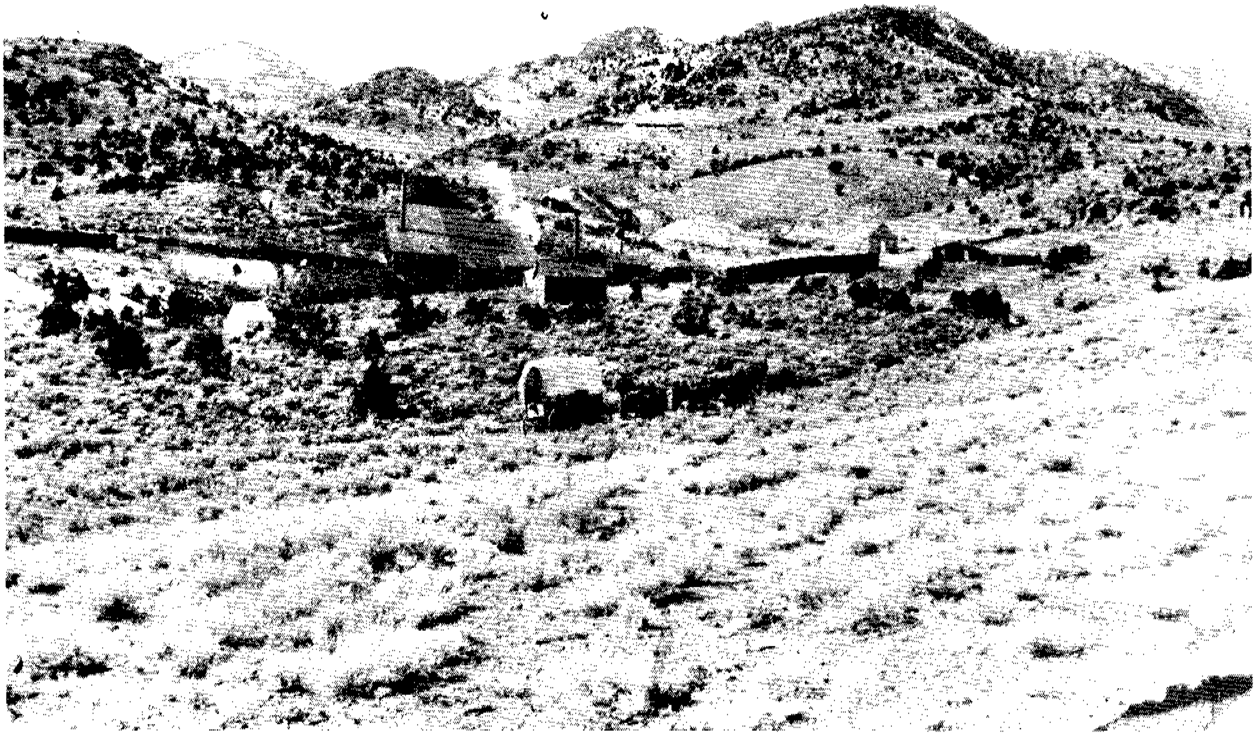


Figure 31. Star Mill, Cherry Creek, White Pine County, Nevada, ca. 1900 (Stanley W. Paher photo, courtesy of Nevada State Museum, neg. no. 2131).

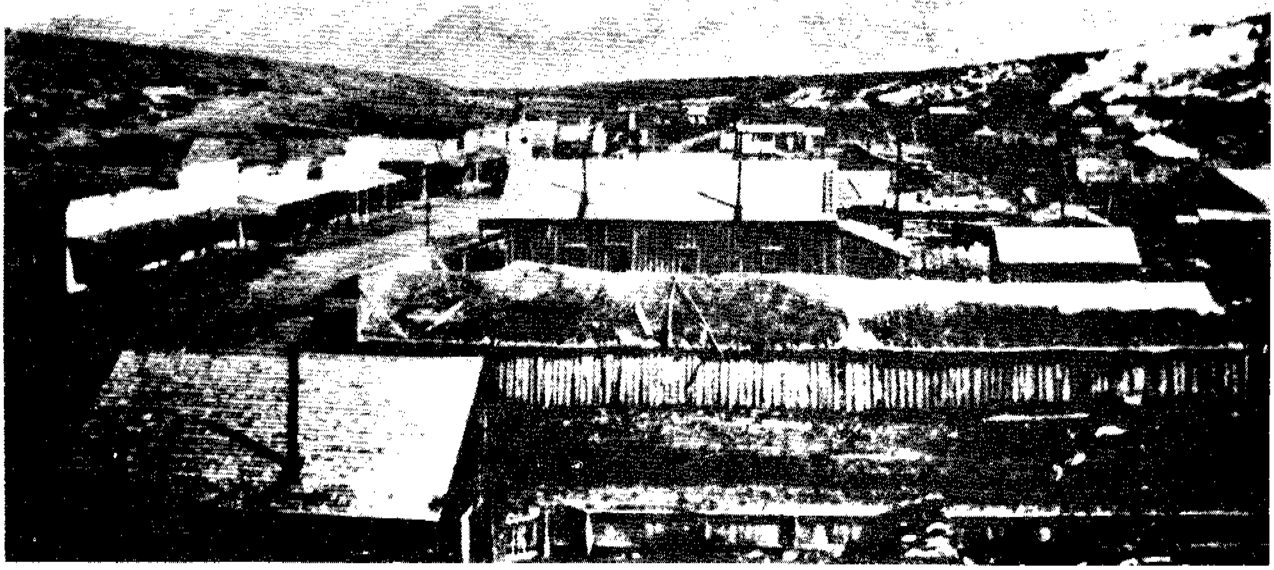


Figure 32. Ely, Nevada, ca. 1896-1900 (Courtesy of Nevada State Museum, neg. no. 5512).

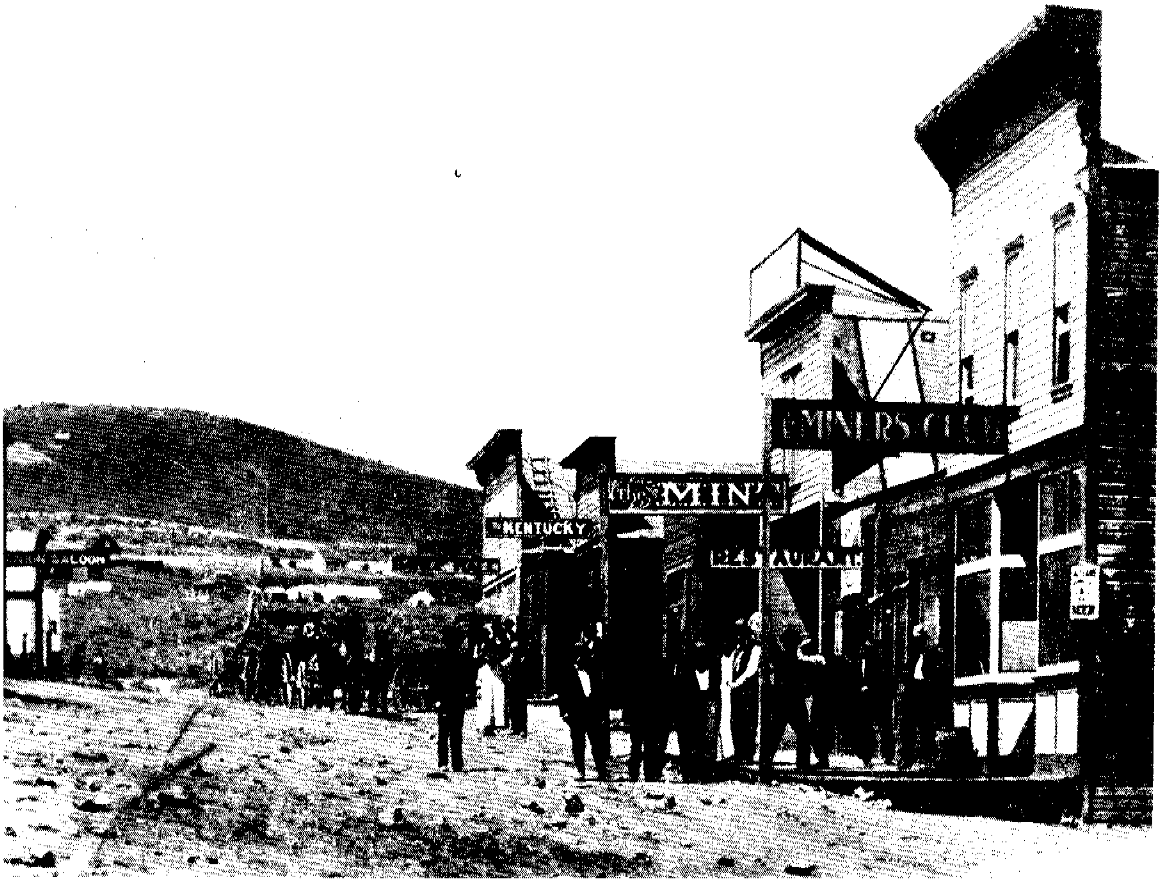


Figure 33. Reipetown, White Pine County street scene, ca. 1910 (Stanley W. Paher photo, courtesy of Nevada State Museum, neg. no. 2145).

the area. Their plant near Salt Lake City was used for processing (Smith 1976a:65-67; Wogan 1947:16-20; Ingalls 1907:675-682; Lincoln 1923:245, 251).

In 1866 the Newark District was set up on the eastern slope of the Diamond Range, just east of Eureka. Austin prospectors discovered the lead-silver veins and sold their interests the next year to the Centenary Silver Company. They constructed a twenty stamp mill, but the amount of ore eventually found did not warrant its operation. While mining activity declined in the 1870's, it was revived in the early 1900's when lead and copper ore were recovered (Smith 1976a:60; Lincoln 1923:252).

As in Elko County, the year 1869 witnessed a large growth in the number of mining districts in White Pine County. The Bald Mountain District was centered around the old town of Joy on the southern end of the Ruby Range. It was a region of gold, silver, copper and tungsten (Lincoln 1923:241-242; Smith 1976a:44-45; Hill 1916:156). The Nevada District, situated on the Schell Creek Range's western slope about ten miles southeast of Ely, was the site of a silver discovery by Reno prospectors. Manganese was also located in 1910 and continued to be mined for the next five decades (Lincoln 1923:252; Smith 1976a:58-59). This range was also the site of the Cooper District, located on the south side of the Nevada District (Smith 1976:50). The Duck Creek District was situated on the west slope of a branch of the Schell Creek Range called the Duck Creek Ridge. Although it was the site of early discoveries, production of metals was minimal until the twentieth century (Lincoln 1923:244; Smith 1976a:51; Hill 1916:196).

Silver ore was discovered in the Lincoln District on the western slope of the Snake Range, south of Wheeler Peak. Operations were unsuccessful, but the general area was reorganized as the Tungsten District in 1900, and claims of this metal were developed in subsequent years (Lincoln 1923:256; Smith 1976a:58, 79). The Shoshone District, located on the western slope of the Snake range near the old Shoshone post office, was yet another mining area to which prospectors were led by an Indian. Although it was abandoned in 1876, tungsten was discovered in 1915 (Lincoln 1923:254; Smith 1976a:76). The Piermont District was located at the old town of that name on the eastern slope of the Schell Creek Range. Silver and gold were mined here until operations were shut down in 1873. They were not reopened until 1916, and mining activity continued through 1953 (Smith 1976a:63; Lincoln 1923:253-254).

Other operations that began in 1869 included the Pinto District on the eastern slope of the Diamond Mountains near Highway 50, the Snake District on the eastern slope of the Snake Range, the Sacramento District west of the Sacramento Pass on the western slope of the Snake Range, and the San Francisco District which included all of the Heusser Mountain on the eastern slope of the Egan Range. Discoveries were made in the Pinto District in 1865, but by 1873 its mining operations were shut down. Silver was mined first in the Snake District, and in 1913 it was revived with the discovery of tungsten-bearing veins. This procedure was repeated in the

Sacramento District when tungsten was discovered during World War I. The San Francisco District produced small amounts of silver-lead ore (Lincoln 1923:254-255; Smith 1976a:64, 75, 77).

After the phenomenal development in 1869 which saw the beginning of a dozen mining districts, six more were organized in the following decade. In 1870 the Pancake District was set up on Pancake Mountain, fifteen miles southwest of Hamilton. Silver chloride ore and outcrops of lignite were discovered here. Around the same time, the Aurum District (originally known as the Schell Creek District) was organized in the northern part of the Schell Creek Range. Silver was the most important ore in the early days, but it was later replaced by lead and copper. Tungsten was produced in the area during World War II (Lincoln 1923:241; Smith 1976a:42-43; Hill 1916:190). In 1871 lead-silver ores were discovered in the Hunter District on the western slope of the Egan Range in central White Pine County. The area was worked extensively from 1877 to 1884 and activity was revived in 1957 with the discovery of uranium (Lincoln 1923:251; Smith 1976a:54-55; Hill 1916:173).

The Ward and Osceola Districts were established in 1872. The first was located at the old camp of Ward on the eastern edge of the Egan Range, 16 miles south of Ely. Lead-silver-copper ores were first discovered in 1869, and the mines were actively worked until 1882. However, the mining was resumed in 1907 and remained intermittently active into the 1960's (Lincoln 1923:256-257; Smith 1976a:80; Hill 1916:182-183). Located at Osceola on the western flank of the Snake Range, the latter district was the only area in the county that was predominantly concerned with placer gold, which was irregularly mined until 1959. The region was also responsible for the production of tungsten, originally discovered in 1916 (Smith 1976:60-61; Lincoln 1923:253). In 1873 silver-lead-copper ores were discovered in the Taylor District, situated at the old town of Taylor on the western side of the Schell Creek Range. The area was active until 1892, but it was reopened in 1909 and mined in different periods for the next six decades (Smith 1976a:78; Lincoln 1923:255; Hill 1916:200).

The development of new mining districts in White Pine County was at a virtual standstill throughout the remainder of the nineteenth century. Only the Granite District, located on the eastern slope of the Egan Range just north of the Hunter District, was opened in 1894. The area consisted of 24 mines which continued in use until 1960 with the peak production year in 1948 (Smith 1976a:54; Lincoln 1923:251; Hill 1916:177). The Black Horse District was discovered in 1905 at the town of the same name on the eastern flank of the Snake Range. Gold was mined until 1913, but the area remained unproductive until the discovery of lead-silver ore in 1933 (Smith 1976a:46; Lincoln 1923:242).

The last three mining districts discovered in White Pine County were never officially organized. The Cleve Creek District, located in the central part of the Schell Range, was first mined in 1923, but it did not produce again until the early 1950's (Smith 1976a:49-50). The Ellison District was situated about two miles above the mouth of

Sawmill Canyon and was active from 1936 to 1948 (Smith 1976a:53). Finally, the Telegraph District, which lies between the Cherry Creek and Granite Districts, got its name from being an area that was a source of poles for the transcontinental telegraph line. Tungsten deposits were discovered there in 1940 (Smith 1976a:79).

Ranching and Agriculture

Although the growth of early Nevada was inextricably tied to mining developments, these activities often played themselves out as boom towns became deserted. While mining flourished in the remote sections of the eastern part of the state, it required support systems to feed its bulging population. After ore rich areas were depleted, ranching and agriculture remained important activities for those people desiring to settle in the area. In general, these occupations had a more stabilizing effect on the maturation of the Ely and Elko districts.

The first cattle to enter the region accompanied the Bartleson-Bidwell party of 1841. Subsequent emigrant trains brought livestock through northern Nevada, and often they were forced to sell exhausted animals to settlers along the way. There were various cattle drives along the Humboldt Trail throughout the 1850's and 1860's, but major efforts did not begin until the end of the Civil War, when Texas longhorns were brought into Elko County. Others were brought from California, Utah, Idaho, Wyoming and Oregon by cattlemen who were seeking outside markets (Patterson 1965:5).

One of the Civil War veterans who drove cattle into northeastern Nevada was John Sparks, who later became Nevada's governor. He entered the state in 1868 with a herd of Texas longhorns which he wintered in Elko County. Recognizing that the open range would some day come to an end, Sparks encouraged his men to file for homesteads. When these new landowners became tired of their surroundings, Sparks purchased their property; in this manner he became one of the area's largest landowners (Mack and Sawyer 1965:110).

The Ruby Valley became an important grazing pasture for cattle drives. The freighting firm of Russell, Majors and Waddell received an army contract to transport supplies and oxen in 1859. They wintered 3500 head in Ruby Valley before moving them to California the next spring. After this, the valley continued to be utilized as a holding area for cattle to be sold to the mining camps in White Pine, Eureka and Lincoln counties. Some of the herds held in the valley were sold to Mormons in Utah (Patterson et al. 1969:208-209).

Large herds of cattle poured into Nevada from Texas following the Civil War; this helped to make Elko a shipping and trading center by the time the transcontinental railroad was completed. By the early 1870's, these long drives from the south ended, and California became a new source for cattle. A great drought in that state in 1871 forced stockmen to find a new area to graze their cattle and Elko County received many of these animals. Overgrazing in northern Mexico forced cattle owners there to ¬fell their stock, and many of these animals found their way into Ruby Valley and Independence Valley near Tuscarora.

Overgrazing also became a major problem for stockmen in eastern Nevada. Elko County's ranges were crowded by 1873; contributing to this problem was the fact that many small ranchers had acquired irrigable land through the Preemption and Homestead acts thus withdrawing large areas from the public domain. A severe winter in 1879 vastly reduced the herds as some cattle died and others were moved to nearby states. In that year there were almost 100,000 head in Elko County, but by the next year, less than one-third of them remained (Patterson et al. 1969:211-214).

The growth of Nevada's cattle industry necessitated legislation to deal with the stockman's problems. In 1873 the state legislature required owners to brand their herds and to register their insignia at the county courthouse. Fencing was another problem facing Nevada's cattlemen. Although a bill of 1873, which would have required fencing for private lands, was defeated; farmers, railroads and state and federal agencies began to enclose their property. Through this process, barbed wire helped to end the open range. Since wandering sheep were destroying good pasturing land, an additional law was passed to tax sheep owners for land use.

In order to protect their own interests, stockmen from Nevada, Oregon and northern California met in Winnemucca in 1884 to form the Nevada Livestock Association. Twelve years later, the Elko County Cattle Association was organized with representatives from eight districts (Patterson et al. 1969:215-218).

In 1880 Nevada's representatives asked the federal government to take back three million acres that had been set aside to support its public school system. The state had only been able to sell 229,000 acres of the original area, and the Nevada legislature wanted to exchange it for two million acres that would be selected by state officials. In 1885 the state remodeled its land laws in order to choose and sell the area agreed upon by Congress. This exchange allowed entrepreneurs to purchase large holdings containing irrigable land and water, even though the state laws were originally designed to prevent such a concentration. This condition dominated the cattle industry and was best exemplified in Elko County (Wooton 1932:33).

After the harsh winter of 1879, the cattle industry experienced a boom period lasting until 1886. Thereafter, droughts in the summer and extreme cold conditions in the winter destroyed many animals. The year 1889 was especially hard, with the summer being the driest on record up to that time and winter temperatures as law as sixty degrees below zero. In the following spring cattlemen who chose to stay in the business began to implement new ideas, such as plowing and planting a pasture, hay mowing and winter feeding (Patterson 1965:6-7).

By the beginning of the twentieth century land that had previously been used for cattle grazing had been taken by farmers or other stockmen or belonged to the federal government. Public lands were utilized through the issuing of grazing permits. Each stockman was allowed to graze a certain number of animals during a specified time period. This system was based on past utilization and the productive capacity of the area (Nevada Highways and Parks 1948:23).

The cattle industry continued to grow and became the state's second largest tax base. Production was increased during World War I in order to meet wartime demands, however, a major slump occurred between 1919 and 1925. This was brought on by higher production costs and low prices and forced many breeders out of business. Conditions worsened in 1931 when the cattle industry suffered due to droughts, harsh winters, bank failures, low prices and poor economic conditions brought on by the depression (Patterson et al. 1969:240-241).

Specific figures on the cattle industry for counties within the Ely and Elko districts are provided in Table 8. These statistics are not entirely representative of these regions, since not all of Lander, Eureka, Lincoln and Nye counties are within the boundaries of the two BLM districts. The head counts were reported by the state's surveyor general and are the results of surveys done for tax purposes. Some of the counts may not be entirely correct, since some stockmen were known to transfer a number of animals when this counting was taking place (State of Nevada 1873-1923).

The sheep industry's growth was similar to that of the cattle business in Nevada, but the former was often detrimental to the latter. The first sheep in the region were wild bighorns who grazed in the Ruby Mountains and other high elevations. Indians had hunted these animals, but they were never domesticated. Nevada's first domesticated sheep were brought in by the Workman-Rowland party in 1841, and in the early fifties large herds were driven through the state by "Uncle Dick" Wootton and Kit Carson, both of whom found a new market in California.

By 1865 this pattern had reversed and sheepherders in Oregon and California began to drive their stock to eastern markets. This practice continued until the end of the century; it was brought about by an overabundance of sheep in the western states and higher prices in the East. The Humboldt route was not used for this transport since it was too well fenced to permit the easy flow of sheep through the area (Georgetta 1965:18-28; Wentworth 1942:517-520).

Eventually, eastern Nevada became a vast grazing area for sheep herders who had appropriated large meadows and good watering spots. In spite of a loss in profits for 1886-1887, herds continued to grow. The harsh winters of the late 1880's killed thousands of sheep and led herders to grow hay for winter feeding. However, the major problem for the sheep industry was its competition with the cattle kingdom. Nomadic sheep from tramp outfits appeared in the eighties and increased rapidly. By the mid-nineties, problems between sheep

Table 8. Total Number of Cattle by County Within the Ely and Elko Districts (State of Nevada 1873-1923).

County	1874	1877	1882	1886	1890	1898	1902	1906	1914	1922
Elko	40,200	38,899	18,000	7,016	36,569	--	92,015	102,650	90,353	89,273
Eureka	9,579	627	329	13,086	16,806	16,295	13,914	12,200	12,900	162
Lander	14,355	21,589	3,100	1,118	5,927	8,325	15,500	24,000	--	--
Lincoln	2,368	2,790	3,692	--	5,775	--	2,465	4,308	13,600	23,148
Nye	23,848	17,844	942	5,991	13,641	15	--	--	16,126	26,435
White Pine	10,832	23,007	6,794	15,313	8,870	11,412	26,404	1,130	12,461	13,235
Total	101,182	104,756	32,857	42,524	87,588	36,047	150,298	144,288	145,440	152,253

and cattle interests erupted in range wars.

The major conflict concerned the use of grazing land and stock watering areas. Nomadic sheep were especially a problem, since they were crowding ranges and overgrazing the land. At first they caused problems on the summer ranges in the mountains, but they later began to crowd winter ranges. To combat these conditions, national forests were created and small operators began to utilize the available irrigation water more efficiently. Fencing also helped to eliminate nomadic sheep, but there was still a need for it by the 1930's (Wooton 1932:36-37; Patterson et al. 1969:259-277).

Ranchers tried to get legislation passed which would attempt to end disputes between cattlemen and sheepmen. For example, a bill introduced in 1895 proposed that sheep owners be taxed according to the animals they owned in order to pay for their grazing. The fact that sheep cropped the land so closely caused former ranges to lose their plant growth, thus rendering such areas useless. The Nevada Stock Water Law of 1925 attempted to ease the burden of sheep grazing by developing new wells and watering places. However, when there was a lack of snow, overgrazing continued to be the rule (Fleming and Brennen 1940:8; Patterson et al. 1969:278).

Statistics from the state surveyor general's office are the basis for Table 9 concerning sheep. Again, it should be remembered that these figures are only approximations, since the roaming herds were difficult, if not impossible, to count (State of Nevada 1873-1923).

Given the geographic isolation of eastern Nevada, agricultural products had to be produced in the immediate area. Therefore, farming became a necessary adjunct to ranching. Most of the Mormon communities which sprang up in the region were based on a combination of these industries. However, the areas cultivated were much smaller than the large ranges because of the lack of rainfall in Nevada.

Early farmers found a ready market for their crops in the various mining camps that were established. Some of them settled in Independence and Ruby Valleys and the arable land along the South Fork of the Owyhee River and supplied the mining towns of Elko County (Townley 1973:30-31). Farmers in numerous valleys in White Pine County also raised barley and hay, which was purchased by freighting firms (Miller 1924:300).

In an arid state like Nevada, irrigation is essential for successful agriculture. Water rights in Nevada, like those of many other western states, were subject to prior appropriation and beneficial use. However, farmers received these rights only in the irrigation season and lost them to outside users during the remainder of the year. While most of the natural flow of water was appropriated early, rights to flood waters were often ignored (Norcross 1911:11). In 1905 the state passed a law which established the method of obtaining water rights. Water appropriations established at that time were recognized, while new users had to file for their rights with the state engineer (Wooton 1932:19).

Table 9. Total Number of Sheep by County Within the Ely and Elko Districts (State of Nevada 1873-1923).

County	1874	1883	1886	1890	1898	1902	1906	1914	1922
Elko	30,000	18,240	25,850	27,125	--	160,725	355,000	284,532	220,417
Eureka	13,719	12,400	17,400	9,867	25,800	19,350	20,800	24,200	65,616
Lander	28,050	--	16,702	12,580	40,000	100,000	50,000	--	--
Lincoln	--	3,200	5,100	12,000	--	2,500	8,500	19,100	30,915
Nye	23,850	7,746	17,000	13,300	--	--	--	18,290	24,917
White Pine	2,500	8,000	35,000	35,000	15,000	31,000	60,000	167,283	118,666
Total	98,119	49,586	117,052	109,872	80,800	313,575	494,300	513,405	460,531

The federal government also passed legislation to aid settlement in arid states. For example, the Desert Land Entry Act of 1877 provided for the sale of semi-arid federal land in 640 acre parcels at $1.25 per acre. The purchaser had to irrigate the land within three years in order to gain ownership. Interest in these areas did not grow until the twentieth century, when farmers and ranchers began to recognize the feasibility of ground-water development (Dahl 1964:69). In addition, the Carey Act of 1894 provided for the donation of large tracts of public land to individual states to enable them to subsidize irrigation projects (Norcross 1911:11, 22-29). In 1902 the Newlands Act was passed; it allowed for the sale of public lands to finance certain irrigation projects (Gibson 1976:574). The Agricultural Extension Service was also set up to aid farmers and ranchers through the implementation of modern methods (Nevada Highways and Parks 1947:15).

A survey published in 1932 demonstrated the utilization of land in Nevada. Some 16 per cent of all landowners were stockmen who controlled 68 per cent of the state's privately owned land. These ranchers, who raised cattle, sheep or both, leased more railroad land than the entire group owned and rented almost all of the available railroad property. The average cattleman or sheepman owned about an equal amount of property, while large operators, who raised a combination of animals, held almost four times as much land. Large areas of farm land could be found in only a few places, such as Ruby Valley and the area around Panaca. There was a small number of real farms along the Humboldt Valley, and while there were large amounts of irrigable land in Elko County, most of it was employed as stock ranches (Wooton 1932:24-25, 28-29).

Tables 10 and 11 show the relationship between cultivated land and grazing areas in each county of the Ely and Elko districts. The statistics come from reports by the state's surveyor general (State of Nevada 1873-1923).

Statistics concerning land use in modern Nevada bear out the domination of the federal government in this area. Of the more than seventy million acres within the state's confines, over sixty-one million acres are federally owned; of this amount more than eighty-three percent (51.5 million acres) is used for grazing. The rest of the federal property is designated for forest and wildlife (4.25 million acres), Indian reservations and colonies (1.14 million acres), defense (3.92 million acres), reclamation and irrigation (.59 million acres), power (.60 million acres) and monuments (.12 million acres). State owned land amounted to only .15 million acres while private land owners held some 8.74 million acres. The bulk of this latter figure was in railroad grants (Mack and Sawyer 1965:3).

To an observer who is unfamiliar with an arid setting, the Ely and Elko districts may appear to be a vast wasteland. Indeed, many of its early travelers looked on the region as a restrictive encumbrance designed to impede their progress. However, the area gave witness to a number of phenomena peculiar to the American West. Trappers, explorers and emigrants traversed the area, while Indians tried to hold on to their ancient lifestyles. The first major

Table 10. Land Cultivated in the Ely and Elko Districts.

County	1874	1878	1884	1886	1890	1898	1902	1906	1914	1922
Elko	14,000	11,337	12,600	7,540	54,300	--	245,175	285,000	222,421	220,716
Eureka	718	500	9,244	16,000	19,540	26,000	32,000	34,000	20,000	597
Lander	1,840	3,000	--	2,120	4,500	1,000	5,000	4,000	--	--
Lincoln	385	2,000	5,280	--	3,831	--	--	12,500	4,500	2,327
Nye	9,000	--	2,650	4,200	10,132	--	--	--	12,000	8,701
White Pine	3,000	2,680	16,050	6,500	10,000	3,200	11,000	13,000	20,528	11,232
Total	28,943	19,517	45,824	36,360	102,303	30,200	293,175	348,500	279,449	243,573

Table 11. Approximate Area of Grazing Land in the Ely and Elko Districts.

County	1874	1878	1884	1886	1890	1898	1902	1906	1914	1922
Elko	7,686,000	--	--	--	--	--	--	--	--	--
Eureka	--	596,400	--	--	122,585	--	--	--	--	400,000
Lander	32,000	46,000	--	27,000,000	--	200,000	--	600,000	--	--
Lincoln	150,000	100,000	--	--	45,614	7,000,000	7,000,000	7,000,000	5,761,660	4,271,950
Nye	6,000,000	--	--	--	--	--	--	--	--	--
White Pine	500,000	4,776,160	4,776,160	2,000,000	100,000	800,000	900,000	--	1,800,000	150,000
Total	14,368,000	5,518,560	4,776,160	29,000,000	168,199	8,000,000	7,900,000	7,600,000	7,561,660	4,821,950

attempts at transcontinental transportation and communication embraced this region. Miners, ranchers and farmers tried to gain their fortunes here, but natural resources were often inadequate. Discouraged by the geographical restrictions of the area, many people simply moved to more promising surroundings.

Table 12. Chronology of Historical Events in the Ely and Elko Districts.

1813	Earliest account of slave trade in the Great Basin.
1826	Peter Skene Ogden leads first expedition into Nevada.
1827	Jedediah Smith led an expedition across central Nevada.
1828	Peter Skene Ogden leads first exploration of the Humboldt Basin.
1830	Old Spanish Trail becomes an established route.
1831	John Work heads another British expedition into northern Nevada. Captain B.L.E. Bonneville leads western fur trapping expedition.
1833	Joseph R. Walker leads a party of fur trappers into northern Nevada; experience first white-Indian conflict in the Great Basin.
1834	Walker party establishes route from Humboldt Basin to Idaho.
1841	The first emigrant party, the Bartleson-Bidwell group, enters Nevada.
1845	Captain John Charles Fremont leads his third exploration party which was concerned with the Great Basin.
1846	The Donner Party crosses Nevada.
1848	The United States and Mexico sign the Treaty of Guadalupe-Hidalgo and America acquires present Nevada.
1849	Mormons organize the State of Deseret which included modern Nevada.
1850	Compromise of 1850 is passed by Congress creating the Territory of Utah including most of Nevada.
1851	The "Jackass Mail" begins trips along the Humboldt Trail between Sacramento and Salt Lake City.
1853	In his fifth expedition, Fremont crossed southern Nevada and probably reached the tip of the Ely District. Captain John W. Gunnison leads expedition concerned with transcontinental rail route.
1854	Lieutenant E.G. Beckwith replaces Gunnison after his death and travels through the Elko District.

