

PIAPAXA 'UIPI
(BIG RIVER CANYON)



Bureau of Applied Research in Anthropology
University of Arizona
Tucson, Arizona

Report of work carried out for the Rocky Mountain Regional Office, National Park Service,
under Project No. GLCA-R92-0071

PIAPAXA 'UIPI (BIG RIVER CANYON):

**SOUTHERN PAIUTE ETHNOGRAPHIC RESOURCE INVENTORY AND ASSESSMENT
FOR *COLORADO RIVER CORRIDOR*, GLEN CANYON NATIONAL RECREATION
AREA, UTAH AND ARIZONA, AND GRAND CANYON NATIONAL PARK, ARIZONA**

Final Report

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A NOTE ON TRANSCRIPTIONAL PRACTICE

The transcriptions used in this report follow the system for writing Southern Paiute used by Bunte and Franklin (1987:297-298), despite some criticism of this orthography by other Numicists (Givon 1992; Miller 1992) because it is allophonic and not phonemic. Briefly, the vowels are as in Spanish, except that barred-u (*u*) is a high central vowel, and the vowel (*o*) is a mid, front, rounded vowel. Long vowels are indicated with two vowels. Most consonants correspond roughly to their American English equivalents. Consonant *x* is a velar fricative. Consonant *xw* is a labialized velar fricative.

It should be noted that spellings of Paiute words in quotations have been retained without any correction, except for glottal stop, which is indicated by a question mark (?), instead of the IPA symbol, for typographical convenience.

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time away from their families and busy schedules to share their knowledge of traditional life and cultural resources in the Grand Canyon and Colorado River study area. Without their collaboration and participation, this study could not have been conducted. They deserve an equal share of the credit for the data and findings contained in this report. These individuals, listed by tribe, are:

Kaibab Paiute Tribe

Gloria Bulletts Benson
Angelita S. Bulletts
Crissy Bulletts
Danny Bulletts, Jr.
Karen Mayo
Willis Mayo
Vivienne Jake
Lucille Jake
Timothy Rogers
Bennjamin Pikyavit
Elva Drye

Paiute Indian Tribe of Utah/Shivwits Paiute
Tribe/Indian Peaks

Geneal Anderson
Alex Shepherd
Merrill Wall
Mart Snow
Ferman Grayman
Wallea Baker
Clifford Jake

Yetta Jake
Lamina Rogers
Barry Frank
Charlotte Razo
Eunice Surveyor

San Juan Southern Paiute Tribe

Evelyn James
Johnny Lehi
Grace Lehi
Candelora Lehi
Clarence Lehi
Jerry Lehi
Mabel Lehi
Benly Whiskers
Clyde Whiskers
Anna Whiskers
Henry Whiskers
Blue Lee
Jack Owl, Sr.
Mary Ann Owl
Bessie Owl

EXECUTIVE SUMMARY

Piapaxa 'uipi

The river there is like our veins. Some are like the small streams and tributaries that run into the river there. So the same things; it's like blood--it's the veins of the world...This story has been carried down from generation to generation. It's been given to them by the old people...it would be given to the new generation, too...(San Juan Southern Paiute elder, interviewed about the Colorado River at Willow Springs, September 27, 1993)

The traditional lands of the Southern Paiute people are bounded by more than 600 miles of *Piapaxa* (Colorado River) from the Kaiparowits Plateau in the north to Blythe, California in the south. According to traditional beliefs, Southern Paiute people were created in this traditional land and, through this creation, the Creator gave Paiute people a special supernatural responsibility to protect and manage this land including its water and natural resources. *Puaxantu Tuvip* (sacred land) is the term that refers to traditional ethnic territory. Within these lands no place was more special than *Piapaxa 'uipi* (Big River Canyon) where the Colorado River cuts through the Grand Canyon.

Southern Paiute people express a preservation philosophy regarding *Puaxantu Tuvip* and the water, minerals, animals, plants, artifacts, and burials existing there. Natural resources are perceived as having their own human-like life-force. *Piapaxa* (Colorado River) is one of the most powerful of all natural resources within traditional lands. Elders tell children about its power and the gifts it provides when talked to and treated with great respect. Traditionally Southern Paiutes lived, farmed, collected plants, and hunted along the Colorado River where it passed through their land. For this reason, the banks of the Colorado River are full of culturally meaningful human artifacts and natural elements.

Historically, many Southern Paiute people died when Europeans encroached upon *Puaxantu Tuvip*, bringing foreign people, domestic animals, and diseases. Paiute people soon lost control over most of the tributaries of the Colorado River, like the Santa Clara River, the Virgin River and Kanab Creek. As Paiute people were forced out of these riverine oases, they retreated to the Grand Canyon to live in regions of refuge that were not being entered by Euroamericans. So *Piapaxa 'uipi* (Grand Canyon) became the final refuge for traditional Southern Paiute life and, as such, assumed additional cultural significance.

Modern Southern Paiute people continue to use in traditional ways the Grand Canyon and the Colorado River, because they are still required to do so by the Creator. If a land and its resources are not used in a culturally appropriate manner, they become disappointed or angry and withhold food, health, and power from humans. For this reason, Paiute people continue to visit the Canyon and River to harvest plants, fish, and conduct ceremonies, even though access to these areas is now limited. When the Paiute people traveled through the Canyon during this study, one elder received three songs, a sign that the River and Canyon were pleased.

METHODS

This ethnographic resource study was funded by the Bureau of Reclamation and administered by the National Park Service for the period May 1, 1992 to January 1, 1994. The purpose of the research is to identify and document Southern Paiute ethnographic resources located along the *Colorado River Corridor* from Glen Canyon Dam to the end of the free flowing river at Separation Canyon within Grand Canyon National Park. The findings of this study are to be incorporated into the Glen Canyon Dam Environmental Impact Statement, which assesses the impacts of water releases downstream from the dam. This study area involves approximately 255 miles down river from Lee's Ferry and 15 miles up river from Lee's Ferry to Glen Canyon Dam.

The study identifies the ethnographic concerns of Southern Paiute people as these are represented by three tribes: San Juan Southern Paiute, Kaibab Paiute, and Shivwits Paiute Band of the Paiute Indian Tribe of Utah. A total of 364 interviews were conducted with representatives of these tribes at archaeological and ethnobotanical sites located along the Colorado River during two raft trips through the study area. These interviews are the basis of the Southern Paiute responses to potential impacts deriving from Glen Canyon water releases. Discussions with elders and an extensive search of documents provided additional information about how these Indian people feel about the Grand Canyon and the Colorado River. An extensive videotape of sites along the Colorado River provided tribal elders with the opportunity to make additional comments about Southern Paiute ethnographic resources.

FINDINGS

Only 36 of the more than 475 scientifically recorded archaeology sites were visited by Southern Paiute representatives during the first raft trip in July of 1992. Of these, at least 50 sites have been identified by archaeologists as Paiute (18 are clearly Paiute and 32 are either Pai or Paiute). Further ethnographic resource studies are expected to clarify the status of the remaining known archaeology sites and, potentially, add places without associated artifacts, such as power rocks or shrines, which are called Traditional Cultural Properties. At least a couple Traditional Cultural Properties have been identified.

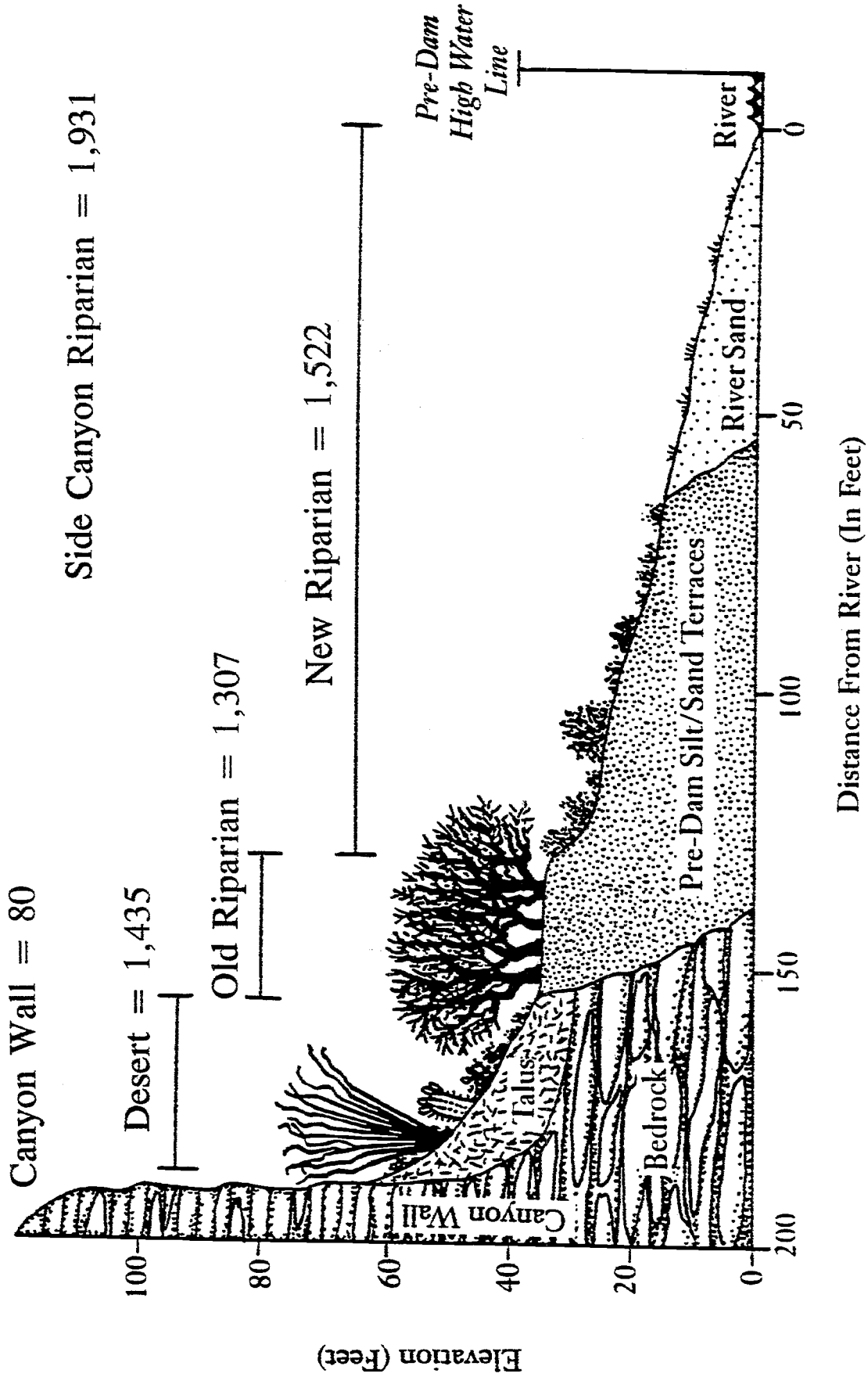
During a second raft trip covering 296 miles in May of 1993, Southern Paiute tribal representatives identified 68 species of plants at 21 sites which encompassed new riparian, old riparian, desert, canyon wall and side canyon ecozones. These plants continue to be significant

sources of food, medicine, ceremony, construction, and income. Indian children continue to be taught about the traditional uses of these plants. A calculation of the cultural significance of each species (Stoffle, Halmo, Evans, and Olmsted 1990; Halmo, Stoffle, and Evans 1993) permitted calculating the cultural significance of sites and ecozones based on plants. While the side canyon riparian ecozone scored the highest, the new riparian ecozone scored the highest of the ecozones closest to the Colorado River (see Figure 1.1).

In summary, the study findings indicate:

- * In the past whole families of Southern Paiutes lived along the Colorado River farming, gathering plants, hunting, trading with other Indian peoples, and conducting ceremonies.
- * In the past Southern Paiute people lived for long periods along the river as part of their normal way of life.
- * Paiute people say the sites visited were interconnected up and down the river locally, and regionally as part of a system of trade and transhumant resource use.
- * Some Paiute people continue to use sites along the Colorado River, although most people do not use sites because of changes in lifestyles and greatly reduced access.
- * These Indian people have been taught about sites along the Colorado River and continue to teach new generations about these sites.
- * Most sites visited were perceived to be of high cultural significance to Southern Paiute people.
- * The vast majority of the 68 species of plants that were traditionally used for food, medicine, ceremony, construction, and other purposes are currently used for the same purposes, and younger generations continue to be instructed about their traditional uses.
- * Of the ecozones closest to the *Colorado River Corridor*, the new riparian ecozone scored the highest in cultural significance based on plants.

ECOZONE SIGNIFICANCE SCORES



- * Flow regimes that protect native plants in the new riparian ecozone from severe flooding but maintain the old riparian ecozone are preferred.

SOUTHERN PAIUTE VOICES

This portion of the Executive Summary presents what some Southern Paiute elders and representatives said about the places, plants, and their concerns for these important cultural resources. The following quotes are taken directly from interviews recorded during the raft trips and on-reservation focus group interviews with tribal elders. These voices represent the speakers themselves and are not intended as a set of conclusions for the entire study. They do illustrate, however, the historic and contemporary concerns of Southern Paiute people for places and resources they consider to be sacred in the *Colorado River Corridor* study area.

Agave Roasting and Sacred Sites

In September of 1993, San Juan Paiute elders discussed the importance of *Agave (yaant)*, the practice of roasting it, and how this practice transformed the location, generally considered by archaeologists to be a relatively insignificant archaeological feature or site, into a sacred site by virtue of accompanying ceremonies and rituals associated with the roasting of this plant. The plant and the act of roasting it is linked to the importance of Grand Canyon and the Colorado River.

...they gathered some plants like yaant and other plants they used to eat or roast...The Paiutes used to go down the river a long time ago and they gathered yaant, and after they gathered it they would roast it. And they would also make a small niche where they'd roast their yaant. And then it bakes all night. So that yaant has syrup too. The syrup seeps out of the ground. The syrup is gathered...The next morning they'd get that syrup and remix it with yaant, and dry it on the rocks there the next morning.

First they would structure a small roasting pit and then they would find wood for it, and the only person that was allowed to build a roasting pit or find wood for it would be the person who was born in June, in mid-summer...This was the only person allowed to build that kind of a fire for that kind of roasting. So he would start up the fire from the east. So that's the only person who could do that kind of roasting; (he) could start up a fire from the east only...So this man had no clothes on--naked--roasting yaant. And he would be the only person roasting; no other person.

He says he would roast it on a hot surface ground. So that's how he would collect the syrup. This person would open that pit, this person would have an arrowhead to cut up small pieces to distribute to people. The people would be there...I guess his name was "person born in summer." Male.

This person would be trained first. He'd learn from a person who had also done that kind of work...And also a person who knows how to make bow and arrow. He'd learn from his father. That way they would choose the person who does this roasting, the people already knew that the person was born in the summer. That's how they would choose the person. A person born in summer would teach a young man.

In those days, after the feast, there would be a ceremony, a dance...There would be a peace dance. There are old words that we use, older Paiute words that we use...Yaant was also used as a hair brush...This plant was useful. It would be up, and also it would be in the canyons...Anna says the people who gathered the yaant used a rock pounder. They would go to the center [the agave heart]. It would be severed when it's ripe...that's what they're after. Once they got the leaf off...

...it [the agave roasting site] would be considered as a sacred land and also...as a power against the enemies. Back then we had a lot of enemies...They have eaten, they have danced there, they have had [a] ceremony there at those places...Anna was talking about the bloom of that flower. It's blue, purple...So, she's just saying that the old people called it blood...The flower. The tip of it... So we still hear "blood," "vein"...The blooming of the flower is like the river and also like the blood...

Wickiups and Women's Healing Sites

During the first raft trip, a Kaibab Paiute elder offered an alternative interpretation of a rectangular rock ring and associated pit features at Bedrock Canyon. Archaeologists have interpreted the site as consisting of a wickiup foundation and mescal roasting pits. Based on her observations, she concluded

That site as it's being interpreted to us in a scientific way I don't feel is correct, because instead of being a pit house or the foundation or something that surrounds the wickiup...it's not because our people never used rocks to surround a wickiup to hold it down or anything like that...a wickiup was portable and a wickiup could be taken down after its use so there was no reason to put the rocks around it. My thoughts on it and my observations, I see that it was a healing area, quite possibly where the shaman did his healing. And the shape of the rocks that surround that area are pretty evident that that's what it might have been. And those rocks, because of the way that they have been arranged, it just gives other people the information that that's a place of healing and that people should go there as they needed that healing. It might have been a place for women who were having a difficult childbirth and that's where they were treated. The size of that place is indicative that three adult people could have very easily, comfortably been in that, within that site. Possibly two midwives and a woman in labor. Then

again, it could be a place where young women when they were on their monthly periods so they would go there, and that would have been a place where they resided during that period that they were having their menstrual cycle..."

And further up, just the little hill up there, would indicate to me that that was where the shaman or the midwives stayed because the young woman with child or the young woman on her moon, as we say it, would have been in the wickiup or the healing place...and they would be there for a long period of time, so that place would have had to hold whatever belongings that they had there...their bedding, and water possibly, and things in preparation for the child that would be coming. Therefore, I don't agree with the interpretation that that is a wickiup site for living, but rather that it is a wickiup site for healing, because of the shape of the rocks on the ground. (Kaibab Paiute elder interviewed at Bedrock Canyon, July 20, 1992)

Hematite Cave and Ompi Pigment

During the third raft trip, Southern Paiute elders visited the hematite cave. A Shivwits Paiute elder, who is the daughter of Tony Tillohash, commented on the significance of the cave and the red pigment that is collected and used by Paiute people

[They] rub it all over on their face...some said people come around and bad spirits come and bother them and then they use that to protect themselves. They rub it on their face...They used it all the time...I still do...My kids complain about evil spirits bothering them and I rub it on their face, on my doors, it protects...My son who Sun dances, he uses that when he's Sun dancing...it's sort of a medicine...me, I use it for protection from the evil spirits...

...it was carried down from generation to generation, from my grandparents. I never saw them but my mother told me about it. My grandchildren ask me about these things. I think the whole canyon is related to the Paiutes because they wandered all around here, and camped and gathered all kinds of roots...

They only came when they needed it. They used to paint their jars, too... they mix it up with that sanap, they call it, the pitch from the pine...they mix it up in that and then paint their jug with it, paste it around...

That's very sacred to us, that paint. You don't just put it on, you have to pray when you put that paint on, or explain the purpose of using it. That's the way you use that paint. (Shivwits Paiute elder interviewed at Hematite Cave, May 13, 1993)

CHAPTER ONE

INTRODUCTION

The Colorado River and the canyons it carved over past millennium inspire awe in peoples of all cultures, thus causing the International Union for the Conservation of Nature to designate the Grand Canyon of the Colorado as a World Heritage Site. American Indian people share this awe and consequentially have incorporated the Colorado River and its canyons into their religion and the definition of themselves as a distinct people. Activities that influence the Colorado River and its canyons can affect American Indian religious values and even their existence as a people. Southern Paiutes are one of the American Indian ethnic groups who have long-standing traditional cultural ties to the Colorado River and its canyons.

This study is being administered by the National Park Service, Rocky Mountain Regional Office for the period from May 1, 1992 to January 1, 1994. Funding for the study was provided by the Glen Canyon Environmental Studies program, which is part of the Bureau of Reclamation.

The purpose of the study is to identify and document Southern Paiute ethnographic resources along the *Colorado River Corridor* from the Glen Canyon Dam to the end of the free flowing river at Separation Canyon within Grand Canyon National Park. Specifically, this study is concerned with

All locales and physiographic features along the river corridor potentially impacted by a proposed Bureau of Reclamation project to change the regime of water releases from the Glen Canyon Dam.

Findings from this study will contribute to the Southern Paiute portions of the Glen Canyon Dam Environmental Impact Statement being prepared by the Bureau of Reclamation.

The *Colorado River Corridor* is composed of an *affected zone* and a *study area*. The *affected zone* includes all riverine environments, especially those that contain river derived sediments, whether alluvial, fluvial, or eolian. This zone encompasses the present beach up to and including the farthest extent of the old high water zone marked by high dunes and mesquite. The *study area* is the 255 mile stretch of Colorado River corridor including all areas up to the 300,000 cubic feet per second water level and all sand covered areas above that level.

The purpose of this study is to identify the ethnographic resource concerns of Southern Paiute people as these are represented by the San Juan Southern Paiute, Kaibab Paiute Tribe, and Shivwits Paiute Band of the Paiute Indian Tribe of Utah. Studies of the Walapai Tribe, the Hopi, the Navajo, and the Zuni Tribes have been funded and are presented elsewhere. The remainder of this chapter discusses (1) ethnographic resources and agency management, (2) the research design and tasks, (3) a chronology of research activities, (4) personnel qualifications and (5) the protection of human subjects.

ETHNOGRAPHIC RESOURCES AND AGENCY MANAGEMENT

The term *ethnographic resources* is used to describe both a perspective on and a methodology for studying cultural resources. Typically, the term *cultural resources* is defined by federal and state law and agency regulation as being artifactual materials associated with places. These artifactual materials and associated places are legally evaluated and managed by professional archaeologists, historians, and folklorists. In general the artifacts and places are evaluated in terms of how culturally significant they are to the people of the United States, although regional and local significances are recognized. In general, the value of an artifact or place to the history of the United States or its value to science are key in defining significance. The final test of cultural resources is to undergo review by the Advisory Council on Historic Preservation. If the artifactual materials and associated places are deemed of national significance they are placed on the list of historic places. Once on this list they are afforded special status and protection under federal and state laws.