1855 Colonel E.J. Steptoe sends a detachment into Nevada. One member of this group, John Reese, explores the Reese River Valley.

1855 Major Howard Egan of the Mormon Battalion traversed a new route across central Nevada.

1857 Brigham Young ordered all Latter-Day Saints to return to Utah because of the approach of government forces.

1859 The Comstock Load was discovered in western Nevada.
Agent Robert Jarvis was instructed to initiate farms for the Indians in Deep Creek and Ruby Valley.
A trail that became the Simpson Route across central Nevada was explored by Captain J.H. Simpson.

1860 The Central Overland California and Pike's Peak Express Company was chartered.
The Pony Express began service between the Missouri River and California.

1861 On March 2 the bill creating the territory of Nevada was signed by President Buchanan.
In September the transcontinental telephone line was completed and in October the Pony Express ended.
Mail for California was carried over the Central Route.

1862 Fort Ruby was constructed on the west side of the Ruby Valley to protect mail, freight and emigrant traffic.
Gold and silver ore was discovered near Austin and the Reese River Mining District was organized.
Congress expanded Nevada by one degree of longitude to the east.

1862 Lander county, with its seat at Austin, was created.

1863 The federal government concluded a series of treaties with various Indian groups in the Great Basin.

1864 Nevada was admitted as a State by President Lincoln's proclamation.
Silver-lead ore was discovered at Eureka.
Rich ores were discovered near Pioche.
Nye County, with its seat at Tonopah, was created.

1865 A cooperative effort by Mormons and gentiles led to the discovery of the Pahranagat Mining District.

1866 By an act of Congress, the eastern boundary of the State of Nevada was set at the 114th degree of west longitude.
Wells Fargo and Company purchased John Butterfield's interest in the Overland Stage Line.

Lincoln County, with its seat at Pioche, was created.

1868 Clarence King heads the first major scientific reconnaissance of the 40th parallel into the Elko District.
Silver ore was discovered at Treasure Hill.
The town of Hamilton in White Pine County was laid out.

1869 The formal completion of the transcontinental railroad took place at Promontory, Utah.
A mining boom begins at Mountain City in Elko County.
Elko County, with Elko as its seat, was established.
William C. Beachey opened his first Railroad Stage Lines road between Elko and the White Pine Mining District.
White Pine County, with Ely as its seat, was created.

1871 Lieutenant George M. Wheeler conducted the final military survey into Nevada.

1873 Eureka County, with Eureka as its seat, was created from part of Lander County.
A special commission headed by John Wesley Powell and George W. Ingalls traveled to Nevada to investigate possible relocation sites for the Southern Paiutes and some Shoshoni.
State legislature passes law requiring stockmen to brand their herds.

1874 University of Nevada was established at Elko.
Pioche and Bullionville Railroad was built.

1875 Eureka and Palisade Railroad was completed.
Eureka was destroyed by fire.
Part of Elko County, the Mineral Hill strip, was annexed to Eureka County.

1877 President Hayes set aside the Duck Valley Indian Reservation.
By another executive order, 521 acres were reserved for Indians at Carlin Farms; it was revoked two years later.
Desert Land Entry Act was passed.

1881 Pioche and Bullionville Railroad was abandoned.

1884 Nevada Livestock Association is formed.

1885 The legislature provided for the removal of the state university from Elko to Reno.

1886 Fort Halleck in Elko County was abandoned and the troops were moved to Fort Douglas in Utah.

1894 Congress passed the Carey Act.

1895	Elko County Board of Education organized the high school.
1896	Elko County Cattle Association was organized.
1900	The development of the copper zone in the Ely Mining District was begun.
1902	Newlands Act was passed.
1903	White Mine Copper Company was formed in Ely.
1905	Original claims at the Ruth copper mine were located by D.C. McDonald. Construction on the McGill copper mill began. San Pedro, Los Angeles and Salt Lake City Railroad was finished. Nevada passed its first water rights law.
1909	The Western Pacific Railroad was completed.
1910-1915	Twelve individual allotments were issued to Indians in the Ruby Valley.
1912	President Taft assigned the Gosiutes eighty acres in Skull Valley.
1913	The first state motor vehicle law was passed.
1916	Congress passed a law which provided for federal aid to subsidize state highway programs.
1917	Construction on the Deep Creek Railroad was completed. Nevada State Highway Department was created.
1919	Deep Creek Reservation was set up for the Gosiutes in western Utah and eastern White Pine County.
1921	Coppermines Company at Ruth and Nevada Consolidated Copper Company of Ely closed down because of the low price of copper.
1925	Nevada Stock Water Law was passed.
1930	Work was begun on Hoover Dam.
1933	Kennecott Copper Company gained control of Nevada Consolidated.
1936	Hoover Dam was completed.
1937	Taylor Grazing Act was put into effect.

1938 Eureka-Palisade Railroad was abandoned.

1939 Deep Creek Railroad was abandoned.

CULTURAL RESOURCE SYNTHESIS

Prehistory

Steven R. James

Interest in the archaeology of eastern Nevada did not begin until the 1920's and 1930's with the work of Mark R. Harrington and his associates. The investigations by Harrington focused on three areas within the region: (1) caves in the Snake Range near Baker, Nevada, and in Smith Creek Canyon north of Baker; (2) caves in Condor Canyon southeast of Pioche; and (3) Gypsum Cave and the ruins at Lost City, both near Las Vegas. The latter two areas are located outside of the study area. In northeastern Nevada during this time, Matthew W. Stirling conducted a brief archaeological reconnaissance north of Deeth. While a considerable number of excavations were undertaken during this time period, the results of the work for the most part, were brief and poorly reported. More thorough archaeological investigations of the region have been carried out since the 1950's by the University of Utah, University of California, Nevada State Museum, and more recently by the federal government and private contracting firms as a result of cultural resource management.

From the archaeological work which has been conducted in eastern Nevada throughout the years, the broad outlines of the regional cultural history have been established. Essentially, four cultural stages spanning the past 15,000 years are represented: Lithic (15,000 to 10,000 B.P.), Archaic (10,000 to 1500 B.P.), Fremont (A.D. 500 to 1300) and Numic (A.D. 1300 to 1850).

The Lithic stage is divided into two stone-working industries. The proposed earlier industry, the pre-Llano, is characterized by crude percussion flaked artifacts and the absence of projectile points. The integrity of this stage is often questioned as sites assigned to it are frequently lacking in chronological control, the crude artifacts are difficult to distinguish from naturally flaked cobble, and the absence of projectile points may be a result of chance or sampling error. Pre-Llano sites have not been reported from eastern Nevada. The younger, more refined stone tool assemblages are those of Paleoindian hunters; the most diagnostic artifacts are fluted and unfluted lanceolate projectile points such as the Clovis, Folsom, and Plano.

The Paleoindians pursued large bison, camels, ground sloth, mastodons, horses, and other extenct megafauna which once roamed the North American continent. These herbivores were hunted by driving into bogs, sand dunes, and over cliffs where they were killed and butchered. Most of the archaeological evidence on Paleoindians comes from these kill sites, although occasionally the lowest cultural levels in caves and rockshelters contain the artifactual debris of their camps. In eastern Nevada, the earliest definite cultural level in Smith Creek Cave appears to represent a Great Basin variant of a Paleoindian occupation, the Western Pluvial Lakes tradition; it is the only such dated site in the region. Surface finds of Paleoindian projectile points are more numerous than buried sites; several such points have been reported from eastern Nevada.

At the beginning of the Holocene between 8,000 to 10,000 years ago, the environment in the Great Basin began to change as the climate grew warmer and the marshes and lakes in the valleys receded from their maximum late Pleistocene levels. Concomitantly, the larger Pleistocene mammals disappeared in the region and throughout the New World. The reasons for their extinction remain unclear but may include over-exploitation by Paleoindian hunters, environmental shifts, or both.

While these early Holocene environmental changes were occurring, the Archaic hunting and gathering lifeway emerged in the Great Basin. Known as the Desert culture or Desert Archaic, this pattern was one which persisted into historic times in much of this region as represented by Numic groups.

The material culture of the Archaic peoples was relatively simple, yet suited for a mobile hunting and gathering existence. Common items included the atlatl or spear-thrower, digging sticks, grinding slabs, manos, basketry, cordage and netting, assorted chipped stone tools, bone implements, and shell beads. Temporally diagnostic projectile points are the Humboldt, Pinto, Elko, Gypsum, and Northern Side-notched types.

From analyses of plant and animal macrofossils, fossil pollen, and human feces recovered in caves and rockshelters in the Great Basin, particularly Danger and Hogup caves in northwestern Utah, we have a fair understanding of the Archaic diet. Seeds, nuts, leaves, and roots of many wild plants were consumed. These included pickleweed, numerous grasses such as Indian rice grass and Great Basin rye, bulrush, cattail, sagebrush, pinyon, and prickly pear. Of the many animals hunted, mountain sheep, antelope, deer, rabbits, and marmot and other rodents were the most important. Birds, fish, freshwater mussels, lizards, insects, and even fly larvae were eaten as well.

As inferred from ethnographic studies of the Western Shoshoni and other hunting and gathering groups, Desert Archaic hunter-gatherers appear to have been organized into small foraging bands with an optimal size of about 25 individuals. These collecting groups ranged over their territory in a cyclical seasonal pattern moving from one area or vegetation zone to another as food resources ripened or became available. While the lifeway depicted here is heavily based upon ethnographic analogy and is thus subject to some criticism, the ideology of these Archaic peoples is even less well-known. Feather fetishes, incised pebbles, and bull roarers probably represent artifacts connected with rituals and beliefs. Rock art may have served a similar function, perhaps as hunting magic.

Archaeological evidence for the Archaic period has been recovered at numerous surface sites and from excavations of several caves and rockshelters in eastern Nevada. Excavated sites in the Elko District which have yielded Archaic deposits include: Bronco Charlie Cave, Carlin Basin Sites, Deer Creek Cave, South Fork Shelter, and Thomas Shelter.

Although the Archaic hunting and gathering pattern was the dominant lifeway throughout the prehistory of the study area, a change in material culture and subsistence is discernible in the archaeological record between A.D. 500 and A.D. 1200 to 1300 with the presence of the Fremont. The Fremont inhabited most of Utah north of the Colorado River and adjacent portions of eastern Nevada during this time period. To the west of the Fremont in the Great Basin, Archaic groups continued to occupy the region.

As opposed to the gathering of the Archaic, the Fremont planted corn and squash, although their horticultural diet was supplemented by wild plant and animal foods. Their material culture was more complex than that of the Archaic peoples and was influenced by technological innovations which had diffused from the Southwest and Mesoamerica. Conspicuous among these technological innovations was the construction of pithouses for dwellings and adobe or masonry surface structures for the storage of crops. Another feature of their material culture was the manufacture of plain gray, corrugated, and painted pottery for cooking and storage purposes. Distinctive Fremont traits include Fremont moccasins, one-rod-and-bundle coiled basketry, stone balls, and triangular-bodied anthropomorphic figures drawn at pictograph sites.

In addition to the Fremont settlement at the Garrison Site in Snake Valley which contained pithouses and surface structures, evidence for the Fremont in eastern Nevada comes from components in rockshelters and the presence of Fremont ceramics at surface sites. Thomas Shelter in extreme northeastern Elko County is one of the few sites in the Elko District to contain Fremont artifacts.

About A.D. 1200 to 1300, the Fremont disappear from the archaeological record and Numic groups, the Western Shoshoni and Southern Paiute, apparently spread into eastern Nevada and throughout the Intermountain West from the southwestern Great Basin. Fremont and Numic ceramics often co-occur in archaeological deposits or at surface sites. This may indicate that the two groups were contemporaneous for a short time prior to the disappearance of the Fremont. In any event, the migration of Numic-speaking peoples into the region essentially represented a continuation of the Archaic subsistence pattern.

From an archaeological standpoint, we know very little about the Shoshoni and Southern Paiute groups who inhabited eastern Nevada. The most diagnostic artifacts are their crude, brown pottery and Desert Side-notched arrow points.

As evidenced by pottery, Numic occupation was present in the upper levels of Bronco Charlie Cave, Carlin Basin Sites, Deer Creek

Cave, South Fork Shelter, and Thomas Shelter in the Elko District. At Deer Creek Cave, Shoshonean groups inhabited the cave after A.D. 1150 and appeared to have placed a greater emphasis on wild plant foods than the preceding Archaic occupants. Slight differences in subsistence patterns between ethnographic Western Shoshoni groups and their prehistoric counterparts are shown in the South Fork Shelter deposits by the presence of a fairly large number of freshwater mussel shells which were not noted as having been exploited in the ethnographic record. On the other hand, South Fork Shelter contained white chert bifaces which wer used ethnographically by the Tosawihi or White Knife Shoshoni near Battle Mountain.

In comparison to the archaeological evidence, the ethnographic data on Numic groups is quite extensive. Ethnographically, the Western Shoshoni subsistence-settlement pattern was that of a cyclical seasonal round through which they moved from one area or vegetation zone to another as wild food resources ripened and became available during the year. In response to the availability and abundance of these food resources, the size and structure of Shoshoni bands fluctuated seasonally. In winter, as many as fifteen families might live together in villages located near their caches of pinyon nuts which were collected in the fall. With the coming of spring and the dwindling of food supplies, the villages separated into nucler families or camp groups in order to forage for roots, tubers, seeds, and game. This pattern continued throughout the summer; it ceased in the fall when the families again congregated to conduct communal antelope and rabbit drives and gather pinyon nuts.

HISTORY

James A. Vlasich

The Western Shoshoni and Southern Paiutes were the last Native Americans to come into continuous contact with whites. The first white intervention into the Western Shoshoni territory was the result of fur trapping expeditions. The Hudson's Bay Company sent a company of men under Peter Skene Ogden to trap the Snake River and adjacent areas. He entered northern Elko County in 1826 and two years later headed the first exploration of the Humboldt Basin. His American counterpart, Jedediah Smith, traversed the Ely District in 1827.

In order to facilitate American interests in the Far West, exploration parties were sent out to study the geography and the possibility for settlement in the region. The most important of those ventures was headed by Captain John Charles Fremont, who led five major expeditions between 1842 and 1854. During his third expedition of 1845, he entered the Great Basin to determine the feasibility of a road between the Great Salt Lake and eastern Nevada. Another expedition concerned with the transcontinental route was led by Captain John W. Gunnison in 1853 and Captain James H. Simpson headed another reconnaissance mission six years later. Other surveys included one led by Clarence King in 1868 and another by Lieutenant George M. Wheeler in 1871.

Emigrant parties began to enter the state in the 1840's. The first of these expeditions was the Bartleson-Bidwell group of 1841 which followed the Humboldt River. The Humboldt Trail remained an important artery for westward immigration until the construction of the transcontinental railroad in 1869. Because of the heavy traffic along the Humboldt during the years immediately following the Mexican War, Shoshoni Indians in this area were constantly in conflict with the intruding Americans.

The Federal government hoped to end depredations through peace treaties and the establishment of reservations. The Indian lacked sufficient implements, seeds and instructions to be successful at farming and this situation led some of them to make attacks on the Overland Mail route through central Nevada and on emigrant trains along the Humboldt. In 1863 the federal authorities concluded a series of treaties with various Indian groups in the Great Basin. Reservations were eventually established for the Gosiutes, Southern Paiutes, and Western Shoshonis. In order to facilitate military operations in the area, the army established military installations in the region. The most significant one was Fort Halleck which was set up in 1867.

As mining activity boomed in California in the early 1850's, transportation to that state became a major concern. In 1851 the first express outfit to traverse Nevada began operations. Four years later, Major Howard Egan discovered the Central Route across the state and this new road became a forerunner for stage, freight, mail, telegraph, and express service between Utah and California. The Central Pacific was the most significant railroad in the region, but other important links were built including the Western Pacific, the Eureka and Palisade and Nevada Northern.

The development of eastern Nevada is closely associated with mining. As interest in this area increased, large sections were taken from the Utah and Arizona territories and annexed to Nevada. Boom towns were started in the late 1860's and continued for the next two decades. After a lull in mining activity, the area experienced a rejuvenation at the beginning of the twentieth century. Some of the rich finds included those in the Pioche and Eureka mining districts and the copper mines outside of Ely.

Other major industries in the region were ranching and agriculture. These two often conflicted over the use of arable land and water rights. The use of fencing by farmers, railroads and state and federal agencies brought an end to the open range. After the harsh weather conditions of the late 1880's, cattlemen began to implement new ideas such as plowing and planting a pasture, hay mowing and winter feeding. Eventually, the cattle industry became the state's second largest tax base.

RESEARCH AND MANAGEMENT DIRECTIONS

Steven R. James

In the course of compiling this monograph, the authors have become cognizant of several problems with the current cultural resource data base and how these resources are being managed. The directions in which future research and management might proceed to help resolve some of these problems are outlined in the present section. Several of these issues have previously been discussed by one of us in a recent Class I for the BLM Salt Lake District in Utah (James and Singer 1980). Since these issues are applicable to eastern Nevada as well, they are reiterated here along with several other suggestions.

Before turning specifically to future research and management directions in the study area, we need to briefly touch upon a matter of great concern, one which is affecting the very structure of American archaeology. The problem centers on the growing schism between archaeological research and cultural resource management (cf. Dunnell 1979, 1980; Wendorf 1979). Although some innovative and creative archaeology has been generated as a result of cultural resource management, Wendorf describes a dismal scenario which illustrates what is happening between the two areas:

> I can foresee a time when archaeology may come to be regarded, even by archaeologists, as nothing more than a service industry, when archaeologists regard themselves as the peers of beauticians and plumbers, who have no obligation whatsoever beyond the simple repair jobs they are called in to do. They may fulfill a contract in the very strictest sense, but will go on from there to the next contract rather than to the assimilation and synthesis of the data, which is what cultural preservation is all about. They will feel no responsibility to disseminate to the world at large such knowledge as is gained and no regret for the loss of knowledge which might have been gained.
>
> I can foresee a time when it is no longer mandatory for archaeologists to publish the results of their investigations in a form that is readily accessible to their colleagues. This will have one of two unfortunate results either when something is achieved and new knowledge is gained, no one will know about it; or when nothing is achieved and the project is a waste, still no one will know about it. I will leave you to decide which is the greater of these two evils. In either case, this would be a travesty of the ideals of those who struggled for the passage of the legislation that created this whole program. Their aims were the preservation of our cultural heritage, and the aims of the archaeological community surely cannot

be less (Wendorf 1979:642-643).

While it is apparent that the concerns of researchers and cultural resource managers are not always consistent, the ultimate goals of both should be the furtherance and dissemination (i.e. publication) of knowledge about the past. In order to fulfill this objective within the study area, the following research and management directions should not be seen as separate suggestions, although they have been presented as such. Research or problem-oriented studies focus on those aspects which will hopefully help us to understand the cultural evolution of the region. Furthermore, it is through the investigation of research oriented questions that we are also able to know what cultural resources are significant from a management perspective and should perhaps be protected. Keeping this in mind, we now turn to the future research and management directions.

As briefly mentioned in the Cultural Resource Narrative section, there are a number of archaeological problems yet to be resolved in eastern Nevada, most of which pertain to the Great Basin as a whole. Possible research directions which might help answer some of these questions are summarized as follows:

(1) Since little evidence of the Lithic stage has been found in the study area, archaeologists working in the area should continue the search for Paleoindian sites. One means of acquiring data on this stage is to examine private collections from eastern Nevada for Paleoindian projectile points. If collectors are willing to disclose the locations from which these points were found, then the sites could be field checked to determine the cultural materials present and the condition of the sites.

(2) Further testing of Steward's (1938) annual subsistence pattern for the Shoshoni, as it is often applied to the Archaic, should be conducted in the study area. Madsen and Berry (1975) have proposed that the structure of Archaic subsistence and settlement patterns was more varied than previously believed, particularly in terms of late Archaic upland resource exploitation.

(3) Related to the previous problem is the importance of pinyon nuts in the Archaic diet. But before we can determine their importance in the diet, we need to establish when pinyon (<u>Pinus monophylla</u>) became a dominate species in upland vegetation. From analyses of wood rat middens in Smith Creek Cave, pinyon was not present in the area prior to 6100 years B.P. (Thompson 1979). If pinyon is a fairly recent arrival in the northern Great Basin or only a minor component in the vegetation until the mid-Holocene, then it may not have been available for utilization by aboriginal populations until later in the Archaic. Since large wood rat nests which contain amberat and preserved plant materials can provide data on vegetational changes in the region, the location of these should be recorded so that interested researchers can return to the wood rat middens to collect samples for analysis and dating. A category indicating the presence

wood rat nests in an area should be included on site survey forms.

(4) In future excavations of archaeological sites in eastern Nevada, pollen and flotation samples should be collected to provide more data relevant to prehistoric subsistence patterns. While a considerable amount of subsistence data has been recovered from Hogup and Danger caves in northwestern Utah which may be applicable to the study area, we know very little about the wild plant foods utilized by the aboriginal inhabitants of eastern Nevada.

(5) Shoshonean and Southern Paiute sites need to be recognized and carefully excavated to determine the nature of the relationship between Numic and Fremont cultures and to document the arrival of Numic groups in the region. Steward's model of an annual subsistence cycle, as discussed above, can also be tested in this context.

(6) In the Elko District, only a few excavations of any importance have been carried out. Consequently, we do not know very much about cultural dynamics in the region. For instance, what was the relationship between people of the Elko area and those in the Columbia and Snake River Plateaus? Or what importance did fishing and freshwater mussels play in the subsistence of the people in the area? These and some of the issues discussed above might be addressed by future excavations and surveys.

The proceeding directions for future research should also be addressed in cultural resource management programs. There are, however, additional problems with which cultural resource management should be concerned:

(1) Uniform site survey forms for the entire state should be employed by all federal and state agencies, private contractors, and universities conducting research or contract investigations in Nevada. Establishing a uniform site form will insure that the data recorded from archaeological or historical sites can be standardized for comparative purposes.

(2) Another problem of greater importance concerns the site numbering systems used thoughout the state. Currently in Nevada, several institutions assign their own site numbers to archaeological sites. These institutions include the BLM, Forest Service, and Nevada State Museum

The Nevada State Museum is ultimately in charge of assigning Smithsonian trinominal numbers to sites, but in the case of work conducted by BLM and Forest Service, they assign their own site designations prior to obtaining a Smithsonian number from the Nevada State Museum. The site numbers issued by the BLM and Forest Service are not considered to be temporary numbers by these two institutions and are used to organize the site record systems at each BLM district and Forest Service office.

As a result of the use of these several site numbering systems, a considerable amount of confusion has arisen. Some sites have BLM numbers, but no Smithsonian numbers and vice versa, or some sites are recorded by the BLM and are given a site number when the site may have been previously recorded by the Nevada State Museum or some other institution. In order to rectify this situation, it is recommended that the BLM, Forest Service and Nevada State Museum better co-ordinate their efforts in assigning site numbers. For all practical intents and purposes, the Smithsonian numbering system should be retained and the other systems should be abolished. In the state of Utah, all the institutions and contractors working in the state, including the BLM, obtain site numbers from the State Historic Preservation Office so that there are not multiple site numbering systems in operation. A similar procedure should be implemented in Nevada.

(3) In addition to the simultaneous use of several site numbering systems in Nevada, there is a problem with the practice of reassigning old, unused numbers to newly recorded sites. This confuses the normal sequence of site designations in which lower site numbers are usually considered to have been assigned to sites located first. Furthermore, some complications have arisen as a result of reassigning what were supposed to be unused site numbers but which, in fact, were actually in use. Consequently, the same number may have been used for two different sites. To alleviate this problem presumeably unused site numbers should never be reassigned, even if this means that some site numbers are never used. A site numbering system is an arbitrary designation system and can run from site number 1 to the nth site number in a sequential fashion. But when supposedly unused numbers are reassigned, there is always the possibility that the number was previously used and might be on a site form of which you do not have a copy, which is on file in some other archaeological office. [Note: The problem discussed here applies to the Nevada State Museum as well as the Bureau of Land Management.]

(4) As shown in recent ethnoarchaeological research among Australian Aborigines, single tools may be manufactured and used for a specfic task and discarded at the area of use. In the archaeological record, these artifacts may appear as isolated finds such as projectile points, chopping tools, or unretouched flakes. By recording the location of these isolated finds we can learn something about the prehistoric activities in which the discarded items were employed.

The recording of isolated finds has already been carried out by David H. Thomas in a survey of the Reese River Valley area in central Nevada. Isolated finds elsewhere in Nevada are currently recorded on cultural resource surveys, but they are assigned trinominal Smithsonian site numbers. If this practice is continued the site records will eventually become inflated by sites which are, in actuality, isolated finds.

To alleviate this situation, isolated finds should be recorded on short survey forms and a new numbering system (perhaps based on a modified Smithsonian system) designed for isolated finds should be adopted. Instead of a standard site number, isolated finds could be recorded as IF1, IF2, IF3, ..., with the IF designating an isolated find. The standard state and county designations could be used without any changes. For instance, 26EK-IF1 would be the first isolated find in Elko County, and so on. The Nevada State Museum used a similar system in the past (but no longer does so) in which "isolated finds" were distinguished from "standard sites" by two zeros preceeding the end element (e.g., 26EK1 = "site #1, Elko Co." and 26EK001 = "isolated find #1, Elko Co."). Isolated finds were recorded using this system on several large scale surveys in eastern Nevada. The Bureau of Land Management in Nevada, on the other hand currently uses a short survey form for recording isolated finds and small sites (e.g., less than 20 cultural items), but a separate numbering system is not employed. However, if a dual site numbering system is not adopted, the isolated finds that already have the double digit zero numbers from earlier surveys should be reassigned standard Smithsonian site numbers and integrated into the existing site numbering system.

(5) Throughout the Elko District, there exist a number of rural historic sites, such as stage stations, homesteads around water tanks and windmills, mining cabins, abandoned ranch houses, etc. Many of these types of sites have not been formally recorded. Some concerted effort on the part of the BLM should be made to photograph and record these sites before they are destroyed by vandals or in the wake of proposed development (e.g. MX installations, drilling new water wells, and oil and gas exploration).

PART II

KNOWN CULTURAL RESOURCE RECORD COMPILATION

SITE RECORD COMPILATION

Steven R. James

Cultural Resource Site Record Systems

The cultural resource site record system for the Elko and Ely districts is not a simple matter and mirrors the confusion for the entire state. Unlike the state of Utah, which has one recognized site numbering system and assigns numbers through one agency, the State Historic Preservation Office, site numbers in Nevada are assigned by several governmental agencies.

The Nevada State Museum maintains the most complete site record system for the state. It is supposedly the clearinghouse for all the site records in the state and is ultimately responsible for assigning Smithsonian Institution trinominal site designations, a numbering system which it has followed since 1967 (Tuohy 1979:17). The Smithsonian Institution site numbering system indicates the state in which the site is recorded by a two-digit number based on the state's alphabetical position among all the states (except Alaska and Hawaii which are numbers 49 and 50, respectively), followed by a two letter county designation (usually the first two letters in the county name, or in the case of two words, the first letter of each), and then lastly, a numerical designation which indicates the site's position in the consecutive sequence of sites recorded in the county. By way of example, in site number 26WP31, the number 26 indicates that the state is Nevada (the 26th state in alphabetical order), WP refers to White Pine County, and 31 is the 31st site recorded in White Pine County (refer to Hester, Heizer, and Graham 1975:23 for further details on the Smithsonian Institution trinominal site designation system).

Aside from the Nevada State Museum, each BLM district in Nevada also maintains its own site records for the district and assigns its own site numbers for prehistoric and historic sites recorded on BLM land within the district. BLM site numbers are a trinominal alphanumeric designation similar to the Smithsonian Institution numbering system. For example, in the BLM site number CrNV-04-50, the first portion of the site number stands for cultural resources (Cr) in Nevada (NV). Before using the CrNV designation for all cultural resource sites, the designations ArNV and HsNV were employed to distinguish between prehistoric and historic sites, respectively. Differentiating between the two site types ceased in 1976; historic sites (HsNV) were reassigned a CrNV number, and ArNV designations were simply converted to CrNV without being renumbered.

The second designation in the site number, 04, is a code number which indicates the BLM district in which the site is located. The code numbers for each district are:

01 Elko District
02 Winnemucca District
03 Carson City District
04 Ely District
05 Las Vegas District
06 Battle Mountain District

The last portion of the number, in this case 50, indicates that the site's position in the consecutive sequence of sites recorded in the Ely District. This BLM site numbering system has been in effect for sites recorded on BLM land since the BLM initiated its cultural resource management program in the mid-1970's.

As with the BLM, the U.S. Forest Service maintains a set of site records and assigns its own numbers to sites recorded within the Forest Service boundaries. To complicate the site records system even further, each of the institutions that conducted archaeological work in Nevada prior to the early 1970's assigned site numbers to sites they excavated or recorded. These institutions include University of California at Berkeley, University of Nevada at Reno and Las Vegas, University of Utah, and Southwest Museum in Los Angeles. Needless to say, many problems have been created with the site records system as a result of so many institutions assigning site numbers, and in some instances, the same site may have been recorded by several institutions and have several different site numbers. In attempt to resolve some of these problems for the Elko and Ely districts, site number correlation tables for the counties in each district have been designed which list the Nevada State Museum site number, the equivalent BLM site number, and any other site designations along with published references on the sites (Tables 17 through 22).

Site Classification

Although all archaeologists deal with sites in one form or another, the connotations of the word "site" vary considerably among archaeologists, both temporally and spatially. Of these two parameters, the spatial aspect has probably led to more ambiguity in recent years, particularly in the arena of cultural resource management. Much of the confusion centers around isolated artifact finds and small concentrations of cultural debris (i.e., 5 flakes or less) and whether they should be formally recorded as sites.

Various site definitions are found in the literature. In their discussion of the spatial and temporal "units" that archaeologists study, Willey and Phillips (1958:18) state that "a site is the smallest unit of space...which may vary from a few square yards to as many square miles...and may be anything from a small camp to a large city." Their only requirement was that a site should be "fairly continuously covered by remains of former occupation...". Since the focus of archaeology has changed in recent years, definitions of the term site have dropped this requirement, but other conditions or factors have been added. For instance, Hester, Heizer, and Graham (1975:13) consider a site to be "the scene of past human activity...some archaeological sites are places where human remains or artifacts have been secondarily deposited, as by a river in the silts or fluvial gravels of a terrace."

In his regional sampling of Reese River Valley, central Nevada, David Thomas (1975) abandoned the traditional site concept altogether in favor of nonsite sampling, in which the "cultural item (the artifact, feature, manuport, individual flake or whatever)" was the minimal unit of study (Thomas 1975:62). Since the Reese River area had been inhabited by nonsedentary peoples (Shoshoni) who left little cultural remains of their lifeway, cultural items rather than sites were predicted by his model. From this specific regional sampling standpoint, Thomas's (1975:81) rationale was quite valid.

A more thorough survey of the literature than presented in this short discussion would undoubtedly provide a veritable array of site definitions. The important point in all of these definitions is that a site is the result of some sort of human activity which is older than 50 years, and that its parameters are defined in space. This is the operational definition of a site as used in this report. The definition has been left as flexible and broad as possible in order to cover whatever unforeseen situations exist. A site could be as small and simple as a prehistoric isolated find or as large and complex as an historic town.

In addition, some intervening distance should be recognized between sites. By specifying this last condition, the situation should be avoided where aggregates of small sites or petroglyph boulders/panels, which represent definable spatial units, are each given a separate site designation. Instead, the small sites or petroglyphs should be designated as localities or panels within one site.

Now that we have a working definition of a site, we can move on to the site types which are present in eastern Nevada. The site types encountered in the field, of course, vary from region to region as a result of the cultures once inhabiting a particular region. For example, neither prehistoric Southwestern masonry structures nor temple mounds are normally found in the Great Basin.