Cultural resources become ethnographic resources when viewed from the perspective of the people who produced them. American Indian people often view artifactual materials and the places associated with them differently than these are viewed by scientists. American Indian people also ascribe meaning and value to places and things that are not man-made such as plants used in ceremonies, animals that served in the creation of human-kind, and rocks that agree to use their power to cure sick people. In order to understand the American Indian perspective, professional cultural anthropologists use ethnographic research methods. These methods involve taking individual responses to cultural resources and generalizing these to the ethnic group level.

Most state and federal land management agencies closely follow the laws and guidelines associated with the scientific identification, evaluation, and management of cultural resources. It has only been in the past few years, however, that these agencies have begun to consult with American Indian people about ethnographic resources contained within the boundaries of these land management facilities. The present research is directed towards this goal.

RESEARCH DESIGN AND TASKS

The Colorado River Corridor study was designed to understand what cultural factors contribute to the identification of archaeology sites, how differential cultural significance is assigned to archaeology sites, what forces can influence the condition of archaeology sites, and how to evaluate the damage that may have occurred or may occur to the archaeology sites

located in the Colorado River Corridor. The study was open to concerns for plants and animals of religious importance and to what have been called *traditional cultural properties* that have religious importance but lack archaeological materials. In order to achieve these goals, the research process was participatory so that all parties to the study agree with the final report's presentation of findings and mitigation recommendations. The study also was reliable. The findings from the study can be used to predict the future.

Background and Experience

Our study team has worked to represent the cultural concerns of 63 American Indian tribes, including Southern Paiute, Navajo, Hopi, and Zuni peoples. During this same period we have successfully worked with archaeologists to merge their professional concerns with the cultural concerns of the Indian people to produce appropriate mitigation recommendations. The following research design has been developed during these projects (Stoffle and Evans 1990, Stoffle, Halmo, Evans and Olmsted 1990; Stoffle, Jake, Evans, and Bunte 1981), but it has been specifically adjusted to reflect the special needs of this study. On other projects we have utilized surveys to represent the concerns of rural residents, such as the recent social impact assessment in Michigan of the Superconducting Super Collider (Stoffle, Traugott, Jensen, and Copeland 1987; Stoffle et al. 1988) and a separate proposal to locate the Midwest Compact's Low-Level Radioactive Waste Isolation Facility (Stoffle 1990; Stoffle et al. 1990, 1991).

Study Design

The *Colorado River Corridor* study was designed with the following nine research tasks: (1) Consultation, (2) Legal Reviews, (3) Inventory and Analysis, (4) Resource Type and Land Use Interviews, (5) Interim Study Group Tribal Meeting, (6) Contemporary Significance evaluation, (7) Resource Conflicts and Mitigation Assessment, (8) Traditional Cultural Properties nomination, and (9) Write-up and Review.

Specific methodologies were developed for each of these study tasks. These methodologies derive from past project experience and from the published literature. Over the years our research team has published a number of articles describing aspects of our research methods, most recently about the process of consultation (Stoffle and Evans 1990) and about a model for establishing the cultural significance of Native American plants (Stoffle et al. 1990). In general we trend toward using survey forms in order to compare American Indian responses. Such forms have been developed for plants and are being developed for animals, archaeology, and places of power as part of the current Native American AIRFA compliance work on the Nevada Test Site (NTS). Currently the 17 tribes involved in the NTS research are helping to prepare sets of questions they would prefer that we ask their elders regarding these issues. The forms were modified based upon review by the Havasupai and Southern Paiute people. In general we used every recording tool at our disposal, so we neither miss nor misunderstand the thoughts of the tribal elders. Elders were asked for their permission to use various recording devices and most agreed to be tape recorded or videotaped because they want us to accurately record their thoughts. We developed and tested a sampling procedure for searching newspapers

that is unique, but other documents were searched according to standard procedures. Report writing involved the *triangulation* of information. We compared the thoughts of elders within and between cultural groups in order to establish the existence of patterns. These patterns were checked against available written materials to expand our understanding of what concerns are being expressed.

The governments of the Indian tribes were closely involved in the research from beginning to final report. Tribal councils determined how they wish to review the research methods and findings. In general, each tribe appointed someone to follow the project. We have called this person the Official Tribal Contact Representative or OTCR. The OTCR keeps the tribe's official files on the project and is a person who can read and digest the large volume of written material that is normally produced by a project such as this. The OTCR reports to the tribal council whenever they wish an update on the project. The OTCR reviewed the research team's procedures for assuring that information collected during this project is properly protected and assuring the confidentiality of information sources. The OTCR provided coordinating functions when our study team visited a reservation to meet with the tribal council or to interview elders. The OTCR does not speak for the tribal council. No research activities occurred without the knowledge of and permission of the tribal government.

Task 1: Initial Consultation

Indian people today want to know when agencies or academic researchers are planning to propose research that involves tribal members or tribal issues. For this reason many tribes are asking that potential contractors submit copies of their proposal to the tribal government or cultural resource office at the time these proposals are sent to the funding agencies. A copy of our proposal was sent to each of the potentially involved tribes with the clear understanding that this was a bid.

Upon notification of the contract award, the UofA research team held a one-day strategic planning meeting regarding issues of schedule, methodology, and task responsibilities. In addition, the Principal Investigator met (as specified in the RFP) with the NPS superintendents and the Contracting Officer's Representative (COR) in Tuba City, Arizona. Once these meetings occurred, the contacts with involved tribes began.

✓ Tribal governments are the official representatives of their tribal members; therefore, this is the first point of contact for any research project involving Indian people. No research should be conducted without the tribal government or its official representatives (like a cultural resource management officer) being informed of the project and officially approving of the research design. Phone calls and letters are insufficient for fully informing tribal governments about proposed research, so each tribal government or its official representative should have the right to a face-to-face presentation about the proposed research.

The initial tribal contacts involved telephone calls that briefly described the project and its objectives. Tribal chairs were asked if they wished to be involved in the project. Telephone

contacts were followed by a letter that was sent to formally notify the tribes of the project, its objectives, and a request for identifying knowledgeable elders who wished to be interviewed on the traditional resources and important locations in the river corridor study area.

The following tribes were contacted regarding the study: (1) the Kaibab Paiute Tribe, (2) the San Juan Paiute Tribe (with groupings at Paiute Mountain and Willow Springs), (3) the Shivwits Paiute Tribe, and (4) the Paiute Indian Tribe of Utah.

When the above tribes expressed interest in learning more about the project, UofA researchers and the tribal chairs scheduled a time for presentation by members of the research team. The meetings were held on a day, at a time and location that was mutually agreeable to both parties. Normally, these presentations were held at the tribal offices. The research team asked the NPS to provide visual materials (such as slides and overheads of the study area) as part of the presentation. The Native American Project Assistant, Ms. Vivienne Jake of Kaibab, attended the meetings with the Southern Paiute governments.

The project was discussed with the Kaibab tribal council on May 21, 1992. The meeting with the Shivwits council occurred on May 22, 1992. Because of prior commitments on the part of tribal leaders, the initial council meeting with the San Juan Southern Paiute Tribe did not occur until July 7, 1992. The following day, July 8, a meeting requested by the San Juan Southern Paiute Tribe was held at Wahweap Lodge in Page, Arizona. The project was described and the selection of tribal representatives for the first raft trip was discussed. The meeting was attended by 24 members of the San Juan Southern Paiute Tribe, eight members of the Shivwits Paiute Tribe, and four members of the Kaibab Paiute Tribe.

Special cultural resource training was provided to Paiute representatives, in consultation with the Paiute representatives. The training provided cultural resource management materials as well as a question-and-answer discussion of the issues. This training was designed to help prepare the Native American tribal representatives to understand the project. A second training workshop was held with members of the San Juan Southern Paiute Tribe at the tribal government's request. A meeting was held on January 4, 1993 with the tribal council. The following day (January 5), an all-day training session was held with ten tribal members. Documents and other materials concerning cultural resource legislation and management were distributed at the workshop.

Task 2: Legal Review

This task involved searching, duplicating, reviewing and assessing the federal legislation and regulations regarding Southern Paiute rights to practice traditional religion, and have access to and use natural resources in the study area. A parallel analysis is provided for a neighboring tribe, the Havasupai, so that the Southern Paiute legal materials can be compared and contrasted. The legal documents included in this search were Indian Claims Commission reports and decisions, as well as any federal legislation regarding the Grand Canyon National Park, Glen Canyon National Recreation Area, and any programmatic memoranda of agreement between the

NPS and the involved Indian tribes concerning access to and use of natural resources in these park units. In addition, all relevant NPS policies regarding ethnographic resources and studies were reviewed. This task was broken down into two subtasks: document searching and tribal contacts.

Document Searching

This subtask refers to visits to various document repositories to find and duplicate relevant legal documents. The University of Arizona library holds most of these kinds of documents.

Tribal Contacts

In the event that some legal documents could not be located in the University of Arizona library, involved tribal governments were contacted by phone for the purpose of obtaining information on the legal documents that may have been missed by the search process.

Task 3: Inventory and Analysis

The research team produced an inventory of contemporary resource uses and placed these into a discussion of traditional culture patterns. Past research with the involved tribes has produced an extensive collection of document sources regarding the type of cultural resources that are currently used by Southern Paiute and Havasupai peoples. Our search focused on documenting resource use patterns in the current study area, so it was necessary to review documents in our possession as well as seek out new sources.

Literature Search

Past research has shown that local newspapers are an excellent source of information on the recent history of patterns of cultural resource use for certain types of resources. The University of Arizona and the Arizona State Historical Society have copies of newspapers from the Grand Canyon Region and we briefly searched a sample of these.

Reservation Interviews

The best source of information about contemporary use is the Indian people. We interviewed Indian people about recent historic and contemporary use of the study area. The tribal governments were asked to select the people they wished to speak regarding this issue. On-reservation interviews and meetings with tribal elders were conducted with each of the tribes. Interviews with two San Juan elders occurred on July 7, 1992. The interview session lasted two hours. On July 9, a meeting was held with five Kaibab elders. The meeting lasted seven hours. On July 10, a meeting with ten Shivwits elders was held. The meeting lasted seven hours.

Large-scale flat topographic maps and raised topographic maps were used as a visual aid during interviews. Place names from these maps were used to stimulate conversation about traditional Paiute areas. Most of the elders had family who lived at some time in the Colorado River study area, and all were aware of specific locations in the Grand Canyon.

In February of 1993, a six-hour video presentation of the July 1992 raft trip was made to each of the involved tribes. Following the video presentation, informal interviews were conducted with elders to elicit place names for culturally significant locations in and around Grand Canyon and the river corridor study area.

The video presentation was made at Kaibab on February 6, 1993. Twenty people attended, including 13 adults and 7 youth. The Cedar City presentation was made on February 8, 1993. Ten adults attended the presentation. On February 9, 1993, the video was shown at Shivwits. The presentation was attended by 17 adults. The video presentation was shown at San Juan on February 10, 1993. Seventeen tribal members attended the presentation, including 14 adults and 3 youth. In all cases, members who viewed the video were invited by the tribal governments.

Additional interviews were conducted with San Juan Paiute elders at Willow Springs on September 27, 1993, and with elders at Navajo Mountain on November 2 and 3, 1993. These interviews were conducted to obtain San Juan stories about traditional beliefs and practices surrounding cultural resources in the study area. The tribal government requested that these interviews be conducted at a mitigation meeting, which was held on August 30, 1993.

Task 4: Resource Type and Land Use

The research team located, to the degree possible, site-specific information and criteria for recognizing specific ethnographic resource sites (for example, possible archaeological characteristics of protohistoric sites, landscape characteristics, ethnobotany). These data helped guide the Indian people and the study team members in choosing places to visit during the on-site visits by raft.

Initial On-site Visits

Two members of each tribe were provided access to the study by three joint raft trips. A motorized commercial trip from Lees Ferry to Diamond Creek generally requires a full week, so we allotted up to twelve days including travel to and from the canyon for the first trip. To the extent possible, places to visit were decided in advance in consultation with NPS archaeologists and the involved tribes. The ratio of Indian cultural resource experts to ethnographer was kept as low as possible so that full interviews could be conducted at each place that was visited.

An American Indian video crew from the Colorado River Indian Tribe's museum joined the first trip for site visits. This Indian film crew is highly respected among the Southern

Paiutes. The crew has worked in the past with Southern Paiutes and was able to film without disrupting interviews. The head of the film crew is Mr. Gilford Harper. Footage was provided to the research team and used in the Interim Study Tribal Consultation Meeting and in the focus group interviews with elders on the reservations.

Task 5: Interim Study Tribal Consultation Meeting

The NPS request for proposals asked that the contractor and, if appropriate, an NPS representative, meet with representatives of the tribal groups under study approximately midway through the study to present a non-technical oral report and consult on preliminary findings. After this interim study meeting the contractor prepared a brief written report to the NPS on the outcomes of this meeting. Our team has conducted dozens of these types of meetings. We recommended that a portion of each meeting be set aside for the Indian representatives to talk among themselves without either the NPS or UofA research team member being present. This meeting was held on the Kaibab Paiute Indian reservation on September 23 and 24, 1992. At least one leader from each of the four tribes attended this meeting.

Task 6: Documentation of Ethnohistoric and Contemporary Significance

The NPS request for proposals asked that the contractor discuss how the cultural resources that are identified by the American Indian people in the Colorado River Corridor study area fit as parts in Paiute culture, social organization, subsistence and modern economy. First and foremost, American Indian people define what is significant to them. Recently, however, we have developed a model for calculating the cultural significance of American Indian plants (Stoffle, Halmo, Evans, and Olmsted 1990). This model formalizes what Indian people tell us about plants, but it has the advantage of helping to compile statements from a number of Indian people into an overall calculation of cultural significance. It has the added advantage of being able to translate cultural significance into spatial scores. Land managers tend to find it is easier to protect places of cultural significance than to protect specific resources such as a stand of a type of medicine plant.

There is an extensive literature regarding Southern Paiute culture. The draft archeology report *The Grand Canyon River Corridor Survey Project* (Fairley et al. 1991) brings much of this literature together. The UofA research proposal suggested even other places to go for background information. Ultimately, however, our search derived from the types of cultural resources that Indian people specified as significant and therefore needed to be placed into ethnographic context.

Most tribal elders were not able to visit the places of cultural importance along the 255 mile long study area. As a consequence, it was essential to take photographs of cultural items found in the study area and show these to elders to provide an opportunity for their comment. Our experience is that when high levels of rapport are present between the research team and the people it is possible to have focus group discussions. We have conducted such meetings with

all of the Southern Paiute people involved in this project. We also provided the opportunity for individual tribal members to discuss this issue in private.

Task 7: Resource Conflicts and Mitigation Recommendations

The NPS request for proposals specified that the contractor provide an inventory of existing or potential conflicts between Native American resource use(s)/traditional practices and current NPS management of these resources. Along with this inventory, the contractor would recommend potential mitigation of these conflicts.

This task required careful consultation with the Indian tribal governments involved in this study. The resource conflicts can be identified during the interviews with tribal members, but mitigation recommendation must involve both the cultural experts of the tribe and the tribal government. Most agencies, including the NPS, recognize the need to establish government-to-government relationships with American Indian tribes. Such relationships cannot be fully implemented by just one research project, but one project can lay the foundation for the formation of lasting relationships between a federal agency and tribes with traditional ties to agency lands.

HUMAN SUBJECTS

This cultural resource assessment study was guided by standard ethnographic human subject interviewing procedures as outlined and approved by the University of Arizona human subjects committee. These procedures protect the privacy of the respondent and facilitate more open communication. In addition to these commitments to protecting human subjects, prospective respondents were fully informed about their rights and the project. It is standard practice that when contacted as part of ethnographic interviews, the potential respondent is told orally about the nature and purpose of the project. They are told that their participation is voluntary and that they can refuse to answer any question. They are also told that all answers are confidential. Only those people who gave their informed consent to participate were interviewed during the ethnographic research. The ethnographic researchers left with each person who gave their consent to be interviewed information about the project and a commitment to maintain confidentiality.

CHAPTER TWO

SOUTHERN PAIUTE PEOPLE

Southern Paiute people have resided in their traditional lands for many generations. According to archaeologists, Paiute people came into the region by at least 1150 AD (Euler 1964, Shutler 1961). Their ethnic group boundary has been defined by travelers' observations in the late 1700's (Bolton 1950), by Euroamerican settlers diaries and official government surveys in the mid-1800s (Little 1881; Powell and Ingalls 1874), and by oral history interviews in the 1930s (Kelly 1934, 1964; Stewart 1942) and in the 1980s (Bunte and Franklin 1987; ERT 1980). All of these sources of boundary information document that the lands currently occupied by the Shivwits Paiute, the Kaibab Paiute, and San Juan Paiute people are part of the traditional territory of the Southern Paiute Nation (Figure 2.1). The Colorado River Corridor study area is within Southern Paiute traditional territory (Figure 2.2).

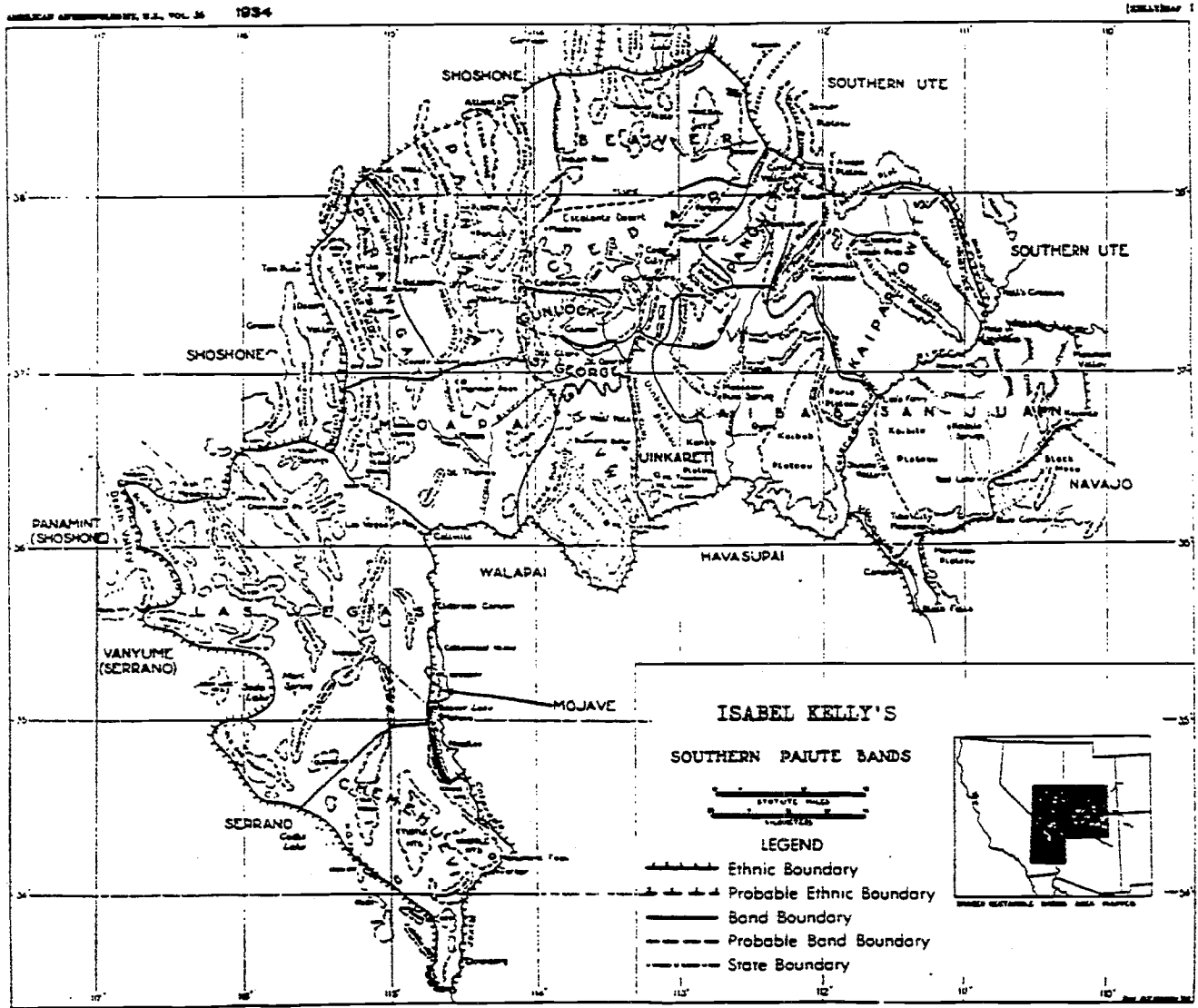
Efforts by Euroamerican scholars to define a boundary and an origin time for the Southern Paiutes are perceived by Paiute people themselves to be overshadowed by religious knowledge about traditional ethnic territory and the events by which the people came to inhabit it. According to traditional Paiute beliefs, Paiute people were created in these traditional lands. Through this creation, the Creator gave Paiute people a special supernatural responsibility to protect and manage the land and its resources. In Euroamerican terminology, this land is their Holy Land (Spicer 1957:197, 213).

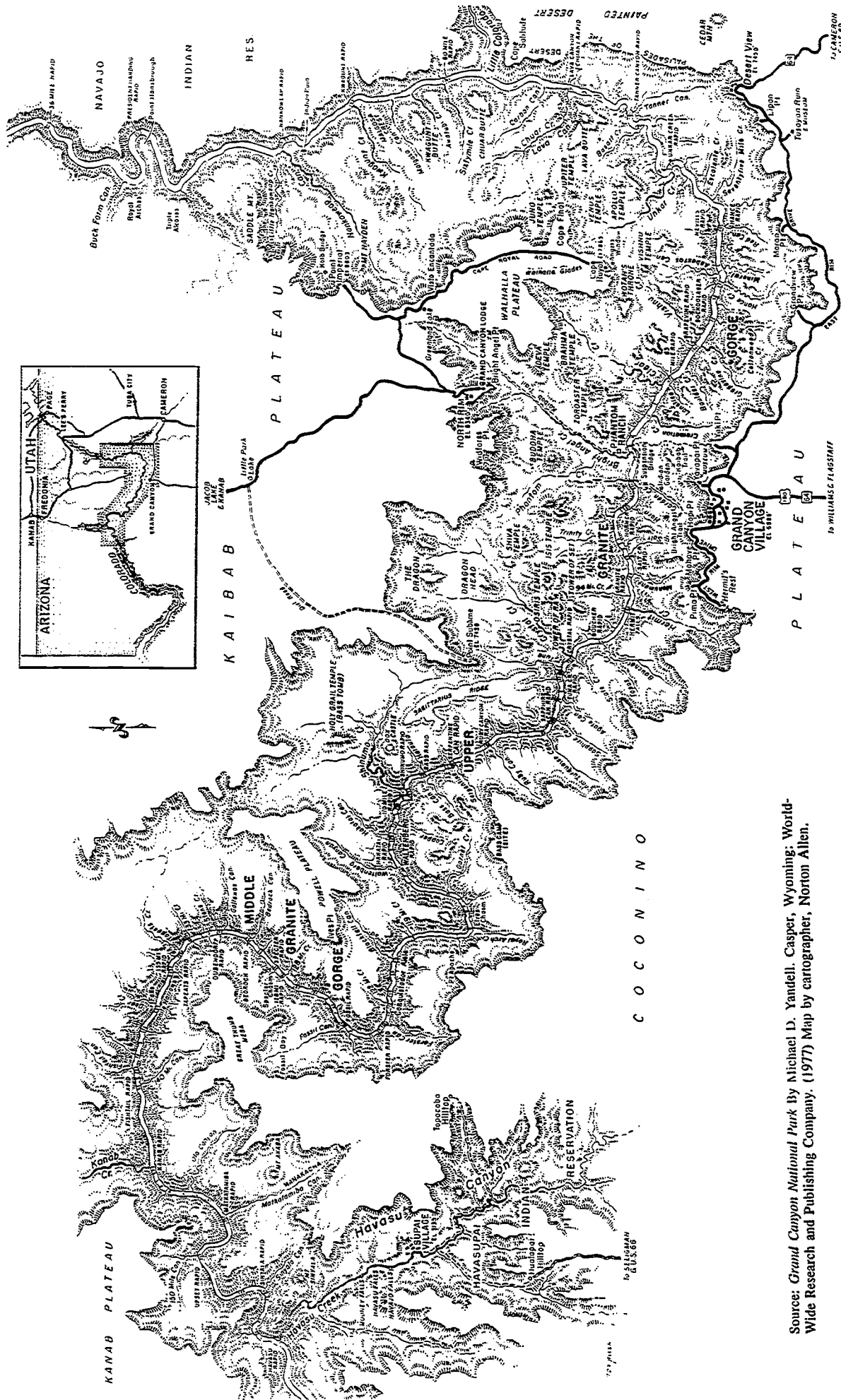
The Southern Paiute people believe that they were created by the supernatural near Charleston Peak -- called *Nuvaγantu* [herein rendered as *Nuvagantu*]--located in the Spring Mountains (Kroeber 1970, Laird 1976, Stoffle and Dobyns 1983). According to Laird (1976:122):

In prehuman times *Nivagant̄i* was the home of Wolf and his brother, Mythic Coyote. It was the very heart of *T̄iwiin̄ar̄ivip̄i*, the Storied Land.

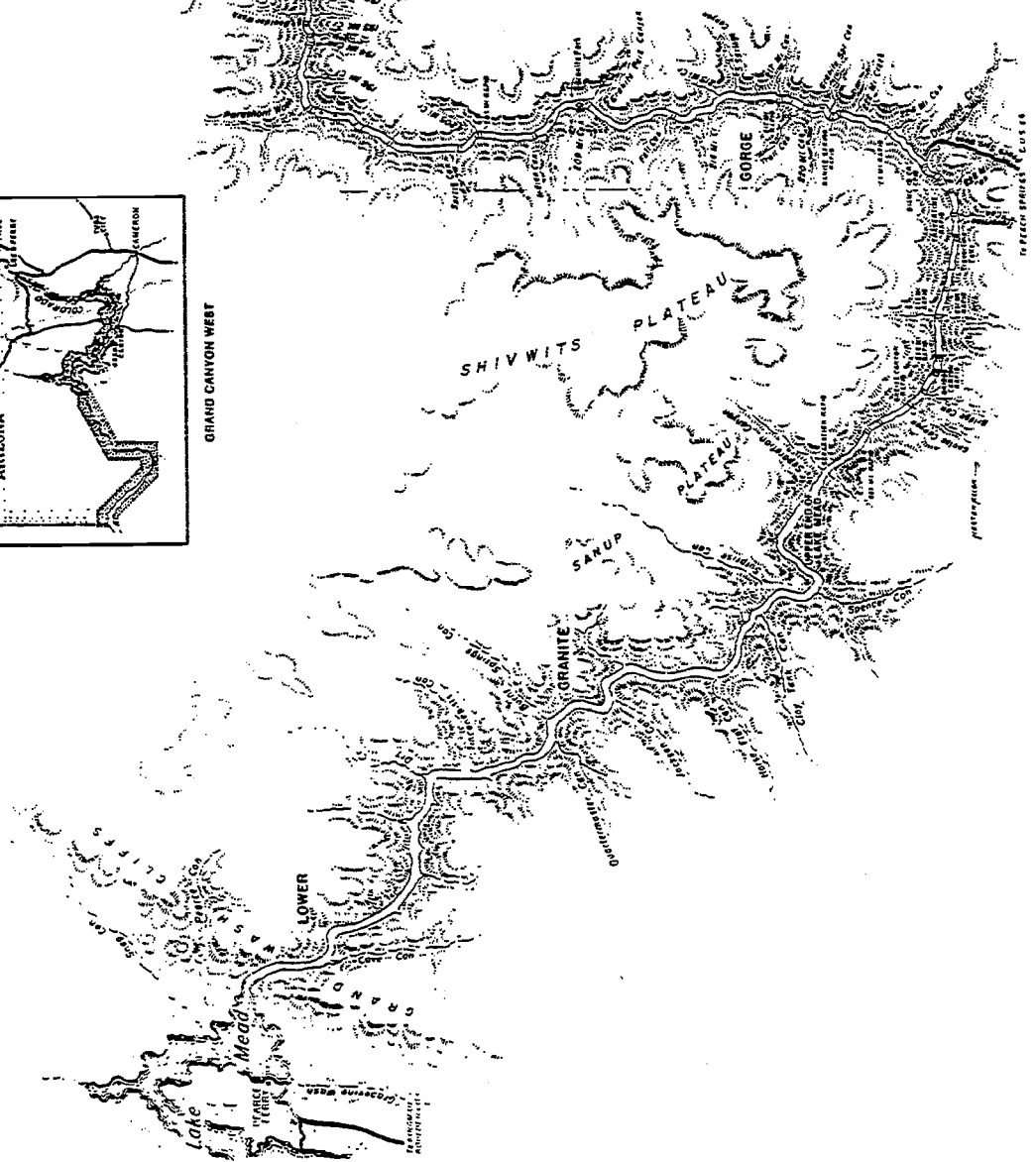
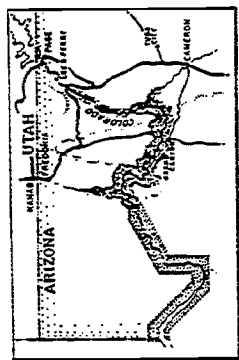
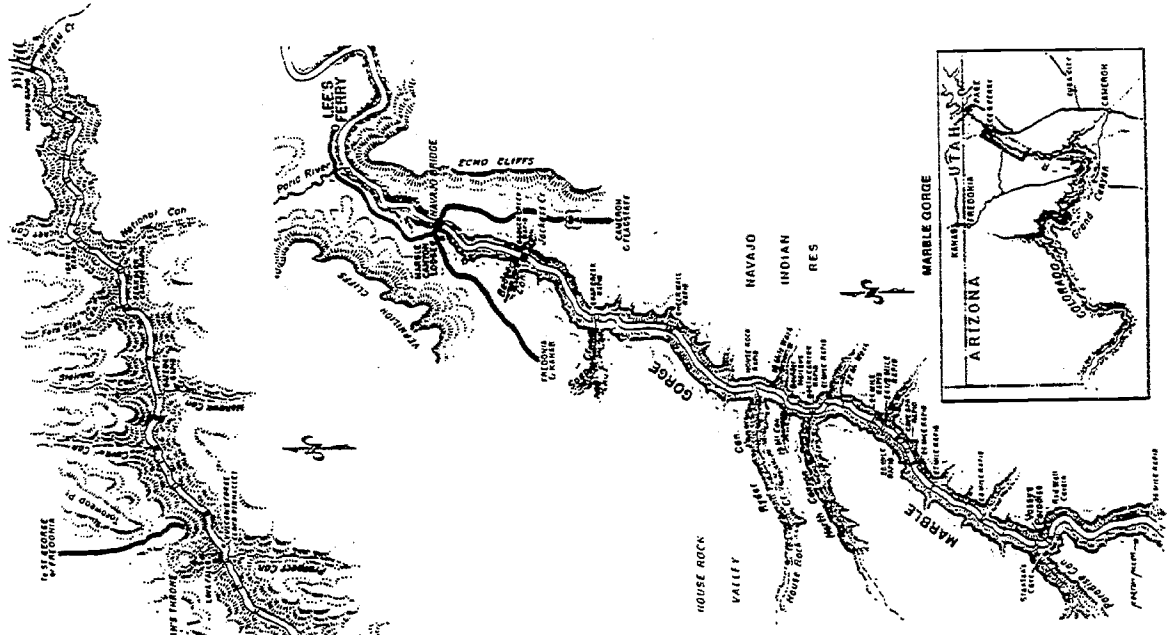
There was and is no place in Southern Paiute traditional territory more sacred than the Spring Mountains and the areas around them. One author has noted that Charleston Peak is the most powerful of all cosmic centers in the south and central Great Basin (Miller 1983:72). Concerns for this sacred area have been expressed repeatedly in cultural resource studies involving

Figure 2.1. Map of Southern Paiute Territory (after Kelly 1934)





Source: Grand Canyon National Park By Michael D. Yandell. Casper, Wyoming: World-Wide Research and Publishing Company. (1977) Map by cartographer, Norton Allen.



U.S. GEOLOGICAL SURVEY

Southern Paiute people (Stoffle and Dobyns 1982, 1983; Stoffle, Dobyns and Evans 1983; Stoffle, Evans, Harshbarger 1988).

Creation Stories

Southern Paiute oral scriptures have been recorded that generally resemble Christian Genesis and other creation stories in terms of placing the people on the earth. While there are different versions of this story, the following account derives from southern California and was provided by a Chemehuevi Paiute (Laird 1976). According to this account, Southern Paiutes believe that originally there was only water. Ocean Woman (*Hutsipamamau ?u*) then created dry land (Laird 1976:148-149). Once there was land, Creator Coyote and Wolf lived on Charleston Peak. Creator Coyote later saw tracks of a woman, but when he caught up with her, she was a louse (*Poo?avi*). Coyote propositioned her, and she agreed to the proposal on the condition that he build them a house. He ran ahead, built a house, and when Louse caught up she magically put Coyote to sleep, and continued on. This happened four times before they reached the Pacific Coast. Louse set out to swim to her home island with Coyote on her back. She dived, and Coyote let go and turned himself into a water-spider. He reached the island first, and was waiting for Louse when she arrived. Louse's mother wove a large basket while Coyote enjoyed Louse (Kroeber 1908:240; Laird 1976:150-151). Then Louse's mother sealed the basket, and gave it to Coyote to tow back to land. As a water-spider, he did so. As Coyote, he found the basket growing heavy, and full of curiosity, he opened it before reaching *Nuvagantu*. Louse's eggs had hatched in the basket, and become human beings. The new human beings emerged from the now opened basket and began to scatter in all directions over the land. By the time Coyote returned to *Nuvagantu*, only weaklings, cripples and excrement remained in the basket. On Charleston Peak, Wolf (Kroeber 1908:240 says it was Coyote) used his greater power to create the Chemehuevis and their Southern Paiute kindred. The darker color of Southern Paiute skin is attributed to the ingredients used by Wolf to create them. Because it is the place where the Southern Paiute people were created, *Nuvagantu* -- Charleston Peak -- is holy to Southern Paiutes.

For each Southern Paiute tribal group there is a slightly different version of this story (e.g., Lowie 1924, for Shivwits version; Sapir 1930, for Kaibab) "which highlights the sacredness of their own local tribal territory" (Bunte and Franklin 1987:227). The Shivwits story has the emergence point at Buckskin Mountain in Kaibab territory (Lowie 1924:104). In general terms, however, Southern Paiute origin stories share much in common. In the San Juan Paiute version of the Creation story the culture heroes (both Wolf and Coyote) are called *Shunangwav*, a name which also translates into English as "God" or the "Great Spirit" (Bunte and Franklin 1987:33). In the San Juan story, Coyote untied the sack [basket in other versions] near Page, Arizona, and there was made the Southern Paiute people. So for this version of the origin story, the original home of all Paiutes is in local territory of the San Juan Paiutes (Bunte and Franklin 1987:227). By moving the place of their ethnic group's origin, the San Juan Paiutes strengthen their identification with the ethnic group itself and solidify their cosmological ties to that specific portion of Southern Paiute ethnic territory.

Despite local variations in the identification of the ethnic group's place of origin, all portions of traditional ethnic territory remain sacred to all Southern Paiute people. *Puaxantu Tuvip* (variant *Puaruvwip*) is the Southern Paiute term which translates into "sacred land" (Stoffle and Dobyns 1982). The Paiute term *pua* is cognate to the Shoshone term *puha*, or "power" (Franklin and Bunte 1993b:3; Miller 1983). The term *puaxantu* is a derivative of the term *pua*; it may be transliterated as "powerful" or "(sacred) power." Thus the indigenous Paiute term would refer to sacred or powerful lands, that is lands traditionally occupied by the ethnic group that are made powerful by being where the creator placed the Paiute people.

Constituent Political Units

The Southern Paiute nation comprised several levels of political organization including possibly two or more major subdivisions or subtribes, a dozen or more districts, and numerous local groups—sometimes referred to as bands—within each district. Some of the evidence of hierarchical organization comes from Laird's (1976) documentation of Chemehuevi institutions, elicited from her Chemehuevi husband, George Laird.

It appears that a small elite provided the Southern Paiute people with socio-religious leadership. While male leaders have been referred to as High Chiefs, they functioned as ritualists rather than political officers (Laird 1976:24). Some federal officials called Tutseguvits the head chief for a decade, from 1859 (Forney 1859:73) until 1869 (Fenton 1869:203). Another official in the early 1870s (Powell 1873) perceived that a single tribal chief named Tagon exercised some authority over all Southern Paiutes. That perception may well have been accurate and a principal chief may have played a more important pre-contact role.

Leaders occupied a special status with special symbols very visible in pre-contact Southern Paiute society. So-called high chiefs could wear turquoise. The elite spoke a special language known as "t'ivitsi?ampagap?" (Real Speech) as well as normal Southern Paiute. High Chiefs chanted it with a strong accent. Living members of the elite preserved that special language into the final decade of the nineteenth century. Quail-beans (*kakaramurih*), or black-eyed peas, became a special dietary item for the chiefly elite (Laird 1976:24).

Leaders led at least regional polities made up of lineage bands (Laird 1976:24). In 1873, one identified High Chief active into post-conquest times provided sacred leadership for lesser chiefs heading at least eight local lineage organizations based at Potosi, Paroom Spring, Kingston Mountain, Ivanpah, Providence Mountain, Ash Meadows, Amargosa and the northern Chemehuevi (Fowler and Fowler 1971:104-105; Laird 1976:24). Leaders employed a specialized corps of runners to transmit communications. These runners were probably young men (Laird 1976:47). The elite appears to have disappeared as the last surviving high chief died late in the nineteenth century. In the 1870s, Powell and Ingalls perceived the functioning high chiefs as heads of what they called confederacies of local groups (Fowler and Fowler 1971:109).

Subtribes

Just below the level of the Southern Paiute nation as a whole, there may have been two or more large divisions each encompassing a number of neighboring districts. The divisions would have included geographically contiguous districts having particularly close ties of economic exchange, intermarriage, and political cooperation. The evidence for these intermediate-scale political divisions within the Southern Paiute nation is sketchy, however, past research suggests that prior to about 1825 there may have been two divisions; a western subtribe called *paran'* |*γitsiη*" (Sapir 1910:3, herein rendered as *Paranayi*) and an eastern subtribe that derives from a native designation that Jacob Hamblin recorded as *Yanawant* (Stoffle and Dobyns 1983a, 1983b; Stoffle et al. 1991:7-8; Brooks 1950:27; Little 1969). Depopulation due to diseases and economic disruption due to Euroamerican intrusion into the riverine oases caused subtribal functions to be largely eliminated by the 1850s.

The key contributions that riverine oases made to Southern Paiute subsistence made certain major streams geographically central to aboriginal life. Southern Paiute concepts reflected that geopolitical reality quite directly in native designations.

Paranayi Subtribe. The term *Paranayi* loosely translates into "marshy spring people" (Hodge 1910:202) or "people with a foot in the water" (Palmer 1928:11; Kelly 1934:554) and refers specifically to the Pahrnatagat-Moapa watercourse. The name has commonly applied as a band name for Pahrnatagat Valley Paiutes.

Previously published studies described that portion of southern Nevada as the pre-colonization habitat of two so-called "bands" labeled the Moapa and the Las Vegas bands. Our previous studies (Stoffle and Dobyns 1983a, 1983b) suggested that when Euroamerican colonization of southern Nevada began, the entire western division of the tribe (including the Panaca, Paranagat, Moapa, Las Vegas and Chemehuevi bands) was known as the *Paranayi*. The water referred to in the designation is that flowing down Meadow Valley Wash, Moapa River and the Virgin River into the Colorado. From the Colorado north to the headwaters of Meadow Valley ran the ribbon-like oasis where all contingents of the *Paranayi* appear to have cultivated food crops. The western division of the Southern Paiutes seems to have been rather populous and wide ranging to be properly labeled a band. It might properly be considered one of two subtribes constituting the Southern Paiute nation, where the term "subtribe" is used in a purely technical sense to indicate that the tribe formerly consisted of western and eastern components.

Yanawant Subtribe. Southern Paiutes inhabiting the higher altitude plateaus of southern Utah and northern Arizona planted their summer crops primarily in the Santa Clara Creek oasis, and up the Virgin River from that tributary. They grew maize and other crops on sand-bar fields along the Colorado River. The San Juan people may have stayed south of the larger stream, planting in oases along the San Juan River and its tributaries, at Paiute Canyon, and the springs and wash floodplains along the Echo Cliffs to the Moenkopi area near Tuba City (Bunte and Franklin 1987:30). The eastern subtribe may have been self-labeled *Yanawant* (Brooks 1950:27).

The Santa Clara Paiute people used a term for themselves that English speakers recorded as *Yanawant* with several variant spellings. Jacob Hamblin used the term *Yanawant* for the Indian people of the region. He attributed this usage to the Indian people themselves, including Chief Tutsigavits. Hamblin quoted the chief as saying "I and all of the Yanawants love the Mormons all the time..." (Little 1969:39). In his narrative, Hamblin also referred to the local Indian people as the Yanawants: "the Yannewants were much alarmed" (Hamblin 1951:18); "a good feeling prevailed among the Yanwants as they call themselves" (Little 1969:39); "I started for Great Salt Lake City in company with Thales Haskell and Tutsegabit (the Yanawant Chief)" (Hamblin 1951:27).