Several "sets" of site type categories are currently listed on the site survey forms used in Nevada. Site types should be objective, avoiding individual interpretation as much as possible. This is not always possible, nor is it entirely desirable. The site type categories presented below are, for the most part, objective and descriptive, but in order to decide in the field whether a site falls into one category or another, some interpretation may be necessary. Above all, site types should unambiguously indicate to other researchers what type of site is present.

Related to the site type categories are the types of features and artifacts which make up the sites. Some features are confined to a specific site type, other features are not. An attempt was made in the present scheme to correlate the site types with the features one might expect to find at these sites.

The site types represented in Nevada can be divided into two major categories, habitation sites and nonhabitation sites.

1. Habitation sites. These are areas which show evidence of occupation over a long time span, either continually or seasonally through repeated visits. Habitation sites are further characterized by three subtypes.

a. Rockshelters/Caves. This category includes caves, rockshelters, alcoves, and any other natural areas which provide shelter from the elements and show surface or subsurface indications of having been utilized for habitation purposes by prehistoric populations.

b. Open habitation sites without structures. These are open sites which were inhabited for an extended period of time, perhaps on a seasonal bases. Evidence of man-made habitation structures should not be visible on the surface of these sites. If structures are present, these sites fall into category 1c discussed below. The presence of chipped and ground stone, possibly ceramics, fire hearths, and midden deposit in what appears to be an intensive site occupation define this site type. The Shoshoni winter base camp identified by Julian H. Steward is an example of this site type.

c. Open habitation sites with structures. These sites include pithouses, surface masonry structures, adobe structures, or other man-made structures which show evidence of having been occupied. The presence of a fire hearth inside a structure is usually the criterion for making this determination, but this may not be established until after the site is excavated. Mounds and/or depressions, associated features and artifacts (pottery, ground stone, fire cracked rock, sandstone hatch covers, etc.) may be the only clues visible on the surface which may indicate that structures are present. This type of site is generally attributed to the Fremont and Anasazi in southeastern Nevada.

2. Nonhabitation sites. In some of the cultural resource literature and on various site forms, these sites are referred to as limited activity areas. Since this is a rather nebulous term, it was felt that nonhabitation site would more adequately describe sites of this

nature and could more readily be contrasted with habitation sites.

a. Temporary campsites. These are sites which show evidence of short-term occupation for the purposes of procuring food resources and raw materials and require overnight camping away from base camps. Chipped or ground stone, and/or ceramics in association with a fire hearth or burned area usually define temporary campsites. These sites are distinguished from artifact scatters by the presence of a fire hearth.

b. Artifact scatters. These sites are more commonly known as lithic scatters, but since other kinds of debris (ceramics, animal bones, etc.) may also be present, artifact scatter is a more accurate description. The term artifact scatter is simply a descriptive, objective category and implies no assumptions as to the specific function of the site.

c. Quarry sites. These are sites in which raw lithic material for chipped or ground stone tools and building materials are present along with some indication that the site was used prehistorically for obtaining these materials. In the case of lithics, primary and secondary flakes, exhausted cores, tested cobbles, hammerstones, partially finished tools, and unworked raw material (obsidian, quartzite, basalt, or chert) would be found at a quarry site.

d. Rock art. This category includes petroglyphs and pictographs which are found on boulders, cliff faces, or semi-portable slabs and boulders (not to be confused with etched stones).

e. Rock alignments. These are circular, semi-circular, or linear alignments of rocks or brush, more commonly known as hunting blinds, rock walls, and game drives.

f. Storage sites. These are small man-made structures or caches in rock crevices which are not directly associated with habitation areas. Storage sites were normally used to hold food items, but other cultural remains, such as baskets and ground stone implements, may be present. Two types of man-made structures can be identified under storage sites: (1) above ground storage structures, such as masonry or adobe graneries and (2) below ground storage facilities, such as cists.

g. Human burials. These are human interments that are isolated from habitation sites; they are usually found in rocky outcrops, in crevices, or under ledges.

h. Isolated finds/small site concentrations. An isolated find is a single cultural item such as a projectile point, ground stone artifact, core, or flake found in a solitary context with no other nearby cultural materials. A small site concentration may be composed of from 2 to 25 lithic fragments and artifacts found in a relatively distinct spatial context, say, within 25 square meters or less.

Formal Recognition

National Register of Historic Places

Only several sites/locations in the Elko and Ely districts are entered on the National Register of Historic Places.

Elko District:

1. Ruby Valley Pony Express Station (Elko County; date entered: 3-10-75).

Ely District:

1. Bristol Well (Lincoln County; date entered: 3-72).
2. Fort Ruby* (White Pine County; date entered: 1961).
3. Fort Schellbourne (White Pine County; date entered: 2-23-72).
4. Lehman Orchard and Viaduct (White Pine County; date entered: 2-25-75).
5. Rhodes Cabin (White Pine County; date entered: 2-25-75).
6. Sunshine Locality (White Pine County; date entered: 1-30-78).
7. Ward Charcoal Ovens (White Pine County; date entered: 9-28-71).
8. White River Narrows Archaeological Site (Lincoln County; date entered: 8-1-78).

* National Historic Landmark

As of this writing, data from a total of 1443 recorded archaeological sites in the Elko District have been encoded and computerized into the University of Utah Archeological Center's Archaeological Resource Inventory System (UUAC-ARIS). Some of these recorded sites are duplicate numbers for the same site. Concomitantly, more sites have been recorded in the district since the Class I was initiated.

Based on the descriptive site types defined in the Site Classification section, these 1443 recorded sites can be broken down into several site types: habitation sites with structures (44 sites), temporary camps (260 sites), rock art (1 site), artifact scatters (631 sites), and isolated finds/small sites (507 sites). Additionally, some of these site types may have a second or overlapping site type present, e.g., a rockshelter with rock art, but because only one set of variables could be examined by the computer to determine the site type, the second site type was listed as a site attribute. In this category are two rock art sites, making a total of three in the Elko District, and 43 quarry sites.

For sites in the Elko District, a crosstabulation of site type by vegetation zone is shown in Figure 34. Since vegetation zones or communities were not listed on most site forms, the probable vegetation zone in which a site is located was determined by the elevation of the site. Elevational ranges from which the vegetation zones were derived are presented in Table 14. Out of a crosstabulation of 1300 sites (Figure 34), most of the sites (81%) are situated in the sagebrush zone, followed by 17% in the pinyon-juniper zone. The 4 sites in the creosote bush zone are in error, since elevations below 3500 feet, the approximate upper limit of this zone, are not present in the Elko District nor is the creosote bush zone represented this far north in the Great Basin (see Billings 1949:Figure 1, 1951:Map).

A crosstabulation of the descriptive site types were run against the cultural affiliations for the total number of sites in the district. The results are shown in Figures 35 and 36. Before discussing these data, an explain of how the cultural affiliation was determined is necessary.

Cultural affiliation was established in one of two ways. First, if a determination of cultural affiliation was made on the site form, this information was listed. These included Great Basin Archaic, Chinese, European-American, Shoshoni, and Basque (Figures 35 and 36). One paleoenvironmental site was also included in the data set. Secondly, a computer program was written to select for cultural affiliation based on the presence of diagnostic artifacts recorded on a site. The criteria for this selection are presented in Table 13.

As shown in Figure 35, the cultural affiliation of only 365 sites out of 1443 sites could be determined. The majority of these sites are Desert Culture (216 sites) with 116 of these represented only on the presence of Elko Series points. Based on site type, most

VEGCOM	NEVTYP Count / Row % / Col % / Total %	HABIT.-W \STRUCT. C	TEMP. CA MP D	ROCK ART E	ARTIFACT SCATTER J	ISOL.ART IFACT\SM K	Row Total
EB	Count	6	58	0	92	67	223
PINYON- JUNIPER	Row %	2.7	26.0	0.0	41.3	30.0	17.2
	Col %	15.8	23.3	0.0	15.4	16.1	
	Total %	0.5	4.5	0.0	7.1	5.2	
FA	Count	32	191	1	493	346	1063
SAGEBRUSH	Row %	3.0	18.0	0.1	46.4	32.5	81.8
	Col %	84.2	76.7	100.0	82.6	83.4	
	Total %	2.5	14.7	0.1	37.9	26.6	
FD	Count	0	0	0	9	1	10
SHADSCALE	Row %	0.0	0.0	0.0	90.0	10.0	0.8
	Col %	0.0	0.0	0.0	1.5	0.2	
	Total %	0.0	0.0	0.0	0.7	0.1	
HB	Count	0	0	0	3	1	4
CREOSOTE BUSH	Row %	0.0	0.0	0.0	75.0	25.0	0.3
	Col %	0.0	0.0	0.0	0.5	0.2	
	Total %	0.0	0.0	0.0	0.2	0.1	
Column Total		38	249	1	597	415	1300
		2.9	19.2	0.1	45.9	31.9	100.0

Number of missing observations = 143

Figure 34. Crosstabulation of site type by vegetation zone for sites in the Elko District.

CULTAFL1	NEVTYP: Count / Row % / Col % / Total %	HABIT.-W \STRUCT. C	TEMP. CA MP D	ARTIFACT SCATTER J	ISOL.ART IFACT\SM K	Row Total
AR	Count	0	2	3	2	7
GREAT BASIN ARCH	Row %	0.0	28.6	42.9	28.6	1.9
	Col %	0.0	2.1	2.0	2.0	
	Total %	0.0	0.5	0.8	0.5	
CH	Count	0	0	1	0	1
CHINESE	Row %	0.0	0.0	100.0	0.0	0.3
	Col %	0.0	0.0	0.7	0.0	
	Total %	0.0	0.0	0.3	0.0	
DC	Count	3	28	45	24	100
DESERT CULTURE	Row %	3.0	28.0	45.0	24.0	27.4
	Col %	12.0	29.8	30.6	24.2	
	Total %	0.8	7.7	12.3	6.6	
DQ	Count	4	36	39	37	116
DESERT CULTURE?	Row %	3.4	31.0	33.6	31.9	31.8
	Col %	16.0	38.3	26.5	37.4	
	Total %	1.1	9.9	10.7	10.1	
EA	Count	11	3	25	7	46
EUROPEAN-AMERICA	Row %	23.9	6.5	54.3	15.2	12.6
	Col %	44.0	3.2	17.0	7.1	
	Total %	3.0	0.8	6.8	1.9	
FN	Count	2	7	4	1	14
FREMONT\NUMIC?	Row %	14.3	50.0	28.6	7.1	3.8
	Col %	8.0	7.4	2.7	1.0	
	Total %	0.5	1.9	1.1	0.3	
LP	Count	4	11	12	13	40
LATE PREHISTORIC	Row %	10.0	27.5	30.0	32.5	11.0
	Col %	16.0	11.7	8.2	13.1	
	Total %	1.1	3.0	3.3	3.6	
NQ	Count	0	3	1	2	6
NUMIC ?	Row %	0.0	50.0	16.7	33.3	1.6
	Col %	0.0	3.2	0.7	2.0	
	Total %	0.0	0.8	0.3	0.5	
Column Total	Count	25	94	147	99	365
	%	6.8	25.8	40.3	27.1	100.0

(Continued)

Figure 35. Crosstabulation of site type by cultural affiliation for sites in the Elko District.

NEVTYP Count Row % Col % Total %	HABIT.-W \STRUCT. C	TEMP. CA MP D	ARTIFACT SCATTER J	ISOL.ART IFACT\SM K	Row Total
CULTAFL1					
NU NUMIC	0 0.0 0.0 0.0	3 14.3 3.2 0.8	10 47.6 6.8 2.7	8 38.1 8.1 2.2	21 5.8
PA PALEOINDIAN	0 0.0 0.0 0.0	0 0.0 0.0 0.0	2 100.0 1.4 0.5	0 0.0 0.0 0.0	2 0.5
SH SHOSHONI	1 11.1 4.0 0.3	1 11.1 1.1 0.3	4 44.4 2.7 1.1	3 33.3 3.0 0.8	9 2.5
WP WESTERN PLUVIAL	0 0.0 0.0 0.0	0 0.0 0.0 0.0	1 33.3 0.7 0.3	2 66.7 2.0 0.5	3 0.8
Column Total	25 6.8	94 25.8	147 40.3	99 27.1	365 100.0

Number of missing observations = 1078

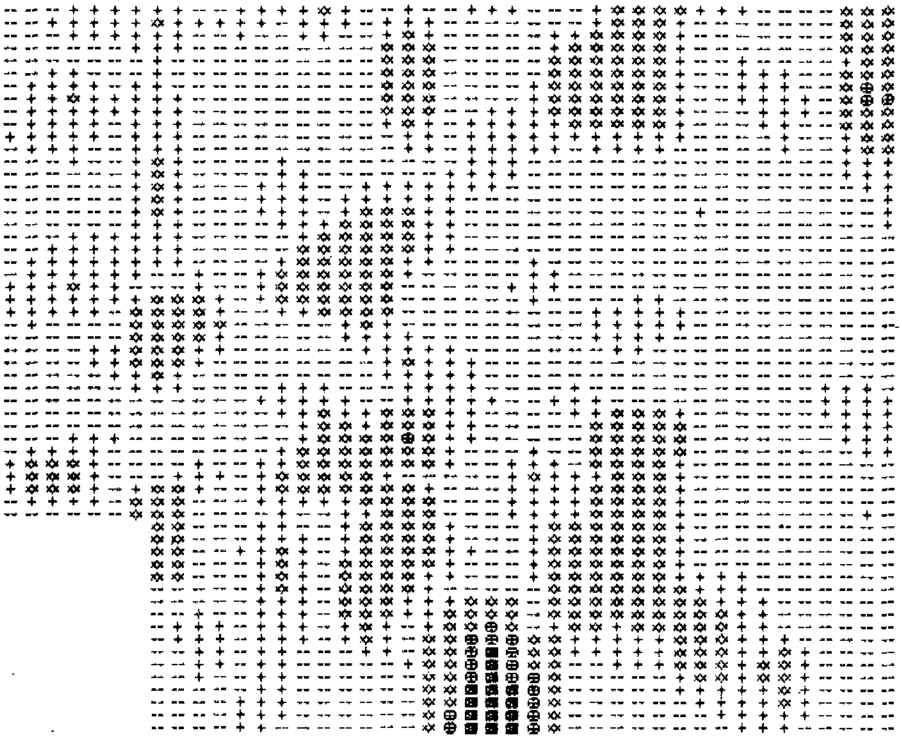
Figure 35. (Continued).

NEVTYP

CULTAFL2	Count / Row % / Col % / Total %	HABIT.-W \STRUCT. C	TEMP. CA MP D	ARTIFACT SCATTER J	ISOL.ART IFACT\SM K	Row Total
BA	Count	0	1	0	0	1
BASQUE	Row %	0.0	100.0	0.0	0.0	1.7
	Col %	0.0	7.7	0.0	0.0	
	Total %	0.0	1.7	0.0	0.0	
EA	Count	1	0	0	1	2
EUROPEAN-AMERICA	Row %	50.0	0.0	0.0	50.0	3.4
	Col %	16.7	0.0	0.0	20.0	
	Total %	1.7	0.0	0.0	1.7	
FN	Count	1	1	1	0	3
FREMONT\NUMIC?	Row %	33.3	33.3	33.3	0.0	5.1
	Col %	16.7	7.7	2.9	0.0	
	Total %	1.7	1.7	1.7	0.0	
FR	Count	1	1	2	0	4
FREMONT	Row %	25.0	25.0	50.0	0.0	6.8
	Col %	16.7	7.7	5.7	0.0	
	Total %	1.7	1.7	3.4	0.0	
LP	Count	1	7	24	3	35
LATE PREHISTORIC	Row %	2.9	20.0	68.6	8.6	59.3
	Col %	16.7	53.8	68.6	60.0	
	Total %	1.7	11.9	40.7	5.1	
NU	Count	2	3	8	0	13
NUMIC	Row %	15.4	23.1	61.5	0.0	22.0
	Col %	33.3	23.1	22.9	0.0	
	Total %	3.4	5.1	13.6	0.0	
PE	Count	0	0	0	1	1
PALEOENVIRONMENT	Row %	0.0	0.0	0.0	100.0	1.7
	Col %	0.0	0.0	0.0	20.0	
	Total %	0.0	0.0	0.0	1.7	
Column Total		6	13	35	5	59
		10.2	22.0	59.3	8.5	100.0

Number of missing observations = 1384

Figure 36. Crosstabulation of site type by second cultural affiliation for sites with multiple components in the Elko District.



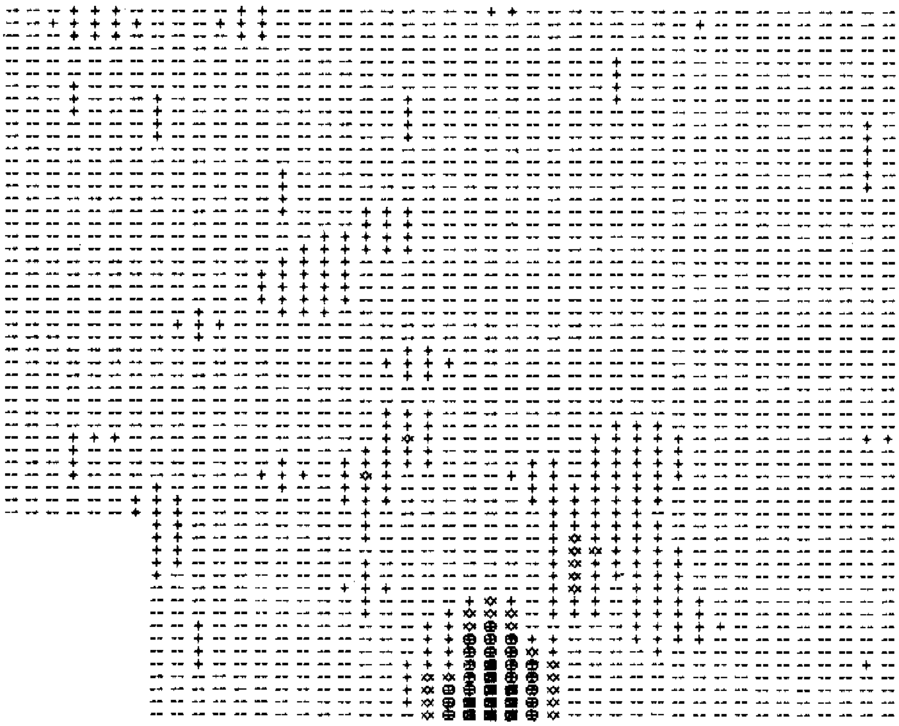
Frequency Values

1: 0 sites
2: 1-2 sites
3: 3-21 sites
4: 22-59 sites
5: 60-134 sites

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL

LEVEL	1	2	3	4	5
SYMBOLS	||||1||||	++++2++++	✧✧✧✧3✧✧✧✧	⊕⊕⊕⊕4⊕⊕⊕⊕	■■■■5■■■■

Figure 37. Density map of all known archaeological sites in the Elko District.



Frequency Values

1: 0 sites
2: 1-2 sites
3: 3-4 sites
4: 5-15 sites
5: 16-32 sites

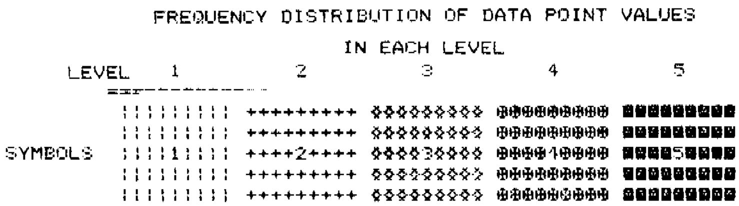
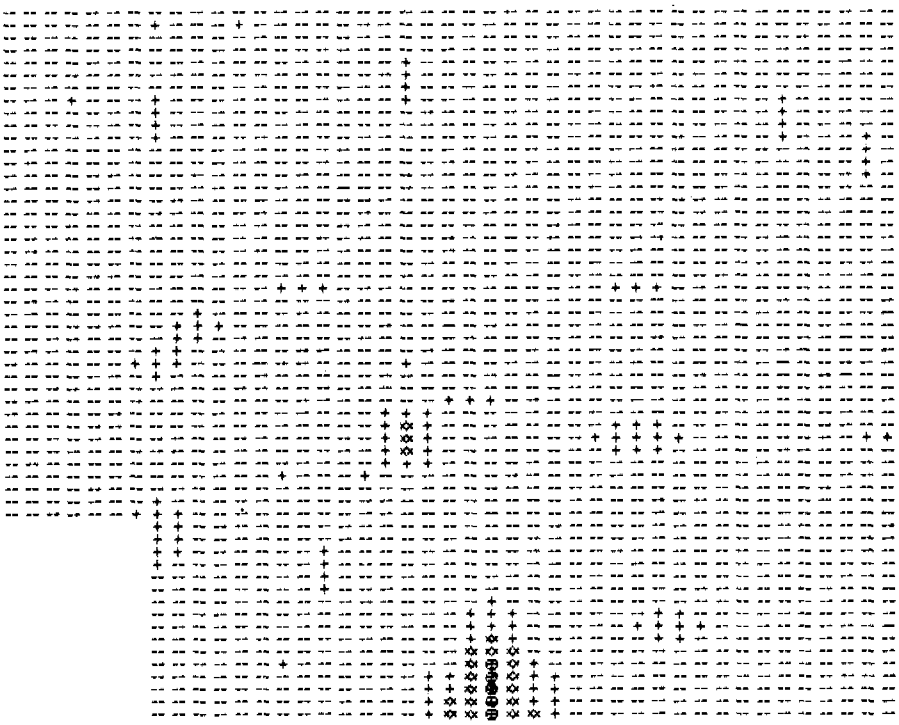


Figure 38. Density map of Desert Culture sites in the Elko District.



Frequency Values

1: 0 sites
2: 1 site
3: 2-6 sites
4: 7-11 sites
5: 12-13 sites

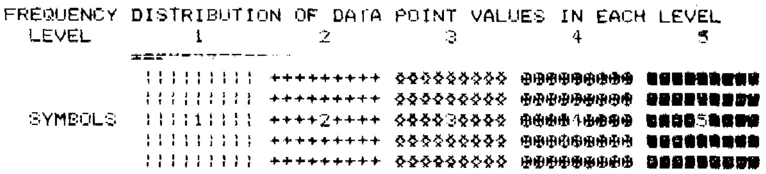
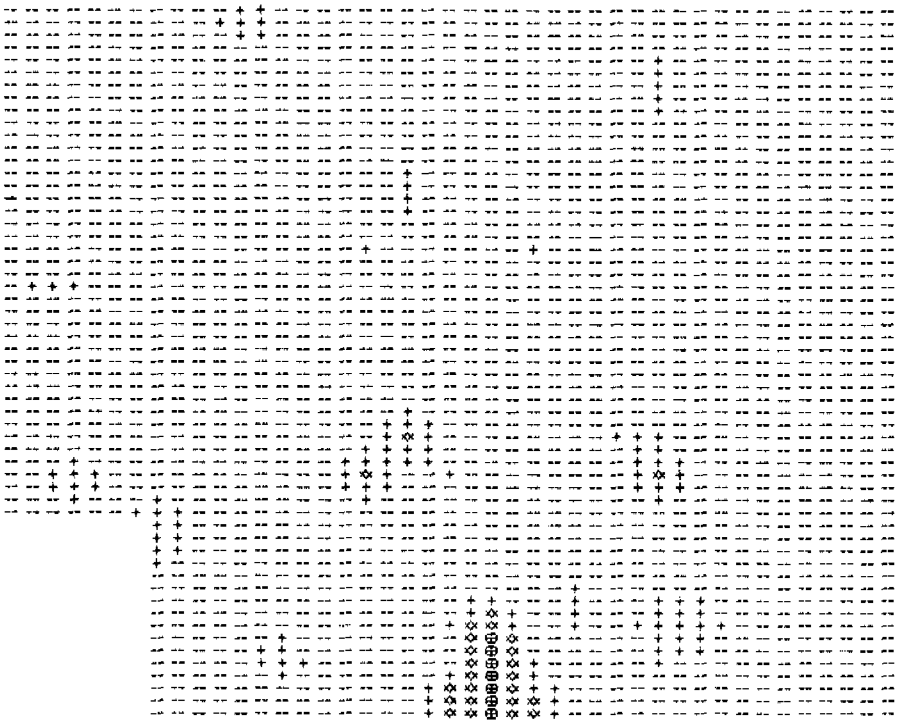


Figure 39. Density map of Late Prehistoric sites in the Elko District.



Frequency Values

1: 0 sites
2: 1 site
3: 2-3 sites
4: 4-5 sites
5: 6-8 sites

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL

LEVEL 1 2 3 4 5

SYMBOLS

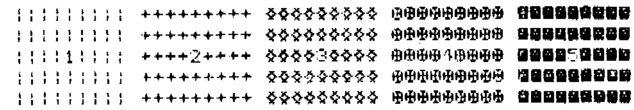


Figure 40. Density map of Numic sites in the Elko District.

Desert Culture sites are divided between temporary campsites, artifact scatters, and isolated finds/small sites. Few of the Desert Culture sites are habitation sites with structures.

To help illustrate the distribution of sites recorded in the Elko District, several density maps are provided in Figures 37 through 40. The map in Figure 37 shows the density of all known archaeological sites in the district (compare Figure 6). As can be seen in the map, the highest density of sites (frequency value 5) is located in Ruby Valley. While Ruby Valley did have a high population density, as noted ethnographically by Steward, the high density of sites in this area may be due to the fact that this area has been more intensively surveyed than other areas of the district. Figures 38 through 40 illustrate the density of recorded sites in the district for which Archaic, Late Prehistoric, and Proto-Historic (Numic) cultural affiliations are known. Parenthetically, the highest density of sites for these time periods are located in Ruby Valley. However, once again, this is probably the result of sampling.

Synthesis of Ely District Site Data

For the Ely District, 1463 archaeological sites have been encoded and computerized in the UUAC-ARISystem, and as with the Elko District site data, this number does not actually represent the total number of sites recorded in the district. On the basis of the descriptive site type definitions, there are 112 habitation sites with structures, 189 temporary campsites, 18 rock art sites (some of these sites are counted twice since they have duplicate site numbers in the data set), 1144 artifact scatters and isolated finds/small sites, and 1 quarry site.

For 1166 sites in the Ely District, a crosstabulation of site type by vegetation zone was generated (Figure 41). Over half the sites (59%) are in the sagebrush zone, one-third are situated in the pinyon-juniper zone, 6% fall into the creosote bush zone, and less than 2% are in the shadscale zone. Both of the latter two vegetation zones compose only a small percentage of the Ely District, so only a small number of sites would be expected to be present in these two zones. The method in which these vegetation zones were derived is shown in Table 14.

The results of a crosstabulation by site type and cultural affiliation for sites in the Ely District are shown in Figures 42, 43, and 44. Beyond making general statements about cultural affiliation and site type, the frequencies should not be used for statistical comparisons because of problems with the data set and the way in which the data were manipulated to derive the crosstabulation. From the crosstabulation, cultural affiliation was determined for a total of 407 sites recorded in the district. For sites with multiple components, cultural affiliation was determined on an additional 131 of the 407 sites (Figures 43 and 44). As with the Elko District, the majority of the sites are of the Desert Culture, most of which are

VEGCOM	Count / Row % / Col % / Total %	NEVTYP: HABIT.-W \STRUCT. C	TEMP. CA MP D	ROCK ART E	ARTIFACT SCATTER J	ISOL.ART IFACT\SM K	Row Total
EB PINYON- JUNIPER	Count	53	65	8	182	86	394
	Row %	13.5	16.5	2.0	46.2	21.8	33.8
	Col %	54.6	38.9	61.5	33.8	24.6	
	Total %	4.5	5.6	0.7	15.6	7.4	
FA SAGEBRUSH	Count	43	99	4	285	255	686
	Row %	6.3	14.4	0.6	41.5	37.2	58.8
	Col %	44.3	59.3	30.8	52.9	72.9	
	Total %	3.7	8.5	0.3	24.4	21.9	
FD SHADSCALE	Count	1	2	1	8	5	17
	Row %	5.9	11.8	5.9	47.1	29.4	1.5
	Col %	1.0	1.2	7.7	1.5	1.4	
	Total %	0.1	0.2	0.1	0.7	0.4	
HB CREOSOTE BUSH	Count	0	1	0	64	4	69
	Row %	0.0	1.4	0.0	92.8	5.8	5.9
	Col %	0.0	0.6	0.0	11.9	1.1	
	Total %	0.0	0.1	0.0	5.5	0.3	
Column Total		97	167	13	539	350	1166
		8.3	14.3	1.1	46.2	30.0	100.0

Number of missing observations = 297

Figure 41. Crosstabulation of site type by vegetation zone for sites in the Ely District.

NEVTYP

CULTAFL1	Count / Row % / Col % / Total %	HABIT.-W \STRUCT. C	TEMP. CAMP D	ROCK ART E	ARTIFACT SCATTER J	ISOL.ARTIFACT\SM K	Row Total
AN	Count	0	0	0	1	0	1
ANASAZI - PUEBLO	Row %	0.0	0.0	0.0	100.0	0.0	0.2
	Col %	0.0	0.0	0.0	0.6	0.0	
	Total %	0.0	0.0	0.0	0.2	0.0	
AR	Count	0	8	0	26	4	38
GREAT BASIN ARCH	Row %	0.0	21.1	0.0	68.4	10.5	9.3
	Col %	0.0	8.3	0.0	14.7	6.6	
	Total %	0.0	2.0	0.0	6.4	1.0	
BA	Count	1	0	0	1	0	2
BASQUE	Row %	50.0	0.0	0.0	50.0	0.0	0.5
	Col %	1.4	0.0	0.0	0.6	0.0	
	Total %	0.2	0.0	0.0	0.2	0.0	
DC	Count	8	20	0	36	11	75
DESERT CULTURE	Row %	10.7	26.7	0.0	48.0	14.7	18.4
	Col %	11.3	20.8	0.0	20.3	18.0	
	Total %	2.0	4.9	0.0	8.8	2.7	
DQ	Count	7	30	0	37	16	90
DESERT CULTURE?	Row %	7.8	33.3	0.0	41.1	17.8	22.1
	Col %	9.9	31.3	0.0	20.9	26.2	
	Total %	1.7	7.4	0.0	9.1	3.9	
EA	Count	36	0	1	25	12	74
EUROPEAN-AMERICA	Row %	48.6	0.0	1.4	33.8	16.2	18.2
	Col %	50.7	0.0	50.0	14.1	19.7	
	Total %	8.8	0.0	0.2	6.1	2.9	
ER	Count	1	0	0	0	0	1
	Row %	100.0	0.0	0.0	0.0	0.0	0.2
	Col %	1.4	0.0	0.0	0.0	0.0	
	Total %	0.2	0.0	0.0	0.0	0.0	
FN	Count	3	8	0	18	5	34
FREMONT\NUMIC?	Row %	8.8	23.5	0.0	52.9	14.7	8.4
	Col %	4.2	8.3	0.0	10.2	8.2	
	Total %	0.7	2.0	0.0	4.4	1.2	
Column Total		71	96	2	177	61	407
		17.4	23.6	0.5	43.5	15.0	100.0

(Continued)

Figure 42. Crosstabulation of site type by cultural affiliation for sites in the Ely District.