John Wesley Powell recorded the term *U'-ai-nu-ints*, which Powell defined as "People who live by farming" and also glossed as "Santa Clara Indians" (Powell 1971a:156). This may be the same term as Hamblin's *Yanawant*. In another report by Powell, *U-ai-Nu-ints* are identified as the people "who live in the vicinity of St. George" (Powell and Ingalls 1874:47,51). In another manuscript Powell renders the same word as "*U-en-u-wunts*, The name of the Santa Clara Indians" (Powell 1971b:161). Elsewhere Powell renders the term as *Yen-u-unts*, meaning "Farmers, those who cultivate the soil" and also as *Yum-a-wints* and *Y-ai-nu-intz*, "People who cultivate soil; farmers" (Powell 1971a:144).

William Palmer gave the term *U-an-no* or *U-un-o* as referring to the St. George area, and also to the larger region of "Dixie"; he recorded that the meaning of *U-un-o* was "good garden place or good fields" (Palmer 1928a:24). Palmer also rendered the word as *Uaino* and *Uano* (Palmer 1928b:50). Adding the suffix *its* or *ints*, to refer to the people of a place (1928b:40), Palmer gave the variant spellings of *Uain-uints*, *Uano-ints*, *Uano-its* (Palmer 1928b:50), *U-an-nu-ince* and *U-ano-intz* (Palmer 1933:95) as the term used for people who farm and for people of the Santa Clara. In one article Palmer noted that these numerous variants of *U-an-nu-ince* refer to the economic activity of farming rather than to a specific group of people:

The word "u-an-o" means farmers. The Indians who lived at Washington, St. George and Santa Clara were farmers and they knew something of the practice of irrigation. They cultivated corn, beans and sunflowers for their seed, and other plants used for food and for fibre. For this reason the comparatively small area of Utah's Dixie in which farming was done was called "U-an-o," and the farmers were "U-an-nu-ince" or "U-ano-its." The name has no clan or tribal significance but rather vocational. (Palmer 1933:95)

The Indian words which Euroamericans have adopted to label a geographically localized group of Indian people often did not traditionally have such a limited, localized point of reference. Thus, *Yanawant* and its variants may have had a broad rather than a localized meaning, that is "people who farm." *Yanawant* referred to the people of the Santa Clara, since they cultivated crops, but it is probable that Euroamerican usage gave the term a more localized reference than the term originally had. The same may have been true for *Paranayi*. Given the likelihood that such terms may have referred to larger groupings, one might for convenience think of the *Paranayi* subtribe as the Nevada Southern Paiutes, and the *Yanawant* subtribe as the Utah-

Arizona Southern Paiutes.

Districts

Traditionally there were about a dozen smaller regional units referred to as *districts*, a term adapted from Julian Steward's *Basin-Political Aboriginal Sociopolitical Groups* (Steward 1938:93). Each district was a sphere of influence with a geographic territory shaped in part by natural features—chiefly watercourses and watersheds—and in part by the existence of neighboring groups who of necessity reached political agreements about the extent of their respective spheres of influence and resource harvesting territories.

Each Southern Paiute district encompassed a territory that contained all or nearly all of the resources necessary for the survival of its population. To provide a full complement of resources, each district needed to include, and did include, both (1) oasis areas with either riverine or springfed sources of water sufficient for irrigation farming, and (2) upland and desert areas with a full range of needed wild resources, including game animals, pinyon nuts, and wild seed grains. Each district, then, included permanent settlements near irrigated fields in oasis areas, and outlying upland and desert territories used for intermittent and seasonal harvesting of wild plant and animal resources from temporary camps. Often small permanent habitations were maintained near springs in order to safeguard Southern Paiute claims to those crucial resources. Kelly and Fowler say of the sixteen Southern Paiute subgroups identified in their article that "Except for two, each territory was self-sufficient economically" (Kelly and Fowler 1986:368). The exceptions are the Gunlock and Saint George groups, which "had to go outside their own areas for certain staples" (Kelly and Fowler 1986:368). The fact that the Gunlock area and the Saint George area were not sufficiently extensive and ecologically diverse to provide all the resources needed for a self-sufficient and semi-autonomous district indicates that these were not separate districts but rather components of a larger district that included the necessary upland resources, which in this district were located on the Shivwits and Uinkaret uplands. The data suggest that the Gunlock and Saint George groups represent post-contact development of localized labor gangs and that traditionally the Gunlock and Saint George areas were part of a single larger subgroup or district that included the Shivwits Plateau and the Uinkaret area.

It was in the core oasis area (or areas) of the district that the population of a district had the most highly developed sense of territoriality and proprietorship. Core oasis areas and central places of the districts are readily identified. Outer boundaries of districts cannot be as precisely delineated, for at least two reasons. First, those areas were not as sharply delineated by Native American people as were the core oases areas where the most valuable resources were concentrated. Secondly and not surprisingly, there is much more written documentation for the central oasis areas where Euroamerican settlement was concentrated than for outlying upland and desert areas.

Each district had its own political leadership. In the case of the Shivwits/Santa Clara Southern Paiutes, this included a principal leader (principal chief or head chief) for the entire district, and lesser leaders (or subchiefs) from the various local groups or bands comprising the

district. This will be discussed in detail in a later section. There was apparently a similar pattern of leadership in the other districts as well.

Kelly and Fowler (1986) delineate sixteen Southern Paiute "subgroups". Their term "subgroup" corresponds to the term "district" used in this report, though the data suggests some modifications to the list of groups developed by Kelly and Fowler. The data suggests that four of the subgroups defined by Kelly and Fowler (the Gunlock subgroup, St. George subgroup, Shivwits subgroup, and Uinkarets subgroup) in fact comprised a single subgroup or district. In the decades after contact, the massive impact of Mormon colonization resulted in the gradual breakdown of regional political organization, the emergence of labor camps associated with Euroamerican towns (Gunlock, St. George), and the relocation of much of the population into regions of refuge in the uplands (Shivwits and Uinkarets Plateau). The data also suggest that two additional districts should be added to Kelly and Fowler's list--the Pahvants as the northernmost Southern Paiute district, and the Ash Meadows/Pahrump Southern Paiutes as the western-most district. With these modifications, the list of districts comprising the Southern Paiute nation would include the following:

- Ash Meadows/Pahrump district
- Las Vegas district
- Pahranagat district
- Shivwits/Santa Clara district (including the Uinkaret area)
- Kaibab district
- Kaiparowits district
- Panguitch district
- Cedar City/Indian Peaks district
- San Juan district
- Pahvant district
- Chemehuevi district

For this project, however, it is only necessary to delineate or draw conclusions about the Shivwits/Santa Clara/Virgin River district, the Kaibab district, and the San Juan district.

Shivwits/Santa Clara Southern Paiute Tribe

The Santa Clara River, the Virgin River, the upper Santa Clara watershed, and the arid uplands stretching south from the Santa Clara to the Colorado River and roughly from present Lake Mead in the west to the Uinkaret plateau in the east comprised one district of the Southern Paiute nation. Within this region, people moved freely back and forth between the oasis farmlands and the upland areas used primarily for wild-resource harvesting. The data indicates that the Santa Clara, and to a lesser degree the Virgin River, was the horticultural center and the population center of a district whose upland territories included the Shivwits Plateau in the south and upper watershed of the Santa Clara in the north (including the Pine Valley and the Bull Valley Mountains). For whatever reasons, it was the Santa Clara rather than the Virgin River that apparently constituted the primary horticultural core of the Shivwits/Santa

Clara/Virgin River district, with smaller, subsidiary horticultural settlements on the Virgin River and Ash Creek. The major concentration of population and irrigated fields was on the Santa Clara rather than on the Virgin.

Anthropologist A. L. Kroeber generalized from his study of the Mojave Indians who inhabited Mojave Valley and Cottonwood Island Valley, the first large valleys on the lower Colorado River with cultivable floodplains south of the Virgin-Colorado confluence; and he concluded that an Indian tribe inhabiting a river valley typically exploits upland resources on both sides of the stream (Kroeber 1974:31-33). The data suggest that this economic and ecological model can be transferred upstream to the Shivwits/Santa Clara Southern Paiutes. The Virgin River and its principal tributaries constituted the riverine core of Southern Paiute territory. Kroeber's model suggests that Southern Paiutes who farmed in the riverine core along the Santa Clara and Virgin Rivers, would have harvested wild resources in hinterlands to the south (including the Shivwits Plateau), as well as to the north (including the watersheds feeding the tributaries of the upper Santa Clara).

The Shivwits/Santa Clara people rebelled against Mormon domination but were forced to take refuge south of the Colorado River among the Northeastern Pai. About two dozen Shivwits warriors fought beside the Pai in the Walapai war of 1866-1869 (Dobyns and Euler 1970: 38; Dobyns and Euler 1971:18). Later these Shivwits/Santa Clara returned to the north side of the Colorado River, but they remained culturally conservative in what might be called a *region of refuge* (Beltran 1973) on the Shivwits Plateau. There they managed to make a meager living farming around springs, hunting and collecting in the upland portion of their traditional territory until this portion of their land also was acquired by a Mormon cattleman. This person had sufficient political power to obtain federal appropriations to purchase land on the upper portion of the Santa Clara River to relocate the refugee Shivwits/Santa Clara people. There their children attended an English language school, and they were exposed to numerous Euroamerican influences, including lethal germs. Close to St. George, the Shivwits reservation became a wage workers's bedroom community, although the people farmed all the lands they could reach with their irrigation water allocation from the Santa Clara River. The Shivwits reservation attracted many Paiute people and became the home of famous Paiute leaders such as Uncle Sam (pronounced Sham) after whom the reservation is nicknamed, and Tony Tillohash (who was born at Kaibab).

Today, the Shivwits/Santa Clara people are administratively united with four other Southern Paiute bands into the Paiute Indian Tribe of Utah (PITU). PITU was created by a 1980 Act of Congress, which accorded re-recognition to diverse small enclaves whose trust relationship with the federal government had been terminated in 1954. The 1980 Act defines five local groups as members (1) Koosharem, (2) Kanosh, (3) Indian Peak, (4) Cedar City and (5) Shivwits. The five local components of PITU elect delegates to a council, and a chairman. These representatives speak for all five groups and are the point of consultation between any project and one of the five groups.

Kaibab Southern Paiute Tribe

The Kaibab Paiute people irrigated gardens of maize, beans, and squash near permanent water sources as well as gathered natural plants and hunting or collecting all the fauna available in their ecologically diverse territory. They had gardens along the Colorado River at 2,300 feet, roasted agave (*yaant*) along the upper edges of the canyon, hunted deer in the mountains of the Kaibab Plateau at 9,000 feet, and gathered hundreds of acres of sunflowers and Indian rice grass (*wa'iv*) in the sandy foothills below the Vermillion Cliffs. They utilized all of the ecological zones within their territory.

They lost access to these ecological zones because of various types of intrusions, beginning in the early 1860s. Euler (1972), Stoffle and Evans (1976), and Turner (1985) provide detailed accounts of social, cultural, and ecological impacts of planned Mormon settlements, unregulated mining, and tens of thousands of cattle, sheep, and horses. Despite these intrusions and facing the loss of all but a fraction of their original population, the Kaibab Paiute people continued to reject federal efforts to move them to distant reservations in Utah and Nevada. A portion of the water from one of their larger artesian springs was reserved for them by the Mormon Church in 1907 and a 12-by-18-mile portion of land near the spring was reserved for them by the federal government in 1909. Yet, it was not until the U. S. Land Claims payment occurred in the early 1970s that sufficient resources were available to the Kaibab Paiute tribe to begin to build the economic and service infrastructure needed to provide jobs and housing for most of the tribal members. Today, the tribe has a viable and mixed economy, sufficient housing for all tribal members, and a strong concern for preserving cultural resources that are located within traditional Southern Paiute territory.

San Juan Southern Paiute Tribe

The San Juan Southern Paiute Tribe constitutes the eastern-most territorial unit of the Southern Paiute ethnic group. In aboriginal times, the San Juan people may have been part of the eastern subtribe that was labeled by a name which Euroamericans recorded as *Yanawant*. Along with their western division, or *Paranayi*, ethnic kinsmen, they share an affiliation with the ethnic self-term *nungwu* or *nungwuts*, which translates into English as "The People" (Stoffle and Dobyns 1983a:165; Franklin and Bunte 1993b:4). *Payuts* or *Payuts(i)* (Franklin and Bunte 1993b:4; Bunte and Franklin 1987:41), which is the Southern Numic term for Paiute, and variants of this second ethnic-self term are also used by Paiute people (Franklin and Bunte 1993b:4).

San Juan Paiute people occupied, and continue to reside in, their portion of traditional Southern Paiute ethnic territory. The San Juan Paiute local territory extended roughly from the Colorado River in the west to Monument Valley and Kayenta in the east, and from the San Juan river in the north to the Moenkopi Plateau in the south (Kelly 1964:167; Stewart 1942:233). Like citizens of a state incorporated into a nation, the San Juan people were not limited in movement or resource use to their local territory. In fact the strength of the Southern Paiute Nation derived from the control and redistribution through exchange of resources grown,

gathered, and stored in extremely different ecological zones. So the San Juan Paiutes went beyond their local territory to harvest wild game and plant resources in places like House Rock Valley west of the Colorado River and south to the San Francisco Peaks. These trips were carried out under reciprocal use agreements with other Southern Paiute territorial units and other American Indian ethnic groups. These reciprocal use agreements were negotiated and cemented through a number of sacred and secular ceremonies such as round-dance ceremonials (Bunte and Franklin 1987:19).

The Southern Paiute people continue to maintain a strong attachment to their ethnic group and its traditional lands as well as to their own local territory, even though Paiute sovereignty has been lost over portions of these lands due to Navajo ethnic group expansion, encroachment by Euroamericans, and federal government legislation. Despite the loss of Paiute sovereignty, Southern Paiute people continue to affiliate themselves with these symbols of their common ethnic identity. Additionally, all Southern Paiute people continue to perform traditional ceremonies along with the menarche and first childbirth rites of passage rituals. The locations at which these ceremonies and rituals were or are performed become transformed from secular "sites" to highly sacred locations or places. By virtue of the transformation of locations into sacred places, Southern Paiute people reaffirm their ties to traditional lands because they have carried out their sacred responsibilities as given to them by the Creator. Southern Paiutes can be characterized as a "persistent people" (Spicer 1971) with a persistent cultural system (Bunte and Franklin 1987; Stoffle and Dobyns 1983; Stoffle and Evans 1976; Stoffle et al. 1982; Turner 1985; Turner and Euler 1983).

CULTURAL RESOURCE PERCEPTIONS

Southern Paiute people express a preservation philosophy regarding traditional lands and the animals, plants, artifacts, burials, and minerals that exist there. This philosophy primarily derives from a supernaturally established relationship between these lands and the people who have lived there since creation. This holy land relationship has been discussed above. One holistic philosophy that logically derives from this human-land relationship addresses the issue of how to act towards the land, animals, plants, artifacts, and burials. Simply, the philosophy leads to the normative assertion that these cultural resources should be left undisturbed, i.e. they should be preserved as they are, not removed or modified in any way.

This philosophy is in sharp contrast with an instrumental human-land philosophy that leads to the normative assertion that the land, animals, plants, artifacts, minerals, and even burials, should be used for economic development or scientific study. This philosophy is premised on the epistemological belief that humans should dominate and control the natural environment for the immediate benefit of whomever is sufficiently powerful to hold sovereignty over the land. Consistent with this instrumental human-land philosophy, unused natural or human resources have a potential for development, being termed "wild lands" or "wild people", and therefore constitute a challenge for development efforts. The process of conquering wild resources has variously been termed "progress," "modernization," "civilization," and

"development." The human and natural components of a system are perceived of as "resources" to be "managed."

The very terms used to describe the scientific study of these resources -- "American Indian Cultural Resources" -- reflect a philosophy that is antithetical to the core philosophical belief of Southern Paiute people. Understanding the existence of a conflict in basic philosophies is a complex, but essential, starting point for explaining why the Southern Paiute people have made certain types of cultural resource responses.

Concerns for Plants

Southern Paiutes relied upon plants for their survival, making ethnobotanical knowledge essential to their "transhumant adaptive strategy" (Stoffle and Evans 1976) for living in the desert. An intimate knowledge of plant genetics has been suggested as a major "cultural focus" of desert-dwelling Indian people (Anderson 1956; Shipek 1970). Being horticulturalists is a cultural characteristic that separates Southern Paiutes from closely related groups in the Great Basin (Dobyns and Euler 1980).

A wide variety of plants continue to be utilized by Paiute people for food, medicine, ceremonies, and economic activity (Bye 1972). It is evident that plants are important because Paiute people say a prayer before a plant is picked and utilized with a request that it provide the needed medicine or nutrition. The plant, like the people, has rights and human-like qualities. The prayer is directed to the plant because the plant is perceived as an anthropomorphic organism.

Concern for Animals

Indian people express concern for all animals because of a traditional belief that all animals, including insects, are important to the earth. Respect for animals is demonstrated in the kinds of traditional prayers that are said in association with hunting and taking the life of an animal. Like plants, animals are perceived to have rights and human qualities, because they are seen as relatives to human beings.

Birds like eagles are perceived as important and are prayed to and talked with when captured. Other types of animals, like the desert tortoise and the chuckwalla, have been singled out in previous studies as being relatively unique to certain areas and important to Paiute people. Both of these animals are cultural resources; the desert tortoise is part of Southern Paiute tribal religious symbolism and the chuckwalla is used medicinally.

Concern for Natural Elements

The concern of Southern Paiutes for natural elements is strong, because soil, water, rocks, and minerals are components of the holy land. Many of the Southern Paiute have commented that they hold in high regard people who have knowledge of water sources, which are so vital for sustaining life in the desert. The Indian people believe natural elements should

be protected from contamination, alteration, and even movement without talking to them. Like plants and animals, Southern Paiutes believe that natural elements have rights, human-like qualities, and life of their own.

Water

The belief that the water sources are connected to each other underground correlates with the belief about Water Babies. Southern Paiute people mentioned that Water Babies are often present at springs. According to the ethnographic literature (Miller 1983), Water Babies owned springs and had elaborate systems of underground pathways, usually taking form as underground watercourses. The Water Baby used to travel from one spring to another. Water Babies are never good, at best being neutral, and are extremely dangerous. If a person angers a Water Baby, the person will almost surely die. By extension, then, any activity that damages or destroys the underground water sources will anger the Water Babies who own it, thereby endangering everyone in the vicinity.

Water bodies like springs, streams, rivers, and lakes are viewed as having rights and human-like qualities. If water bodies are misused they can become angry and engage in self-motivated actions. Comments during an interview with two Paiute women during a previous project illustrates such a case.

Indian Woman #1:

They were probably trying to tell us and we didn't understand. We didn't pay attention to them that much. But the only thing that I really paid attention to is my grandfather telling me even the lakes and the rivers, the Colorado River especially, at times it gets mean. It'll take a life. They'll run around there and holler and go wade around in there, it will get angry with you, it'll take you. (She tells a story of a little boy who drowned. It validated the belief for her.)

Indian Woman #3:

The elders told me they also believe...rivers are supposed to be flowing freely, but what does man do today. They dam them up, so therefore those lakes and dams that are man made are no longer safe because they've been forced to stand like that, and don't belong there. The water doesn't flow freely like they're supposed to. That's why you see places like Quail Creek [a new lake in Utah], it takes people.

Places and Minerals

Ethnographic studies of human societies document that people who live in a region over long periods of time come to understand, explain, and deal with most of the natural components of their environment. Such knowledge is termed "local knowledge" or "emic perspectives" of

the environment. Paiute people certainly qualify as having local knowledge inasmuch as they have lived in the region for more than a thousand years. One Paiute elder, for example, discussed places where the old people told him never to spend the night. These were places of great power that could make you sick if you remained there. He also told about powerful rocks that could cure or harm and were only utilized by religious leaders. If these rocks were broken, they could release their power and potentially harm people. Consequently, it was always better not to break a rock unless you understood the extent of its power.

Other Indian people confirmed these ideas about rocks having power. It is recognized that some rocks have more or different power than others. Breaking a rock or removing it from its place without fully explaining these actions not only releases the power inherent in the rock but also angers the rock.

Rocks can also be self-willing, inasmuch as they can reveal themselves to people and act on people. Crystals, for example, have a self-willing, animate power, and will reveal themselves to a person whom they desire to be with. If this person picks them up, the person will have great luck. The luck, however, is taken away from others and eventually people will come to recognize this and single out the excessively lucky person as having used some non-human power at the expense of his or her people. Threats of community sanctions usually make the person take the crystal back to where it had revealed itself to them and return it with an explanation of why it was being returned. The ethnographic literature also discusses the power of crystals for Great Basin and surrounding Native American groups (Levi 1978; Miller 1983).

Concern for Burials

Burials are among the most sensitive of traditional cultural resources. According to Miller (1983:75-76):

...As power has a profound affinity for the living, some of it lingers as long as there is any vestige of life. Hence, there is always some power around graves, but by its nature it is less vital and so more likely to cause harm or be used in sorcery. It appears to be power that has been trapped and stagnated, only released when decomposition is complete. Therefore graves are generally avoided.

Even discussing burials can bring on emotional stress to Southern Paiute people. One Paiute elder warned during a previous study that if a person walked through the dust of a burial, physical harm could come to them. Disturbance of burials can potentially bring the spirit of the deceased back to earth. So the task of identifying burials is physically and emotionally dangerous to the living person, and is never taken lightly.

In addition to the belief that burials contain power and they should never be disturbed, death and the resultant burial ceremonies are significant components of Southern Paiute culture. Burial ceremonies, both traditional Southern Paiute and recently acquired ceremonies such as "the cry," are religious events involving great numbers of people who engage in song and prayer. As part of the cry, the deceased person is remembered at a one-year ceremony of worship and prayer. San Juan Paiutes continue to perform aspects of the traditional Southern Paiute burial ceremony, and do not generally practice the cry, believing that the spirit of this ritual was forbidden to cross the Colorado (Franklin and Bunte 1993b:4). Disturbance of a burial can require that a ceremony be repeated at great emotional and economic cost to the involved Indian people.

Concern for Artifacts

Southern Paiute people believe artifacts belong to the original owners, the Indian people. They believe artifacts were intentionally left in a spot, and they should remain there until their original owners return. Artifacts left by Indian people in traditional camping, gathering, and hunting areas are important to Indian identity, history, and culture.

Many people expressed the fear that artifacts will continue to be taken from sites and hoarded by amateur pot hunters or bulldozed at construction sites. Ambivalent feelings were also expressed about artifacts taken from sites for study by archaeologists. Many people said the artifacts should be returned to the appropriate tribe. This is a potential source of conflict between Native Americans and archaeologists, however, mutually agreeable artifact mitigations have been developed between many of these involved tribes and regional archaeologists.

CHAPTER THREE

LEGISLATION AND REGULATIONS

This chapter outlines the legal relationships that exist between the Southern Paiute tribes and the United States government which relate to the lands in the *Colorado River Corridor* study area. The legal relationships of a neighboring tribe, the Havasupai, are included in the analysis so that legal relations with the Southern Paiute people can be compared and contrasted.

For the purposes of this discussion, legal agreements of relevance include government actions that establish tribal claims to any land, natural resource, or cultural resource in the study area. In addition, legislation and regulations that affect national parks, and policies concerning cultural resources are reviewed. This chapter is produced by the ethnographic research team and does not represent legal opinion on any issue involving these tribes and the involved Federal agencies. Instead, the analysis is meant to provide a general background to the legal environment within which this project occurs.

The first two sections summarize the legal background for the Havasupai and Southern Paiute (Shivwits, Kaibab, and San Juan) tribes. None of the four tribes is included in any ratified treaty with the United States; their claimed lands were simply taken by the United States (U.S. House of Representatives 1874; U.S. Indian Claims Commission 1965). Therefore, the reservations of these tribes were all established by Executive Order. Contemporary political structures of these groups result from U.S. government actions rather than aboriginal relationships (Dobyns and Euler 1970).

The third section reviews legislation that established public domain lands in the vicinity of the *Colorado River Corridor*. It also describes legislation and policies that address the study, protection, and preservation of cultural resources. Cultural resources are defined as "material remains of past human life or activities that are of significant cultural interest and are more than 50 years of age" (36 CFR 1.4). In addition, cultural resources include Traditional Cultural Properties, defined as properties that "(a) are rooted in that community's history, and (b) are important in maintaining the continuing cultural identity of the community" (Parker and King 1990). The unique Native American policies of the Grand Canyon National Park, under whose jurisdiction many of the lands in this study fall, are then summarized.

METHODOLOGY FOR LEGAL REVIEW

The legal review was accomplished through two avenues, searching documents and personal contacts. See Appendix A for a detailed discussion of the methodology and chronology. Documents were reviewed in the University of Arizona Law Library and Main Library, particularly the Documents Center and Special Collections. In addition, materials were collected from the library at the Western Archaeological and Conservation Center and from individuals who possessed relevant information. Documents that contributed to the review are 1) Congressional Acts, with accompanying reports and legislative histories, 2) Presidential proclamations and Executive Orders, 3) Indian Claims Commission reports, 4) National Park Service reports, bulletins, and management plans, including available issues of the *Cultural Resources Management Bulletin*, and 5) published legal reviews. Legal reference guides and indices were used to identify existing laws, regulations, and policies of relevance to this task. In addition, newspaper and magazine articles, ethnographies, and reports provided information about their historical development.

To assist in the legal review, personal contacts were made with individuals and organizations deemed relevant to the task. To begin, tribal chairs and attorneys of the affected tribes provided information about both formal and informal agreements existing between them and the Federal government in the *Colorado River Corridor*. Attorneys within the U.S. Department of Justice and the Native American Rights Fund were also contacted. Information was also gathered from representatives of the Bureau of Indian Affairs, from the Phoenix Area Office, Phoenix, Arizona, the Southern Paiute Field Agency, Cedar City, Utah, and the Hopi Agency, Keams Canyon, Arizona. National Park Service officials from the Grand Canyon and Washington provided information and documents. Contacts also included individuals from the Washington and Denver offices of the Advisory Council on Historic Preservation. In addition, officials from the U.S. Department of the Interior and Federal agencies, including the Forest Service, Bureau of Land Management, and the United States Geological Survey, and Arizona Geological Survey, were contacted. Discussions took place with representatives from the Arizona Geological Survey and State Historic Preservation Office (SHPO) as well. These contacts provided information, materials, and references to documents relevant to this review.

LEGAL SUMMARY OF SOUTHERN PAIUTE TRIBES

The aboriginal territory of the Southern Paiutes included the land north of the Colorado River in the Grand Canyon National Park as well as an area south of the river in the easternmost portion of the park south of Lee's Ferry (see map; U.S. Indian Claims Commission 1978). An early official contact between the Federal government and the Southern Paiute bands was the 1856 visit of George W. Armstrong to examine conditions of the Paiutes (BIA 1982). Shortly after the visit, the Federal government attempted to consolidate all the Utah Native Americans onto one reservation. A consequence of this effort was the Spanish Fork Treaty signed by the Utes. In addition, negotiations with a handful of Southern Utah Paiutes in September 1865 specified the movement of the Southern Utah Paiutes to the Uintah Reservation and a small

compensation for the tribe, most of which was designated for the signers of the treaty (BIA 1982). The treaty was never ratified by the U.S. Senate.

In 1872, representatives from the Indian Bureau distributed goods to the Indians in the region from St. George, Utah (Dellenbaugh 1926: 191). A November 1, 1872 report from the Pioche, Nevada Indian Agency, having responsibility for "the three southern counties of Utah, that part of Arizona north of the Colorado River, all Lincoln County, and part of Nye County, Nevada" recommended for the Utah Paiutes a tract east of Kanab located "in one of the most fertile valleys in Southern Utah" (U.S. House of Representatives 1873: 2). In addition, the agent acknowledged receipt of communication from General Crook of Arizona urging that several bands of Paiutes in Arizona and California be withdrawn across the Colorado into the Muddy Valley because they were "not now attached *to* or provided for *by* any agency: they are very destitute [*italics in original*]" (U.S. House of Representatives 1873: 3). The Muddy River Valley is the traditional home of the Moapa Paiutes. In 1873, a special commission headed by John Wesley Powell and G.W. Ingalls was sent to Nevada and Southern Utah to seek reservation sites for the Great Basin tribes (Shoshone and Southern Paiute). Powell and Ingalls recommended the removal of Indians not already on reservations suggesting first that the Southern Paiutes be sent to Uintah. This arrangement was unsatisfactory due to the presence of certain Ute bands, who were traditional enemies of the Southern Paiutes, living at Uintah. Lack of other "good" reservation land resulted in the Southern Paiutes having the choice of moving to the Moapa reservation in Nevada or doing without (BIA 1982; Fowler and Fowler 1971). Most stayed where they were. No further involvement of the Federal government and the Southern Paiutes occurred until the 1890s. The first federal government program for the tribe was the Indian school, established in Utah on the Santa Clara River, up river from St. George, to which Southern Paiute students were sent (Stoffle and Evans 1976).

Southern Paiute use of their traditional lands in the study area was restricted on February 20, 1893, when much of the plateau area on either side of the Grand Canyon, as well as the Canyon itself, was set aside by presidential proclamation as the Grand Canyon Forest Reserve (Harrison 1893). On June 29, 1906, Congress approved an Act authorizing the President to designate areas within the Grand Canyon Forest Reserve to be set aside for the protection of game animals. The lands within the Grand Canyon Forest Reserve north and west of the Colorado River were declared a Game Preserve by presidential proclamation on November 28, 1906, further limiting activity within these areas (Roosevelt 1906b). On January 11, 1908, Paiute use of the Grand Canyon and its northern plateau was further restricted when the Grand Canyon National Monument was established within the old Grand Canyon Forest Reserve by presidential proclamation (Roosevelt 1908a). It was not until the 1970s that the Kaibab Paiutes were offered the opportunity to use natural and cultural resources on the north rim of the Grand Canyon when the Canyon anthropologist, Robert Euler, visited the tribal council (Stoffle, pers. comm., 1992).

In 1951, the Southern Paiutes filed a claims suit with the Indian Claims Commission seeking compensation for their lands which had been taken. The Commission made its final judgment on January 18, 1965, the disposition of funds was appropriated by Congress on October 17, 1968 (PL 90-584) and the claims money was distributed in 1971. In this settlement,

the precise value of the land was not determined; the Paiutes were awarded \$8,250,000 for 29,935,000 acres of land (U.S. Indian Claims Commission 1965, 1978). Entry of the final judgment disposed the involved parties "of all rights, claims or demands which the petitioners have asserted or could have asserted with respect to the subject matter of these claims, and petitioners shall be barred thereby from asserting any such right, claim or demand against defendant in any future action" (U.S. Indian Claims Commission 1965). Land claims settlements did not extinguish other rights, such as those associated with water and cultural resources.

Though the Kaibab, San Juan and Shivwits Paiutes are all part of the Southern Paiute Nation, their legal histories are distinct due to their inclusion or exclusion from the various laws and Executive Orders affecting them and will be considered separately.

Shivwits

Today the Shivwits Paiutes are one of five bands included in the Paiute Indian Tribe of Utah (PITU). The first official government action on behalf of the Southern Paiute people in Utah was the 1891 authorization by Congress of the purchase of lands along the Santa Clara River near St. George for a school (BIA 1982). The Secretary of the Interior established a reservation for the Shivwits Band on this land on November 1, 1903. The reservation was formally established by Executive Order of April 21, 1916 (Wilson 1916) and enlarged by Congress on May 28, 1937 (50 Stat. 239) (U.S. Senate 1968).

In 1940, the Shivwits tribe organized under the 1934 Indian Reorganization Act (48 Stat. 984), approving a constitution and bylaws on March 21 of that year. A corporate charter was issued and ratified August 30, 1941. On September 1, 1954, Congress passed termination legislation (68 Stat. 1099, 25 USC 741 et seq.) that included the Shivwits Tribe. Their inclusion in the termination legislation contradicted all studies and recommendations made earlier concerning their readiness for termination (U.S. House of Representatives 1983; BIA 1982). On February 21, 1957, the Shivwits Tribal constitution was terminated and corporate charter revoked. The people were left with little other than the marginal lands in their possession.

At the time of termination, the Shivwits tribe had 26,680 acres of land. The surface and subsurface rights were transferred in trust to the Walker Bank and Trust Co. of Salt Lake City. The trustee attempted to dispose of the surface rights to all but 840 acres (BIA 1982: 40). The U.S. Senate report to accompany the disposition of funds appropriated to the Southern Paiute Nation as a result of the Indian Claims Commission settlement (U.S. Senate 1968) states that the Shivwits Band had land holdings of 27,520 acres at the time of termination, all but 840 of which were disposed of by the trustee, Walker Bank and Trust, Co. It further states that the surface rights to the 840 acres were transferred to the beneficiaries of the trust on April 24, 1964. The failure of the government to later appropriate any new land for the Shivwits due to their continued possession of the land they retained at the time of termination (PL 98-219) provides evidence that the Senate report is in error on this point.

On April 3, 1980, the Paiute Indian Tribe of Utah (PITU) became the seventh tribe in the United States to be restored to Federal recognition status (PL 96-227). The PITU was established as a composite tribe of the Shivwits, Kanosh, Koosharem, Indian Peaks, and Cedar City Bands. The Shivwits, Kanosh, Koosharem, and Indian Peaks tribes had been federally recognized sovereign Indian tribes and all five had previously received federal services and benefits furnished to federally recognized tribes and their members. The restoration legislation required that a reservation plan be drawn up allocating land for each band as well as a separate tract of land to be placed in trust for the entire tribe. The land was to be taken only from the Utah counties of Washington, Iron, Beaver, Millard, and Sevier. Of the five bands of PITU, only the Shivwits still possessed a significant amount of land (26,680 acres). Therefore, the reservation plan did not provide for additional land to the Shivwits band, although the plan provided for expansion of existing Shivwits facilities (BIA 1982: 135). In addition, though the Shivwits band was not included in the band land allocations because of its existing reservation lands, it was to participate in the management of and benefits from the lands designated in the plan as tribal lands (BIA 1982: 165). The 1982 Reservation Plan was never implemented. Public outcry and resistance from the federal agencies whose land was targeted in the plan resulted in allocation of virtually worthless land to the bands. New legislation (PL 98-219) was passed on February 17, 1984 to void much of the 1980 legislation requiring a reservation plan and to place in trust 4,770 acres of land and to appropriate \$2,500,000 for the PITU in lieu of the 14,800 acres as provided for in the restoration legislation. The description of the parcels of land set aside for the PITU was published in the *Federal Register* on September 13, 1984. Included in the legislation is provision for rights to use and occupy national forest land at Fish Lake for religious or ceremonial purposes (section 3), including the right to make reasonable use of local plants and materials and to erect temporary structures (U.S. House of Representatives 1983). No agreements between the U.S. government and the Shivwits band exist for land or resources outside of Utah.

Kaibab

Beginning in 1906, the Federal government began appropriating money to the Kaibab Paiutes. The Kaibab Paiute Reservation was established by an order of the Department of the Interior October 16, 1907 and made permanent by the Executive Order of June 11, 1913 (Wilson 1913). The reservation occupies a twelve by eighteen mile rectangle lying approximately 30 miles north of the Grand Canyon and immediately south of the Utah border. The reservation was reduced to 125,000 acres with the removal of approximately twelve square miles for the town of Moccasin on July 17, 1917 (Wilson 1917).

The Kaibab Paiutes became involved with the National Park Service with the conversion of 40 acres of land within the reservation boundaries for the creation of Pipe Springs National Monument by presidential proclamation on May 31, 1923 (Harding 1923a). The proclamation expressly provided that the Indians of the Kaibab Reservation be able to utilize waters from Pipe Spring "for irrigation, stockwatering and other purposes, under regulations to be prescribed by the Secretary of the Interior." Pipe Springs is one of only two flowing springs on the reservation, so the negotiations for water use have required that the tribe and the NPS maintain

a relationship, and recent efforts to include the Paiutes in the interpretation regarding the monument have meant further involvement (Fields 1980).

Money was appropriated by Congress in 1928 for the improvement and maintenance of a road leading across the Kaibab Paiute Reservation to the Grand Canyon. The Commissioner of Indian Affairs in 1929 recommended the U.S. government acquire the Heaton ranch at Moccasin in order to provide sufficient resources to support local Indian people (USDI 1929). No present agreements or laws concerning the tribe and the area including the Grand Canyon exist. The tribe was included with the other Southern Paiutes in the 1965 settlement of the Indian Claims Commission with all the stipulations incumbent upon the Shivwits and described above. On May 29, 1965, the tribe's constitution and bylaws were approved by the Secretary of the Interior (U.S. Senate 1968).

San Juan

The Federal government began appropriating money to the San Juan Paiutes for the purchase of land beginning in 1906. The San Juan Paiute Reservation, or Paiute Strip reservation, was established in 1907 in Utah. In 1922, the reservation was restored to the public domain by an Executive action; nevertheless, that action did not constitute "termination" of the tribe (BIA 1987).

The lands of the reservation in the region became part of the Navajo Reservation by an Executive Order on January 8, 1900. These lands included Tuba City, Moenkopi, and Willow Springs, traditional San Juan Paiute territory (Bunte and Franklin 1987:100). Subsequently, the Western Navajo Agency was established. A small portion of these lands, now commonly known as the Bennett Freeze Area, were annexed to the Navajo Reservation on June 14, 1934 (49 Stat. 960). That small portion of land became part of the Navajo-Hopi land claim lawsuit involving 3.5 million acres in the western half of the Navajo reservation. On December 22, 1974, Congress called for the relocation of Navajos and Hopis from land partitioned between the two and the Secretary of the Interior was explicitly authorized to allot in severalty to individual Paiute Indians located with the area (PL 93-531, Sect. 9). In 1984, the San Juan Paiute Band received permission from a federal judge to pursue its land claims in the Bennett Freeze Area. On November 4, 1985, a Federal judge in Phoenix reviewed the status of the 1934 dispute and the Paiute land claims (Elston 1985) and, on August 11, 1987, notice of the proposed finding to acknowledge the San Juan Southern Paiute Tribe was published in the *Federal Register* (BIA 1987). On December 11, 1989, the Bureau of Indian Affairs issued notice of final determination that the San Juan Southern Paiute Tribe exists as an Indian tribe within the meaning of Federal law. The notice was published in the *Federal Register* on December 15 and December 29, 1989 (BIA 1989). The tribe received Federal recognition on March 28, 1990. This decision to grant tribal status to the San Juan Southern Paiute Indians was challenged by the Navajo Nation but, on March 13, 1992, that challenge was dismissed. The San Juan Paiutes were not specifically mentioned in the 1965 Southern Paiute land claim settlement, although "Indians living elsewhere who can establish Southern Paiute lineal descent to the satisfaction of the Secretary of the Interior" (PL 90-584) were included. Some of the San Juan Paiutes were paid in that judgment

(Gottschalk, pers. comm., 1992). A judicial ruling establishing San Juan Southern Paiute interest in land within the 1934 Navajo Reservation was concluded July 10, 1992. Partitioning of land is still being negotiated. No agreements exist between the San Juan Paiutes and the U.S. government regarding land or resources in the vicinity of the Grand Canyon although some decisions made regarding the land under Navajo jurisdiction may become relevant once the San Juan reservation is established.

LEGAL SUMMARY OF THE HAVASUPAI TRIBE

The Havasupai originally occupied land in the drainage area of Cataract Canyon and within the canyon itself, and on the high plateau from the Bill Williams Mountain in the south running north to the Colorado River and Grand Canyon (Spier 1928, Indian Claims Commission 1978). Their territory extended to the east as far as the junction of the Colorado and Little Colorado Rivers, and Havasupai farms have been identified at Moencopi Wash (Bureau of Indian Affairs 1979 cited in Morehouse 1993). Involvement of the Havasupai with the U.S. government began indirectly with the July 27, 1866 indemnity land grants, including traditional Havasupai lands, provided by an Act of Congress to the Atlantic and Pacific Railroad (14 Stat. 292). The Havasupai generally stayed out of the Walapai Wars of 1866-1869 and remained in isolated groups in the canyon during the subsequent removal of the Hualapai people to a reservation. (Walapai is an alternative spelling used by the Federal government for the Hualapai Tribe.) Official government involvement with the Havasupai began in 1877 when the Commander of the Department of Arizona noted that the Havasupai had "never been under control" of the U.S. government (U.S. Senate 1936:116). Anglo-American perceptions of a distinction between the Hualapai and Havasupai led to the creation of two separate political units (Dobyns and Euler 1970). Presidential Executive Orders of June 8 and November 23, 1880 (Hayes 1880a, 1880b) designated 60 square miles as a reservation for the Havasupai. The reservation land was reduced to 518 acres, primarily the intensely cultivated land at the bottom of Havasu Canyon, on March 31, 1882 (Arthur 1882). In 1865, government officials first recognized in writing that the Havasupai needed more land. This observation was repeated many times in the ensuing years (Ducheneaux 1973; Hirst 1985:60, 89, 149).

Grand Canyon Forest Reserve

On February 20, 1893, the presidential proclamation creating the Grand Canyon Forest Reserve (Harrison 1893) restricted Havasupai use of the area. A bill introduced in 1902 sought to grant railroad right-of-way through the Havasupai Reservation. The bill passed the House; the concluding sentence of the recommendation by the House Committee on Indian Affairs began, "This small reservation should not interfere with the development of mineral interests of northwestern Arizona..." (House Rpt. 2658:3). In 1905, President Theodore Roosevelt met Havasupai people living and farming in the area within the reserve that is now known as Indian Gardens and urged them to vacate the area to allow creation of a park for the American people (Hirst 1985:71). On June 29, 1906, the Congressional Act designating areas within the Grand Canyon Forest Reserve to be set aside for the protection of game animals further limited activity

within these areas. The last farming was done by Havasupai people at Indian Gardens in 1928 (Hirst 1985:132).