NEVTYP

CULTAFL1	Count / Row % / Col % / Total %	HABIT.-W \STRUCT. C	TEMP. CA MP D	ROCK ART E	ARTIFACT SCATTER J	ISOL.ART IFACT\SM K	Row Total
FR FREMONT	Count	3	7	1	7	3	21
	Row %	14.3	33.3	4.8	33.3	14.3	5.2
	Col %	4.2	7.3	50.0	4.0	4.9	
	Total %	0.7	1.7	0.2	1.7	0.7	
LP LATE PREHISTORIC	Count	5	8	0	7	5	25
	Row %	20.0	32.0	0.0	28.0	20.0	6.1
	Col %	7.0	8.3	0.0	4.0	8.2	
	Total %	1.2	2.0	0.0	1.7	1.2	
NQ NUMIC ?	Count	1	2	0	2	0	5
	Row %	20.0	40.0	0.0	40.0	0.0	1.2
	Col %	1.4	2.1	0.0	1.1	0.0	
	Total %	0.2	0.5	0.0	0.5	0.0	
NU NUMIC	Count	0	4	0	4	1	9
	Row %	0.0	44.4	0.0	44.4	11.1	2.2
	Col %	0.0	4.2	0.0	2.3	1.6	
	Total %	0.0	1.0	0.0	1.0	0.2	
PA PALEOINDIAN	Count	0	0	0	1	0	1
	Row %	0.0	0.0	0.0	100.0	0.0	0.2
	Col %	0.0	0.0	0.0	0.6	0.0	
	Total %	0.0	0.0	0.0	0.2	0.0	
SH SHOSHONI	Count	3	8	0	12	3	26
	Row %	11.5	30.8	0.0	46.2	11.5	6.4
	Col %	4.2	8.3	0.0	6.8	4.9	
	Total %	0.7	2.0	0.0	2.9	0.7	
UP UTE- PIUTE	Count	1	0	0	0	0	1
	Row %	100.0	0.0	0.0	0.0	0.0	0.2
	Col %	1.4	0.0	0.0	0.0	0.0	
	Total %	0.2	0.0	0.0	0.0	0.0	
WP WESTERN PLUVIAL	Count	2	1	0	0	1	4
	Row %	50.0	25.0	0.0	0.0	25.0	1.0
	Col %	2.8	1.0	0.0	0.0	1.6	
	Total %	0.5	0.2	0.0	0.0	0.2	
Column Total		71	96	2	177	61	407
		17.4	23.6	0.5	43.5	15.0	100.0

Number of missing observations = 1056

Figure 42. (Continued).

CULTAFL2	NEVTYP Count Row % Col % Total %	HABIT.-W \STRUCT. C	TEMP. CAMP D	ARTIFACT SCATTER J	ISOL.ARTIFACT\SM K	Row Total
AR		0	0	3	0	3
GREAT BASIN ARCH		0.0	0.0	100.0	0.0	2.9
		0.0	0.0	4.8	0.0	
		0.0	0.0	2.9	0.0	
EA		0	4	3	0	7
EUROPEAN-AMERICA		0.0	57.1	42.9	0.0	6.9
		0.0	14.8	4.8	0.0	
		0.0	3.9	2.9	0.0	
FN		2	2	0	0	4
FREMONT\NUMIC?		50.0	50.0	0.0	0.0	3.9
		16.7	7.4	0.0	0.0	
		2.0	2.0	0.0	0.0	
FR		1	10	5	0	16
FREMONT		6.3	62.5	31.3	0.0	15.7
		8.3	37.0	8.1	0.0	
		1.0	9.8	4.9	0.0	
LP		2	5	26	0	33
LATE PREHISTORIC		6.1	15.2	78.8	0.0	32.4
		16.7	18.5	41.9	0.0	
		2.0	4.9	25.5	0.0	
NQ		2	0	6	1	9
NUMIC ?		22.2	0.0	66.7	11.1	8.8
		16.7	0.0	9.7	100.0	
		2.0	0.0	5.9	1.0	
NU		4	5	14	0	23
NUMIC		17.4	21.7	60.9	0.0	22.5
		33.3	18.5	22.6	0.0	
		3.9	4.9	13.7	0.0	
SH		1	1	5	0	7
SHOSHONI		14.3	14.3	71.4	0.0	6.9
		8.3	3.7	8.1	0.0	
		1.0	1.0	4.9	0.0	
	Column Total	12	27	62	1	102
		11.8	26.5	60.8	1.0	100.0

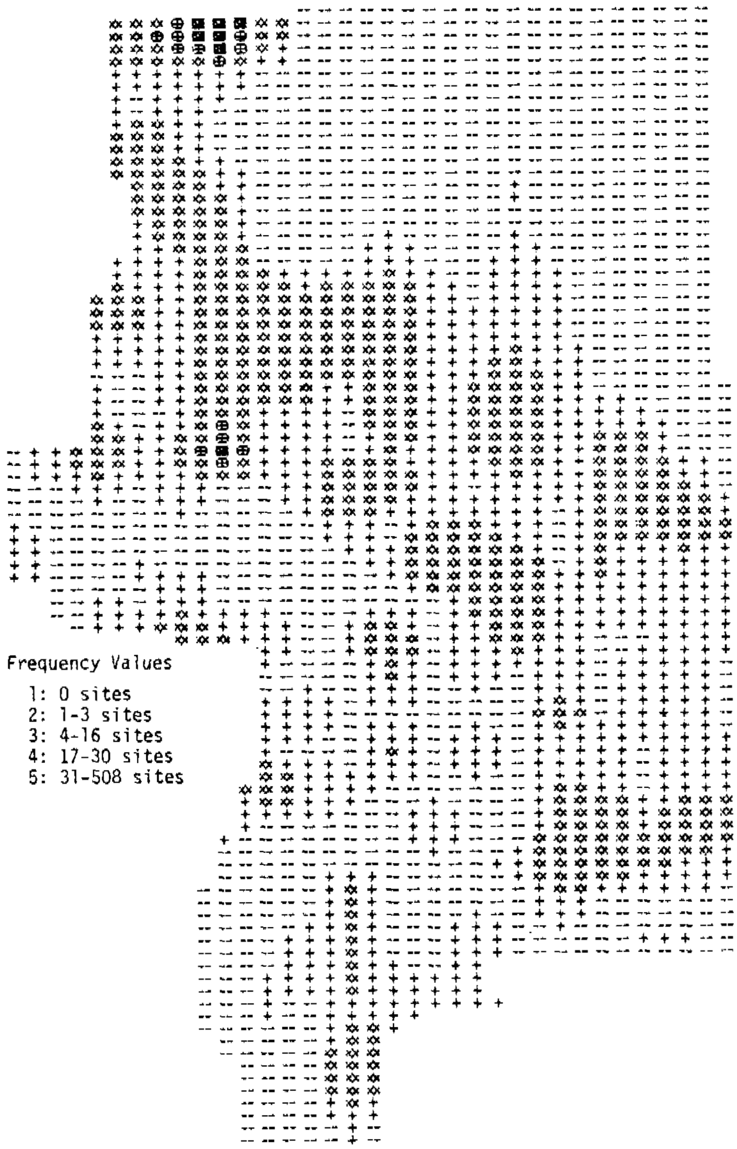
Number of missing observations = 1361

Figure 43. Crosstabulation of site type by second cultural affiliation for sites with multiple components in the Ely District.

CULTAFL3	Count / Row % / Col % / Total %	NEVTYP: HABIT.-W \STRUCT. C	TEMP. CAMP D	ARTIFACT SCATTER J	Row Total
EA EUROPEAN-AMERICA	Count	0	0	1	1
	Row %	0.0	0.0	100.0	3.4
	Col %	0.0	0.0	6.7	
	Total %	0.0	0.0	3.4	
FN FREMONT\NUMIC?	Count	0	0	3	3
	Row %	0.0	0.0	100.0	10.3
	Col %	0.0	0.0	20.0	
	Total %	0.0	0.0	10.3	
NQ NUMIC ?	Count	0	0	1	1
	Row %	0.0	0.0	100.0	3.4
	Col %	0.0	0.0	6.7	
	Total %	0.0	0.0	3.4	
NU NUMIC	Count	0	11	9	20
	Row %	0.0	55.0	45.0	69.0
	Col %	0.0	84.6	60.0	
	Total %	0.0	37.9	31.0	
OT OTHER	Count	0	1	0	1
	Row %	0.0	100.0	0.0	3.4
	Col %	0.0	7.7	0.0	
	Total %	0.0	3.4	0.0	
SH SHOSHONI	Count	0	1	1	2
	Row %	0.0	50.0	50.0	6.9
	Col %	0.0	7.7	6.7	
	Total %	0.0	3.4	3.4	
UP UTE- PIUTE	Count	1	0	0	1
	Row %	100.0	0.0	0.0	3.4
	Col %	100.0	0.0	0.0	
	Total %	3.4	0.0	0.0	
Column Total		1	13	15	29
		3.4	44.8	51.7	100.0

Number of missing observations = 1434

Figure 44. Crosstabulation of site type by third cultural affiliation for sites with multiple components in the Ely District.



FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL

LEVEL	1	2	3	4	5
	¦¦¦¦¦¦¦¦¦	+++++++++	✲✲✲✲✲✲✲✲✲	⊕⊕⊕⊕⊕⊕⊕⊕⊕	■■■■■■■■■
	¦¦¦¦¦¦¦¦¦	+++++++++	✲✲✲✲✲✲✲✲✲	⊕⊕⊕⊕⊕⊕⊕⊕⊕	■■■■■■■■■
SYMBOLS	¦¦¦¦1¦¦¦¦	++++2++++	✲✲✲✲3✲✲✲✲	⊕⊕⊕⊕4⊕⊕⊕⊕	■■■■5■■■■
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Figure 45. Density map of all known archaeological sites in the Ely District.

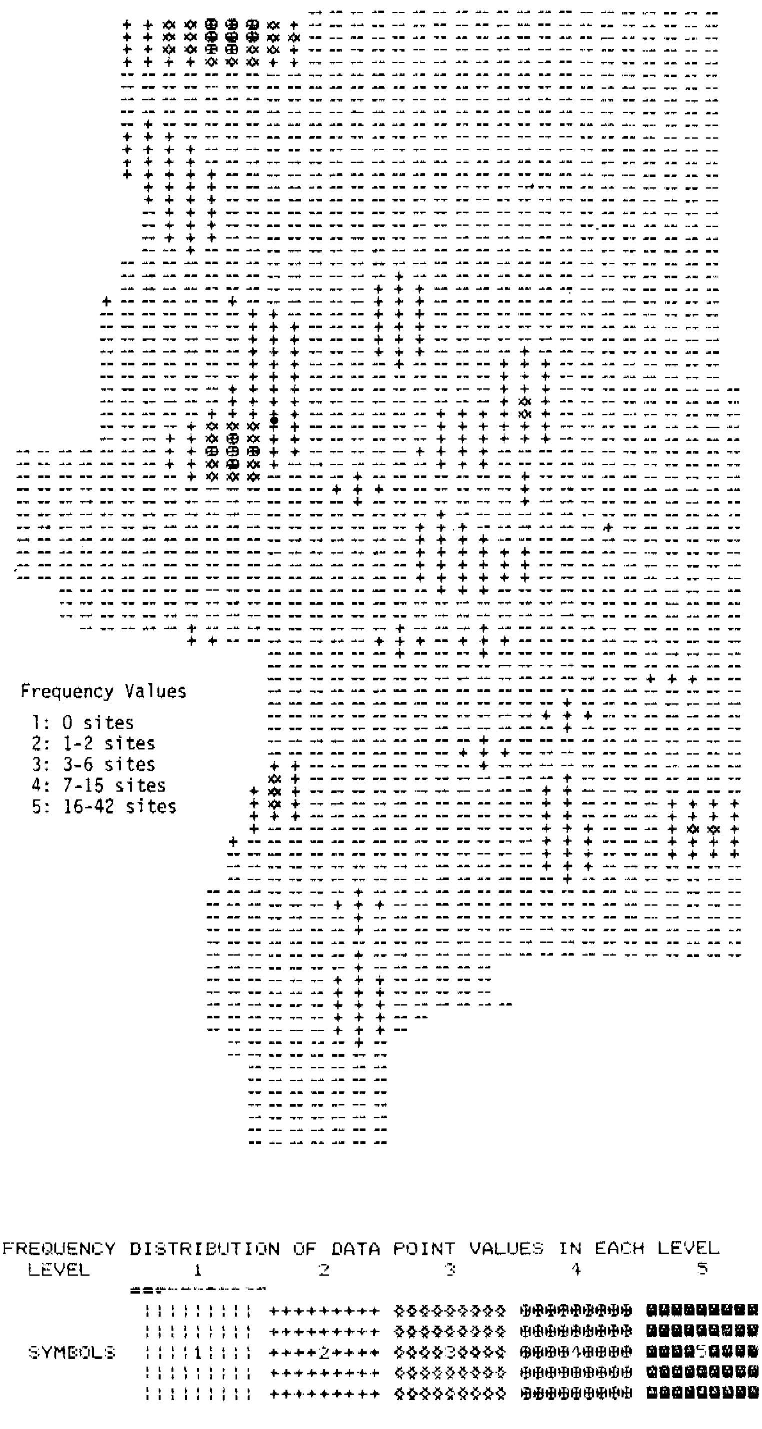


Figure 46. Density map of Desert Culture sites in the Ely District.

temporary camps and artifact scatters (Figure 42). A density map of Desert Culture sites is shown in Figure 46. Figure 45 shows the density of all recorded sites in the district.

Table 13. Cultural Affiliation as Indicated by Diagnostic Artifacts

Cultural Affiliation	Diagnostic Artifacts
Paleoindian (15,000-10,000 B.P)	Fluted Points, e.g., Clovis, Folsom
Western Pluvial Lakes Tradition (11,000-80000 B.P.)	Crescents, stemmed points, e.g., Lake Mohave, Silver Lake
Desert Culture (8000-1500 B.P.)	Pinto, Humboldt, Northern Side-notched, Gypsum, Elko points
Desert Culture ?	Elko only
Fremont (A.D. 500-1300)	Eastgate/Rose Spring points and Fremont pottery
Late Prehistoric (A.D. 500-(1300)	Eastgate/Rose Spring and no pottery
Fremont/Numic ?	Eastgate/Rose Spring and unknown ceramic type
Numic (A.D. 1300-1850)	Desert Side-notched points and Shoshonean pottery
Numic ?	Cottonwood Triangular points only

Table 14. Vegetation Zones as Determined by Elevation.

Elevation	Vegetation Zones
Below ca. 3500 feet	Creosote
3500-4500 feet	Shadscale
4500-6500 feet	Sagebrush
6500-9500 feet	Pinyon-Juniper
9500-12,000 feet	Limber Pine-Bristlecone
Above 12,000 feet	Alpine Tundra

BIBLIOGRAPHY

* Reference contains information on Ely District
+ Reference contains information on Elko District

Adovasio, James M.
1970a Textiles. In Hogup Cave, C. M. Aikens. University of Utah Anthropological Papers 93:133-153.

1970b The origin, development and distribution of Western Archaic textiles. Ph.D. dissertation, University of Utah. University Microfilms No. 70-23065, Ann Arbor.

1970c The origin, development and distribution of Western Archaic textiles. Tebiwa 13(2):1-40.

1971 Some comments on the relationships of Great Basin textiles to textiles from the Southwest. University of Oregon Anthropological Papers 1:103-108

1974 Prehistoric North American basketry. Nevada State Museum Anthropological Papers 16:98-148

1975 Fremont basketry. Tebiwa 17(2):67-73.

1977 Basketry from Swallow Shelter (42Bo268). In Swallow Shelter and associated sites, Gardiner F. Dalley. University of Utah Anthropological Papers 96:167-169.

1979 Comment by Adovasio. American Antiquity 44:723-731.

Adovasio, James, and Gary Fry
1972 An equilibrium model for culture change in the Great Basin. In Great Basin cultural ecology: a symposium, edited by Don D. Fowler. Desert Research Institute Publications in the Social Sciences 8:67-71.

Aikens, C. Melvin
1966a Fremont-Promontory-Plains relationships. University of Utah Anthropological Papers 82.

1966b Plain's relationships of the Fremont culture: a hypothesis based on excavations at two Fremont-Promontory sites in northern Utah. Unpublished Ph.D. dissertation, Department of Anthropology, University of Chicago.

1967a Excavations at Snake Rock Village and the Bear River No. 2 Site. University of Utah Anthropological Papers 87.

1967b Plain's relationships of the Fremont culture: a hypothesis. American Antiquity 32:198-209.

1970a Hogup Cave. University of Utah Anthropological

Papers 93.

1970b Towards the recognition of cultural diversity in Basin-Plateau prehistory. In cultural relations between the Plateau and Great Basin, edited by E. H. Swanson, Jr. Northwest Anthropological Research Notes 4:67-74.

1972 Fremont culture: restatement of some problems. American Antiquity 37:61-66.

1976 Cultural hiatus in the eastern Great Basin? American Antiquity 41:543-548.

1978a Archaeology of the Great Basin. Annual Review of Anthropology 7:71-87.

1978b The far West. In Ancient Native Americans, edited by Jesse D. Jennings, pp. 130-181. W. H. Freeman, San Francisco.

1978c Indian petroglyphs from White Pine County, Nevada. Miscellaneous Collected Paper 19. University of Utah Anthropological Papers 99:3-15.

1979 Comment by Aikens. American Antiquity 44:731-732.

Alter, J. Cecil (editor)
1943 Father Escalante's journal, 1776-77. Utah Historical Quarterly 11.

Albright, George Leslie.
1921 Official explorations for Pacific railroads, 1853-1855. University of California Press, Berkeley.

Allen, Gary G.
1964 Nevada Northern: sagebrush short line. Trans-Anglo Books, Los Angeles.

Allen, James B., and Ted J. Warner
1971 The Gosiute Indians in pioneer Utah. Utah Historical Quarterly 39:162-177.

Alley, John R.
1978 The fur trapper and the Great Basin Indian. Unpublished M.A. thesis, University of Utah.

Ambler, John Richard
1966 Caldwell Village and Fremont prehistory. Ph.D. dissertation, University of Colorado. University Microfilms No. 67-09961, Ann Arbor.

1969 The temporal span of the Fremont. Southwestern Lore 34(4):107-117.

Andrews, Janet

1971 The cranial morphology of the prehistoric Great Basin Fremont population. Unpublished B.A. honors thesis, Department of Anthropology, University of Utah.

1972 Paleopathology of the eastern Great Basin Fremont population. Unpublished M.A. thesis, Department of Anthropology, University of Utah.

Angel, Myron (editor)

1881 History of Nevada with illustrations and biographical sketches of its prominent men and pioneers. Thompson and West, Oakland, California. (Reprinted 1958 with an introduction by David F. Myrick, Howell-North Books, Berkeley).

Antevs, Ernst

1925 On the Pleistocene history of the Great Basin. In Quaternary climates. Carnegie Institution of Washington Publication 352:51-114.

1938 Rainfall and tree growth in the Great Basin. Carnegie Institution of Washington Publication 469.

1948 Climatic changes and pre-white man. In The Great Basin with emphasis on glacial and postglacial times, part 3, pp. 168-191. University of Utah Bulletin 38(20), Biological Series 10(7).

1952a Cenozoic climates of the Great Basin. Geologisch Rundschau 40(1):94-108.

1952b Climatic history and the antiquity of man in California. University of California Archaeological Survey Reports 16:23-31.

1953a On division of the last 20,000 years. University of California Archaeological Survey Reports 22:5-8.

1953b The postpluvial or Neothermal. University of California Archaeological Survey Reports 22:9-23. (Reprinted from the 1948 University of Utah Bulletin 38(20):174-181.

1955 Geologic-climatic dating in the West. American Antiquity 20:317-335.

1962 Late Quaternary climates in Arizona. American Antiquity 28:193-198.

Armelagos, George J.

1968 Aiken's Fremont hypothesis and use of skeletal material in archaeological interpretation. American Antiquity 33:385-386.

Armstrong, Robert D.

1967 A preliminary union catalog of Nevada manuscripts. Nevada Library Association, Reno.

Ashbaugh, Don.
1963 Nevada's turbulent yesterday; a study in ghost towns. Westernlore, Los Angeles.

Aschmann, H. H.
1958 Great Basin climates in relationship to human occupance. University of California Archaeological Survey Reports 42:23-40.

Averett, Walter R.
* 1962 Directory of southern Nevada place names. Walter R. Averett, Las Vegas.

d'Azevedo, Warren L.
1966 Comments on tribal distribution. In The current status of anthropological research in the Great Basin: 1964. edited by Warren L. d'Azevedo et al. Desert Research Institute Social Sciences and Humanities Publications 1:315-334.

d'Azevedo, Warren L., et al. (editors)
1966 The current status of anthropological research in the Great Basin: 1964. Desert Research Institute Social Sciences and Humanities Publications 1.

Bagley, Gerald C.
1964 Daniel T. Potts, chronicler of the fur trade, 1822-1828. Unpublished MA thesis, Brigham Young University, Provo.

Bailey, L. R.
1966 Indian slave trade in the Southwest. Westernlore Press, Los Angeles.

Bailey, Robert G.
1978 Descriptions of the ecoregions of the United States. Forest Service, U.S. Department of Agriculture, Ogden, Utah.

Baldwin, Gordon C.
1950 The pottery of the Southern Paiute. American Antiquity 16:50-56.

Bancroft, Hubert Howe.
1875 The native races of the Pacific states: antiquities. The works of Hubert Howe Bancroft (Vol. 4). D. Appleton and Co., New York.

1883 The native races (Vol. 1, Wild Tribes). A. L. Bancroft Co., San Francisco.

1890 History of Nevada, Colorado, and Wyoming, 1540-1888. The History Company, San Francisco.

Barber, A. E.
1876 Language and utensils of the modern Utes. In U.S. Geologic and Geographical Survey of the Territories 2:71-76.

Bard, James C.
1976 Possible new patination dating technique under development at UC Berkeley. Newsletter of Lithic Technology 5(3):21. Center for Archaeological Research, University of Texas at San Antonio.

Bard, J. C., F. Asaro, and R. F. Heizer
1978 Perspectives on the dating of prehistoric Great Basin petroglyphs by neutron activation analysis. Archaeometry 20:85-88.

Bartlett, Richard A.
1962 Great surveys of the American West. University of Oklahoma Press, Norman.

Baumhoff, Martin A.
1958 History of Great Basin ethnography. Reports of the University of California Archaeological Survey 42:1-6.

+ n.d. Ruby Cave projectile points-link drawings and descriptions. Ms. on file, Nevada State Museum, Carson City.

Baumhoff, M. A. and R. F. Heizer
1965 Postglacial climates and archaeology in the Desert West. In The Quaternary of the United States, edited by H.E. Wright, Jr. and D.G. Frey, pp. 697-707. Princeton University Press, Princeton.

Baumhoff, M. A., R. F. Heizer, and A. B. Elsasser
1958 Lagomarsino petroglyph site, Storey County, Nevada. Reports of the University of California Archaeological Survey 42:49-59.

Bean, George W.
1945 The autobiography of George W. Bean. Utah Printing Co., Salt Lake City.

Beckwith, Lieutenant E. G.
1855 Report of exploration for a route for the Pacific railroad on the line of the forty-first parallel of north latitude. In Explorations and surveys for a railroad route from the Mississippi River to the Pacific Ocean. Vol. II, pp. 1-132. War Department, Washington.

Bedwell, Stephen F.
1973 Fort Rock Basin prehistory and environment. University of Oregon Books, Eugene.

Bedwell, S. F., and L. S. Cressman
1971 Fort Rock report: prehistory and environment of the Pluvial Fort Rock Lake area of south-central Oregon. In Great Basin Anthropological Conference 1970 selected papers, edited by C. Melvin Aikens. University of Oregon Anthropological Papers 1:1-25.

Beebe, Lucius, and Charles Clegg
1949 U. S. West, the saga of Wells Fargo. E. P. Dutton, New York.

Behle, William H.
1955 The birds of the Deep Creek Mountains of central western Utah. University of Utah Biological Series 11(4).

1958 The birds of the Raft River Mountains, northwestern Utah. University of Utah Biological Series 11(6).

Benedict, James B., and Bryon L. Olson
1978 The Mount Albion complex: a study of prehistoric man and the Altithermal. Center for Mountain Archeology, Research Report 1. Ward, Colorado.

Berry, Michael S.
1972 The Evans Site. A Special Report, Department of Anthropology, University of Utah.

1975 An archaeological survey of the northeast portion of Arches National Park. Antiquities Section Selected Papers 1(3). Division of State History, Salt Lake City.

+ 1977a No Name Valley. In Swallow Shelter and associated sites, G. F. Dalley. University of Utah Anthropological Papers 96:145-161.

1977b Remnant Cave. In Swallow Shelter and associated sites, G. F. Dalley. University of Utah Anthropological Papers 96:115-128.

Bettinger, Robert L.
1976 The development of pinyon exploitation in central eastern California. Journal of California Anthropology 3(1):81-95.

1978 Alternative adaptive strategies in the prehistoric Great Basin. Journal of Anthropological Research 34:27-46.

Billings, W. D.
1949 The shadscale vegetation zone of Nevada and eastern California in relation to climate and soils. American Midland Naturalist 42(1):87-109.

1951 Vegetational zonation in the Great Basin of western

North America. Union Internationale des Sciences Biologiques, Serie B (Colloques), 9:101-122.

Binford, Lewis R.
1976 Forty-seven trips: a case study in the character of some formation processes of the archaeological record. In Contributions to anthropology: The interior peoples of northern Alaska, edited by E. S. Hall, Jr. National Museum of Man, Mercury Series Paper 49:299-351. National Museum of Canada, Ottawa.

1977 Forty-seven trips: a case study in the character of archaeological formation processes. In Stone tools as cultural markers, edited by R. V. S. Wright, pp. 24-36. Australian Institute of Aboriginal Studies, Canberra; and Humanities Press, New Jersey.

1978 Dimensional analysis of behavior and site structure: learning from an Eskimo hunting stand. American Antiquity 43:330-361.

Blackwelder, Eliot
1930 Correlation of glacial epochs in western United States. Geological Society of America Bulletin 41:91.

1931 Pleistocene glaciation in the Sierra Nevada and Basin Ranges. Geological Society of America Bulletin 42:865-922.

1934 Supplementary notes on Pleistocene glaciation in the in the Great Basin. Washington Academy of Science Journal 24:217-222.

Bloss, Roy S.
1959 Pony Express-the great gamble. Howell-North Books, Berkeley.

Bolton, Herbert E. (editor and translator)
1950 Pageant in the wilderness: the story of the Escalante expedition to the interior basin, 1776. Utah Historical Society, Salt Lake City.

Bonner, Thomas N. (editor and translator)
1959 Journey through the Rocky Mountains and the Humboldt Mountains to the Pacific Ocean, by Jacob Schiel. University of Oklahoma Press, Norman.

Borell, A. E., and Ellis, R.
+ 1934 Mammals of the Ruby Mountains region of northeastern Nevada. Journal of Mammology 15:12-44.

Brennen, C. A., and Fred B. Harris
+ 1943 Fourteen years cattle production and ranch earning

power in northeastern Nevada, 1928 to 1941. University of Nevada Agricultural Experiment Station Bulletin 165.

Bright, Robert C.
1966 Pollen and seed stratigraphy of Swan Lake, southeastern Idaho: its relation to regional vegetational history and to Lake Bonneville history. Tebiwa 9(2):1-47.

Brodie, F. M. (editor)
1963 The city of the saints and across the Rocky Mountains to California, by Richard F. Burton. Alfred A. Knopf, New York.

Broecker, W. S., and Aaron Kaufman
1965 Radiocarbon chronology of Lake Lahontan and Lake Bonneville II, Great Basin. Geological Society of America Bulletin 76:537-566.

Broecker, W. S., and P. C. Orr
1958 Radiocarbon chronology of Lake Lahontan and Lake Bonneville. Geological Society of America Bulletin 69:1009-1032.

Brooks, George R. (editor)
1977 The southwest expedition of Jedediah S. Smith. The Arthur H. Clark Company, Glendale, California.

Brooks, Richard H., Daniel O. Larson, Joseph King, Robert Leavitt, and Kathryne Olson
* 1977 The archaeology of the Mariah Site 26LN618, White River Narrows, Lincoln County, Nevada. Unpublished Ms., Nevada Archaeological Survey, University of Nevada at Las Vegas.

Brooks, Richard H., Daniel O. Larson, David Derraro, Joseph King, and Kathryne Olson
* 1975 The Burnt Canyon Creek Bureau of Land Management chaining project: an archaeological survey in Lincoln County, Nevada. Unpublished Ms., Nevada Archaeological Survey, University of Nevada at Las Vegas.

Brooks, Richard H., Daniel O. Larson, Robert M. Leavitt, Robert Jones, Anthony Wonderley, and Kathryne Olson
* 1974 An archaeological survey in the Mount Wilson fire rehabilitation area, Lincoln County, Nevada. Unpublished Ms., Nevada Archaeological Survey, University of Nevada at Las Vegas.

Brooks, Sheilagh T., and Richard H. Brooks
* 1964 An evaluation of the human skeletal remains from Lehman Caves, Nevada. In The archaeology of Lehman Caves National Monument, by Charles Rozaire, pp. 17-41. Ms. on file, Nevada State Museum, Carson City.

Bryan, Alan L.
* 1972 Summary of the archeology of Smith Creek and Council Hall Caves, White Pine County, Nevada. Nevada Archeological Survey Reporter 6(1):6-8.

* 1977 Developmental stages and technological traditions. In Amerinds and their paleoenvironments in northeastern North America, edited by Walter S. Newman and Bert Salwen. Annals: New York Academy of Sciences 288:355-368.

* 1979a Council Hall Cave. In The archaeology of Smith Creek Canyon, eastern Nevada, edited by Donald R. Tuohy and Doris L. Rendall. Nevada State Museum Anthropological Papers 17:254-268.

* 1979b Smith Creek Cave. In The archaeology of Smith Creek Canyon, eastern Nevada, edited by Donald R. Tuohy and Doris L. Rendall. Nevada State Museum Anthropological Papers 17:162-251.

Bryan, A. L., and R. Gruhn
1964 Problems relating to the Neothermal climatic sequence. American Antiquity 29:307-315.

* 1974 A Great Basin small tool tradition. Utah Archaeology: A Newsletter 20(3):3-4. Salt Lake City.

Bryant, Edwin
1967 What I saw in California. Ross and Haines, Minneapolis.

Bureau of Land Management
1972 Reptiles and Amphibians of the Elko BLM District. Department of the Interior, Bureau of Land Management, Elko, Nevada.

1979 Nevada BLM statistics. U. S. Department of the Interior, Bureau of Land Management, Elko, Nevada.

Bureau of Sports, Fisheries and Wildlife
1963 Birds of the Ruby Lake National Wildlife Refuge. Refuge Leaflet 156R. Department of the Interior.

Burton, Richard F.
1963 The city of the saints and across the Rocky Mountains to California, edited by Fawn M. Brodie. Alfred A. Knopf, New York.

Busby, Colin I.
* 1977 Civa Shelter, Nye County, Nevada - Report of Excavations. Contributions of the University of California Archaeological Research Facility 35:81-105.

* 1978 The prehistory and human ecology of Garden and Coal Valleys, southeastern Nevada. Ph.D. dissertation, University of California, Berkeley.

* 1979 The prehistory and human ecology of Garden and Coal Valleys: a contribution to the prehistory of southeastern Nevada. Contributions of the University of California Archaeological Research Facility 39.

Busby, Colin I., and Susan M. Seck
* 1977 Archeological investigations at Civa Shelter II, Lincoln County, Nevada: report of field activities, 1976. Nevada Archeological Survey Reporter 10(5):1-5.

Butler, B. Robert
1968 An introduction to archaeological investigations in the Pioneer Basin Locality of eastern Idaho. Tebiwa 11(1):1-30.

1969 More information on the frozen ground features and further interpretation of the small mammal sequence at the Wasden Site (Owl Cave), Bonneville County, Idaho. Tebiwa 12(1):58-63.

1972a The Holocene in the Desert West and its cultural significance. In Great Basin cultural ecology: a symposium, edited by Don D Fowler. Desert Research Institute Publications in the Social Sciences 6:5-12.

1972b The Holocene or postglacial ecological crisis on the eastern Snake River Plain. Tebiwa 15(1):49-63.

1973 Folsom and Plano points from the peripheries of the Upper Snake Country. Tebiwa 16(1):69-72.

1976 The evolution of the modern sagebrush-grass steppe biome on the eastern Snake River Plain. In Holocene environmental change in the Great Basin, edited by Robert Elston. Nevada Archeological Survey Research Paper 6:4-39.

Butzer, Karl W., Gerhard J. Fock, Louis Scott, and Robert Stuckenrath
1979 Dating and context of rock engravings in southern Africa. Science 203:1201-1214.

Calhoun, John S.
1850 [Report in] Report to the Commissioner of Indian Affairs for 1849-50. Washington.

Campbell, Elizabeth W. C., William H. Campbell, Ernst Antevs, Charles A. Amsden, Joseph A. Barbieri, and Francis D. Bode
1937 The archaeology of Pleistocene Lake Mohave: a symposium. Southwest Museum Papers 11.

Carlson, Helen S.

1974 *Nevada place names: a geographical dictionary.* University of Nevada Press, Reno.

Carvalho, S. N.
1857 *Incidents of travel and adventure in the Far West; with Col. Fremont's last expedition across the Rocky Mountains: including three months' residence in Utah, and a perilous trip across the Great American Desert to the Pacific.* Derby and Jackson, New York. Reprinted 1954, The Jewish Publication Society of America, Philadelphia, edited by Bertram W. Korn.

Casjens, Laurel
+ 1974 *The prehistoric human ecology of southern Ruby Valley, Nevada.* Unpublished Ph.D. dissertation, Harvard University.

Castleton, Kenneth B.
1978 *Petroglyphs and pictographs of Utah. Vol. 1: the east and northeast.* Utah Museum of Natural History, Salt Lake City.

1979 *Petroglyphs and pictographs of Utah. Vol. 2: the south, central, west and northwest.* Utah Museum of Natural History, Salt Lake City.

Chamberlin, Ralph V.
1908 Animal names and anatomical terms of the Gosiute Indians. *Proceedings: Academy of the Natural Sciences of Philadelphia* 60:74-103. Also, *Contributions from the Zoological Laboratory of Brigham Young University* 1:74-103.

1909 Some plant names of the Ute Indians. *American Anthropologist* 11:27-40.

1911 The ethnobotany of the Gosiute Indians. *Proceedings: Academy of Natural Science* 63:24-99. Also, *American Anthropological Association, Memoirs* 2(5):329-405.

1913 Place and personal names of the Gosiute Indians of Utah *Proceedings: American Philosophical Society* 52:112-118.

1954 *The American fur trade of the Far West.* Academic Reprints, Stanford.

Christensen, Earl M., and Stanley L. Welsh
1963 Presettlement vegetation of the valleys of western Summit and Wasatch counties. *Proceedings: Utah Academy of Sciences, Arts and Letters* 40(2).

Clark, Lealand L.
1975a A 40,000-year-old stone industry on Lake Bonneville's Alpine Beach. *Proceedings: Utah Academy of Sciences, Arts, and Letters* 52(1):44-49; Also, *Utah Archeology: A Newsletter* 21(1):1-5.

1975b The morphology of stone tools on Lake Bonneville's

40,000-year-old Alpine Beach. Utah Archaeology: A Newsletter 21(1):6-8.

Cleland, Robert G.
1976 This reckless breed of men: the trappers and fur traders of the Southwest. University of New Mexico Press, Albuquerque.

Clemens, Samuel L.
1872 Roughing it. American Publishing Co., Hartford, Connecticut.

Clemmer, Richard O.
* 1978 Pine nuts, cattle, and the Ely chain rip-off resource replacement vs. homeostatic equilibrium. In Selected papers from the 14th Great Basin Anthropological Conference, edited by Donald R. Tuohy. Ballena Press Publications in Archaeology, Ethnology and History 11:61-75.

Clewlow, C. William, Jr.
1968 Surface archaeology of the Black Rock Desert, Nevada. Reports of the University of California Archaeological Survey 73:1-94.

Clewlow, C. William, Jr. (editor)
* 1978 Four rock art studies. Ballena Press Publications on North American Rock Art 1. Socorro, New Mexico.

Cline, Gloria Griffen
1963 Exploring the Great Basin. University of Oklahoma Press, Norman.

1974 Peter Skene Ogden and the Hudson's Bay Company. University of Oklahoma Press, Norman.

Coale, George L.
1963 A study of Shoshonean pottery. Tebiwa 6(2):1-11.

Colley, Charles C.
1973 The struggle of Nevada Indians to hold their lands, 1847-1870. The Indian Historian 6:5-17.

Cooke, Anne M.
1938 The Northern Ute. In Tribal distribution in the Great Basin, W. Z. Park et al., pp. 627-630. American Anthropologist 40:622-638.

Condie, Kent C., and Alan B. Blaxland
1970 Appendix IX: sources of obsidian in Hogup and Danger Caves. In Hogup Cave, C. M. Aikens. University of Utah Anthropological Papers 93:275-281.

Cottam, Walter P., John M. Tucker, and Ruby Drobnick
1959 Some clues to Great Basin postpluvial climates pro-

vided by oak distributions. Ecology 40:361-377.

Cowan, Richard A.
1972 The archaeology Barrel Springs Site (NV-Pe-104), Pershing County, Nevada. Archaeological Research Facility, University of California, Berkeley.

Cowles, J.
1960 Cougar Mountain Cave in south central Oregon. Privately printed, Rainier, Oregon.

Crabtree, Robert H., and David D. Ferraro
1980 Artifact assemblages from the Pahranagat unintentional trespass act land sales parcels, Lincoln County, Nevada. Nevada Bureau of Land Management, Contributions to the Study of Cultural Resources, Technical Report 4.

Crane, William K., and John L. Eames
1950 Archeological reconnaissance, western Tooele and Box Elder Counties, Utah. Ms. on file, Department of Anthropology, University of Utah.

Creel, Cecil W.
1927 Agricultural Nevada. Nevada Newsletter 21: 69-70, 93, 95, 98.

Cressman, Luther S.
1940a Early man in the northern part of the Great Basin of south-central Oregon. Proceedings: Sixth Pacific Science Congress, 1939 4:169-176. University of California Press, Berkeley and Los Angeles.

1940b Studies on early man in south central Oregon. Carnegie Institute of Washington Yearbook 39:300-306.

1966 Man in association with extinct fauna in the Great Basin. American Antiquity 31:866-867.

Critchfield, W. B., and G. L. Allenbaugh
1969 The distribution of Pinaceae in and near northern Nevada. Madrono 20:12-26.

Cronquist, A., A. H. Holmgren, N. H. Holmgren, and J. L. Reveal
1972 Intermountain flora. Vascular plants of the Intermountain West, Vol. 1. Hafner, New York.

Currey, Donald R.
* 1965 An ancient bristlecone pine stand in eastern Nevada. Ecology 46:564-566.

1977 Appendix: Late Quaternary landforms of Great Salt Lake State Park and vicinity, Davis County, Utah. In

Perceptions of Utah: a field guide, edited by Deon C. Greer, pp. 85-89. Association of American Geographers, Washington, D. C. (Report prepared for the 1977 National Meetings of the Association of American Geographers, Salt Lake City).

1980a Coastal geomorphology of Great Salt Lake and vicinity. In Great Salt Lake: a scientific, historical, and economic overview, edited by J. Wallace Gwynn. Utah Geological and Mineral Survey Bulletin 116:69-82.

1980b Events associated with the last cycle of Lake Bonneville--Idaho, Nevada, and Utah. AMQUA Abstracts.

Currey, Donald R., and Steven R. James
1981 Paleoenvironments of the northeastern Great Basin and northeastern Basin rim region: a review of geological and biological evidence. In Man and Environment in the Great Basin, edited by David B. Madsen and James F. O'Connell. Society for American Archaeology Papers 2, in press.

Currey, Donald R., and David B. Madsen
1974 Holocene fluctuations of Great Salt Lake. Paper presented at the third biennial meeting of the American Quaternary Association, Madison.

Cutler, Hugh C.
1970 Appendix VII: Corn from Hogup Cave, a Fremont site. In Hogup Cave, C. M. Aikens. University of Utah Anthropological Papers 93:271-272.

Dahl, Albin J.
1964 Nevada's economic resources. University of Nevada Press, Reno.

Dalley, Gardiner F.
1970 Faunal remains. In Median Village and Fremont culture variation, John P. Marwitt. University of Utah Anthropological Papers 95:127-133.

1977a Swallow Shelter and associated sites. University of Utah Anthropological Papers 96.

1977b Appendix II: palynology of the Swallow Shelter deposits. In Swallow Shelter and associated sites, G. F. Dalley. University of Utah Anthropological Papers 96:171-174.

Davis, Emma Lou, and Richard Shutler, Jr.
1969 Recent discoveries of fluted points in California and Nevada. Nevada State Museum Anthropological Papers 14:154-169.

Davis, Jonathan O., and Robert Elston

1972 New stratigraphic evidence of late Quaternary climatic change in northwestern Nevada. In Great Basin cultural ecology: a symposium, edited by Don D. Fowler. Desert Research Institute Publications in the Social Sciences 8:43-55.

Day, Kent C., and David S. Dibble
1963 Archeological survey of the Flaming Gorge Reservoir area, Wyoming-Utah. University of Utah Anthropological Papers 65, Upper Colorado Series 9.

Defa, Dennis R.
1979 A history of the Gosiute Indians to 1900. Unpublished M.A. thesis, University of Utah.

Delano, Alonzo
1936 Across the plains and among the diggings. Wilson-Erickson, New York.

Delisio, Mario P.
1970 The natural and cultural stratigraphy of the Weston Canyon Rockshelter, southeastern Idaho. Unpublished M.A. thesis, Idaho State University, Pocatello.

1971 Preliminary report on the Weston Canyon Rockshelter, southeastern Idaho: a big game hunting site in the northern Great Basin. In Great Basin anthropological conference 1970 selected papers, edited by C. Melvin Aikens. University of Oregon Anthropological Papers 1:43-57.

Dellenbaugh, F. S.
1877 The Shinumos--a pre-historic people of the Rocky Mountain region. Buffalo Society of Natural Sciences Bulletin 3(4).

Desart, D. J.
1970 A study of Paiute and Shoshone pottery. Ms. on file, Western Studies Center, Desert Research Institute, Reno.

DeSmet, P. J.
1843 Letters and sketches: with a narrative of a year's residence among the Indian tribes of the Rocky Mountains. Philadelphia. (Reprinted 1906 in Thwaites' Early Western Travels, Vol. 27:123-411, Cleveland).

DeVoto, Bernard
1943 The year of decision: 1846. Houghton Mifflin Company, Boston.

Dibble, Charles E.
1939 Recent archaeological investigations of the Great Salt Lake region of Utah. Proceedings: 27th International Congress of Americanists 1:207-208.

1940 Some stone implements of the Deep Creek Area of Utah. In The archeology of the Deep Creek Region, Utah, C. Malouf, C. E. Dibble, and E. Smith. Museum of Anthropology, University of Utah, Archaeology and Ethnology Papers No. 5. (Reprinted in 1950 as University of Utah Anthropological Papers (1-9):65-70).

Dice, L. R.
1943 The biotic provinces of North America. University of Michigan Press, Ann Arbor.

Dodd, Walter A., Jr.
1980 Final year excavations at the Evans Mound Site. University of Utah Anthropological Papers, in press.

Dorn, Edward
1966 The Shoshoneans: the people of the Basin-Plateau. William Morrow, New York.

Douglas, H.
1870 (Communication in) Annual Report of the Commissioner of Indian Affairs for the Year 1870, pp. 94-101. Government Printing Office, Washington.

Downs, James
1966a The two worlds of the Washo. Holt, Rhinehart and Winston, New York.

1966b The significance of environmental manipulation in Great Basin cultural development. In The current status of anthropological research in the Great Basin: 1964, edited by W. L. d'Azevedo, W. A. Davis, D. D. Fowler, and W. Suttles. Desert Research Institute Social Sciences and Humanities Publications 1:39-56.

Drewes, Harold
* 1958 Structural geology of the southern Snake Range, Nevada. Geological Society of America Bulletin 69:221-240.

* 1967 Geology of the Connors Pass Quadrangle, Schell Creek Range, east-central Nevada. USGS Professional Papers 557.

Duffield, M. S.
1904 Aboriginal remains in Nevada and Utah. American Anthropologist 6:148-150.

Dunlop, Richard
1971 Great trails of the West. Abington Press, Nashville.

Dunnell, Robert C.
1979 Trends in current Americanist archaeology. American Journal of Archaeology 83:437-449.

1980 Americanist archaeology: the 1979 contribution. American

Journal of Archaeology 84:463-478.

Durrant, Stephen D.
1952 Mammals of Utah: taxonomy and distribution. University of Kansas Publications 6.

1970 Faunal remains as indicators of Neothermal climates at Hogup Cave. In Hogup Cave, C. M. Aikens. University of Utah Anthropological Papers 93:241-246.

Eardley, A. J., V. Gvosdetsky, and R. E. Marsell
1957 Hydrology of Lake Bonneville and sediments and soils of its basin. Geological Society of America Bulletin 68:1141-1202.

Egan, Howard R.
1917 Pioneering the West, 1846 to 1878, edited by William M. Egan. Howard R. Egan Estate, Richmond, Utah.

Elliot, Russell R.
* 1939 The early history of White Pine County, Nevada, 1865-1887. Pacific Northwest Quarterly 30:145-168.

1966 Nevada's twentieth-century mining boom. University of Nevada Press, Reno.

1973 History of Nevada. University of Nebraska Press, Lincoln.

Elliot, Russell R., and Helen J. Poulton
1963 Writings on Nevada: a selected bibliography. University of Nevada Press, Reno.

Emmons, S. F.
1910 A reconnaissance of some mining camps in Elko, Lander, and Eureka counties, Nevada. U. S. Geological Survey Bulletin 408.

Euler, Robert C.
1964 Southern Paiute archeology. American Antiquity 29(3):379-381.

1966 Southern Paiute ethnohistory. University of Utah Anthropological Papers 78.

Farnham, Thomas J.
1843 Travels in the great western prairies, the Arahuac and Rocky Mountains and in the Oregon Territory (2 Vols.). London.

Farris, Glenn J.
1980 A reassessment of the nutritional value of Pinus monophylla. Journal of California and Great Basin Anthropology 2:133-136.

Fautin, Reed W.
1946 Biotic communities of the northern desert shrub biome in western Utah. Ecology Monographs 16:251-310.

Fenenga, F., and R. F. Heizer
1941 The origin and authenticity of an atlatl and an atlatl dart from Lassen County, California. American Antiquity 7:134-141.

1942 Further notes on the Susanville atlatl. American Antiquity 8:120-122.

Fenneman, N. H.
1931 Physiography of western United States. McGraw-Hill, New York.

Firby, James R.
* 1979 Gastropods from Smith Creek and Council Hall caves and associated Lake Bonneville terrace, White Pine County, Nevada. In The archaeology of Smith Creek Canyon, eastern Nevada, edited by Donald R. Tuohy and Doris L. Rendall. Nevada State Museum Anthropological Papers 17:384-394.

Flannery, Kent V.
1968 Archeological systems, theory and early Mesoamerica. In Anthropological Archeology in the Americas, edited by Betty J. Meggers, pp. 67-87. Anthropological Society of Washington, Washington, D.C.

Fleming, C. E., and C. A. Brennen
1940 Range sheep production in northeastern Nevada. University of Nevada Agricultural Experiment Station Bulletin 151:5-31.

Follett, W. I.
1963 Fish remains from Deer Creek Cave, Elko County, Nevada. In Deer Creek Cave, Elko County, Nevada, by Mary Elizabeth Shutler and Richard Shulter, Jr. Nevada State Museum Anthropological Papers 11:31-32.

Fonner, R. L.
1957 Appendix B,b: mammal feces from Danger Cave. In Danger Cave, J. D. Jennings. University of Utah Anthropological Papers 27:303.

Forbes, Jack D.
1966 White-Indian relations in Nevada since the 1870's: a century of disappointment. Pacific Historian 10: 15-21.

1967 Nevada Indians speak. University of Nevada Press, Reno.

Fowler, Catherine Sweeney
1969 Great Basin anthropology--a bibliography. Desert Research Institute Publications in the Social Sciences 5.

1972a *Comparative Numic ethnobiology*. Ph.D. dissertation, University of Pittsburgh. University Microfilms No. 73-04998, Ann Arbor.

1972b Some ecological clues to proto-Numic homelands. In Great Basin cultural ecology, edited by D. D. Fowler. *Desert Research Institute Publications in the Social Sciences* 8:105-121.

1977 Ethnography and Great Basin prehistory. *Desert Research Institute Publications in the Social Sciences* 2:11-48.

1980 Food-named groups among the Northern Paiute of the Great Basin of North America: an ecological interpretation. In The regulation of environmental resources in food-collecting societies, *American Association for the Advancement of Science*, New York, in press.

Fowler, Catherine S., and Don D. Fowler
1971 Notes on the history of the Southern Paiutes and Western Shoshonis. *Utah Historical Quarterly* 39:95-113.

Fowler, Donald Dee
1965 *Cultural ecology and culture history of the Eastern Shoshoni Indians*. Ph.D. dissertation, University of Pittsburgh. University Microfilms No. 66-08124, Ann Arbor.

+ 1968a Archaeological survey in eastern Nevada, 1966. *Desert Research Institute Publications in the Social Sciences* 2.

* 1968b The archaeology of Newark Cave, White Pine County, Nevada. *Desert Research Institute Publications in the Social Sciences* 3.

1970 *The Western Fremont*. Paper presented at the thirty-fifth annual meeting of the Society for American Archaeology, Mexico City. Ms. on file, Department of Anthropology, University of Utah.

1973 Dated split-twig figurine from Etna Cave, Nevada. *Plateau* 46:54-63.

1980 History of Great Basin anthropological research, 1776-1979. *Journal of California and Great Basin Anthropology* 2:8-36.

Fowler, Don D. (editor)
1972 Great Basin cultural ecology: a symposium. *Desert Research Institute Publications in the Social Sciences* 8.

1973 The archeology of Etna Cave, Lincoln County, Nevada:

A reprint by S. M. Wheeler. Desert Research Institute Publications in the Social Sciences 7.

* 1975 Archeological reconnaissance of the Steptoe Creek region. Report submitted to the Nevada Highway Department under Nevada Archeological Survey Contract 81. Ms. on file, BLM Ely District Office, Ely, Nevada.

* 1976 Archeological survey of the Cave Lake State Recreation Area, White Pine County, Nevada. Ms. on file, BLM Ely District Office, Ely, Nevada.

Fowler, Don D., and Catherine S. Fowler (editors)
1971 Anthropology of the Numa: John Wesley Powell's manuscripts on the Numic Peoples of western North America, 1868-1880. Smithsonian Institution Contributions to Anthropology 14.

Fowler, Don D., David B. Madsen, and Eugene M. Hattori
* 1973 Prehistory of southeastern Nevada. Desert Research Institute Publications in the Social Sciences 6.

Fowler, Don D. and F. W. Sharrock
* 1973 Survey and test excavations. In Prehistory of southeastern Nevada, D. D. Fowler, D. B. Madsen and E. M. Hattori. Desert Research Institute Publications in the Social Sciences 6:97-136.

Fowler, Don D., Elizabeth Budy, Dennis DeSort, Joyce Bath, and Alma Smith
* 1978 Final report: Class II cultural resources field sampling inventory along proposed IPP transmission line corridors: Utah, Nevada, California. Desert Research Institute Publication No. 72004. Reno, Nevada.

Fowler, Don D., Lonnie Pippin, and Elizabeth Budy
* 1978 Preliminary report: Class II cultural resources field sampling inventory along proposed IPP transmission line corridors, Utah-Nevada. Desert Research Institute Publication No. 72006. Reno, Nevada.

Fremont, John Charles
1845 Report of the exploring expedition to the Rocky Mountains in the year 1842, and to Oregon and North California in the years 1843-44. 28th Congress, 2nd Session, House Executive Document 166 and Senate Executive Document 174. Gales and Seaton, Washington. Reprinted 1966, Readex Microprint Corp.

1887 Memoirs of my life. Clarke and Company, New York.

1956 Narratives of exploration and adventure, edited by Allen Nevins. Longmans, Green and Co., New York.

Frickstad, Walter N., and Edward W. Thrall

1958 A century of Nevada post offices, 1852-1957. Pacific Rotaprinting, Oakland.

Fry, Gary F.
1968 Prehistoric diet at Danger Cave, Utah: as determined by the the analysis of coprolites. Unpublished M.A. thesis, Department of Anthropology, University of Utah.

1970a Preliminary analysis of Hogup Cave coprolites. in Hogup Cave, C. M. Aikens. University of Utah Anthropological Papers 93:247-250.

1970b Prehistoric human ecology in Utah: based on the analysis of coprolites. Ph.D. dissertation, Department of Anthropology, University of Utah. University Microfilms No. 71-00926, Ann Arbor.

1970c Salt Lake Fremont. Paper presented at the thirty-fifth annual meeting of the Society for American Archaeology, Mexico City. Ms. on file, Department of Anthropology, University of Utah.

1972 Prehistoric territoriality: a case study from the eastern Great Basin. Paper presented at the Great Basin Anthropological Conference, Salt Lake City.

1977 Analysis of prehistoric coprolites from Utah. University of Utah Anthropological Papers 97.

1978 Prehistoric diet at Danger Cave, Utah, as determined by the analysis of coprolites. Miscellaneous Collected Papers No. 23. University of Utah Anthropological Papers 99:105-126.

Fry, Gary F., and James M. Adovasio
1970 Population differentiation in Hogup and Danger Caves, two archaic sites in the eastern Great Basin. In Five papers on the archaeology of the Desert West, edited by D. R. Tuohy, D. L. Kendall, and P. A. Crowell. Nevada State Museum Anthropological Papers 15:208-215.

1976 Human adaptation during the Altithermal in the eastern Great Basin. In Holocene environmental change in the Great Basin, edited by R. Elston. Nevada Archeological Survey Research Paper 6:66-73.

Fry, Gary F., and Gardiner F. Dalley
1979 The Levee Site and the Knoll Site. University of Utah Anthropological Papers 100.

Fry, Gary F., and Henry J. Hall
1969 Parasitological examination of prehistoric human coprolites from Utah. Proceedings: Utah Academy of Science, Arts, and Letters 46(2):102-105.

Fry, Gary F., and John G. Moore
1969 Enterobius vermicularis: 10,000 year old human infection. Science 166:1620.

Gaudy, Peggy
* 1979 Cultural resource record of the Moriah Planning Area, Ely District BLM. Ms. on file, Bureau of Land Management, Ely District Office, Ely, Nevada.

Georgetta, Clel.
1965 Sheep in Nevada. Nevada Historical Society Quarterly 8:17-38.

Gibson, Arrell M.
1976 The West in the life of the nation. D. C. Heath and Company, Lexington, Massachusetts.

Gilbert, G. K.
1890 Lake Bonneville. U.S. Geological Survey Monograph 1.

Gillen, John P.
1941 Archaeological investigations in central Utah. Peabody Museum of American Archaeology and Ethnology Papers 17(2).

Gilmore, H. W.
1953 Hunting habits of the early Nevada Paiute. American Anthropologist 55(1):148-153.

Goetzmann, William H.
1959 Army exploration in the American West, 1803-1863. Yale University Press, New Haven.

1967 Exploration and empire. Alfred A. Knopf, New York.

Goodrich, Robert B.
* 1965 The Quaternary mammalian microfaunal assemblage of Smith Creek Cave, Nevada. Unpublished M.A. thesis, California State University at Los Angeles.

Goodwin, Victor O.
1965 Development of the emigrant routes of northern Nevada. Nevada Historical Society Quarterly 8:27-39.

Goss, James A.
1964 Cultural development in the Great Basin. Utah Archaeology 10(2):8-13; 10(3):4-13; 10(4):4-12.

1972 Ute lexical and phonological patterns. Unpublished Ph.D. dissertation, University of Chicago.

1977 Linguistic tools for the Great Basin historian. In Models and Great Basin prehistory, edited by Don D. Fowler. Desert Research Institute Publications in the Social Sciences 12:49-70.

Gottfredsen, Peter
1919 History of Indian depredations in Utah. Skelton, Salt Lake City.

Gould, Richard A.
1967 Notes on hunting, butchering, and sharing of game among the Ngatatjara and their neighbors in the west Australian Desert. Kroeber Anthropological Society Papers 36:41-66. Berkeley.

1968 Chipping stones in the outback. Natural History 77(2):42-49.

1977a Ethno-archaeology; or, where do models come from? In Stone tools as cultural markers, edited by R. V. S. Wright, pp. 162-168. Australian Institute of Aboriginal Studies, Canberra; and Humanities Press, New Jersey.

1977b Puntutjarpa Rockshelter and the Australian Desert culture. Anthropological Papers of the American Museum of Natural History 54(1).

1978 Beyond analogy in ethnoarchaeology. In Explorations in ethnoarchaeology, edited by Richard A. Gould, pp. 249-293. University of New Mexico Press, Albuquerque.

Gould, Richard A., Dorothy A. Koster, and Ann H. L. Sontz
1971 The lithic assemblage of the Western Desert aborigines of Australia. American Antiquity 36:149-169.

Graham, Edward E.
1974 Fremont dental pathology and morphology. Ph.D. dissertation, Department of Anthropology, University of Utah. University Microfilms No. 75-8063, Ann Arbor.

Graham, Edward E. and John Burkart
1976 A preliminary analysis of antemortem tooth loss among the Fremont. American Antiquity 41:534-537.

Granger, A. E., M. M. Bell, C. G. Simmons and Florence Lee
+ 1957 Geology and mineral resources of Elko County, Nevada. Nevada Bureau of Mines Bulletin 54.

Grosscup, Gordon L.
1957 A bibliography of Nevada archaeology. University of California Archaeological Survey Reports 36.

1960 The culture history of Lovelock Cave, Nevada. University California Archaeological Survey Reports 52.

Gruhn, Ruth
1961 The archaeology of Wilson Butte Cave, south-central Idaho. Idaho State College Museum, Occasional Papers 6.

1965 Two early radiocarbon dates from the lower levels of Wilson Butte Cave, south-central Idaho. Tebiwa 8:57.

* 1979 Excavation in Amy's Shelter, eastern Nevada. In The archaeology of Smith Creek Canyon, eastern Nevada, edited by Donald R. Tuohy and Doris L. Rendall. Nevada State Museum Anthropological Papers 17:90-160.

Gunn, Joel D.

1974 The Hogup system: a causal analysis of prehistoric environ-technical interaction in the Desert West. Ph.D. dissertation University of Pittsburgh. University Microfilms No. 74-24174, Ann Arbor.

1975 An envirotechnological system for Hogup Cave. American Antiquity 40:3-21.

Gunnerson, James H.

1956 Plains-Promontory relationships. American Antiquity 21:412-414.

1957 An archeological survey of the Fremont area. University of Utah Anthropological Papers 28.

1960a An introduction to Plains Apache archaeology--Dismal River aspect. Bureau of American Ethnology Bulletin 173, Anthropological Paper 58:131-260.

1960b Fremont pottery. Ms. on file, Department of Anthropology, University of Utah.

1960c The Fremont culture: internal dimensions and external relationships. American Antiquity 25:373-380.

1962 Plateau Shoshonean prehistory: a suggested reconstruction. American Antiquity 28:41-45.

1963 The Fremont culture: a study in culture dynamics on the northern Anasazi frontier. Ph.D. dissertation, Harvard University.

1969 The Fremont culture: a study in culture dynamics on the the northern Anasazi frontier. Peabody Museum of American Archaeology and Ethnology Papers 59(2).

Hafen, Leroy R., and Ann W. Hafen (editors)

1955 To the Rockies and Oregon. The Arthur H. Clark Co., Glendale.

Hafen, LeRoy R., W. Eugene Hollon, and Carl C. Rister

1970 Western America. Prentice-Hall, Englewood Cliffs, New Jersey.

Hall, E. Raymond

1946 Mammals of Nevada. University of California Press, Berkeley and Los Angeles.

Hall, Henry J.
1969 Rehydration and concentration of parasite ova in human coprolites from the Great Basin. Unpublished B.A. honors thesis, Department of Anthropology, University of Utah.

Harpending, Henry, and Herbert Davis
1977 Some implications for hunter-gatherer ecology derived from the spatial structure of resources. World Archaeology 8(3):275-286.

Harper, Kimball T.
1967 The vegetational environment of the Bear Lake River No. 2 archeological site. In Excavations at Snake Rock Village and the Bear River No. 2 Site, C. M. Aikens. University of Utah Anthropological Papers 87:63-65.

Harper, Kimball T., and G. M. Alder
1970 The macroscopic plant remains of the deposits of Hogup Cave, Utah, and their paleoclimatic implications. In Hogup Cave, C. M. Aikens. University of Utah Anthropological Papers 93:215-240.

1972 Paleoclimatic inferences concerning the last 10,000 years from a resampling of Danger Cave, Utah. In Great Basin cultural ecology, edited by D. D. Fowler. Desert Research Institute Publications in the Social Sciences 8:13-23

Harrington, Edna Parker
* 1933 More kachina pictographs in Nevada. Masterkey 7(2):48-50.

Harrington, J. P.
1911 The origin of the names Ute and Paiute. American Anthropologist 13:173-174.

Harrington, Johns
* 1938 Lehman Caves. Desert Magazine 2(2):34. El Centro, California.

* 1939 Pit of the dead. Desert Magazine 2(5):27-28.

* 1943 Adventure in a Nevada cave. Desert Magazine 6(7):18-19.

Harrington, Mark R.
1925a Ancient salt mine near St. Thomas, Nevada. Museum of the American Indian, Heye Foundation, Indian Notes 2:227-231.

1925b Pueblo sites near St. Thomas, Nevada. Museum of the American Indian, Heye Foundation, Indian Notes 2:74-76.

1926a Another ancient salt mine in Nevada. Museum of the American Indian, Heye Foundation, Indian Notes

3(4):221-232.

1926b A pre-pueblo site on Colorado River. Museum of the American Indian, Heye Foundation, Indian Notes 3(4):274-284.

1926c Primitive pueblo ruin in northwestern Arizona. Museum of the American Indian, Heye Foundation Indian Notes 3(3):172-177.

1926d Western extension of early Pueblo culture. Museum of the American Indian, Heye Foundation, Indian Notes 3(2):69-73.

1927a. A hafted stone hammer from Nevada. Museum of the American Indian, Heye Foundation, Indian Notes 4(2):127-131.

1927b A primitive pueblo city in Nevada. American Anthropologist 29:262-277.

1928 Tracing the pueblo boundary in Nevada. Museum of the American Indian, Heye Foundation, Indian Notes 5(2):235-240.

1930a Ashes found with sloth remains. Science Newsletter 17(478):365.

1930b Curator's report. Masterkey 4:203-208.

1930c The Gypsum Cave murder case. Masterkey 4:37-42.

* 1932a More cave-hunting. Masterkey 6(4):119-121

* 1932b The Kachina Rockshelter in Nevada. Masterkey 6(5):148-151.