Grand Canyon National Monument and Park

On January 11, 1908, Havasupai use of the Grand Canyon and surrounding plateaus was further restricted with the establishment of Grand Canyon National Monument within the old Grand Canyon Forest Reserve (Roosevelt 1908a). Later, though, the Havasupai were given permits to 100,000 acres of land on the plateau designated for horse grazing (Hirst 1985: 74). Hough (1991:218) cites Hirst but describes this area as occupying 10,000 acres. On February 26, 1919, the Grand Canyon National Park was established (40 Stat. 1175). Section 3 of that Act includes the first mention of the Havasupai in any government action involving the area, stating

(t)hat nothing herein contained shall affect the rights of the Havasupai Tribe of Indians to the use and occupancy of the bottom lands of the Canyon of Cataract Creek as described in the Executive order of March thirty-first, eighteen hundred and eighty-two, and the Secretary of the Interior is hereby authorized, in his discretion, to permit individual members of said tribe to use and occupy other tracts of land within said park for agricultural purposes.

The Congressional Act included the first mention of the Havasupai tribe in government decisions regarding the Grand Canyon area. The law authorized the Secretary of the Interior to permit individual members of the tribe to use and occupy the tracts of land within the park for agricultural purposes. Through a Park Service permit Havasupai grazing land was then increased to 150,000 acres, although grazing permits in the most valuable traditional areas, the Pasture Wash area, went to white ranchers (Hirst 1985: 87-89). On April 5, 1910, the U.S. government bought five acres of land in the wider section of Havasu Canyon for a new school and agency site (Hirst 1985). During the 1920s and 1930s, the Havasupai began raising cattle on the plateau south of the Grand Canyon and several dozen young men were employed by the park. These and other Havasupai people lived in traditional homes on a 160 acre piece of land which had been surveyed by the park superintendent and known as Supai Camp. On August 14, 1920, the Office of Indian Affairs made an attempt to remove 87,000 acres of land from Tusayan National Forest for the benefit of the Havasupai people without success (Hirst 1985: 89). On December 22, 1932, the relinquished lands in the Atlantic and Pacific indemnity-grant lands in the Havasupai western winter range were set aside by presidential proclamation as Grand Canyon National Monument (Hoover 1932; Hirst 1985). In 1934, the Park Service burned the traditional homes of the Havasupai people in Supai Camp. The Park Service built frame cabins, making the Havasupai residents tenants and erasing their aboriginal status there. The Havasupai paying rent thereby entered an implied contractual relationship with the Grand Canyon National Park at the camp (Hirst 1985:151).

Havasupai Land Claims

The constitution and by-laws as well as the corporate charter of the Havasupai Tribe were approved on March 27, 1939 and amended July 22, 1967, June 18, 1968, and September 23, 1972. In 1940, the Department of the Interior issued a departmental order withdrawing four sections of land around the upper portion of Havasu Canyon, reserving it for Havasupai use. On January 28, 1941, Hualapai lawyers filed a suit before the Supreme Court of the United States concerning the forfeited Atlantic and Pacific Railroad lands in the Havasupai and Hualapai range. The decision was made in favor of the tribes retaining title to those lands (Supreme Court 1941). Conclusion of the follow-up investigation determined the Havasupai Tribe retained exclusive right of use and occupancy there. The Interior Department issued an administrative order on May 28, 1942 which recognizing the Havasupai claim to federal lands between Cataract Canyon and the Hualapai Reservation. On March 4, 1944, the four sections of land withdrawn by the Department of the Interior in 1940 were added to the Havasupai Reservation by a Congressional Act (58 Stat. 110); none of the other land covered under the Supreme Court decision was included. Money was appropriated by the Department of the Interior for improvements on those lands on June 28, 1944 (58 Stat. 463) and July 3, 1945 (59 Stat. 318). In 1957, the Park Service opened a campground adjacent to the Havasupai Reservation.

On April 13, 1949 the Havasupai filed a claim with the Indian Claims Commission, and on August 6, 1969 the Commission decided that the Federal government had wrongly seized 2,257,728 acres of aboriginal Havasupai lands for which the tribe accepted \$1,240,000 in compensation. The final judgment was entered to dispose of all claims and demands which the Havasupai Tribe had or could have asserted against the government from the period from June 8, 1880 until January 22, 1951 but not those accrued before June 8, 1880 or arising after January 22, 1951. Tribal Chairman Daniel Kaska, in testimony before the Commission, stated the Havasupai people had not realized before voting for the settlement that acceptance could affect their right to their aboriginal land (Hirst 1985:190). The money from the settlement was distributed in September 1973.

Expansion of Grand Canyon National Park

Beginning in the mid-60s, members of the Arizona Congressional delegation recommenced efforts to get land returned to the Havasupai Tribe. Activity increased with National Park Service efforts to expand the Grand Canyon National Park in the 1970s. A Master Plan was developed to incorporate some national forest lands around the Havasupai reservation. Initial maps included in the plan failed to show the existence of the Havasupai reservation (Hirst 1985:191). During this time, a Havasupai proposal to use compensation money to improve permit grazing lands on the plateau was rejected by the Park Service. Consequently, the Havasupai opposed the master plan for the park. The conflict focused on visitor access to the park across the reservation, management and use of the proposed Havasupai Use Lands, and Supai Camp. On January 25, 1973, the Havasupai Tribal Council adopted a resolution requesting "return of all Havasupai allotments and permit areas presently under U.S. Park Service and U.S. Forest Service control, including the 160-acre Havasupai residency area at Grand Canyon; the

return of the 1866 Atlantic and Pacific Railroad indemnity-grant lands; and the return of Havasu campground to the Havasupai Tribe as part of the Havasupai Reservation" (reprinted in Hirst 1985:209). One tribal member argued that he did not feel that lands under continuous use and occupation would have been included in the Havasupai claim against the government (U.S. Senate 1973). On January 3, 1975, the Grand Canyon National Park Enlargement Act (PL 93-620) was passed to expand the park. Included in the legislation is the expansion of the Havasupai reservation by 185,000 acres to include land on the plateau around Havasu Canyon and 95,300 acres of national park land between the new reservation and the Colorado River to be designated as Traditional Use Lands (TUL). Hunting, gathering of plants, and other traditional activities are permitted in the TUL. The Havasupai people also were given the right to control and develop tourist access to the park. Havasupai ownership of Supai Camp was terminated in the legislation, but the tribe has maintained control of the area through five-year Special Use Permits (Hough 1991; Balsom, pers. comm. 1992). The most recent Special Use Permit is in effect until June, 1994. After this time the Havasupai continued to claim much of the park land south of the Colorado River as rightfully theirs. On May 14, 1982, the Havasupai use plan for their returned lands, as stipulated by PL 93-620, received final acceptance by the Department of the Interior.

Havasupai-Park Service Relations

The Park Service is bound by Congressional mandate and the Havasupai sovereignty over the TUL is thus a concern for Congress and the National Park Service. The Grand Canyon Enlargement Act requires a formal relationship between the Park Service and the Havasupai. This relationship is specified in a series of Memoranda of Understanding (MOUs) between the Park Service and the Havasupai Tribe. The initial MOU specified that an annual meeting would take place between park officials and members of the tribe. The MOU was renewable on an annual basis. In 1985, a revised agreement was drafted by the Park Service, but it was never signed by the Havasupai (Hough 1991). Following a meeting between the Superintendent and the Havasupai tribal council in March of 1993, it was agreed that the extant MOU be redrafted and sent to the tribal chairman for signature.

In 1982, a MOU was signed by both parties allowing grazing of horses and cattle in the TUL. Grazing of sheep, however, was to be determined by "an outside agency," namely, the U.S. Forest Service (Hough 1991). The range capacity of the TUL was set by a scientific study conducted by the USDA; the carrying capacity for horses was thereby set at zero. The Grand Canyon Backcountry Management Plan (NPS 1983) gives control of visitor use and access to the TUL to the park. A MOU lays out the Havasupai concerns. The special relationship between the Havasupai and the park is again explicitly recognized in the 1984 Grand Canyon Natural and Cultural Resources Management Plan (NPS 1987b).

Consideration of the Grand Canyon Overflight Act (PL 100-91) led the Havasupai to request a meeting with the National Park Service in order to gain input into discussions on the aircraft overflight policies and regulations (Hough 1991). The Act recommended prohibition of flights below the canyon rim except to and from Supai Village and the lands of the Havasupai Tribe (NPS 1987a).

Comparison of Southern Paiute and Havasupai Legal Histories

The occupancy areas and early lifestyles of the Havasupai and Southern Paiute tribes in connection with the Grand Canyon are quite similar; the Havasupai utilizing the canyon and plateau regions south of the Colorado River and the Southern Paiute doing so to the north and south. San Juan Paiutes interacted frequently with their Havasupai neighbors in the 18th and 19th centuries, before Navajo occupation, as they began to expand into the Moenkopi area (Bunte and Franklin 1987:22, 42-44, 47, 50, 83). These interactions were occasionally violent confrontations as boundaries came under dispute (Bunte and Franklin 1987:31) among expanding ethnic groups.

Nevertheless, the extent of Federal government interaction with these two groups is decidedly different. Because the Havasupai reservation was designated within Cataract Canyon and adjacent to parklands, even though their "legal" use of the canyon and plateau has fluctuated through the years, they could not be ignored by park service and other federal agencies. Neither the Havasupai nor the Southern Paiutes received much recognition in the nineteenth century; they lacked the visibility resulting from the use of horses and did not engage in aggressive military activity which would force persistent and regular contact with the Federal government. In addition, by the mid-1930s, these groups differed from those such as the Hopis and Navajos because they largely lacked the capacity to speak English and therefore the willingness to communicate with non-Indians that would have made it possible for them to have made their interests known to federal officials and the public at large, despite having similar historic exposure to English language education (Bunte and Franklin 1987:164). The general powerlessness of these tribes did not challenge the ignorance of federal officials. These groups also remained hidden from the public. According to a 1929 report of the Board of Indian Commissioners concerning the Southern Paiutes, "Until recently the general public had little knowledge of these Indians" (USDI 1929:27). The Assistant Secretary of the Interior at that time visited the Havasupai and noted that the tribe was "adverse to moving out where it might come into closer contact with the outside world" (USDI 1929:38). The high visibility of the Havasupai in the latter part of the twentieth century is due largely to the presence of visitors to the Grand Canyon. In contrast, of the Southern Paiutes, only the Kaibab Paiutes have even possessed a reservation for much of this century, and that is located approximately thirty miles north of the Grand Canyon.

LEGAL SUMMARY OF THE COLORADO RIVER CORRIDOR

This section will examine the legal history of the Grand Canyon National Park, the Glen Canyon National Recreation Area, and previous National Park Service involvement with the region's tribes regarding cultural resources in the area. In addition, a review of Federal policy regarding cultural resources and Native Americans is included.

Grand Canyon

U.S. government policy in the Grand Canyon region began on February 20, 1893 with a presidential proclamation establishing the Grand Canyon Forest Reserve, setting aside the land south of the Grand Canyon to be protected from settlement (Harrison 1893). The Reserve was enlarged by presidential proclamation on May 6, 1905 (Roosevelt 1905). Then, on June 29, 1906, the Congress authorized the President to designate lands for the Grand Canyon National Game Preserve. The purpose of the reserve was to set aside areas within the Grand Canyon Forest Reserve as an animal breeding area and for the protection of game animals. Trapping, hunting, killing and capturing of game animals were prohibited in this area. The boundaries of the Forest Reserve were modified on August 8, 1906 (Roosevelt 1906a) and the lands within the Grand Canyon Forest Reserve north and west of the Colorado River were declared a Game Preserve by presidential proclamation on November 28, 1906 (Roosevelt 1906b). On January 11, 1908, a presidential proclamation established the Grand Canyon National Monument (Roosevelt 1908a). Persons were thereby forbidden from appropriating, injuring, or destroying any feature of the monument. The new classification was not intended to prevent the use of the lands for forest purposes; nevertheless, the National Monument was designated as the dominant reserve. The Grand Canyon National Game Preserve was enlarged on June 23, 1908 (Roosevelt 1908b). Also, on July 2, 1908, the Grand Canyon, Coconino and Kaibab National Forests were established by Executive Order, created out of the Grand Canyon Forest Reserve (Roosevelt 1908c). At that time, 100,000 acres of land were restored to the Havasupai from the Forest Service (Hirst 1985). Modifications to the boundaries of the National Forests and the Game Preserve created out of the original Grand Canyon Forest Reserve were made throughout the next several decades (Roosevelt 1909; Taft 1910a,b,c; Taft 1913; Harding 1923b; Hoover 1931; Roosevelt 1935).

On August 25, 1916, a Congressional Act established the National Park Service (NPS) within the Department of the Interior to supervise, manage, and control the natural parks, monuments and reserves of the United States. The Secretary of the Interior was given authority to grant the privilege to graze livestock within any national park or monument, except Yellowstone National Park. Shortly following the creation of the NPS, on February 26, 1919, Congress established the Grand Canyon National Park (GCNP). The Act repealed and revoked the 1908 Executive Order which created Grand Canyon National Monument and removed from the Grand Canyon Game Reserve lands lying within the new park boundaries. The Act stated that nothing in it would affect the rights of the Havasupai Tribe on their reservation and also authorized the Secretary of the Interior to permit individual members of that tribe to use and occupy other tracts of land within the park for agricultural purposes. In addition, it authorized the Secretary of the Interior to permit the utilization of areas within the park necessary for the development and management of a Government reclamation project. On May 10, 1926, Congress provided that certain patented lands in the park be exchanged for government lands there (44 Stat. 497). Additional land was added to the GCNP in the Department of Interior appropriations of March 7, 1928, and livestock grazing in adjoining national forest areas was permitted to cross the land (45 Stat. 234). A presidential proclamation of December 22, 1932 created a new Grand Canyon National Monument including a portion of the Grand Canyon down

river from the Grand Canyon National Park and bordering the Hualapai Reservation (Hoover 1932). An Executive Order of 1933 reorganized the executive branch and consolidated the administration of parks into the NPS (Roosevelt 1933). On January 3, 1975, the Grand Canyon National Park Enlargement Act (PL 93-620, 88 Stat. 2089) abolished the Grand Canyon National Monument and Marble Canyon National Monument and expanded the park. It also enlarged the Havasupai Reservation as well as providing for Havasupai Use Lands. Section 10 of that Act provides a detailed description of the area involved and the relationship to be established between the National Park Service and the Havasupai Tribe. The 1975 Act prohibits the taking of Indian lands except with approval of the governing body of the respective Indian tribe or nation (section 5). The Act also authorizes and encourages the Secretary of the Interior to enter cooperative agreements with interested Indian tribes for the protection and interpretation of the Grand Canyon in its entirety (section 6). The Grand Canyon National Park Enlargement Act further restricted grazing within the park by generally prohibiting the renewal of grazing permits beyond 1985. Exceptions were made for permits on land within the former Grand Canyon National Monument (est. 1932); these may be renewed for the life of the present holder.

Glen Canyon

Glen Canyon National Recreation Area was established on October 27, 1972 (PL 92-593, 86 Stat. 3611). It includes Lake Powell and tributaries as well as 15 miles of the Colorado River from the dam to Lee's Ferry. The Act states that "(n)o lands held in trust for any Indian tribe may be acquired except with the concurrence of the tribal council." Land in the area was originally received in exchange with the Navajo Tribe through 76 Stat. 1686 (Sept. 2, 1958), subsection b. An Environmental Assessment and Management Plan for Lake Powell's Accessible Shores was published in April 1988 (NPS 1988b). The cultural resource inventory included only Navajos in November and December 1987; interviews were conducted with Navajo people in the Piute Mesa and Nokai areas of the Navajo Indian Reservation to determine use of natural and cultural ethnographic resources for religious and other purposes by Navajo people (see p. 76 for results). In the July 10, 1992 judicial ruling regarding the San Juan Southern Paiute land claims within the 1934 Navajo Reservation recognizes that San Juan Southern Paiute access and use of religious areas in traditional lands, even if they are part of another Indian reservation, is guaranteed by the 1974 Act (25 USC § 640d-20; Judge Earl H. Carroll 1992:63). San Juan Paiute access and use of locations and resources in the GCNRA should be protected by other federal laws and regulations pertaining to Indian rights in federal lands (Bunte and Franklin 1993a; see below).

Laws Governing Management of Cultural Resources

National Environmental Policy Act

The National Environmental Policy Act (NEPA, PL 91-190, 42 USC 4371, 40 CFR 1500 et seq.) requires completion of an Environmental Impact Statement (EIS) for any federal action determined to have potentially significant environmental impacts. Relevant to the purposes of this study, NEPA encourages the preservation of historic resources and requires consideration

of social impacts. A report of the Council of Environmental Quality specifically directs the solicitation of input from affected Indian tribes at the earliest possible time in the NEPA process (40 CFR 1501.2). The lead agency in the process is also directed to invite the participation in the scoping process of any affected Indian tribes as well as Federal, State, and local agencies or other interested persons (40 CFR 1501.7). In addition, the agency preparing the draft environmental impact statement is directed to request the comments of Indians tribes where effects may be on their reservation (40 CFR 1503.1). However, the NEPA legislation also clearly indicates that in those cases where project impacts are entirely social or economic no EIS is required regardless of the severity of those impacts. NEPA can be an effective means by which to incorporate Native American interests into NPS planning, but concerns have included the possibility that non-artifactual cultural resources considered only under NEPA could be vulnerable to Freedom of Information Act (FOIA) requests, thereby eliminating protection of confidential site locations, and the fact that NEPA requires documentation of impact but provides no real protection for any specific resource (Stuart 1979). Those early concerns have been answered by other legislation and also addressed by specific policies of the implementing agencies. These will be reviewed briefly here.

Early Historic Preservation Legislation

Concern for historic and cultural resources has been expressed in legislation throughout the twentieth century. In 1906, the Antiquities Act (PL 209, 16 U.S.C. 431-33) authorized the President of the United States to declare landmarks, structures, and objects of historic or scientific interest to be national monuments and to reserve land to aid in their protection. The Act also established the necessity of obtaining permits for the excavation of archaeological sites on public lands. On August 21, 1935, the Historic Sites Act (PL 74-292, 49 Stat. 666) provided for the preservation of historic American sites, buildings, objects and antiquities of national significance and confirmed the role of the National Park Service as the Federal government's central agency for historic preservation. On October 26, 1949, Congress created the National Trust for Historic Preservation to receive donations of sites, buildings, and objects significant in American history and culture and to preserve and administer these for the public benefit. On June 27, 1960, Congress provided for the preservation of historical and archeological data threatened by the construction of a dam (PL 86-523, 74 Stat. 220). The Act requires any agency of the U. S. involved in construction of a dam to give written notice to the Secretary of the Interior who shall then order a survey to be conducted to ascertain whether the affected area contains historical and archeological data which should be preserved in the public interest. If indicated by the survey, the Secretary shall then see that the data be collected and preserved. The 1974 amendments to the Act (PL 93-291) added significant scientific and prehistoric data to the others which would require notification and preservation in the public interest. The amendments also require consent of "public entities having a legal interest in the property involved."

National Historic Preservation Act

On October 15, 1966, the National Historic Preservation Act (NHPA, PL 89-665, 80 Stat. 915, 16 U.S.C. 470 et seq.) increased the scope of historic preservation as public policy and broadened the duties of the National Park Service (Connally 1986). The Act expanded the properties to be preserved to include those significant in American history, architecture, archeology and culture (section 101-2). The Act provides assistance to *states* and established the Advisory Council on Historic Preservation whose duty it is to advise the President and Congress on matters relating to historic preservation, encourage public interest and participation in historic preservation, and assist state and local governments in drafting legislation relating to historic preservation. The Director of the National Park Service, or his/her designee, serves as Executive Director of the Council. PL 94-422 of September 28, 1976 amended Section 102 of the NHPA and established the National Historic Preservation Fund. The 1980 amendments to the Act directed the Secretary of the Interior to study the means of "preserving and conserving the intangible elements of our cultural heritage such as arts, skills, folklife, and folkways..." and to recommend ways to "preserve, conserve, and encourage the continuation of the diverse traditional prehistoric, historic, ethnic, and folk cultural traditions that underlie and are a living expression of our American heritage" (PL 96-515, 94 Stat. 2989, 16 U.S.C. 470a). The amendments are explicit in the requirements for the protection of the confidentiality of the location of sensitive historic resources. They direct the head of any federal agency to "withhold from disclosure to the public, information relating to the location or character of historic resources whenever...the disclosure of such information may create a substantial risk of harm, theft, or destruction to such resources or to the area or place where such resources are located" (section 304). National Register Bulletin 29, *Guidelines for Restricting Information on the Location of National Register Properties*, provides full detail for agency directors.

The NHPA amendments also demonstrate the shift in U. S. policy toward the recognition of Native Americans, including for the first time in historic preservation legislation explicit mention of the federal government's partnership with Indian tribes in the protection and preservation of prehistoric and historic resources (section 2). A report, *Cultural Conservation*, was prepared to respond to the directives of the Act and submitted to the President and Congress by the Secretary of the Interior on June 1, 1983 (Parker and King 1990). That report directed the National Park Service to prepare guidelines to assist in the documentation of intangible cultural resources. National Register Bulletin 38, *Guidelines for Evaluating and Documenting Traditional Cultural Properties* fulfilled that purpose with specific inclusion of Indian Tribes (Parker and King 1990:2). That bulletin is significant for preservation of Native American cultural resources because the policies and procedures of the National Register can be interpreted by Federal agencies and others to exclude historic properties of religious significance to Native Americans from eligibility for inclusion in the National Register (Parker and King 1990: 3). On October 1, 1985, a Joint Resolution recognized the fifty years of accomplishments resulting from the Historic Sites Act (PL 99-110).

On October 30, 1992, the National Historic Preservation Act was again amended, providing considerable greater authority and assistance to Native Americans. The 1992

amendments specifically mention the need for Federal agencies to contact and consult with Indian tribes. Properties of traditional religious and cultural importance to an Indian tribe may be determined to be eligible for inclusion on the National Register, and a Federal agency must consult with any tribe that attaches religious or cultural significance to such properties. In addition, Indian tribes are to receive assistance preserving their particular historic properties. Coordination among tribes, State Historic Preservation Offices (SHPOs), and Federal agencies is to be encouraged in historic preservation planning, and in the identification, evaluation, protection, and interpretation of historic properties. Additional language is also included in the amendments regarding confidentiality. Tribes are also eligible to receive direct grants for the purpose of carrying out the Act. The amendments also provide for tribes to assume part or all of the functions of a SHPO with respect to tribal lands.

In response to the 1992 NHPA amendments, a new policy statement, "Consultation with Native Americans Concerning Properties of Traditional Religious and Cultural Importance," was adopted by the Advisory Council on Historic Preservation (ACHP) on June 11, 1993. That policy provides explicit principles for application of the amendments, including particularly that Native American groups who ascribe cultural values to a property or area be "identified by culturally appropriate methods" and that participants in the Section 106 process should learn how to approach Native Americans in "culturally informed ways" (ACHP 1993: 3-4). Consultation with Native Americans must be conducted with sensitivity to cultural values, socioeconomic factors and the administrative structure of the native group. Specific steps should be taken to address language differences and issues such as seasonal availability of Native American participants as well. According to this policy, Native American groups not identified during the initial phases of the Section 106 process may legitimately request to be included later in the process. The Advisory Council's policy statement also reaffirms the US government's commitment to maintaining confidentiality regarding cultural resources and states that participants in the Section 106 process "should seek only the information necessary for planning" (ACHP 1993:3).

Archaeological Resources Protection Act

The Archaeological Resources Protection Act (ARPA, PL 96-95, 93 Stat. 712, 16 USC 470) was signed into law on October 31, 1979 and extended protection of archaeological resources on Federal and Indian land. Archeological resources are defined as material remains of past human life or activities that are of archeological interest, having retrievable scientific information, and over 100 years old. Under ARPA, excavated resources remain the property of the U.S. government, subject to inventory and repatriation in accordance with the Native American Graves Protection and Repatriation Act (NAGPRA, see below). ARPA provides the first significant criminal penalties for the vandalism, alteration, or destruction of historic and prehistoric sites or for any transaction conducted with an archeological resource that was excavated or removed from public or Indian lands or in violation of State or local law (section 6). The Act directs Federal land managers to notify any Indian tribe considering a site as having religious or cultural significance prior to issuing a permit for excavation or removal of archeological resources from the site. Section 9 restricts the release of information concerning

the nature and location of any archeological resource requiring a permit for excavation or removal.

In 1984, uniform regulations were promulgated, as required by the Act, by the Secretaries of the Interior, Defense, and Agriculture and the Chairman of the Tennessee Valley Authority (43 CFR Part 7; Carnett 1991:3). Additional regulations may be promulgated by Federal land managers as needed by their agencies. The January 25, 1988 amendments of the Act (PL 100-555 and PL 100-588) strengthened ARPA with requirements that Federal agencies develop plans for surveying lands not scheduled for projects.

American Indian Religious Freedom Act

Additional legislation which affects tribes and cultural resources includes the American Indian Religious Freedom Act (AIRFA) of August 11, 1978 (PL 95-341, 42 U.S.C. 1996). AIRFA reaffirms the First Amendment of the United States Constitution rights of American Indian people to have access to lands and natural resources essential in the conduct of their traditional religion. In Section 2, Congress asks the President of the United States to direct various federal departments and agencies to consult with native traditional religious leaders to determine appropriate changes in policies and procedures necessary to protect and preserve American Indian religious practices. The Act requires the NPS, like other Federal agencies, to evaluate policies and procedures with the aim of protecting the religious freedoms of Native Americans including "access to sites, use and possession of sacred objects, and the freedom to worship through ceremonials and traditional rites." During the twelve years since AIRFA was passed by Congress, all federal agencies have developed means of interacting with American Indian tribes having cultural resources potentially impacted by agency actions. The Bureau of Reclamation has established an Office of Native American Affairs that helps to facilitate interactions between tribes and facilities. The National Park Service has published specific policies concerning American Indians; these will be discussed at greater length below.

Specific guidelines regarding AIRFA are presently being prepared. Until they are published, most of the guidelines and regulations that address the spirit of AIRFA have been passed as part of the National Historic Preservation Act (NHPA). It is important to note that while these guidelines and regulations deal with issues of concern in AIRFA, there are a number of issues that are not covered by NHPA guidelines.

Native American Graves Protection and Repatriation Act

The Native American Graves Protection and Repatriation Act (NAGPRA, PL 101-601, 104 Stat. 3048) became law on November 16, 1990. NAGPRA makes provisions for the return of human remains, funerary objects and associated sacred items held in federally-funded repositories to American Indian, Native Alaskan, and Native Hawaiian peoples who can demonstrate lineal descent, cultural affiliation, or cultural patrimony. In addition, the Act provides for formal consultation with, and participation of, indigenous peoples to decide the

disposition of these resources. This process should occur as a result of repository inventories and in the event they are encountered by activities on Federal and tribal lands (Price 1991: 32-33).

According to a memorandum from the Executive Director of the Advisory Council for Historic Preservation (Bush 1991), the NAGPRA will affect the Section 106 review process in at least three ways: (1) with regard to the conduct of archeological investigations, formal consultation must occur with appropriate American Indian groups regarding the treatment and disposition of human remains and other cultural resources recovered during archeological studies on Federal and tribal lands, and tribes must give their consent to the excavation of human remains and removal of remains and other cultural resources from tribal land beyond that normally required of the Section 106 process; (2) in discovery situations, agencies are encouraged to develop plans to deal with unexpected discoveries of archeological materials and in the event of inadvertent discovery, all project activities must cease, appropriate Federal agency or Indian tribe notified, and activities must not resume for 30 days. Disposition will be resolved in accordance with the provisions set forth in NAGPRA; (3) with regard to curation, NAGPRA allows for the affiliated American Indian group to decide on the treatment and disposition of recovered cultural items, which goes beyond the ACHP policy that simply requires professional curation.

National Park Service and Cultural Resource Policy

The historic preservation laws apply to cultural resources in general, but this account will examine those laws as they affect Native American groups. Early NPS management policies limited the definition of cultural resources to archeological, historical, and architectural resources. Concern for intangible cultural resources, particularly for Native Americans who identify locales of traditional importance that do not exhibit physical evidence of human behavior, began to be expressed by the late 1970s (Stuart 1979). The September 1984 keynote address by NPS Director Russell E. Dickinson to the First World Conference on Cultural Parks called for park officials to "seek innovative forms of rapprochement among native communities, government land managing agencies, and groups who share that concern." Working together requires recognition and respect, developing permanent working partnerships, recognition of the value of cultural differences, and recognition that culture means more than objects or structures (Scovill 1987). Natural and cultural features are now viewed as park resources with traditional subsistence, sacred ceremonial or religious, residential or other cultural meaning for members of contemporary park-associated ethnic groups, including Native Americans (Crespi 1987). *Bulletin 38* does not address cultural resources with no property referents and the National Register is not seen as the appropriate vehicle for recognizing cultural values that are purely intangible due to the lack of legal authority to address them under Section 106 without relationship to a historic property. Nevertheless, the *Bulletin* is meant to encourage users to address the intangible cultural values that may make a property historic. Also, the *Bulletin* is intended to supplement rather than supplant more specific guidelines such as those used by Indian Tribes (Parker and King 1990:3-4). The *Bulletin* provides guidance in conducting cultural resources surveys, noting the importance of background research about what is already recorded and consultation with persons who have been students in the cultures and traditions of the area

under review. The agency conducting a cultural resources survey has the responsibility for coordination and consultation with Indian tribes. Recommendations include making contact with knowledgeable groups in the area and specifically seeking out knowledgeable parties in the affected community outside the official political structure, with the full knowledge and cooperation of the contemporary community leaders (Parker and King 1990:6).

National Park Service policies (NPS 1988a) provide explicit direction for involving Native American groups, and commitment to creating cooperation with Native American authorities and seeking to establish both formal and informal lines of communication and consultation. The NPS *Management Policies* specifies that the integrity of contemporary Native Americans necessitates that the NPS consult with affected communities before reaching decisions about the treatment of traditional associated resources. Accordingly, potentially affected Native American communities will be given opportunities to become informed about and comment on anticipated NPS actions at the earliest practicable time (NPS 1988a: 5:4). Each park with cultural resources is to prepare and periodically update a cultural resource component of the park's resource management plan, defining and programming the activities required to perpetuate and provide for the public enjoyment of those resources. Any action that might affect cultural resources is to be undertaken only if, in cases involving ethnographic resources, associated Native Americans and other ethnic groups have been consulted, and their concerns have been taken into account. In addition, certain contemporary Native Americans and other communities are permitted by law, regulation, or policy to pursue customary religious, subsistence and other cultural uses of park resources with which they are traditionally associated. The policies also state that the NPS will actively consult with appropriate Native American tribes or groups regarding interpretive programs, repatriation of museum objects, etc. The NPS will conduct appropriate cultural anthropological research in cooperation with park-associated groups to develop interpretive programs accurately reflecting Native Americans. Discussion of Native American involvement includes both formal tribal leaders and traditional elders.

The data stored in the memory of Native American elders, extraordinary in quantity and quality, can only be acquired by setting up intimate and equitable working relationships with them...Native American elders who are interested in working with NPS personnel should be contacted immediately, worked with extensively and seriously, and their information integrated with already available material. (Bean and Vane 1987: 27-28)

NPS policies require establishment and maintenance of consultative relationships with Native American groups who have historical ties to specific park lands and direct the Service to "seek the broadest feasible range of views from members of the involved group, while recognizing that it must also respect the views of the group's tribal chair or other formal leaders" (NPS 1987c: 2457). NPS mandates for cultural resource management are further outlined in *Cultural Resources Management Guidelines* (NPS - 28). One aspect of this document is the requirement that "properly selected, sensitized, and trained people shall serve as intermediaries between the NPS and local groups" (NPS 1981: 2-18). Further, the "Native American Relationships Management Policy" (NPS 1987c) presents the National Park service philosophy regarding Native American relationships and outlines NPS policy toward American

Indians, Eskimo, Aleut, and Native Americans of the Pacific Islands. The policy expands and clarifies Special Directive 78-1, *Policy Guidelines for Native American Cultural Resources Management*, and provides guidance to NPS personnel for management actions affecting Native Americans. Emphasis is placed on implementation of activity in a "knowledgeable, aware, and sensitive manner" (NPS 1987c: 35674). Park managers are directed by the policy to identify and consult with Native American groups traditionally associated with park lands and other resources.

Grand Canyon and Cultural Resources

National Park Service involvement with Native American tribes in the Grand Canyon region has focused primarily on the Havasupai; however, Western region employees have recognized that the Grand Canyon National Park includes the ancestral lands of the Hopi, Southern Paiute, Navajo, Hualapai, and Havasupai (Kelly 1980: 2). Treatment of cultural resources within the Grand Canyon is specified in the *Grand Canyon National Park: Natural and Cultural Resources Management Plan* (NPS 1987b). The document provides an overview of cultural resources within the park, including both prehistoric and contemporary ethnic and ethnohistoric groups. Specific mention is made of the Hopi, Navajo, Havasupai, Hualapai and Southern Paiute tribes, all of which have long histories in the area and heritages that must be preserved.

A recent project, "Liaison With Indian Tribes" was proposed by Grand Canyon staff in January 1992. The purpose of the project is to recognize the shared concern of the Kaibab Paiute, San Juan Southern Paiute, Hopi, Navajo, Havasupai, Hualapai, and Zuni tribes and the park. General issues of concern include the desire by park service officials for a joint fire policy and by each tribe for the collection of plants for religious purposes (under the American Indian Religious Freedom Act). Under the 1992 program, a proactive approach to involvement with the seven tribes will be attempted, including at least two meetings per year and frequent telephone contacts. The Park Archaeologist is designated as the liaison in order to best comply with Federal and NPS mandates for establishing regular communication by a culturally sensitive staff person.

History of the Glen Canyon EIS

In 1977, the BOR wrote an Environmental Assessment of the impacts from Glen Canyon and found that they were significant. In 1982 the Department of the Interior initiated the Glen Canyon Environmental Studies to collect the technical information required to assess the impact of low and fluctuating flows on the natural and recreation resources in Glen Canyon and Grand Canyon. The initiation of these studies stemmed from the BOR desire in 1980 to upgrade and rewind the dam's generators. The Secretary of the Interior subsequently directed the preparation of an Environmental Impact Statement (EIS) on the effects of the operation of the dam on the downstream environmental and ecological resources and historic properties of the Glen Canyon National Recreation Area and Grand Canyon National Park (BOR 1992). On October 27, 1989,

notice of intent to prepare a draft EIS on Glen Canyon Dam was published in the *Federal Register* (BOR 1989).

The Glen Canyon Dam was authorized and constructed prior to enactment of the National Environmental Policy Act (NEPA), so no EIS was prepared at the time; none had been completed by 1989. The Bureau of Reclamation (BOR), Upper Colorado Regional Office, administers the releases of water from the dam and is the lead agency for the EIS process. The NPS is responsible for the administration and management of historic properties within the boundaries of the Glen Canyon National Recreation Area and the Grand Canyon National Park and is a cooperating agency in the effort.

The presence of several Native American tribes with concerns in the area led representatives from the Department of the Interior to recommend the inclusion of the Bureau of Indian Affairs, Phoenix Area Office, as a cooperating agency. Early attention was paid to the Havasupai Tribe, with reservation and traditional use lands in the park interior, and the Hualapai Tribe, which is responsible for the administration and management of historic properties within the boundaries of reservation lands affected by the program. The formal public involvement process and scoping efforts of the EIS began in January 1990. The Section 106 consultation process for cultural resources began in June 1990 with all of the tribes, the ACHP, and the SHPO. In the fall of 1990, the BIA representative in the process called attention to the need to bring the affected tribes into the process as cooperators. In addition, the BOR received a formal request from the Arizona Department of Game and Fish requesting status as a cooperating agency. Initial resistance to the involvement of these additional parties was attributed to desire to limit the participants to federal agencies. The General Counsel from the President's Council on Environmental Quality attended a meeting of the cooperating agencies and clarified the requirement under NEPA that tribes and states be afforded the opportunity to be involved in an EIS. The BOR consented to the inclusion of the Arizona Department of Game and Fish, but the request for participation of tribes was again denied. The tribes expressed interest in participating in both the EIS process, to participate in cooperating team meetings and to be represented in the writing process, and also in the Glen Canyon environmental studies, with the opportunity to do their own research and data gathering (Huslein, pers. comm., 1992).

The NPS organized a river trip to begin informal consultation pursuant to section 106. The trip occurred from July 31 to August 7, 1990. On June 21, 1990, the survey design and scope of work was sent to all the tribes. In February 1991, a trip was taken to visit the Havasupai, Hualapai, Hopi, and Navajo tribes. The trip was organized and led by the BIA Area Office in Phoenix and included representatives from the BOR and the BIA agencies with jurisdiction over those tribes. The agency representatives met with the councils of the Hualapai and Havasupai tribes and with staff members at the Hopi and Navajo offices. After the trip, the BOR began to accept the four tribes as cooperators in the EIS process. In the fall of 1991, the BOR began to bring the Kaibab Paiute, San Juan Southern Paiute, and Zuni tribes into the process. Finally, in 1992, the Shivwits Paiutes were included.

Pursuant to the regulations implementing Section 106 of the National Historic Preservation Act (36 CFR 800), a Programmatic Agreement (PA) for the Glen Canyon Dam operations was developed among the BOR, the Advisory Council for Historic Preservation, the NPS, and the Arizona State Historic Preservation Office. Formal consultation between the three agencies began on October 21, 1991. Meetings to draw up the PA regarding the operation of the Glen Canyon Dam began on March 10, 1992. A draft agreement was initially drawn up March 5, 1992 and has been revised numerous times since. The final draft PA was accepted in November 1992. The final PA was signed in spring of 1994. The Havasupai, Hopi, Hualapai, Kaibab Paiute, San Juan Southern Paiute, and the Shivwits Paiute Tribes, the Navajo Nation, and the Zuni Pueblo were included as concurring parties. The final draft of the PA was delivered to the tribal chairperson of each tribe for review.

The Grand Canyon Protection Act of 1992 was passed on October 30 as Title XVIII of the Reclamation Projects Authorization and Adjustment Act of 1992 (PL 102-575). The Grand Canyon Protection Act directs the Secretary of the Interior to continue to operate the Glen Canyon Dam under the interim operating criteria established in October 1991. The Act specifies that implementation be carried out in consultation with Indian tribes as well as appropriate federal and state offices and members of the general public. Section 1804 of the Act requires completion of the final Glen Canyon Dam environmental impact statement no later than October 30, 1994. Section 1804 provides for the establishment and implementation of long-term monitoring programs and activities to ensure that the Dam is operated in a manner consistent with the provisions of the Act. Again, the monitoring programs and activities must be conducted in consultation with Indian tribes, the Secretary of Energy, state governments, and members of the general public. In January 1993, a Memorandum of Understanding (MOU) was signed between the BOR and Southern Paiute Consortium (composed of the Shivwits and Kaibab Paiute Tribes). The San Juan Southern Paiute Tribe signed a separate MOU. The MOUs were signed to establish the Southern Paiutes' formal role as active participants in the preparation and review of the Glen Canyon Dam EIS.

CHAPTER FOUR

CULTURAL RESOURCE INVENTORY AND ANALYSIS

Southern Paiute people have lived since they were created along the Colorado River. During this period they used the resources of this vast area to survive and prosper as a people. These resources were used in ways defined by the supernatural and by the resources themselves, for to Southern Paiute people the plants, animals, soil, minerals, and water of this land have their own self-willed life forces. Paiute people have talked and continue to talk to these resources, receiving guidance as to how the resources desire to be treated. During the raft trip in the summer of 1992, one of the Paiute people received three songs from separate places in the Grand Canyon. The Southern Paiute people are alive and the resources of the Colorado River are alive, and their relationship continues.

The purpose of this chapter is to compile an inventory of cultural resources that Southern Paiute people have used and continue to use along the *Colorado River Corridor*. This inventory is compiled from documented evidence, such as books, articles, and unpublished manuscripts. The great bulk of these documents is eyewitness accounts of Spanish or Euroamerican travelers who recorded the presence and activities of Paiute people at some location in the *Colorado River Corridor*. Some documents come from oral history interviews with Paiute people conducted by an anthropologist early in the twentieth century. Archaeology is used to document prehistoric Southern Paiute occupation and activities.

SOUTHERN PAIUTE PLACES

Southern Paiute people occupied areas, hunted, gathered wild resources, and farmed in the Grand Canyon and this is partially evidenced by the many contemporary place names, such as Nankoweap, Chuar, Tapeats, and Unkar, that derive from Paiute terms which have been defined for the general public in popular guidebooks and anecdotal volumes (Brian 1992; Euler 1990:6-3; Granger 1960). Even geological formations, including rock formations and sandstone layers (e.g., Muav, Kaibab, Toroweap, and Tapeats), are named with indigenous terms. Archaeological and ethnographic research documented Southern Paiute territorial boundaries and occupation of locations in and around Grand Canyon. Many of these locations were named and the Paiute people who lived there were referred to by the place name. This practice caused some confusion among Euroamericans including anthropologists, who often equated local place names

for people with names for people living within a district. The latter social-spatial unit is the one closest to the contemporary designation as a Paiute tribe so it is used to organize the place names discussion. In this section, we rely firstly on contemporary Southern Paiute oral testimony to the extent possible, secondly on primary and scholarly sources, including contemporary ethnographies, and thirdly on secondary sources. For some names, popular books were consulted as a last resort when no other information regarding a place name could be found.