* 1932c Relics of an abandoned colony. Masterkey 6(4):115-116.

1933a Gypsum Cave. Southwest Museum Papers 8.

1933b Rescuing more ancient treasures. Masterkey 7:100-104.

* 1934a American horses and ancient men in Nevada. Masterkey 8(3):165-169.

* 1934b Researches by M. R. Harrington. Carnegie Institution of Washington Yearbook 33:306.

1934c Report of the Curator. Masterkey 8:54-55.

1934d A camel hunter's camp in Nevada. Masterkey 8:22-24.

* 1935 Report of the Curator. Masterkey 9(2):57-59.

Briefly discusses 1934 field work at Baker Creek Cave Smith Creek Cave, Etna Cave, and Lost City, all in eastern Nevada, and finds along Pleistocene Lake Bonneville.

* 1936 Smith Creek Cave. Masterkey 10(5):192.

1937a Report of the Curator. Masterkey 11:57-59.

1937b Ancient Nevada pueblo cotton. Masterkey 11:5-7.

1937c Ancient tribes of the Boulder Dam country. Southwest Museum Leaflets 9.

* 1938 Preliminary report on work of the Southwest Museum at Owl Cave, White Pine County, Nevada. Unpublished Ms. Southwest Museum, Los Angeles.

1940 Man and beast in Gypsum Cave. Desert Magazine 3(6):3-5, 34.

1941 Our oldest bone implement. Masterkey 15:232-234.

1944 Prehistoric dots and dashes. Masterkey 18(6):196-197.

Harrington, M. R., and Ruth D. Simpson
1961 Tule Springs, Nevada, with other evidences of Pleistocene man in North America. Southwest Museum Papers 18.

Harrington, W. P.
1927 Highway development in Nevada. Nevada Newsletter 21:59-60, 89, 91, 98.

Harris, Jack S.
1940 The White Knife Shoshoni of Nevada. In Acculturation in seven American Indian tribes, edited by Ralph Linton, pp. 39-116. Appleton, New York. Reprinted in 1963, Peter Smith, Gloucester, Mass.

Harris, Robert P.
1973 Nevada postal history: 1861 to 1972. Nevada Publications, Las Vegas.

Hayden, B.
1977 Stone tools functions in the Western Desert. In Stone tools as cultural markers, edited by R. V. S. Wright, pp. 178-188. Australian Institute of Aboriginal Studies, Canberra; and Humanities Press, New Jersey.

Hayden, F. V.
1871 Preliminary report (fourth annual) of the United States Geological Survey of Wyoming and portions of contiguous territories (being a second annual report of progress). U.S. Geological Survey Territories, Fourth Annual Report.

Haynes, C. Vance, Jr., A. R. Doberenz, and Jack Allen
1966 Geological and geochemical evidence concerning the antiquity of bone tools from Tule Springs, Site 2, Clark County, Nevada. American Antiquity 31:517-521.

Head, F. H.
1868 Utah superintendency, No. 42. In Report of the Secretary of the Interior, Part II--Report on Indian affairs by the Acting Commissioner for the year 1867, pp. 173-180. Government Printing Office, Washington.

Heider, Karl
1979 Grand Valley Dani: peaceful warriors. Holt, Rinehart, and Winston, New York.

Heizer, Robert F. (editor)
1954 Notes on the Utah Utes by Edward A. Palmer, 1866-1877. University of Utah Anthropological Papers 17. Also, 1962, Utah Archaeology 8(3):7-14.

Heizer, Robert F., and Martin A. Baumhoff
1959 Great Basin petroglyphs and prehistoric game trails. Science 129:904-905.

1961 The archaeology of two sites at Eastgate, Churchill County, Nevada. I. Wagon Jack Shelter. University of California Anthropological Records 20(4).

1962 Prehistoric rock art of Nevada and eastern California. University of California Press, Berkeley and Los Angeles.

1970 Big game hunters in the Great Basin: a critical review of the evidence. Contributions of the University of California Archaeological Research Facility 7:1-12.

Heizer, Robert, Martin A. Baumhoff, and C. W. Clewlow
* 1968 Archaeology of South Fork Shelter (NV-EL-11), Elko County, Nevada. Reports of the University of California Archaeological Survey 71:1-58.

Heizer, R. F., and R. Berger
1970 Radiocarbon age of the Gypsum culture. Contributions of the University of California Archaeological Research Facility 7:13-18.

Heizer, Robert F., and C. William Clewlow
1973 Prehistoric rock art of California (2 vols.). Ballena Press, Ramona, California.

Heizer, R. F., and T. R. Hester
* 1974 Two petroglyph sites in Lincoln County, Nevada. Contributions of the University of California Archaeological Research Facility 20:1-52. Reprinted

1978 in Four rock art studies, edited by C. W. Clewlow, Jr. Ballena Press Publications on North American Rock Art 1.

1978a Great Basin. In Chronologies in New World Archaeology, edited by R. E. Taylor and Clement W. Meighan, pp.147-199. Academic Press, New York.

1978b Great Basin projectile points: forms and chronology. Ballena Press Publications in Archaeology, Ethnology, and History 10.

Heizer, R. F., and A. D. Krieger
1956 The archaeology of Humboldt Cave, Churchill County, Nevada. University of California Publications in American Archaeology and Ethnology 47(1).

Heizer, R. F. and L. K. Napton
1969 Biological and cultural evidence from prehistoric human coprolites. Science 165:563-568.

1970 Archaeological investigations in Lovelock Cave, Nevada. Contributions of the University of California Archaeological Research Facility 7:44-54.

Henderson, Mark
* 1979 Cultural resources survey for 21 shallow geothermal drill holes near Monte Neva, Steptoe Valley. In Oil and gas/geothermal program inventories. Nevada Bureau of Land Management, Contributions to the Study of Cultural Resources, Technical Report 3.

Hester, Thomas R.
1973 Chronological ordering of Great Basin prehistory. Contributions of the University of California Archaeological Research Facility 27.

1977 Archaeological materials from a site in the Black Rock Desert of northern Nevada. Contributions of the University of California Archaeological Research Facility 35:1-15.

Hester, Thomas R., and Robert F. Heizer
1973 Review and discussion of Great Basin projective points: form and chronology. University of California Archaeological Research Facility, Non-Serial Publications.

Hester, Thomas R., Robert F. Heizer, and John A. Graham
1975 Field methods in archaeology. Mayfield Publishing Company, Palo Alto, California.

Hester, Thomas R., and Lucy R. Jameson
1977 Evidence for the early occupation of the Washoe Lake Basin. Contributions of the University of California Archaeological Research Facility 35:17-22.

Hester, Thomas R., and Michael P. Mildner
* 1974 An atlatl from Council Hall Cave, Nevada. In Great Basin atlatl studies, T. R. Hester, M. P. Mildner, and L. Spencer. Ballena Press Publications in Archeology, Ethnology and History 2:33-35. Ramona, California.

Describes one of two atlatls recovered by M. R. Harrington in 1924 or 1925 from Council Hall Cave and now in collections of the Museum of the American Indian, New York.

Higgins, L. James, Jr.
1975 A guide to the manuscript collections at the Nevada Historical Society. Nevada Historical Society, Reno.

Higgins, L. James, Jr., Eric N. Moody, and Lee Mortensen
1974 A preliminary checklist of the Nevada Historical Society. Nevada Historical Society, Reno.

Hill, Joseph J.
1930 Spanish and Mexican explorations and trade northwest from New Mexico into the Great Basin, 1765-1853. Utah Historical Quarterly 3:3-23.

Hill, James M.
1916 Notes on some mining districts in eastern Nevada. U. S. Geological Survey Bulletin 648.

Hintze, Lehi F.
1973 Geologic history of Utah. Brigham Young University Geology Studies 20(3).

Hodge, F. N. (editor)
1907-1910
Handbook of the American Indians, north of Mexico. Bureau of American Ethnology Bulletin 30 (Parts 1 and 2).

Hodge, F. W.
* 1937 Report of the Director. Masterkey 11(2):42-52.

Hoffman, W. J.
1878 Miscellaneous ethnographic observations on Indians inhabiting Nevada, California and Arizona. Tenth Annual Report of the United States Geological and Geographical Survey of the Territories--Being a Report of the Progress of Exploration for the Year 1876. Government Printing Office, Washington.

Holeman, J. H.
1853 [Report in] Report to the commissioner of Indian Affairs for 1855, pp. 443-447. Washington.

Holmer, Richard N.
1978 A mathematical typology for Archaic projectile points of the eastern Great Basin. Ph.D. dissertation, University of Utah. University Microfilms, Ann Arbor.

Holmer, Richard N., and Dennis G. Weder
1980 Common post-Archaic projectile points of the Fremont area. In Fremont perspectives, edited by David B. Madsen. Antiquities Section Selected Papers 7(16):55-68. Utah State Historical Society, Salt Lake City.

Holliman, Rhodes B.
1967 Engraved basalt stones from the Great Salt Desert, Utah. Southwestern Lore 32(4):86-87.

1969 Further studies on incised stones from the Great Salt Lake Desert, Utah. Southwestern Lore 35(2):23-25.

Holmgren, A. H.
1942 A handbook of the vascular plants of northeastern Nevada. Utah Agricultural Experiment Station, Logan, Utah.

Hope, R. A., and R. R. Coats
* 1976 Preliminary geologic map of Elko County, Nevada. U. S. Geological Survey Open-file Map 76-779, scale 1:100,000.

Hopkins, N. A.
1965 Great Basin prehistory and Uto-Aztecan. American Antiquity 31:48-60.

Hopkins, M. L., and B. Robert Butler
1961 Remarks on a notched fossil bison ischium. Tebiwa 4(2):10-18.

Hopkins, Sara Winnimuca
1883 Life among the Paiutes: their wrongs and claims. Boston.

Hose, Richard K., and M. D. Blake, Jr.
* 1976 Geology, Part I. In Geology and mineral resources of White Pine County, Nevada. Nevada Bureau of Mines and Geology Bulletin 85:1-32.

Houghton, J. G., C. M. Sakamoto, and R. O. Gifford
1975 Nevada's weathers and climate. Nevada Bureau of Mines and Geology, Special Publication 2. University of Nevada, Reno.

Howard, Hildegarde
* 1935 A new species of eagle from a Quaternary cave deposit in eastern Nevada. Condor 37:206-209.

* 1952 The prehistoric avifauna of Smith Creek Cave, Nevada, with a description of a new gigantic raptor. Bulletin of Southern California Academy of Science 51:50-54.

Hubbs, Carl L., and Robert R. Miller

1948 The Great Basin, with emphasis on glacial and postglacial times: the zoological evidence. Bulletin of the University of Utah 38(20):17-166.

Hull, Frank W.
1977 Appendix III: comparative pollen sampling techniques at Remnant Cave. In Swallow Shelter and associated sites, G. F. Dalley. University of Utah Anthropological Papers 96:175-179.

Hulse, James W.
* 1957 Boom and bust government in Lincoln County, Nevada, 1866-1909. Nevada Historical Society Quarterly: 65-80.

* 1971 Lincoln County, Nevada: 1864-1909. University of Nevada Press, Reno.

1972 The Nevada adventure: a history. University of Nevada Press, Reno.

Humphrey, Fred L.
* 1960 Geology of the White Pine Mining District, White Pine County, Nevada. Nevada Bureau of Mines Bulletin 57.

Humphrey, Robert L.
1979 Foreword. In Pre-Llano cultures of the Americas: paradoxes and possibilities, edited by Robert L. Humphrey and Dennis Stanford, pp. v-ix. The Anthropological Society of Washington, Washington, D.C.

Hungerford, Edward
1949 Wells Fargo: advancing the American frontier. Bonanza Books, New York.

Hunt, Charles B.
1974 Natural regions of the United States and Canada. W. H. Freeman, San Francisco.

Hunt, Charles B., and Roger B. Morrison
1957 Geology of Danger and Juke Box Caves, near Wendover, Utah. In Danger Cave, by Jesse D. Jennings. University of Utah Anthropological Papers 27: 298-301.

Huntington, Oliver Boardman
n.d. Diary of Oliver Boardman Huntington. 1842-1900. Ms. on file, Church of Jesus Christ of Latter Day Saints Historian's Office, Salt Lake City.

Hurley, Lulu Belle
+ 1910 The history of the development of Elko County. B. A. thesis, University of Nevada.

Hurt, Garland

1857 [Report in] Report to the Commissioner of Indian Affairs for 1856, pp. 224-232. Washington.

Husted, W. M. and O. L. Mallory
1967 The Fremont culture: its derivation and ultimate fate. Plains Anthropologist 12:222-232.

Ingalls, Walter Renton
* 1907 The copper mines of Ely, Nevada. The Engineering and Mining Journal:675-83.

Inter-Tribal Council of Nevada
1976a Newe: a Western Shoshone history. Inter-Tribal Council of Nevada, Reno.

1976b Nuwuvi: a Southern Paiute history. Inter-Tribal Council of Nevada, Reno.

Irish, O. H.
1865 Report No. 28. In Report of the Commissioner of Indian Affairs for the Year 1865, pp. 145-146. Government Printing Office, Washington.

Irving, Washington
1881 The works of Washington Irving in three volumes. Peter Fenelon Collier, New York.

Ives, R. L.
1946 Glaciation in the desert ranges, Utah. Journal of Geology 54:335.

Jackson, Donald, and Mary Lee Spence (editors)
1970 The expeditions of John Charles Fremont. University of Illinois Press, Urbana.

Jackson, W. Turrentine
1963 Treasure Hill: portrait of a silver mining camp. University of Arizona Press, Tucson.

1964 Wagon roads West. Yale University Press, New Haven.

James, Steven R.
1978 Archaeological investigations in Lincoln, Nye, and White Pine counties. Paper presented at the 1978 Great Basin Anthropological Conference, Reno, Nevada.

1979 Archaeological and historical record of eastern Nevada: White River and Lake Valley/Wilson Creek Planning Units. Ms. on file, Bureau of Land Management, Ely District Office, Ely, Nevada.

James, Steven R., and David J. Singer
1980 Cultural resources existing data inventory, Salt Lake District, Utah. University of Utah Archeological Center,

Reports of Investigations 80-17.

Janetski, Joel C.
1980a Implications of snare bundles in the Great Basin and Southwest. Journal of California and Great Basin Anthropology 1:306-321.

1980b Western Ute ethnohistory. Paper presented at 1980 Great Basin Anthropological Conference, Salt Lake City.

Jennings, Jesse D.
1953 Danger Cave: a progress summary. El Palacio 60(5):179-213.

1956a Early man in the West. Utah Archaeology 2(3):2-5.

1956b Radiocarbon dates from Danger Cave. Utah Archaeology 2(2):3-6. Reprinted 1969, Utah Archaeology 15(3):17-21.

1957 Danger Cave. University of Utah Anthropological Papers 27. Also, Society for American Archaeology, Memoir 14.

1960 Early man in Utah. Utah Historical Quarterly 28(1):3-17.

1964 The Desert West. In Prehistoric man in the New World, edited by J. D. Jennings and E. Norbeck, pp. 149-174. University of Chicago Press, Chicago.

1966a Early man in the Desert West. Quaternaria 8:81-89.

1966b Glen Canyon: a summary. University of Utah Anthropological Papers 81, Glen Canyon Series 31.

1968 The prehistory of North America. McGraw-Hill, New York.

1973 The short useful life of a simple hypothesis. Tebiwa 16(1):1-9.

1974 The prehistory of North America (second ed.). McGraw-Hill, New York.

1975 Desert dwellers with few resources: 10,000 years of Utah prehistory. Leigh Lecture, 1975. Ms. on file, Department of Anthropology, University of Utah.

1978 Prehistory of Utah and the eastern Great Basin. University of Utah Anthropological Papers 98.

Jennings, Jesse D., and Edward Norbeck
1955 Great Basin prehistory: a review. American Antiquity 21:1-11.

Jennings, Jesse D., and Others
1956 The American Southwest: a problem in cultural isolation. In Seminars in archaeology: 1955, edited by R. Wauchope.

Memoirs of the Society for American Archaeology 11:59-127.

Jensen, Andrew (compiler)
n.d. White Mountain Mission. Ms on microfilm, LDS Church Archives, Salt Lake City, Utah.

Judd, Neil M.
1916 Archeological reconnaissance in western Utah. Smithsonian Miscellaneous Collections 66(3):64-71.

1917 Notes on certain prehistoric habitations in western Utah. Proceedings: Nineteenth International Congress of Americanists, 1915, pp. 119-124.

1926 Archeological observations north of the Rio Colorado. Bureau of American Ethnology Bulletin 82.

Kautz, Robert R., and David Hurst Thomas
1972 Palynological investigations of two prehistoric cave middens in central Nevada. Tebiwa 15(2):43-54.

Keller, Gordon N., and John D. Hunt
1967 Lithic materials from Escalante Valley, Utah. Miscellaneous Paper 17, University of Utah Anthropological Papers 89:51-59.

Kelly, Charles
1930 Jedediah Smith on the Salt Desert Trail. Utah Historical Quarterly 3(1):23-27, (2)35-52.

Kelly, Isabel T.
1934 Southern Paiute bands. American Anthropologist 36:548-560.

1964 Southern Paiute ethnography. University of Utah Anthropological Papers 69.

Kelso, Gerald
1970 Appendix IV: Hogup Cave, Utah: comparative pollen analysis of human coprolites and cave fill. In Hogup Cave, C. Melvin Aikens. University of Utah Anthropological Papers 93:251-262.

Kern, Edward M.
1876 Journal of Mr. Edward Kern of an exploration of Mary's or Humboldt River, Carson Lake and Owens River and Lake. Appendix Q in Report of explorations across the Great Basin of the Territory of Utah for a direct wagon route from Camp Floyd to Genoa in Carson Valley in 1859 by Capt. J. H. Simpson. Government Printing Office, Washington.

Kleihampl, F. J., and J. I. Ziony
* 1967 Preliminary geological map of northern Nye County,

Nevada. USGS Open-file Map (NBM-15), scale 1:200,000.

Kobori, Larry S., and Herbert C. Covert
* 1979 Analysis of two faunal assemblages: Slivovitz Rockshelter and Avocado Rockshelter. In The prehistory and human ecology of Garden and Coal Valleys: a contribution to the prehistory of southeastern Nevada, by Colin I. Busby. Contributions of the University of California Archaeological Research Facility 39:245-257.

Krieger, Alex D.
1964 Early man in the New World. In Prehistoric man in the New World, edited by Jesse D. Jennings and Edward Norbeck, pp. 23-81. University of Chicago Press, Chicago.

Kroeber, A. L.
1934 Native American population. American Anthropologist 22:272-277.

1939 Cultural and natural areas of native North America. University of California Publications in American Archaeology and Ethnology 38.

LaMarche, Valmore R.
1974 Paleoclimatic inferences from long tree-ring records. Science 183:1043-1048.

Lamb, Sydney M.
1958 Linguistic prehistory in the Great Basin. International Journal of American Linguistics 24(2):95-100.

Lane, Richard Harris
1974 The cultural ecology of sheep nomadism: northeastern Nevada. Ph.D. dissertation, Yale University. University Microfilms No. 75-1376, Ann Arbor.

Lange, Arthur L.
* 1952 The Baker Creek caves. Monthly report of the Stanford Grotto, National Speleological Society 2:105-108. Palo Alto, California.

Lanning, E. P.
1963 Archaeology of the Rose Spring Site INY-372. University of California Publications in American Archaeology and Ethnology 49(3):237-336.

LaRivers, Ira
1962 Fishes and fisheries of Nevada. Nevada State Fish and Game Commission Publication 401.

Laxalt, Robert.
1977 Nevada: a Bicentennial history. W. W. Norton and Company, New York.

Layton,Thomas N.
1970 High Rock archaeology. Unpublished Ph.D. dissertation, Harvard University.

1972a Lithic chronology in the Fort Rock Valley, Oregon. Tebiwa 15(2):1-21.

1972b A 12,000 year obsidian hydration record of occupation, abandonment and lithic change from the northwestern Great Basin. Tebiwa 15(2):22-28.

1979 Archaeology and paleo-ecology of pluvial Lake Parman, northwestern Great Basin. Journal of New World Archaeology 3(3):41-56.

Layton, Thomas N., and David Hurst Thomas
1979 The archaeology of Silent Snake Springs, Humboldt County, Nevada. American Museum of Natural History Anthropological Papers 55(3).

Leonard, Paul A.
* 1947 White Pine County. The Nevada Magazine 3:10-15.

Leonard, Zenas
1904 Adventures of Zenas Leonard fur trapper and trader, 1831-1836, edited by W. F. Wagner. The Burrows Company, Cleveland.

1978 Narrative of the Adventures of Zenas Leonard, edited by Milo M. Quaite. Bison Press, Lincoln, Nebraska.

Lewis, Mont E.
1971 Flora and major plant communities of the Ruby-East Humboldt Mountains with special emphasis on Lamoille Canyon. Report printed by the Humboldt National Forest, Region 4, U. S. Forest Service, Elko, Nevada.

Libby, W. F.
1952 Chicago radiocarbon dates, III. Science 116:673-681.

Lincoln, Francis Church
1923 Mining districts and mineral resources of Nevada. Nevada Newsletter Publishing Company, Reno.

Lindsay, La Mar W., and Kay Sargent
1979 Prehistory of the Deep Creek Mountain area, western Utah. Antiquities Section Selected Papers 6(14):1-64. Division of State History, Salt Lake City.

Linsdale, Jean M.
1936 The birds of Nevada. Cooper Ornithological Club Pacific Coast Avifauna 23.

1940 Amphibians and reptiles in Nevada.

Linton, Ralph V. (editor)
1940 Acculturation in seven American Indian Tribes. D. Appleton, New York. Reprinted in 1963, Peter Smith, Gloucester, Mass.

Loomis, Noel M.
1968 Wells Fargo. Clarkson N. Potter.

Loope, L. L.
1969 Subalpine and alpine vegetation of northeastern Nevada. Unpublished Ph.D. dissertation, Duke University.

Loud, Llewellyn L., and Mark R. Harrington
1929 Lovelock Cave. University of California Publications in American Archaeology and Ethnology 25(1).

Lowie, Robert H.
1909 The Northern Shoshoni. American Museum of Natural History Anthropological Papers 2:169-306.

1924 Notes on Shoshonean ethnography. American Museum of Natural History Anthropological Papers 20(3):187-314.

Lynch, Mark, and Lawrence H. Robbins
1977 Animal brands and the interpretation of rock art in East Africa. Current Anthropology 18:538-539.

McCague, James
1964 Moguls and iron men: The story of the first transcontinental railroad. Harper and Row, New York.

McGonagle, Roberta L., and Lynda L. Waski
1978 Archaeological survey of springs in the Tonopah Resource Area. Nevada Bureau of Land Management, Contributions to the Study of Cultural Resources, Technical Report 2.

McGuire, Kelly R.
+ 1980 Cave sites, faunal analysis, and big-game hunters of the Great Basin: a caution. Quaternary Research 14:263-268.

Mack, Effie Mona, and Byrd Wall Sawyer
1965 Here is Nevada: a history of the state. Western Printing and Publishing Co., Reno.

McLane, Alvin
+ 1968 Letter regarding Elko County Caves. On file at the Nevada State Museum, Carson City.

McMillan, Calvin
1948 A taxonomic and ecological study of the flora of the Deep Creek Mountains of central western Utah. Unpublished M.A. thesis, University of Utah.

Madsen, David B.
1971 O'Malley Shelter. Unpublished M.A. thesis, University of Utah.

1972 Paleoecological investigations in Meadow Valley Wash, Nevada. In Great Basin cultural ecology: a symposium, edited by Don D. Fowler. Desert Research Institute Publications in the Social Sciences 8:57-68.

1973 Late quaternary paleoecology in the Southeastern Great Basin. Unpublished Ph.D. dissertation, University of Missouri.

1973 The pollen analysis of O'Malley Shelter. In Prehistory of southeastern Nevada, D. D. Fowler, D. B. Madsen, and E. M. Hattori. Desert Research Institute Publications in the Social Sciences 6:137-142.

1975 Dating Paiute-Shoshoni expansion in the Great Basin. American Antiquity 40(1):82-86.

1976 Pluvial-post-pluvial vegetation changes in the southeastern Great Basin. In Holocene environmental change in the Great Basin, edited by Robert Elston, pp. 104-119. Nevada Archeological Survey Research Paper 6.

1978 Recent data bearing on the question of a hiatus in the eastern Great Basin. American Antiquity 43:508-509.

1979a Great Salt Lake Fremont ceramics. In the Levee Site and the Knoll Site, Gary F. Fry and Gardiner F. Dalley. University of Utah Anthropological Papers 100:79-100.

1979b The Fremont and the Sevier: defining prehistoric agriculturalists north of the Anasazi. American Antiquity 44(4):711-722.

1980a Fremont/Sevier subsistence. In Fremont perspectives, edited by David B. Madsen. Antiquities Section Selected Papers 7(16):25-33.

1980b The human prehistory of the Great Salt Lake Region. In Great Salt Lake: a scientific, historical and economic overview, edited by J. Wallace Gwynn. Utah Geological and Mineral Survey 116:19-31.

Madsen, David B., and Michael S. Berry
1975 A reassessment of northeastern Great Basin prehistory. American Antiquity 40:391-405.

Madsen, D. B., and D. R. Currey
1979 Late Quaternary glacial and vegetation changes, Little Cottonwood Canyon area, Wasatch Mountains, Utah. Quaternary Research. 12:254-270

Madsen, David B., Donald R. Currey, and James H. Madsen
1976 Man, mammoth, and lake fluctuations in Utah. *Antiquities Section Selected Papers* 2(5):43-58. *Division of State History, Salt Lake City.*

Madsen, David B., and LaMar W. Lindsay
1977 Backhoe Village. *Antiquities Section Selected Papers* 4(12). *Utah State Historical Society, Salt Lake City.*

Madsen, Rex
1977 Prehistoric ceramics of the Fremont. *Museum of Northern Arizona Ceramic Series* 6.

1978 Topography, climate, and soil types as indicators of Fremont regional variation. *Tebiwa* 12.

Magee, Molly
1964 A flat-bottomed earthenware vessel from central Nevada. *American Antiquity* 30:96-98.

1966 The Grass Valley horse. *Plains Anthropologist* 11(33):204-207.

1967 A report on perforated sherds from central Nevada with a tentative suggestion for their use. *American Antiquity* 32:226-227.

Malouf, Carling I.
1939 Prehistoric exchange in Utah. *Museum of Anthropology, University of Utah, Archaeology and Ethnology Papers* 1. *Reprinted in 1950 as Paper No.* 1, *University of Utah Anthropological Papers* 1-9:1-7.

1940a Prehistoric exchange in the Northern Periphery of the of the Southwest. *American Antiquity* 6:115-122.

1940b The Gosiute Indians. *Museum of Anthropology, University of Utah, Archaeology and Ethnology Papers* 3. Reprinted in 1950 as Paper No. 3, *University of Utah Anthropological Papers* 1-9:33-42.

1940c *A study of the Gosiute Indians.* M.A. thesis, University of Utah, Salt Lake City.

* 1940d The archeology of sites along Fifteen-Mile Creek. In The archeology of the Deep Creek region, Utah, Carling Malouf, Charles E. Dibble, and Elmer R. Smith. *Museum of Anthropology, University of Utah, Archaeology and Ethnology Papers* 5. *Reprinted in 1950* as Paper No. 5, *University of Utah Anthropological Papers* 1-9:50-64.

1944 Thoughts on Utah archaeology. *American Antiquity* 3:319-328.

* 1946 The Deep Creek region, the northwestern frontier of the

Pueblo culture. American Antiquity 12:117-121.

1966 Ethnohistory in the Great Basin. In The current status of anthropological research in the Great Basin:1964, edited by W. L. d'Azevedo et al. Desert Research Institute Social Sciences and Humanities Publications 1:1-28.

1974 The Gosiute Indians. In Shoshone Indians, edited by D. A. Horr, pp. 25-172. Garland Publishing, New York.

Malouf, Carling, Charles E. Dibble, and Elmer R. Smith
* 1940 The archeology of the Deep Creek region. Museum of Anthropology, University of Utah, Archaeology and Ethnology Papers 5. Reprinted in 1950 as Paper No. 5, University of Utah Anthropological Papers 1-9:49-75.

Malouf, Carling, and A. Arline Malouf
1972 The effects of Spanish slavery on the Indians of the Intermountain West. In The emergent Native Americans, edited by D. E. Walker, Jr., pp. 426-35. Little, Brown and Company, Boston.

Malouf, Carling I., and Elmer R. Smith
1947 Some Gosiute mythological characters and concepts. Utah Humanities Review 1(3):369-377.

Mallery, Garrick
1886 Pictographs of the North American Indians; a preliminary paper. Fourth Annual Report of the Bureau of American Ethnology, 1882-83, pp. 3-256.

1893 Picture-writing of the American Indians. Tenth Annual Report of the Bureau of American Ethnology, 1888-89, pp. 3-822.

Manners, Robert A.
1974 Southern Paiute and Chemehuevi: An ethnohistorical report. In Paiute Indians I, edited by D. A. Horr. Garland Publishing, New York.

Martin, Paul S.
1963a Early man in Arizona: the pollen evidence. American Antiquity 29:67-73.

1963b The last 10,000 years. University of Arizona Press, Tucson.

Martin, Paul S., and Peter J. Mehringer, Jr.
1965 Pleistocene pollen analysis and biogeography of the Southwest. In The Quaternary of the United States, edited by H. E. Wright, Jr. and D. G. Frey, pp. 433-451. Princeton University Press, Princeton, New Jersey.

Martineau, LaVan
1973 The rocks begin to speak. KC Publications, Las Vegas.

Marwitt, John P.
1970 Median village and Fremont culture regional variation. University of Utah Anthropological Papers 95.

1979 Comment by Marwitt. American Antiquity 44:732-736.

Marwitt, John P., Gary F. Fry, and James M. Adovasio
1971 Sandwich Shelter. In Great Basin anthropological conference 1970 selected papers, edited by C. Melvin Aikens. University of Oregon Anthropological Papers 1:27-36.

Marwitt, John P., and Gary F. Fry
1973 Radiocarbon dates from Utah. Southwestern Lore 38(4):1-9.

Mathews, Barbara S.
* 1972 Rock art sites in Lincoln County, Nevada. Ms. on file, Lincoln County Historical Museum and Library, Pioche, Nevada.

Mehringer, Peter J., Jr.
1977 Great Basin late Quaternary environments and chronology. In Models and Great Basin prehistory: a symposium, edited by Don D. Fowler. Desert Research Institute Publications in the Social Sciences 12:113-168.

Mehringer, Peter J., Jr., Eric Blinman, and Kenneth L. Petersen
1977 Pollen influx and volcanic ash. Science 198:257-261.

Mehringer, Peter J., William P. Nash, and Richard H. Fuller
1971 A Holocene volcanic ash from northwestern Utah. Proceedings: Utah Academy of Sciences, Arts, and Letters 48(1):46-51.

Meighan, Clement W., Norman E. Coles, Frank D. Davis, Geraldine M. Greenwood, William M. Harrison, and E. Heath MacBain
1956 Archeological excavations in Iron County, Utah. University of Utah Anthropological Papers 25.

Meinzer, Oscar E.
1922 Map of Pleistocene lakes of the Basin-and-Range Province and its significance. Geological Society of America Bulletin 33:541-552.

Mielke, James H. and Dennis P. Van Gerven
1978 Appendix: Human skeletal analysis from Bear River No. 3. In The Bear River No. 3 Site, Wayne F. Shields and Gardiner F. Dalley. Miscellaneous Collected Papers No. 22. University of Utah Anthropological Papers 99:101-104.

Mifflin, M. D., and M. M. Wheat
1979 Pluvial lakes and estimated pluvial climates of Nevada. Nevada Bureau of Mines and Geology Bulletin 94.

Miller, B. F.
1924 Nevada in the making. Nevada State Historical Society,

Reno.

Miller, Meredith R, George Hardman, and Howard G. Mason
1953 Irrigation waters of Nevada. University of Nevada Agricultural Experiment Station Bulletin No. 187.

Miller, Susanne J.
* 1979 The archaeological fauna of four sites in Smith Creek Canyon. In The archaeology of Smith Creek Canyon, eastern Nevada, edited by Donald R. Tuohy and Doris L. Rendall. Nevada State Museum Anthropological Papers 17:272-329.

Miller, Susanne J., and Wakefield Dort, Jr.
1978 Early Man at Owl Cave: current investigations at the Wasden Site, eastern Snake River Plain, Idaho. In Early Man in America: from a circum-Pacific perspective, edited by Alan L. Bryan. Department of Anthropology, University of Alberta Occasional Papers 1:129-139.

Miller, Wick R.
1966 Anthropological linguistics in the Great Basin. In Current status of anthropological research in the Great Basin: 1964, edited by W. L. d'Azevedo et al. Desert Research Institute Social Sciences and Humanities Publications 1:75-112.

1970 Western Shoshoni dialects. In Languages and cultures of western North America, edited by Earl H. Swanson, Jr., pp. 17-36. Idaho State University Press, Pocatello.

1972 Newe Natekwinappeh: Shoshoni stories and dictionary. University of Utah Anthropological Papers 94.

Miluck, Nancy C.
1978 Nevada: this is our land. Dragon Enterprises, Genoa, Nevada.

Mitchell, Jimmy L., Paula Rosa, Stanley Castagnetto, and Thomas R. Hester
1977 A preliminary statistical analysis of chipped crescents from the Great Basin. Contributions of the University of California Archaeological Research Facility 35:23-48.

Mitchell, Samuel A.
1867 County map of Utah and Nevada. W. H. Gamble, Philadelphia.

Moen Associates
+ 1979 Cultural resources technical report for Jerritt Canyon Project, Humboldt National Forest. Ms. on file, Bureau of Land Management, Elko District Office, Elko, Nevada.

Moody, Eric
1977 An index to the publications of the Nevada Historical Society, 1907-1971.. Nevada Historical Society, Reno.

Moore, J. G., G. F. Fry, and E. Englert, Jr.
1969 Thorny-headed worm infection in North American prehistoric man. Science 163:1324-1325.

Mordy, Brooke D., and Donald L. McCaughey
1968 Nevada historical sites. Desert Research Institute, Reno.

Morgan, Dale L.
1943 The Humboldt: highroad of the West. Farrar, Rinehart and Company, New York.

1953 Jedediah Smith and the opening of the West. University of Nebraska Press, Lincoln.

Morrison, Roger B.
1965a Lake Bonneville: Quaternary stratigraphy of eastern Jordan, south of Salt Lake City, Utah. U. S. Geological Survey Professional Paper 477.

1965b New evidence on Lake Bonneville stratigraphy and history from southern Promontory Point, Utah. U.S. Geological Survey Professional Papers 525:C110-C119. Also, Utah Archaeology 21:9-20.

1965c Quaternary geology of the Great Basin. In The Quaternary of the United States, edited by H.E. Wright, Jr., and D.G. Frey, pp. 265-286. Princeton University Press, Princeton.

Morrison, R. B., and John C. Frye
1965 Correlation of the Middle and Late Quaternary successions of the Lake Lahontan, Lake Bonneville, Rocky Mountain (Wasatch Range) southern Great Plains, and eastern Midwest areas. Nevada Bureau of Mines Report 9.

Morss, Noel
1931 The ancient culture of the Fremont River in Utah. Peabody Museum of American Archaeology and Ethnology Papers 12(3).

Murphy, Robert F., and Yolanda
1960 Shoshone-Bannock subsistence and society. University of California Anthropological Records 16(7).

Myrick, David F.
1962 Railroads of Nevada and eastern California (Vol. I). Howell-North Books, Berkeley.

Napton, L. K.
1969 The lacustrine subsistence pattern in the Desert West. Kroeber Anthropological Society Special Publication 2:28-98.

Napton, L. Kyle, and Elizabeth Anne Greathouse
+ 1979-1980 Cultural resource survey of the Sierra Pacific Power Company 230/345 KV transmission line, Nevada (6 Parts).

Unpublished Ms., Institute for Archeological Research, California State College, Stanislaus, Turlock, California.

Napton, L. K., and R. F. Heizer
1970 Archeology and the prehistoric Great Basin lacustrine subsistence regime as seen from Lovelock Cave, Nevada. Contributions of the University of California Archaeological Facility 10.

Nelson, Fred W., and Richard D. Holmes
1979 Trace element analysis of obsidian sources and artifacts from western Utah. Antiquities Section Selected Papers 6(15):65-80. Division of State History, Salt Lake City.

Nevada Bureau of Land Management
1976 The Pony Express in Nevada. Harrah's, Reno.

Nevada Bureau of Mines
1957 Geology and mineral resources of Elko County, Nevada. Nevada Bureau of Mines Bulletin 54.

Nevada Department of Economic Development
1968 Nevada community profiles. Department of Economic Development.

Nevada Highways and Parks
1936 A copper pit thirty years deep. Nevada Highways and Parks.

1937 Nevada ranges supply much beef. Nevada Highways and Parks 2:1-10.

1939 Nevada's agricultural industry. Nevada Highways and Parks 4:1-17.

1947 Nevada ranges produce high quality food. Nevada Highways and Parks 7:3-17.

1948 Elko County spreads out all over northeast Nevada. Nevada HIghways and Parks 8:19-30.

1953 Nevada, from dirt roads to divided paved four lanes. Nevada Highways and Parks 13:3-30.

Nevada State Writers Project
1938-1941 Nevada cave history. Ms. on file, Nevada Historical Society, Reno.

On pages 8 through 17 of this manuscript, the numerous caves in eastern Nevada are mentioned. Most of these are in the Ely District, but several are in the Elko District. Descriptions and locations of the following caves are included: Cave Valley Cave, Goshute Cave, 3 caves near Gallagher Gap, Gold Canyon Cave, Robust Caves near Ely, "Spiral Staircase to Hell" and Cave Creek Cave in Ruby Valley, caves near Baker, Council Hall Cave, Smith Creek Cave, Colcheck Cave in Spring Valley, Fish Cave in Railroad Valley, and Whipple Cave in the White River Valley.

Nevins, Allan
1939 *Fremont: pathmarker of the West*. D. Appleton-Century Company, New York.

Nolan, Thomas B.
1962 The Eureka Mining District, Nevada. *Geological Survey Professional Paper* 406.

Norcross, C. A.
1911 *Agricultural Nevada*. Sunset Magazine Homeseekers Bureau, San Francisco.

Northey, Lorrie D.
* 1979 An analysis of the fauna from Civa Shelter II, Lincoln County, Nevada. In The prehistory and human ecology of Garden and Coal Valleys: a contribution to the prehistory of southeastern Nevada, by Colin I. Busby. *Contributions of the University of California Archaeology Research Facility* 39:233-244.

O'Connell, James F.
1971 *The archaeology and cultural ecology of Surprise Valley, northeastern California*. Unpublished Ph.D. dissertation, University of California, Berkeley.

1975 The prehistory of Surprise Valley. *Ballena Press Anthropological Papers* 4. Ramona, California.

O'Neill, Floyd A.
1973 *A history of the Ute Indians of Utah until 1890*. Unpublished Ph.D. dissertation, University of Utah.

1976 The Utes, Southern Paiutes and Gosiutes. In *The peoples of Utah*, edited by Helen Z. Paponikolos. Utah Historical Society, Salt Lake City.

Opler, M. K.
1939 Southern Ute pottery types. *Masterkey* 13:161-163.

1943 The origins of Comanche and Ute. *American Anthropologist* 45:155-158.

Orr, Phil C.
1956 Pleistocene man in Fishbone Cave, Pershing County, Nevada. *Nevada State Museum, Department of Anthropology Bulletin* 2.

Osborne, D.
1941 Archaeological reconnaissance in western Utah and Nevada, 1939. *Masterkey* 15(5):189-195.

Ostrander, Gilman M.
1966 Nevada: the great rotten borough, 1859-1964. Alfred A. Knopf, New York.

Paher, Stanley W.
1970 Nevada ghost towns and mining camps. Howell-North Books, Berkeley.

Palmer, Edward
1876 Exploration of a mound in Utah. American Naturalist 10:410-414.

1878 Plants used by the Indians of the United States. The American Naturalist 12:593-606, 646-655.

1880 Review of published statements regarding the mounds at Payson, Utah, with an account of their structure and origin. Proceedings: Davenport Academy of Natural Sciences, 1876-1878 2:167-172.

Palmer, William R.
1933 Pahute Indian homeland. Utah Historical Quarterly 6:88-102.

1958 Early day trading with the Nevada mining camps. Utah Historical Quarterly 26:353-368.

Parker, H. G.
1866 (Communication in) Annual Report of the Commissioner of Indian Affairs for the Year 1866, pp. 113-117. GPO, Washington.

Parmalee, Paul W.
1970 Birds from Hogup Cave. In Hogup Cave, C. Melvin Aikens. University of Utah Anthropological Papers 93:263-266.

1979 Appendix III: A preliminary report on the birds from the Levee and Knoll sites, Box Elder County, Utah. In The Levee Site and the Knoll Site, Gary F. Fry and Gardiner F. Dalley. University of Utah Anthropological Papers 100:110-113.

1980 Utilization of birds by the Archaic and Fremont cultural groups of Utah. Natural History Museum of Los Angeles County, Contributions in Science 330:237-250.

Patterson, Edna
1965 Early cattle in Elko County. Nevada Historical Society Quarterly 8:5-12.

Patterson, Edna B, Louise A. Ulph, and Victor Goodwin
1969 Nevada's northeast frontier. Western Printing and Publishing Company, Sparks, Nevada.

Paul, Rodman W.
1963 Mining frontiers of the Far West. Holt, Rinehart and Winston, New York.

Perkins, R. F.
1967 Clovis-like points in southeastern Nevada. Nevada Archaeological Survey Reporter 9:9-11.

1968 Folsom and Sandia points from Clark County. Nevada Archaeological Survey Reporter 2(4):4-5.

Peterson, Frederick F.
1981 Landforms of the Basin and Range Province: defined for soil survey. Nevada Agricultural Experiment Station Technical Bulletin 28. University of Nevada, Reno.

Pippin, Lonnie C.
1979 Bighorn sheep and Great Basin prehistory. In The archaeology of Smith Creek Canyon, eastern Nevada, edited by Donald R. Tuohy and Doris L. Rendall. Nevada State Museum Anthropological Papers 17:332-358.

Plew, Mark G.
1979 Southern Idaho plain ware: implications for Fremont-Shoshoni relationships in southwestern Idaho. Plains Anthropologist 24(86):329-335.

1980a Fish remains from Nahas Cave: archaeological evidence of anadromous fishes in southwestern Idaho. Journal of California and Great Basin Anthropology 2(1):129-132.

1980b Recent data from Nahas Cave: a further note on the origins of the bow and arrow in the northern Great Basin. Masterkey 54:146-149.

1981 A preliminary report on archaeological excavations at Nahas Cave. Idaho Archaeologist 4(3):1-7.

Poulton, Helen J.
1966 Index to Thompson and West's history of Nevada. University of Nevada Press, Reno.

Powell, John W., and G. W. Ingalls
1874 Report of the special commissioner on the condition of the Ute Indians of Utah; the Pai-utes of Utah, Northern Arizona, Southern Nevada, and South-eastern California. U. S. Government Printing Office, Washington, D.C.

Probert, Thomas
1977 Lost mines and buried treasures of the West. University of California Press, Berkeley.

Price, Sara Sue
1952 A comparison of Gosiute material culture and the archeology of western Utah. Unpublished M.A. thesis, Department of

Anthropology, University of Utah.

Price, Sara Sue, and Charles Burnett
1950 A preliminary report of the excavation of Juke Box Cave (42TO20). Ms. on file, Department of Anthropology, University of Utah.

Prucha, Francis Paul
1964 *A guide to the military posts of the United States, 1795-1895.* The State Historical Society of Wisconsin, Madison.

Putnam, J. D.
1876 Hieroglyphics observed in Summit Canyon, Utah, and on Little Popo-agie River in Wyoming. *Proceedings: Davenport Academy of Natural Sciences, 1867-1876* 1:143-145.

Quate, Graham S.
1924 Memoranda for files: Cooperation-Nevada archeological research. Ms. on file, Humboldt Forest Service Office, Ely, Nevada. 4 p.

Read, Effie O.
1965 *White Pine lang syne: a true history of White Pine County, Nevada.* Big Mountain Press, Denver.

Reagan, Albert B.
* 1929 Geology of the Deep Creek Reservation, Utah, and its environs. *Kansas Academy of Science Transactions* 32:105-116.

1934 The Gosiute (Goshute), or Shoshone-Goship Indians of the Deep Creek region, in western Utah. *Proceedings: Utah Academy of Sciences, Arts and Letters* 11:43-54.

1935 Archaeological report of field work done in Utah in 1934-35. *Proceedings: Utah Academy of Sciences, Arts and Letters* 12:50-88.

Ray, Verne F., and Others
1938 Tribal distributions in eastern Oregon and adjacent regions. *American Anthropologist* 40:384-415.

Reed, Flo, and Byron F. Stetler
1962 *Uses of native plants by Nevada Indians.* Carson City, Nevada.

Rees, Tobert A., and Alan Sandy (editors)
1977 *The adventures of Captain Bonneville.* Twayne Publishers, Boston.

Reinfeld, Fred
1966 *Pony Express.* Macmillan Company, New York.

Remy, Jules

1861 A journey to Great-Salt-Lake City (2 Vols.). N. Jeffs, London.

Renaud, Etienne B.
1938 The Blacks Fork culture of southwest Wyoming. The archaeological survey of the High Western Plains, Tenth Report. Department of Anthropology, University of Denver.

1940 Further research work in the Blacks Fork Basin, southwest Wyoming. The archaeological survey of the High Western Plains, Twelfth Report. Department of Anthropology, University of Denver.

Richards, Brian
1968 A Clovis point from northwestern Nevada. Nevada Archaeological Survey Reporter 2(3):12-13.

Richmond, Gerald M.
1965 Glaciation of the Rocky Mountains. In The Quaternary of the United States, edited by H.E. Wright, Jr., and D.G. Frey, pp. 217-230. Princeton University Press, Princeton.

Roberts, B. H.
1965 A comprehensive history of the Church of Jesus Christ of Latter Day Saints, century I (Vol. 4). Brigham Young University Press, Provo.

Roberts, Frank H. H., Jr.
1940 Developments in the problem of the North American Paleo-Indian. In Essays in historical anthropology of North America. Smithsonian Miscellaneous Collections 100:51-116.

1944 Etna Cave, Nevada. Scientific Monthly 59(2):153-155.

Roberts, Heidi
1979 Cultural resource survey/clearance report of proposed Delbert Crapo exchange and material site R/W U-42651. Ms. on file, Bureau of Land Management, Utah State Office, Salt Lake City, Utah.

Roberts, R. J., K. M. Montgomery, and R. E. Lehner
1967 Geology and mineral resources of Eureka County, Nevada. Nevada Bureau of Mines Bulletin 64

Romer, Alfred S.
1928 A "fossil" camel recently living in Utah. Science 68: 19-20.

Root, Frank A., and William E. Connelley
1901 The overland stage to California. W. Y. Morgan, Topeka, Kansas.

Roscoe, Ernest J.
1963 Snails and archaeology in the Great Basin. American Anthropologist 65:134-136.

Rostland, Erhard
1952 Freshwater fish and fishing in native North America. University of California Publications in Geography 9 University of California Press, Berkeley.

Roust, N. L., and G. L. Grosscup
1957 Archaeology of Hidden Cave (NV-CH-16), Nevada. Manuscript 171, Archaeological Research Facility, University of California, Berkeley.

Rozaire, Charles E.
1957 Twined weaving and western North American prehistory. Unpublished Ph.D. dissertation, University of California, Los Angeles.

1963 Lake side cultural specialization in the Great Basin. 1962 Great Basin Anthropological Conference. Nevada State Museum Anthropological Papers 9:72-77.

* 1964 The archaeology of Lehman Caves National Monument. Ms. on file, Nevada State Museum, Carson City.

Ruby Lake National Wildlife Refuge
1970 List of Plant Species from Ruby Lake National Wildlife Refuge. On file at headquarters, Ruby Valley, Nevada.

Rudy, Jack R.
* 1953 An archeological survey of western Utah. University of Utah Anthropological Papers 12.

Rudy, Sara Sue
1957 Textiles. In Danger Cave, Jesse D. Jennings. University of Utah Anthropological Papers 27:235-264.

Ruhlen, George
1964 Early Nevada forts. Nevada Historical Society Quarterly 7:7-62.

Rusco, Mary
* 1970 A petroglyph site in Humboldt National Forest, White Pine County, Nevada. Nevada Archeological Survey Reporter 4(6):3-8.

* 1971 Report to District Ranger on protection and utilization of archaeological resources of site 26WP134, Humboldt National Forest. Ms. on file, Nevada State Museum, Carson City.

Report on the salvage of movable petroglyphs in the Baker Creek area.

+ 1978 A partially restored pottery vessel from Elko County, Nevada. Nevada Archeological Survey Reporter 11(1-2):21-26.

Rusco, Mary K., Andrew Jensen, and Cindy Adams

1976 Reconnaissance, recording, and evaluation of cultural resources within eight proposed geothermal well locations and their right-of-way access roads. Ms. on file, Nevada State Museum, Carson City.

Rusco, Mary K., Jonathan O. Davis, and Andrew Jensen
+ 1979 Archaeological investigations near Carlin, Elko County, Nevada. Nevada State Museum Archaeological Services Reports.

Sahlins, Marshall
1972 Stone Age economics. Aldine Press, Chicago.

Sapir, Edward
1930 Southern Paiute, a Shoshonean language. Proceedings of the American Academy of Arts and Sciences 65(1):1-296.

1931a Southern Paiute Dictionary. Proceedings of the American Academy of Arts and Sciences 65(3):537-730.

1931b Texts of the Kaibab and Uintah Utes. Proceedings of the American Academy of Arts and Sciences 65(2):267-535.

Sawyer, Byrd W.
1971 Nevada nomads: a story of the sheep industry. Harlan-Young Press, San Jose, California.

Schaafsma, Polly
* 1971 The rock art of Utah: from the Donald Scott collection. Peabody Museum of American Archaeology and Ethnology Papers 65.

Schellbach, Louis
* 1927 Ancient bundles of snares from Nevada. Museum of the American Indian, Heye Foundation, Indian Notes and Monographs 4(3):232-240.

Schiel, Jacob H.
1959 Journey through the Rocky Mountains and the Humboldt Mountains to the Pacific Ocean, edited and translated by Thomas N. Bonner. University of Oklahoma Press, Norman.

Schoolcraft, Henry R.
1851 Historical and statistical information respecting the history, condition and prospects of the Indian tribes of the United States. 6 volumes. Lippencott, Grambo, Philadelphia.

Schroeder, Albert H.
1963 Comment on Gunnerson's "Plateau Shoshonean prehistory". American Antiquity 28:559-560.

Schrader, F. C.
1931 Spruce Mountain District, Elko County and Cherry Creek (Egan Canyon) District, White Pine County. University

of Nevada Bulletin 25:1-39.

Schroedl, Alan R.
1977a The Grand Canyon figurine complex. American Antiquity 42:254-265.

1977b The Paleo-Indian period on the Colorado Plateau. Southwestern Lore 43(3):1-9.

1979 A selected bibliography of Utah archeology. University of Utah Anthropological Papers 102.

Schuster, Carl
1968 Incised stones from Nevada and elsewhere. Nevada Archeological Survey Reporter 2(5):4-23.

Scott, Donald
1932 Report on the Peabody Museum activities in northeastern Utah in 1931. American Anthropologist 34:505-506.

Scott, Lalla
1966 Karnee, a Paiute narrative. University of Nevada Press, Reno.

Seck, Susan M.
1980 The archaeology of Trego Hot Springs: 26Pe118. Unpublished M.A. thesis, University of Nevada, Reno.

Seelinger, Evelyn, Bonita Brown, Mary K. Rusco, and Donald R. Tuohy
* 1979 Cultural resources overviews of five proposed wilderness areas in northern Nevada. Nevada State Museum Archaeological Services Reports.

Seelinger, Terry
* 1978a Archeological records and literature search report: USDA Forest Service, Humboldt National Forest, Mt. Moriah and Snake Divisions. Ms. on file, Nevada State Museum, Carson City.

* 1978b Archeological records and literature search report: USDA Forest Service, Humboldt National Forest, Schell Creek Division. Ms. on file, Nevada State Museum, Carson City.

Sellards, E. H.
1952 Early man in America: a study in prehistory. University of Texas Press, Austin.

Settle, Raymond W., and Mary L. Settle
1955 Saddles and spurs: the Pony Express saga. Harnsburg, Pennsylvania.

1966 War drums and wagon wheels. University of Nebraska Press, Lincoln.

Severance, Mark Sibley
1874 Appendix F: Preliminary ethnological report. In *Progress report upon geographical and geological explorations and surveys west of the one-hundredth meridian, in 1872*, George M. Wheeler, pp. 55-56. Government Printing Office, Washington.

Severance, Mark Sibley, and H.C. Yarrow
1879 Notes upon human crania and skeletons collected by the expeditions of 1872-'74. In Archaeology, F.W. Putnam. *United States Geographical Surveys West of the One Hundredth Meridian* 7:391-397. Government Printing Office, Washington.

Shantz, H. L.
1925 Plant communities in Utah and Nevada. In Flora of Utah and Nevada, I. Tidestrom. *Contributions from the United States National Herbarium* 25:15-23.

Sharp, Robert P.
1938a *Cenozoic geology of the Ruby-East Humboldt Range, Nevada.* Unpublished Ph.D. dissertation, Harvard University, Cambridge.

1938b Pleistocene glaciation in the Ruby-East Humboldt Range, northeastern Nevada. *Journal of Geomorphology* 1:296-323.

1940 Geomorphology of the Ruby-East Humboldt, Nevada. *Bulletin of the Geological Society of America* 51:337-374.

1942 Stratigraphy and structure of the Southern Ruby Mountains, Nevada. *Bulletin of the Geological Society of America* 53:647-690.

Sharrock, Floyd W.
1966 Prehistoric occupational patterns in southwest Wyoming and cultural relationships with the Great Basin and Plains culture area. *University of Utah Anthropological Papers* 77.

1968 Archeological survey of Lincoln County, Nevada, 1967. Ms. on file, Western Studies Center, Desert Research Institute, Reno.

1970 *The Sevier Fremont-a subarea?* Paper presented at the 35th annual meeting of the Society for American Archaeology, Mexico City.

Shreve, F.
1942 The desert vegetation of North America. *Botanical Review* 8:195-246.

Shutler, Mary Elizabeth, and Richard Shutler, Jr.

1959 Clovis-like points from Nevada. Masterkey 33(1): 30-32.

1963 Deer Creek Cave, Elko County, Nevada. Nevada State Museum Anthropological Papers 11.

Shutler, Richard, Jr.
1960 Archaeological excavations on Meadow Creek, Elko County, Nevada. Ms. on file, Nevada State Museum, Carson City, 2 p.

1961a Correlation of beach terraces with climatic cycles of pluvial Lake Lahontan. Annals of the New York Academy of Sciences 95:513-520.

1961b Lost City: Pueblo Grande de Nevada. Nevada State Museum Anthropological Papers 5.

1965 Tule Springs expedition. Current Anthropology 6:110-111.

1967 Archaeology of Tule Springs. In Pleistocene studies in southern Nevada, edited by H. M. Wormington and Dorothy Ellis. Nevada State Museum Anthropological Papers 13:298-308.

1968a The Great Basin Archaic. Eastern New Mexico Contributions in Anthropology 1(3):24-26.

1968b Tule Springs: its implications to Early Man studies in North America. In Early Man in North America, edited by C. Irwin-Williams. Eastern New Mexico University, Contributions in Anthropology 1(4):19-26.

Siegrist, Roland (editor)
1972 Prehistoric petroglyphs and pictographs in Utah. Utah State Historical Society and Utah Museum of Fine Arts, Salt Lake City.

Simms, Steven R.
1977 A mid-Archaic subsistence and settlement shift in the northeastern Great Basin. In Models and Great Basin prehistory: a symposium, edited by Don D. Fowler. Desert Research Institute Publications in the Social Sciences 12:195-210.

Simpson, James H., Captain
1869 The shortest route to California. J. B. Lippincott, Philadelphia.

1876 Report of explorations across the Great Basin of the territory of Utah for a direct wagon-route from Camp Floyd to Genoa, in Carson Valley, in 1859. U. S. Army, Engineer Department, Government Printing Office, Washington, D.C.

Skinner, Morris F.
1957 Appendix D: horse bones. In Danger Cave, Jesse D. Jennings University of Utah Anthropological Papers 27:307-308.

Sleight, Frederick W.
1946 Comments on Basketmaker-like pictographs in northern Utah. Masterkey 20(3):88-92.

Smaby, Beverly P.
1975 The Mormons and the Indians: conflicting ecological systems in the Great Basin. American Studies 16:35-48.

Smith, Anne M.
1974a Cultural differences and similarities between Uintah and White River. In Ute Indians II, edited by David Agee Horr, pp. 325-338. A Garland Series, American Indian Ethnohistory: California and Basin-Plateau Indians. Garland, New York and London.

1974b Ethnography of the Northern Utes. Papers in Anthropology 17. Museum of New Mexico Press, University of New Mexico.

Smith, Elmer R.
1940 Post-caucasian Gosiute burials from Deep Creek area of Utah. In The archeology of the Deep Creek region, Utah, Carling Malouf, Charles E. Dibble, and Elmer R. Smith. Museum of Anthropology, University of Utah, Archaeology and Ethnology Papers 5. Reprinted in 1950 as Paper No. 5, University of Utah Anthropological Papers 1-9:71-75.

1941 The archeology of Deadman Cave, Utah. University of Utah Bulletin 32(4).

1942 Early man in the Great Salt Lake area. Mineralogical Society of Utah 3(2):27-32.

1952 The archaeology of Deadman Cave, Utah: a revision. University of Utah Anthropological Papers 10.

Smith, Roscoe M.
* 1976a Mineral resources, Part III. In Geology and mineral resources of White Pine County, Nevada. Nevada Bureau of Mines and Geology Bulletin 85:36-99.

+ 1976b Mineral resources of Elko County. U. S. Geological Survey Open-file Report 76-96.

Smith, Waddell F. (editor)
1960 The story of the Pony Express. Hesperian House, San Francisco.

Snow, William James
1923 The Great Basin before the coming of the Mormons. Unpublished Ph.D. dissertation, University of California,

Berkeley.

Snyder, Charles T., and Walter B. Langbein
* 1962 The Pleistocene lake in Spring Valley, Nevada, and its climatic implications. Journal of Geophysical Research 67(6):2385-2394.

Snyder, Charles T., George Hardman, and F.F. Zdenek
1964 Pleistocene lakes in the Great Basin. USGS Miscellaneous Geologic Investigations, Map I-416.

Spencer, Alan C.
1923 The Great Basin before the coming of the Mormons. Unpublished Ph.D. dissertation, University of California.

Spencer, Robert F., Jesse D. Jennings, et al.
1977 The Native Americans. Harper and Row, New York.

Spiess, Arthur
\+ 1974 Faunal remains from Bronco Charlie Cave (26EK801), Elko County, Nevada. In The prehistoric human ecology of southern Ruby Valley, Nevada, Laurel Ann Casjens, pp. 452-496. Unpublished Ph.D., Harvard University.

Stager, H. K.
\+ 1977 Mineral deposits, Part II. In Geology and mineral deposits of Lander County, Nevada. Nevada Bureau of Mines and Geology Bulletin 88:60-106.

Stanford, Dennis
1979 The Selby and Dutton sites: evidence for a possible pre-Clovis occupation of the High Plains. In Pre-Llano cultures of the Americas: paradoxes and possibilities, edited by Robert L. Humphrey and Dennis Stanford, pp. 101-123. The Anthropological Society of Washington, Washington, D.C.

Stansbury, Howard
1852a An expedition to the valley of the Great Salt Lake of Utah. Sampson Low, Son and Co., London.

1852b Exploration and survey of the valley of Great Salt Lake of Utah, including a reconnaissance of a new route through the Rocky Mountains. 32nd Congress, Special Session, Senate Executive Document 3. Vol. 2. Lippincott, Grambo, and Co., Philadelphia.

State of Nevada
1873-1923 Biennial report of the Surveyor-general and State Land Register. State Printing Office, Carson City.

Stearns, Steven M., Larry S. Steinberg, and Thomas H. Turner
\+ 1978 Archeological survey along the Pine Valley Unit 2 Project RS-602(10) 70739-2. Ms. on file, Nevada State Highway Department, Roadside Development and Environmental Services

Division, Archeological Section, Carson City, Nevada.

Stebbins, R.
1966 A field guide to western reptiles and amphibians. Houghton, Mifflin Company, Boston.

Stephenson, Robert L., and Kent Wilkinson
+ 1969 Archeological reconnaissance of the Winnemucca-Battle Mountain area of Nevada. Nevada Archeological Survey Research Paper 1.

Steward, Julian H.
* 1929 Petroglyphs of California and adjoining states. University of California Publications in American Archaeology and Ethnology 24(2).

1931 Archaeological field work in North America during 1930. American Anthropologist 33:482.

1932 Reports: archaeological field work in North America during 1931. American Anthropologist 34:505.

1933a Aborigines of Utah. Utah Resources and Activities, pp. 161-167. Department of Public Instruction.

1933b Archaeological problems of the Northern Periphery of the Southwest. Museum of Northern Arizona Bulletin 5.

1933c Early inhabitants of western Utah, Part I--mounds and house types. University of Utah Bulletin 23(7).

1933d Ethnography of the Owens Valley Paiute. University of California Publications in American Archaeology and Ethnology 33(3):233-350.

1936a Pueblo material culture in western Utah. University of New Mexico Bulletin 287, Anthropological Series 1(3).

1936b Shoshoni polyandry. American Anthropologist 38:561-564.

1937a Ancient caves of the Great Salt Lake region. Bureau of American Ethnology Bulletin 116.

1937b Linguistic distributions and political groups of Great Basin Shoshoneans. American Anthropologist 39(4):625-634.

1937c Petroglyphs of the United States. Smithsonian Institution Annual Report for 1936, pp. 405-425.

1937d Ethnological reconnaissance among the Desert Shoshoni. Explorations and field-work of the Smithsonian Institution in 1934. Smithsonian Institution, Washington.

1938 Basin-Plateau aboriginal sociopolitical groups. Bureau of American Ethnology Bulletin 120. Reprinted in 1970, University of Utah Press, Salt Lake City.

1939a Notes on Hillers' photographs of the Paiute and Ute Indians taken on the Powell Expedition of 1873. Smithsonian Miscellaneous Collections 98(18):1-23.

1939b Some observations of Shoshonean distributions. American Anthropologist 41:261-265.

1940 Native cultures of the Intermontane (Great Basin) area. Smithsonian Miscellaneous Collections 100:445-502.

1941 Culture element distributions: XIII. Nevada Shoshoni. University of California Anthropological Records 4(2): 209-359.

1943 Culture element distributions: XXIII. Northern and Gosiute Shoshoni. University of California Anthropological Records 8(3):263-392.

1955a Review of Rudy, "Archaeological survey of western Utah". American Antiquity 21:88-89.

1955b Theory of culture change. University of Illinois Press, Urbana.

1963 Review of R. F. Heizer and M. A. Baumhoff, Prehistoric rock art of Nevada and eastern California. American Anthropologist 65:975.

1967 The Great Basin Shoshonean Indians. In The North American Indians: a sourcebook, edited by R. C. Owen, J. F. Deetz, and A. D. Fisher, pp. 241-249. The MacMillan Company, New York.

1970 The foundations of Basin-Plateau Shoshonean society. In Languages and cultures of western North America: essays in honor of Sven S. Liljeblad, edited by E.H. Swanson, Jr., pp. 113-151. Idaho State University Press, Pocatello.

1974 Aboriginal and historical groups of the Ute Indians of Utah. In Ute Indians I, edited by David Agee Horr. A Garland Series, American Indian Ethnohistory: California and Basin-Plateau Indians. Garland, New York and London.

Steward, Julian H., and Ermine Wheeler-Voegelin
1974 The Northern Paiute Indians. In Paiute Indians III, edited by D. A. Horr. Garland Publishing Inc., New York.

Stewart, John H.
1980 Geology of Nevada. Nevada Bureau of Mines and Geology, Special Publication 4.

Stewart, J. H., and E. H. McKee

+ 1977 Geology, Part I. In Geology and mineral deposits of Lander County, Nevada. Nevada Bureau of Mines and Geology Bulletin 88:1-59.

Stewart, Omer C.
1939 The Northern Paiute bands. University of California Anthropological Records. 2(3):127-149.

1941 Culture element distribution: XIV. Northern Paiute. University of California Anthropological Records. 4(3):361-446.

1942 Culture element distributions: XVIII. Ute-Southern Paiute. University of California Anthropological Records 6(4).

1959 Shoshone history and social organization. Actas del 33 Congreso Internacional de Americanista 2:134-142.

1965 The Shoshoni: their history and social organization. Idaho Yesterdays 9:2-5, 28.

1966 Tribal distributions and boundaries in the Great Basin. In The current status of anthropological research in the Great Basin: 1964, edited by W. L. d'Azevedo et al. Desert Research Institute Social Sciences and Humanities Publications 1:167-237.

1978a The western Shoshone of Nevada and the U.S. Government, 1863-1950. In Selected papers from the 14th Great Basin Anthropological Conference, edited by Donald R. Tuohy. Ballena Press Publications in Archaeology, Ethnology and History 11:77-114.

1978b Temoke band of Shoshone and the oasis concept: ethnohistorical report of Ruby Valley, Nevada. Paper presented to the 16th Great Basin Conference, Reno.

Stirling, Matthew W.
+ 1931 Archaeological reconnaissance in Texas and Nevada. In Explorations and field work of the Smithsonian Institution in 1930, pp. 173-176.

Stock, Chester
* 1935 Researches of Chester Stock. Carnegie Institution of Washington Yearbook No. 34, p. 315.

* 1936 A new mountain goat from the Quaternary of Smith Creek Cave, Nevada. Bulletin of the Southern California Academy of Science 35(3):149-153.

Stokes, William Lee
1977 Subdivisions of the major physiographic provinces in Utah. Utah Geology 4(1):1-17.

Stonecipher, Harvey V., Mason, Howard, and Dunn, Dora.

1945 Wartime land market activity in northern Nevada. University of Nevada Agricultural Experiment Station Bulletin No. 174:6-14.

Strong, Emory
1969 Stone Age in the Great Basin. Binfords and Mort, Portland.

Tadlock, W. L.
* 1966 Certain cresentric stone objects as time markers in the Western United States. American Antiquity 31:662-675.

Tamers, M. A., F. J. Pearson, Jr., and E. M. Davis
1964 University of Texas radiocarbon dates II. Radiocarbon 6:138-159.

Taylor, Dee Calderwood
* 1954a The Garrison Site: a report of archeological excavations in Snake Valley, Nevada. M.A. thesis, Department of Anthropology, University of Utah.

* 1954b The Garrison Site. University of Utah Anthropological Papers 16.

1956 Fremont culture: their position in Southwest prehistory. Ph.D. dissertation, University of Michigan Press, Michigan.

1970 Classical Fremont. Paper presented at the thirty-fifth annual meeting of the Society for American Archaeology, Mexico City.

Taylor, Dwight W.
1970 West American freshwater mollusca, 1: Bibliography of Pleistocene and Recent species. San Diego Society of Natural History Memoir 4.

Taylor, Walter W.
1961 Archaeology and language in western North America. American Antiquity 27:71-81.

Taylor, L. H. (compiler)
1894 Nevada and her resources. State Printing Office, Carson City.

Thomas, David Hurst
1969 Great Basin hunting patterns: a quantitative method for treating faunal remains. American Antiquity 34:392-401.

1972a A computer simulation model of Great Basin Shoshonean subsistence and settlement patterns. In Models in Archaeology, edited by D. L. Clarke, pp. 671-704. Meuthuen, London.

1972b Western Shoshoni ecology: settlement patterns and beyond. Desert Research Institute Publications in the Social Sciences 8:135-153.

1973 An empirical test for Steward's model of Great Basin settlement patterns. American Antiquity 38: 155-176.

1974 An archaeological perspective on Shoshonean bands. American Anthropologist 76:11-23.

1975 Nonsite sampling in archaeology: up the creek without a site? In Sampling in archaeology, edited by James W. Mueller, pp. 61-81. University of Arizona Press, Tucson.

The sampling design and analytical issues raised in the Resse River Ecological Project, central Nevada, are discussed.

1976 Petroglyph distribution and the hunting hypothesis in the central Great Basin. Tebiwa 18(2):65-74.

1978 The awful truth about statistics in archeology. American Antiquity 43:231-244.

1980 The archaeology of Gatecliff Shelter and Monitor Valley. Unpublished Ms., American Museum of Natural History, New York.

Thomas, David H., and T. C. Thomas
1972 New data on rock art chronology in the central Great Basin. Tebiwa 15(1):64-71.

Thompson, Robert Luther
1947 Wiring a continent: the history of the telegraph industry in the United States, 1832-1866. Princeton University Press, Princeton.

Thompson, Robert S.
* 1979 Late Pleistocene and Holocene packrat middens from Smith Creek Canyon, White Pine County, Nevada. In The archaeology of Smith Creek Canyon, eastern Nevada, edited by Donald R. Tuohy and Doris L. Rendall. Nevada State Museum Anthropological Papers 17:360-380.

Thornbury, William D.
1965 Regional geomorphology of the United States. John Wiley and Sons, New York.

Thwaites, Reuben G. (editor)
1906 Early western travels 1748-1846 (32 Vols.). Arthur H. Clark Co., Cleveland.

Townley, John M.
1968 Desert complex artifacts from Nye County, Nevada.

Nevada Archeological Survey Reporter 2(2):4-10.

* 1970 A petroglyph panel with three dimensions. Nevada Archeological Survey Reporter 4(5):5-7.

* 1973 Conquered provinces: Nevada moves southeast, 1864-1871. Brigham Young University Press, Provo, Utah.

Train, Percy, James R. Henricks, and W. Andrew Archer
1957 Medicinal uses of plants by Indian tribes of Nevada. Contributions towards a flora of Nevada, No. 45. U. S. Department of Agriculture, Plant Industry Station, Beltsville, Maryland.

Trenholm, Virginia, and Maurine Carley
1964 The Shoshonis: sentinels of the Rockies. University of Oklahoma Press, Norman.

Tschanz, C. M., and E. H. Pampeyan
1970 Geology and mineral deposits of Lincoln County, Nevada. Nevada Bureau of Mines and Geology Bulletin 73.

Tuohy, Donald R.
1956 Shoshoni ware from Idaho. Davidson Journal of Anthropology 2(1):55-71.

\+ 1963 Archaeological survey in southwestern Idaho and northern Nevada. Nevada State Museum Anthropological Papers 8.

1968 Some early lithic sites in western Nevada. In Early Man in North America, edited by C. Irwin-Williams. Eastern New Mexico University Contributions in Anthropology 1(4):27-38.

1969a A brief note on additional fluted points from Nevada. Appendix in Recent discoveries of fluted points in California and Nevada, Emma Lou Davis and Richard Shutler, Jr. Nevada State Museum Anthropological Papers 14:170-177.

1969b Breakage, burin facets, and the probable technological linkage among Lake Mohave, Silver Lake, and other varieties of projectile points in the Desert West. Nevada State Museum Anthropological Papers 14:132-152.

1973 Nevada's non-ceramic culture sphere. Tebiwa 16(1):54-68.

* 1974 In the path of electrical energy...a preliminary report of of archaeological salvage work along Sierra Pacific Power Company's power corridors in central Nevada. Nevada Archaeologist 2(1):18-23.

1977 More on Clovis points from Washoe Lake, Nevada. Nevada Archeological Survey Reporter 10(4):1-7.

* 1979 Kachina Cave. In The archaeology of Smith Creek Canyon, eastern Nevada, edited by Donald R. Tuohy and Doris L. Rendall. Nevada State Museum Anthropological Papers 17:1-88.

Tuohy, Donald R., and Thomas N. Layton
1977 Towards the establishment of a new series of Great Basin projectile points. Nevada Archeological Survey Reporter 10(6):1-5.

Tuohy, Donald R., and B. Palombi
1972 A basketry-impressed Shoshoni pottery vessel from central Nevada. Tebiwa 15(1):46-48.

Tuohy, Donald R., and Doris L. Rendall (editors)
* 1979 The archaeology of Smith Creek Canyon, eastern Nevada. Nevada State Museum Anthropological Papers 17.

Turner, Thomas H., Steven M. Stearns, and Arnie L. Turner
+ 1979 Report of test excavations and a research design proposal for mitigation of impacts to archaeological resources located on Nevada State Highway Department and Federal Highway Administration Project RS-602(10), from 16 to 9 miles south of junction with Palidade Road, E.A. 70739-2 (Pine Valley). Ms. on file, Nevada State Highway Department, Carson City, Nevada.

U. S. Department of Commerce
1974 Federal and state Indian reservations and Indian trust areas. Government Printing Office, Washington, D.C.

Utley, Robert M.
1967 Frontiersman in blue: The United States Army and the Indian, 1848-1865. Macmillan Publishing Co., New York.

1973 Frontier regulars: The United States Army and the Indian, 1866-1890. Macmillan Publishing Co., New York.

Van Buren, G. E.
1974 Arrowheads and projectile points with: a classification guide for lithic artifacts. Arrowhead Publishing Co., Garden Grove, California.

Van Denburgh, J.
1922 The reptiles of western North America. Occasional Papers of the California Academy of Sciences 10.

Venstrom, Cruz, and Howard Mason (compilers)
1944 Agricultural history of Nevada. University of Nevada, Reno.

Vexler, Robert I. (editor)
1978 Chronology and documentary handbook of the State of

Nevada. Oceana Publications, Dobbs Ferry, New York.

Vogel, Beatrice R.
* 1952 Baker Creek Pictograph Cave. Monthly Report of the Stanford Grotto, National Speleological Society 2:107-108. Palo Alto, California.

von Werlhof, Jay C.
1961 Petroglyph and pictograph sites in western (eastern) California and southern Nevada. American Philosophical Society Yearbook, 1960, pp. 575-579.

1965 Rock art of Owens Valley, California. Reports of the University of California Archaeological Survey 65.

Wagner, W. F.
1904 Leonard's narrative: adventures of Zenas Leonard fur trader and trapper, 1831-1836. The Burrows Brothers Company.

Warren, Claude N. and Anthony J. Ranere
1968 Outside Danger Cave: a view of early man in the Great Basin. In Early Man in Western North America, edited by C. Irwin-Williams. Eastern New Mexico University, Contributions in Anthropology 1(4):6-18.

Warner, Ted J. (editor)
1977 The Dominguez-Escalante journal, translated by Fray Angelico Chavez. Brigham University Press, Provo.

Wayne, W. J.
1977 Re-examination of glacial chronology in the Ruby Mountains, Nevada. Geological Society of America Abstracts 9:770-771.

Webster, Gary S.
1980 Recent data bearing on the question of the origins of the bow and arrow in the Great Basin. American Antiquity 45:63-66.

Wedel, W.
1967 Review of Aikens, "Fremont-Promontory-Plains relationships in northern Utah." American Journal of Archeology 71(4):426-427.

Wellmann, Klaus F.
1979 Survey of North American Indian rock art. Akademische Druck- u. Verlagsanstalt, Graz, Austria.

Wells, Philip V.
1979 An equable glaciopluvial in the West: pleniglacial evidence of increased precipitation on a gradient from the Great Basin to the Sonoran and Chihuahuan Deserts. Quaternary Research 12:311-325.

Wendorf, Fred
1979 Changing values in archaeology. American Antiquity 44:641-643.

Wentworth, Edward N.
1942 Eastward sheep drives from California and Oregon. Mississippi Valley Historical Review 28:507-538.

Wheat, Carl I.
1954 Jedediah Smith and his maps of the American West. California Historical Society, San Francisco.

Wheat, Margaret M.
1967 Survival arts of the primitive Paiutes. University of Nevada, Reno.

Wheeler, George M.
1872 Preliminary report concerning explorations and survey's principally in Nevada and Arizona. Government Printing Office, Washington.

1874 Progress report upon geographical and geological surveys west of the one hundredth meridian, in 1872. Engineer Department, United States Army, Washington, D.C.

1879 Report upon United States geographical surveys west of the one hundredth meridian. Vol. 7, Archaeology. Government Printing Office, Washington.

1889 Geographical report. In United States Geographical Surveys West of the One Hundredth Meridian 1. Government Printing Office, Washington.

Wheeler, S. M.
1935 A dry cave in southern Nevada. Masterkey 9(5):5-12.

* 1936 A Pueblo II site in the Great Basin area of Nevada. Masterkey 10:207-211.

* 1937a An archaeological expedition to Nevada. Masterkey 11:194-197.

1937b Prehistoric miniatures. Masterkey 11:181.

1938 A Fremont moccasin from Nevada. Masterkey 12:34-35.

* 1939a The Jean L'Empereur expedition in Nevada. Masterkey 12:216-20.

1939b Split-twig figurines. Masterkey 13:42-45.

1942 Archaeology of Etna Cave, Lincoln County, Nevada. Nevada State Parks Commission, Carson City. Mimeo. Reprinted in 1973 as The archeology of Etna Cave, Lincoln County, Nevada: A reprint, edited by Don D. Fowler. Desert

Research Institute Publications in the Social Sciences 7.

1949 More about split-twig figurines. Masterkey 23:153-58.

White, Katherine A. (compiler)
1930 A Yankee trader in the Gold Rush: the letters of Franklin A. Buck. The Riverside Press, Cambridge.

Whitebread, D. H.
* 1969 Geologic map of the Wheeler Peak and Garrison quadrangles, Nevada and Utah. USGS Miscellaneous Investigations Map I-578.

Whorf, B. L.
1935 The comparative linguistics of Uto-Aztecan. American Anthropologist 37:600-608.

Wier, Jeanne Elizabeth (compiler)
1940 Nevada: a guide to the Silver State. Binford and Mort, Portland.

Wilke, P. J., T. F. King, and R. Bettinger
1974 Ancient hunters of the far west? Nevada Archeological Survey Research Papers 5:80-90.

Wilkes, Charles
1845 Narrative of the U.S. exploring expedition 1838 to 1842. Vol. 4, pp. 471-474. Philadelphia. Reprinted in 1929 Utah Historical Quarterly 2(3):73-75.

Willey, Gordon R.
1966 An introduction to American archaeology. Vol. 1. North and Middle America. Prentice-Hall, Englewood Cliffs, New Jersey.

Willey, Gordon R., and Philip Phillips
1958 Method and theory in American archaeology. University of Chicago Press, Chicago and London.

Williams, Glynder (editor)
1971 Peter Skene Ogden's Snake Country journals, 1827-29. The Hudson's Bay Record Society, London.

Wilmsen, Edwin N.
1970 Lithic analysis and cultural inference: a Paleo-Indian case. Anthropological Papers of the University of Arizona 16.

Wilson, John
1850 [Report in] Report to the Commissioner of Indian Affairs for 1849-50, pp. 66-68. Washington.

Wintch, Leona Fetzer
1963 Extension of Black Fork culture materials. Utah Archaeology 9(3):2-9.

Winter, Joseph C.
1973 The distribution and development of Fremont maize agriculture: some preliminary interpretations. American Antiquity 38:439-452.

1974 Aboriginal agriculture in the Southwest and Great Basin. Ph.D. dissertation, Department of Anthropology, University of Utah. University Microfilms No. 74-14646, Ann Arbor.

1976 The processes of farming diffusion in the Southwest and Great Basin. American Antiquity 41:421-429.

Wirt, Julia J.
1880 Quotations from letters regarding mounds at Payson, Utah. Proceedings: Davenport Academy of Natural Sciences, 1876-1878 2:28, 82.

Winther, Oscar Osburn
1945 Via Western Express and stagecoach. University of Nebraska Press, Lincoln.

Wittwer, Eldon E.
1960 Nevada agriculture. University of Nevada Agricultural Experiment Station Bulletin 210.

Wogan, Maury
1947 Red King Copper. The Nevada Magazine 3:16-21.

Wooton, E. O.
1932 The public domain of Nevada and factors affecting its use. U. S. Department of Agriculture Technical Bulletin 301:1-52.

Work, John
1913 Journal of John Work's Snake Country Expedition of 1830-31. Oregon Historical Society Quarterly 14:280-314.

Wormington, H. Marie
1955 A reappraisal of the Fremont cultures with a summary of the archaeology of the Northern Periphery. Proceedings:Denver Museum of Natural History 1.

1957 Ancient man in North America (fourth edition). Denver Museum of Natural History, Popular Series 4.

Wright, Gary A.
1978 The Shoshonean migration problem. Plains Anthropologist 23:113-137.

Wylie, Henry G.
\+ 1971a Archeological reconnaissance of northwestern Utah and northeastern Nevada, first season. Ms. on file, Department of Anthropology, University of Utah.

+ 1971b Archeological reconnaissance of northwestern Utah and northeastern Nevada, second season. Ms. on file, Department of Anthropology, University of Utah.

+ 1971c Summary and recommendations upon archeological reconnaissance of northwestern Utah and northeastern Nevada. Ms. on file, Department of Anthropology, University of Utah.

1973 Microanalysis and functional typology of the Hogup Cave chipped stone tools. M.A. thesis, Department of Anthropology, University of Utah.

* 1974a Preliminary recommendations for management of cultural resources on Mt. Moriah and Snake Divisions of the Ely Ranger District, Humboldt National Forest, Nevada. Ms. on file, Intermountain Region Forest Service, Ogden, Utah.

* 1974b Promontory pegs as elements of Great Basin subsistence technology. Tebiwa 16(2):46-68.

1975 Tool microwear and functional types from Hogup Cave, Utah. Tebiwa 17(2):1-32.

York, Robert

* 1974 Test excavations and controlled surface collecting in Long Valley, Nevada. Ms. on file, Nevada State Museum, Carson City.

* 1975 A preliminary report on test excavations and controlled surface collecting in Long Valley, Nevada. Nevada Archeological Survey Reporter 8(1):4-10.

* 1976 Corrections and additional data on "a preliminary report on test excavations and controlled surface collecting in Long Valley, Nevada". Nevada Archeological Survey Reporter 9(1):5.

* 1977 Studies ar Adams-McGill Reservoir: exercises in applying small project data to archaeological research. Nevada Bureau of Land Management, Contributions to the Study of Cultural Resources, Technical Report 1.

* 1978 Long Valley archeological study, 1978: progress report. Ms. on file, Bureau of Land Management, Nevada State Office, Reno; and Nevada State Museum, Carson City.

Young, Brigham

1851 History of Brigham Young. Microfilm on file at LDS Church Archives, Salt Lake City.

Ziegler, Alan

* 1964 Animal bones from Lehman Caves National Monument. In The archaeology of Lehman Caves National Monument, by Charles Rozaire, pp. 42-62. Ms. on file, Nevada State Museum,

Carson City.

Zingg, Robert Mowry
1933 A reconstruction of Ute Aztekan history. Unpublished Ph.D. dissertation, University of Chicago.

1938 The Ute Indians in historical relation to Proto-Azteco-Tanoan Culture. Colorado Magazine, July, pp. 1-19.

1939 A reconstruction of Uto-Aztekan history. University of Denver Contributions to Ethnography 2.

ADDITIONAL REFERENCES

Burt, William H., and Richard P. Grossenheider
1976 A field guide to the mammals (third ed.). Houghton Mifflin Co., Boston.

Kurten, Bjorn, and Elaine Anderson
1980 Pleistocene mammals of North America. Columbia University Press, New York.

Ziegler, Alan C.
1963 Unmodified mammal and bird remains from Deer Creek Cave, Elko County, Nevada. In Deer Creek Cave, Elko County, Nevada, by Mary Elizabeth Shulter and Richard Shutler, Jr. Nevada State Museum Anthropological Papers 11:15-23.

APPENDIX I

APPENDIX I

REPORT BY GRAHAM S. QUATE ON 1924 ARCHAEOLOGICAL INVESTIGATIONS OF SMITH CREEK CANYON AND VICINITY

The following was written by District Forest Ranger Graham S. Quate on August 28, 1924. The report concerns an archaeological reconnaissance he made with Captain Alan LeBaron and C. T. Rhodes on the east side of the Snake Range in the vicinity of Smith Creek. In the first paragraph he mentioned a stone corral and a cave along Hendry Creek that they visited. The stone enclosure was recorded by Rudy (1953; UU site no. 26WP13) and the BLM Ely District (BLM site no. AR27-04-4). The cave is, as of yet, an unrecorded site, located in Sec. 36, T. 16 N., R. 70 E. Other sites mentioned in the report are Kachina and Council Hall Cave, both of which are in Humboldt National Forest. The copy of Quate's report was provided by Jack Wilcox, Ely District Ranger, Ely, Nevada (personal communication to S. R. James, July 1977). Since this report is one of the earliest accounts on the archaeology of the area, we felt the complete version should be reprinted.

Cooperation - Nevada
Archeological Research

Baker, Nevada
August 28, 1924

MEMORANDA FOR FILES

On August 27th I left Baker Ranger Station accompanied by Captain Alan LeBaron of San Francisco and C. T. Rhodes, the custodian of Lehman Caves National Monument, and drove to the mouth of Hendry Creek Canyon on the Moriah Range of Mountains. Leaving the road we proceeded on foot to an ancient stone structure or enclosure resembling a low corral which is roughly about one half or three fourths of a mile in circumference. Nothing of importance was found here but working from this point Captain LeBaron quickly located what was probably once the dwelling place of a cave people along Hendry Creek about three fourths of a mile north of the stone structure. After a short search the Captain found several pieces of very crude pottery and several other antique articles of less importance.

Proceeding upon my knowledge of the topography of the surrounding country we decided to explore the mouth of Smith Creek which seemed a likely place to find relics of the Cave Dwellers.

About noon on August 27, 1924 we arrived at a point in Smith Creek Canyon which is in Section 15, T 17 N., R 70 E., Mt. Diablo Base and Meridian. After a very short search we came to a small cavern which is so favorably situated that it is to this day used as a shelter by sheep herders and others who pass through this canyon. Smith Creek flows past this cave and is probably 15 to 20 feet below the floor of the cavern.

On the walls of this cave are numerous drawings in red. They are very well executed and of quite complicated design. One figure in particular represents a man who is shown as holding what appears to be a branch or plant in one hand while in the other hand is a figure made up of a number of concentric rings.

Directly across the small creek from this first cave and at about the same elevation several more drawings were found. Two drawings in particular are very well done and appear to represent female figures holding a war club in the right hand. The hair of these figures appears to be long, hangs down on each side of the head, and is done up in a knot just below the ears. The object held in the right hand of each figure is unmistakeably a war club or similar weapon. The outline and general appearance of these figures stands as very strong proof that they are supposed to represent females.

From this Cave Dwelling we continued the search and at a point one half mile up the Canyon and high up on the south wall we made what I consider a marvelous discovery.

Our attention was attracted by the mouth of a large cave high up on the mountainside with what appeared to be a footpath leading to it. This cave is located about one half mile up the hillside from the creek level, the average grade being at least 35%, and the last 600 feet of the approach to the cave being nearly perpendicular up the face of a bare limestone cliff. As to the footpath leading to the cave, a question might be raised as to its having ever been used as such as portions of it are altogether impassable now. But judging by my observations of such matters I am of the opinion that the dim way which we were able to follow directly to the mouth of the cave is unmistakeably the remains of an ancient footpath.

Arriving at the mouth of the cave to which we were lead by the outlines of an ancient trail we beheld a wonderful sight which defies description. The mouth of this cave faces northward. The entrance is a flat arch which is 80 feet wide and about 25 feet high. Across the mouth of the cave is a ridge or mound of earth so that as one stands upon this ridge they are looking down into a large room 150 feet long 80 feet wide and averaging 20 feet in height. The walls are fairly smooth and regular, the ceiling is also regular and gently arched. The floor is perfectly flat excepting for the slope of the mound across the entrance. The back side walls curve gently together and the ceiling slopes down at the back to within about 5 feet of the floor which is slightly elevated at this point. Here there is room for one or possibly several people who would have a wonderful command over the rest of the huge hall which could accommodate at least five hundred persons without crowding. From this point of vantage the acoustic properties of the hall are wonderful, the voice of a speaker rolls through the cavern greatly amplified and of a wonderful sonorous quality. By pounding a rams horn upon a flat rock we were able to produce some very startling effects.

In the center ;of the great hall we dug up ashes and charcoal to a depth of two feet but did not prospect any deeper. Standing within the hall and looking out, one gazes across a great canyon about one mile in width at this elevation and with great walls of solid limestone from 2,000 to 3,000 feet in height. The grandeur of the place cannot be described.

After a brief examination of the cave, Captain LeBaron set upon a place where he thought something might be buried. We first removed a few inches of fine dust, then several flat rocks were removed, after which we dug down about 14 inches through fairly solid soil and gravel. At this point we struck a sort of cement which was fairly smooth on top and quite rough underneath and about two inches in thickness. This cement was broken and the top of a roughly woven basket uncovered. Beneath this fragment of a basket was found about half a bushel of cedar or juniper bark. This bark was carefully sorted and several kernels of yellow dent corn, a corn cob, and some unidentified seeds were discovered. As to the cement covering, this did not extend entirely over the basket and bark but must have been intended as a protection for the same as it extended down around it on the sides and it would have been difficult or practically impossible to have removed the basket when it was intact without breaking the cement covering.

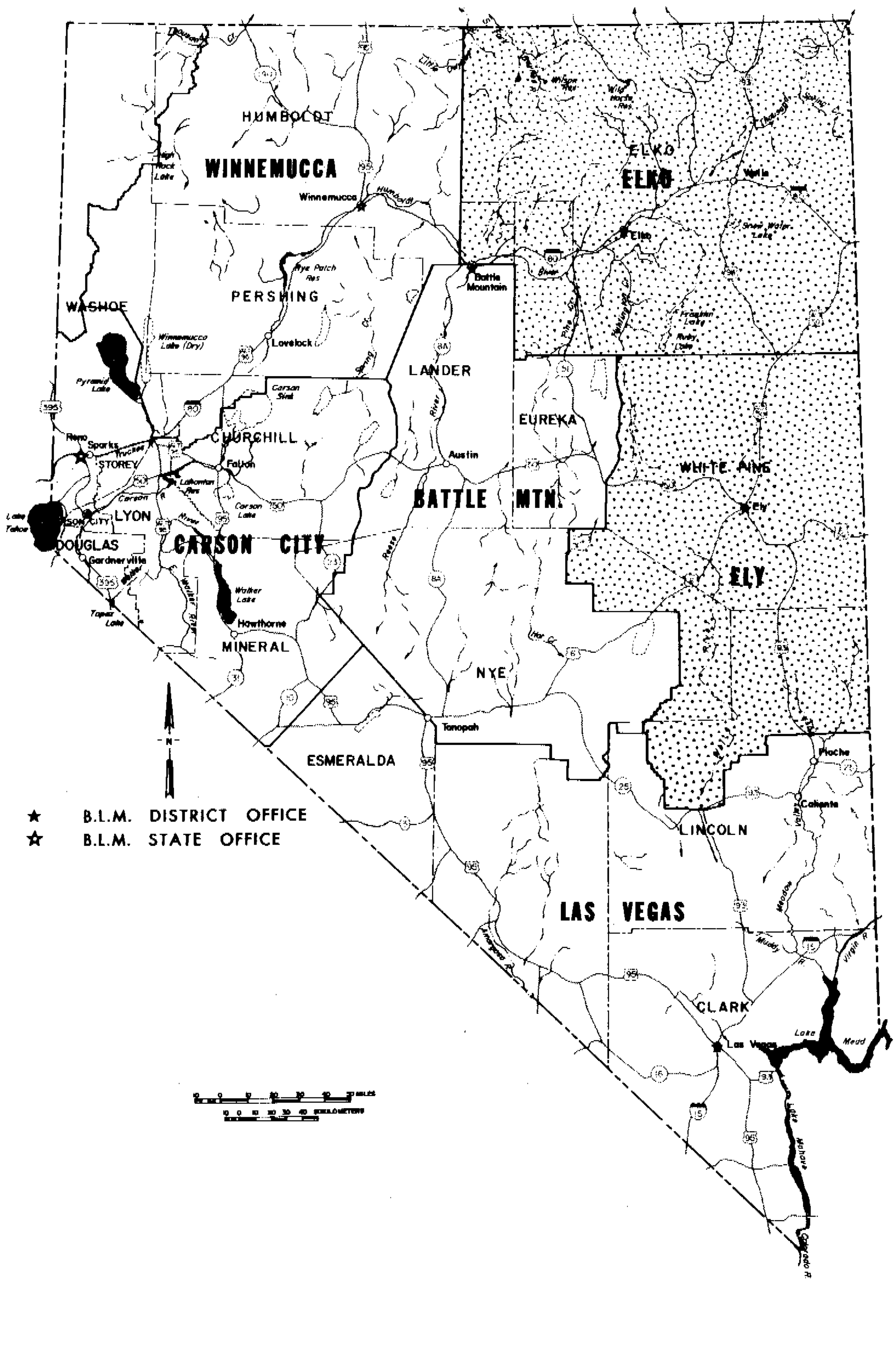
It has been suggested that this cavern be known as the Cave of the Council Hall, and it is my recommendation that it be so shown on our maps near the southwest corner of S. 15, T 17 N., R 70 E., MDB&M.

I should also state that near the center of the room we found a pile of Mountain Sheep horns numbering 12.

Captain LeBaron states that he will probably return and explore the floor of the cave more thoroughly which exploration will probably result in some very important discoveries.

Respectfully submitted,

District Forest Ranger



HUMBOLDT
WINNEMUCCA
Winnemucca
ELKO
Elko
Wells
Battle Mountain
PERSHING
WASHOE
Lovelock
Pyramid Lake
Winnemucca Lake (Dry)
Rye Patch Res
LANDER
EUREKA
Reno
Sparks
STOREY
CHURCHILL
Fallon
Carson Sink
Austin
WHITE PINE
Ely
BATTLE MTN.
Lake Tahoe
CARSON CITY
LYON
DOUGLAS
Gardnerville
Walker Lake
Hawthorne
MINERAL
ELY
NYE
Tonopah
ESMERALDA
Pioche
Caliente
LINCOLN
LAS VEGAS
CLARK
Las Vegas
Lake Mead
Lake Mohave
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★ B.L.M. DISTRICT OFFICE
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