The Colorado River

The Colorado River is an extremely sacred and culturally significant location to Southern Paiute people. John Wesley Powell collected numerous Southern Paiute place names during his work among Paiute people between 1868 and 1880. One of the names obtained was *Pa-ga-we-wi-gum*, the Paiute name for the Canyon of the Colorado (Fowler and Fowler 1971:141). Another Paiute individual with the initials TT (Edward Sapir's consultant Tony Tillohash [Fowler and Fowler 1971:134]) rendered the name as *paya' ?uwi'pi*, meaning "'big stream (river) canyon'" (Fowler and Fowler 1971:141). Fowler and Fowler also note that Edward Sapir (1931:704) listed the name *paya'oipi*, which Sapir translated as "Great water canyon" (Fowler and Fowler 1971:141). Franklin and Bunte (1993b:6) have rendered the term as *paya?uwipi*. In the early 1900s, William Palmer noted that of all water sources, "first in importance to the Pahute was, perhaps, the Colorado. He called it Pa-ha-weap. Interpreted it means 'water down deep in the earth,' or 'along way down to water'" (Palmer 1928:21). In the 1930s, Isabel Kelly recorded that the Colorado River was called by Kaiparowits people *paxa* (spelled *Paga* in Kelly 1964:147), or "big water." This same term and its meaning were given by Kaibab Paiute elders during a focus group meeting on July 9, 1992. The distinctive term *paxa* or *paya* refers specifically to the Colorado River as the "most powerful river" (project field notes) among Southern Paiutes. The term, therefore, does not refer to any watercourse in general. A Shivwits elder referred to the Colorado River as *pianukwintu*, meaning "big water." Franklin and Bunte (1993b:6) note that Tony Tillohash gave this term as the name for the Sevier River, citing Sapir (1931:590; 1910:5). During the second raft trip in November of 1992, a Kaibab Paiute representative referred to the Colorado River as *Piapaxa*, meaning "Big River." From these various sources, we have added the term *'uipi*, the Paiute word for canyon, and transliterated the Paiute place name as *Piapaxa 'uipi*, or "Big River Canyon." Paiute people retain sacred stories regarding the river. Elders mentioned that some of these may have been documented by early "ethnographers" such as William Palmer.

San Juan Paiute District

San Juan Paiute territory includes sacred places and areas such as the Salt cave at the confluence of the Colorado and Little Colorado Rivers, the Marble Canyon gorge, and Paiute Canyon and Rainbow Bridge. The Salt Cave, Marble Canyon, Paiute Canyon and Rainbow Bridge all have traditional San Juan Paiute names, although the San Juan individual interviewed did not remember them.

The San Juan Southern Paiute Tribe is composed of two subcommunities that were identified as early as the late 1930s. These "semiautonomous territorial divisions" emerged by the end of the nineteenth century (Bunte and Franklin 1987:35). The northern subcommunity is located at Navajo Mountain, and the southern area is near Tuba City at Willow Springs. According to Kelly's consultants, the Paiute name attributed to the San Juan Paiute by Kaibab people referred to the San Juan Paiutes as "rock river" or "gravel canyon" people (Kelly 1964:31). Omer Stewart (1942:237) described the two subgroups and elicited the names "Tatsinunts," or "People of the Sands," which lived in the southern area, and "Kaiboka-tawipnunts," which referred to the northern community at Navajo Mountain.

Bunte and Franklin (1987:35) have rendered these terms as *Atatsi[nungwu]tsing* and *Kaivyaxaruru[tuvwipunungwu]tsing*, respectively. The second term more specifically refers to Navajo Mountain people. More recently, Franklin and Bunte (1993b:6) have rendered variants of these terms as *atatsingw* and *kaivyaxarurutsingw*.

Historically, rituals associated with agave roasting served to transform the location of the activity into a highly sacred location. The agave roasting ritual is still practiced in modified form, according to elders interviewed in September of 1993. Agave roasting pits, generally perceived by archaeologists as being somewhat insignificant archaeological sites or features, are in fact highly sacred features by virtue of being the locations where agave roasting rituals were (and still are) performed. This will be discussed in more detail in Chapter Six (see also the quote in the Executive Summary).

One Kaibab elder interviewed in July of 1992 mentioned that the San Juan Paiute people called the San Francisco Peaks *nuvaxaruru*. The term was verified by the San Juan Paiute tribal president on November 3, 1993. Franklin and Bunte (1993b:6) point out that the term is used by San Juan and Kaibab Paiute speakers to refer to the San Francisco Peaks. This name is similar to *Nuvagantu* ("it has snow;" Charleston Peak) in that the root word for both is *nuva*, meaning snow.

Euler in 1960 noted a large scattering of ceramic sherds in an eroding alluvial terrace in front of Beamer's cabin a short distance above the mouth of the Little Colorado River. The site is AZ C:13:4 (PC). Among Kayenta Anasazi, Pai and Hopi sherds were indigenous Southern Paiute ceramics, diagnostic and not representing "intrusive trade ware" (Euler 1969:11-12).

San Juan Paiutes crossed the Colorado River at two locations. The first location was a place known as *parovi* [*parovu*], which means "crossing." Today the place is known as Crossing of the Fathers, upstream from Lee's Ferry. San Juan people also crossed the river at the confluence with the Paria River, a place known as Lee's Ferry, which they called *pari* [*paru*], which means "intersection of rivers" (Kelly 1964:89).

Paiute elders mentioned that "Joe Lee," or Joedie, as he is named in documents, the father of a San Juan elder, used to herd sheep at or near Lee's Ferry. A Kaibab elder recalled visiting the San Juan Paiute people frequently. Her San Juan hosts killed a sheep and roasted it

for guests. According to this Kaibab elder, Joe Lee's (Joedie's) Paiute name was *Akamanaxwats*. His wife's Paiute name was *Ta'ats*. She was at one time married to a Mormon trader named Joe Lee, and so Joedie was jokingly called Joe Lee by Paiutes (Franklin and Bunte 1993b:6).

Blue Lee, Joedie's son, recalled during a September 1993 interview the period of time when his family moved from the Page area, crossed a small stream, built a stone hogan, and planted crops and herded livestock at or very near Lee's Ferry. According to Lee, the family of five moved there around 1901. They stayed there for two years. This residence was on the north side of the Colorado River. According to San Juan elders interviewed, after two years the family moved up on to "the ridge" (the Paria Plateau?). Blue Lee said he was about eight years old at this time. The reason given by elders for the family moving that way was "that they were headed for Kaibab, maybe for visiting or something like that."

At the time the family was living along the Colorado River, there were "Paiute or other Indians living at that place...there were some White people moving in, crossing the river by a raft, and also they had some wagons...nowadays they call that bridge the Grandfather Bridge." While the family was living there, Paiute people from the Moccasin area came down to visit them. Two male individuals were named, and we transcribe their names as *Pangàkī'a* and his son *Kiyùwats*. Blue Lee said he also knew Fred Bullets, from the Kaiparowits Plateau, and described the whole of Paria Plateau (Paiute name *Tàmutsi*, which means "sandy place," according to the elders interviewed) as Paiute land.

In addition to having a field on the north side of the river, the Lee family had another field on the south side of the river, at a place they referred to as "Lee's Station." They planted watermelon, corn, and squash. When the new bridge was put in, the family crossed. The residence site included old houses and trees that the elders said the family planted at the location about three or four miles from the bridge. Water was obtained from a spring that is above where today a motel and a store are located. At this time Blue Lee was ten years old.

After leaving their residence along the river, Blue Lee recalls that his father periodically returned to the river to collect medicinal plants for headaches, ear aches, and toothaches. His father also smoked Indian tobacco that he collected from along the river. According to the San Juan elders interviewed, the stone hogan remains at the site.

San Juan Paiute elders at Navajo Mountain, interviewed in November of 1993, stated that there were Paiute people living at Lee's Ferry and along the canyon near Navajo Bridge prior to the time when Blue Lee resided there. Elders recalled that San Juan people hunted in the Canyon. Animals mentioned as being hunted in the canyon included porcupine (*yungwputsingwu*), squirrel (*kaihputsingwu*), badger (*huna*), jackrabbit (*kamu*), mountain sheep (*naxa*), deer (*tuxia*), bobcat (*kokotsingwu*), and a green lizard called *chakwaraingwu*. In addition to hunting, elders stated, through an interpreter, that Paiute people

...used to go a long way to gather pine nuts (tuva)...they stored it down in the Canyon in a cave...the seeds of the cedar (waapamp) were gathered and eaten

raw...[they also gathered] agave, on the other side of the Grand Canyon...His grandmother and grandfather told him...They went from here [Paiute Mountain] to the Canyon...by the Little Colorado River...they would gather salt there, too...his grandfather and his grandfather before him would gather salt and agave there...Blue Lee was living there on the other side of Lee's Ferry... They were really happy that their paths met in the Canyon...they had fields down in the Grand Canyon and along the rivers; when they built the dam, some of the fields were flooded. This made them sad [shuta'iki]. (San Juan Paiute elders interviewed at Navajo Mountain, November 2, 1993)

San Juan Paiutes from the Navajo Mountain community cultivated fields in Paiute Canyon and along the San Juan River 20 miles upstream from the confluence of that stream with the Colorado. San Juan Paiute hunters crossed the confluence of the rivers to hunt in the Henry Mountains. The oasis of the San Juan River was described as rich with fish and "willows" (sumac, *Rhus trilobata*, called *suuvi* in Paiute). San Juan Paiutes constructed irrigation canals (*paavur*). While not in the study area, San Juan Paiutes at Navajo Mountain fondly remember the old homesteads and fields in the area that were inundated by the Lake Powell reservoir following the construction of Glen Canyon Dam. Elders stated

There were a number of houses in there...under the lake...(made of) sticks and dirt, and cottonwood (logs). They used to say that they used to farm there, live down there. It's all covered, but they still mention it...In the winter, down in that canyon, [there's] no snow. They still remember that place down there...They had irrigation canals...It's all covered now...It was made by old people, some of them, way before.

Kaiparowits Paiute District

Kaiparowits Paiute territory extended from the Aquarius Plateau in the north to the Colorado River on the south (Kelly 1964:146). The southernmost point of Kaiparowits territory is at or very near Lee's Ferry. Kaiparowits people traded and visited with the San Juan Paiutes. One of Kelly's Kaiparowits consultants told her that "upon occasion, her mother crossed the Colorado to visit the Paiute near Tuba City; a few instances of intermarriage were reported; and, presumably, in comparatively recent times (circa 1933), 'fancy basketry' was learned from the San Juan" (Kelly 1964:144).

Kaibab Paiute District

In the early 1930s, Isabel Kelly recorded that a local Kaibab chief named Pačakwi, who owned Pipe Spring and Moccasin Spring, and his son, Tompocoaroc, a rattlesnake shaman, and unmarried brother named Katavi, visited neighbors at Antelope Spring and wintered with them. During the spring of the year, these three Kaibab people accompanied members of the Antelope Spring camp "to Colorado Canyon, just west of Kanab Canyon, for mescal" (*Agave*) (Kelly 1964:12). They camped the first night and reached the rim of the Grand Canyon the next

morning. According to Kelly's consultant, the people "stayed about a month, living in caves...[r]eturned to" Antelope Spring "with supply of mescal" (Kelly 1964:12). Kelly (1964:16) notes that a series of springs along the Vermillion Cliffs, in Wildcat Canyon, and Kaibab Gulch were claimed by the father of one of her consultants. This man originally came from Nankowep Canyon. There were five camps at a location which may have been 16-Mile Spring. The residents of four of these camps would move in the spring of the year to collect *Agave* and meet other Kaibab people from Houserock Valley. A person named Sakic and his people at the settlement of Mukovac wintered in a cave at Cane Ranch on the east base of the Kaibab Plateau. Kelly noted that when the "pinenut crop was insufficient, [they] went to Colorado Canyon for mescal..." (1964:18).

When Sakic died, ownership of the spring passed to his younger sister's son, Kwaganti, who maintained the same seasonal subsistence cycle as his predecessor. Kelly notes that "Powell...named Kwagunt Valley...for Kwaganti, who claimed 'that his father, who used to live there, had given it to him.'" Kwaganti, his brother and sister "'found' the valley when trying to hide from Apache raiders. The brother and sister remained there and, after their death, Kwaganti claimed the site. He discouraged visitors to the valley 'because he wanted to keep the sage seeds for himself'; sometimes he went there for mescal" (Kelly 1964:19).

Cane Ranch was owned by Kisaici, who lived by himself. In separate camps were Satimpi, who had a daughter, and his brother Kwiuimpi, who had a son. Both were widowers and both were shamans. According to Kelly's consultant, they wintered just below the rim of Colorado Canyon, sometimes east of the southern tip of the Kaibab Plateau. They returned to Cane Ranch in spring with mescal (Kelly 1964:20). Kwiavac (Oak Spring) oasis was owned by Kwinivac, a big chief over a series of camps. At Oak Spring in the De Motte region of the southern Kaibab Plateau, he lived with his unmarried brother, another man and his wife, who was Kwinivac's sister, and another woman and her husband. In the winter, members of these three camps went below the rim of Colorado Canyon, near the southeast base of the Kaibab Plateau (Kelly 1964:20).

People along the western base of Kaibab Plateau were called "gravel people" by their kinsmen. They wintered "nearly to the Colorado Canyon," but not within it, according to Kelly's consultant. In the spring they returned to their own water sources with mescal (Kelly 1964:21). During interviews, Kaibab Paiute elders mentioned that Buckskin or Kaibab Mountain is referred to by Paiute people as *kaivats*, *kaivaravich* or *kaivavarits* [*kaivavits*], which means "mountain lying down." The popular books by Granger (1960:15) and Brian (1992:139) both cite Powell's rendition of the name as "Kaivavwi", from "kaiuw," meaning "mountain" and "avwi," meaning "lying down." The shorter term *kaivavits*, according to elders, refers to the forest lands of the Plateau (see Brian 1992:139).

According to Kelly, late winter and especially spring were times of near famine among Paiute people. When their stored caches of yucca fruits, pinenuts and other foods were exhausted, "many traveled to the rim of the Colorado and several tributary canyons to gather mescal, the standby when all else failed; cacti and juniper berries also were starvation foods" (Kelly 1964:22, 36). Perhaps because *Agave* and other resources were perceived by Kelly to be only famine foods, she surmised that the Kaibab Plateau and "the rim of the Grand Canyon, were virtually devoid of established camps. They functioned as communal lands, exploited by the Kaibab at large" (Kelly 1964:23).

One Kaibab elder recalls a place called Bullrush. She remembers being told that a lot of Paiute people were killed as bounty there during one winter by Mormons, who beheaded them and took the heads of the victims to Salt Lake City. A Mormon man whose family had befriended a Paiute woman saved her and her son from the bounty hunters. According to the Kaibab elder, these people went to the Grand Canyon to obtain food.

According to Kaibab elders, the Paiute name for the modern town of Fredonia is *a'tska* or *a'tskum*. The name refers to a location where hunters dehorned their deer. The name may therefore be *Aatsika*, which means "horn-cut off" (Sapir).

According to Brian's book, Paiute people referred to the Hurricane Cliffs as "Chunquawakab, meaning a line of cliffs" (Brian 1992:120). According to Kaibab elders, they refer to the area as *nuarunkani*, which means "wind house" or "house of the wind" (Franklin and Bunte 1993b:7), because of a sacred cave located there. Paiute elders have visited the cave, and noted that non-Indians have disturbed the cave.

Paria. Paria is an English transliteration that comes from the Paiute word *pariyapa*, which means "elk-water" and is the place name for the Paria River (Franklin and Bunte 1993b:7; Kelly 1964:15, 148). It comes from the word *paruy*, which means "elk" or, literally, "water-deer" (Franklin and Bunte 1993b:7; Sapir 1931:607). The name applies both to the plateau and the tributary stream on the boundary of traditional Kaibab and Kaiparowits Paiute territory.

Tapeats. Tapeats Creek was named by the Powell expedition after a Paiute guide of the same name who claimed ownership of it and showed Powell where it was located (Dellenbaugh 1908:240; Thompson 1939:90). Kaibab Paiute elders interviewed on July 9, 1992 mentioned that the name Tapeats may derive from the Paiute words *tampits*, meaning "heel," or *tumpits*, meaning "small rocks."

Kaibab Paiute people refer to the Little Colorado river as *oavaxa*, which means "salt water" or "salt river." One Kaibab Paiute elder mentioned that her grandmother called the river by this name, and the elder learned it from her.

Kaibab elders also mentioned that Paiute people also had a name for the area in which the modern city of Flagstaff is now located before Navajo and Euroamerican colonization. The Paiute name was not remembered, but they contrasted this with the Navajo name which, according to Kaibab elders, means "big town." This indicates that the Navajo name reflects post-settlement knowledge.

Kwagunt. It is widely recognized that this place is named after a Paiute individual, even by popular writers (Granger 1960:16; Brian 1992:38, 107). Fowler and Fowler stated that Dellenbaugh (1908:326n) noted that the *Kwagunt* valley and creek were named by Powell for "Kwagunt...a Uinkarets Paiute (Fowler and Fowler 1971:139)." According to Kaibab Paiute elders, Kwagunt is the name of an elder's grandfather's uncle. He lived on the east side of Houserock (Paiute *au'sak*) Valley. Elders mentioned that the Mormons thought he was a Navajo. Brian adds some additional interesting information on the place and the person for whom it is named:

Powell named this place for a Paiute Indian named Kwagunt (Quawgunt or Kwaganti, a Southern Paiute name meaning quiet or quiet man), but he was also known as Indian Ben. He told Powell that he owned the valley, for his father had given it to him. He discouraged visitors, as he wanted to keep the sage seeds which were available there for himself [this information is lifted from Kelly's data]. One story reports that he escaped to the valley when trying to hide from Apache raiders, while another states that as a child, he and his sisters were [sic] the only survivors of an attack by Yavapai Indians on his family's band camped on the Kaibab Plateau. The children made their way to another band camped by Kanab Creek. Later, this tributary to Kanab Creek, was named Kwagunt Hollow for him (Brian 1992:38).

Mt. Trumbull. Mt. Trumbull is known by all Paiute people as *yuvinkaru*, meaning "place with ponderosas (pines)." Paiutes utilized the water source at the top of the mountain. Additional evidence of the appropriateness of the name is the Kaibab Paiute recollection that Mormon settlers in the area constructed a large temple from pine logs. During the focus group interviews, one Kaibab Paiute elder recalled traveling on an Indian trail down through Whitmore Canyon on his way to Bundyville in the area around Mt. Trumbull. Elders also remembered an Indian man from Moapa, Nevada who stored meat and vegetables and camped in a cave on Mt. Trumbull.

Parashant. Parashant derives from a family name. One Kaibab Paiute elder's father's last name was Parashont. Parashont's people came from Beaver, Utah. Brian (1992:120) states that the word Parashant has two variant meanings. One meaning may refer to tanned elk skin. Another meaning may refer to plenty of water. According to Brian, citing Barnes (1960), Palmer (1928), and personal communication, the "area was a favorite gathering place for the southern Paiute bands after the fall hunting season where they visited, dried their meats and tanned skins" (Brian 1992:120). Kaibab elders recall that some Kaibab people's ancestors came from the Parashant and Beaver areas.

Nankoweap. *Nunku 'uip* or *Nananku 'uip* is the Paiute rendition of the term. Kaibab elders stated that the word means "fighting river." One story relates a Paiute family fighting over their children. Another story recalls this as a place where white people, possibly members of the Powell expedition, fighting during their journey. In Granger's popular book (1960:18), the name is transliterated as "place where Indians had [a] fight." Brian's book notes that

The Southern Paiutes called this Ninkuipi meaning Indians killed or people killed, in memory of an incident in which Apache marauders forded the Colorado River and came upon a Kaibab Camp at night. They hit each sleeping Indian on the head, killing all but one woman who escaped to Moccasin. This account agrees with information on file at the Grand Canyon, that an Indian, named Johnny, said that a fight between Indians took place at Big Saddle, near the head of Nankoweap. Other information states that Nankoweap is a Paiute word meaning singing or echo canyon. Dellenbaugh said Powell gave the creek this name on his second trip because of the deep echo heard in the canyon (Brian 1992:34).

Brian cites Dellenbaugh (1908), Barnes (1960), Kelly (1964), and Wilson (1941) for the history of the name Nankoweap. The connection to killing of Indians is supported by Sapir, who lists the term *nunku*, meaning "to bury." This term may be the root for *nunku 'uip*, which means the place name would gloss into English as "burial canyon."

Shinumo. According to Brian (1992:88, citing Simmons and Gaskill [1979]) and Granger (1960:21), *Shinumo* is a Paiute word for ancient people or cliff dwellers, and Dellenbaugh applied the name to natural features. A. H. Thompson, who participated in the Powell expeditions, spelled the name Sheno-mo. Thompson is also responsible for naming Toroweap valley. In addition to the "altar," creek and rapids, there is also a place known as Shinumo Gardens. Granger notes that

William Bass owned this garden where he raised cantaloupe, onions, corn, beans, squash, and radishes, as well as peaches. It was reported to be a prehistoric garden. In the wall behind it are several cliff dwellings (Granger 1960:21).

Shinomu comes from the Hopi word *sinom*, meaning "people" (Shaul, personal communication).

Chuar. It is widely recognized that this place name derives from a shortening of Chuarumpeak (Paiute *Charumpik*), a Kaibab southern Paiute "chief" who interacted with Jacob Hamblin and John Wesley Powell during the latter's explorations of the Canyon country (Granger 1960:7; Brian 1992:41, 48). Euroamericans called the chief Captain Frank. Kaibab Paiute elders remembered that Powell was called *kavaruats* by Paiute people. No meaning of the name was given. One Kaibab woman's grandfather accompanied Powell on some of his journeys.

Unkar. This name derives from the Paiute word *akaxaru* (Franklin and Bunte 1993b:7), which means "red."

Muav. Muav comes from the word for mosquito (*moavi*) in Paiute. The canyon is so named because of the insect-infested swamps and springs at the top according to elders interviewed. Granger's popular work (1960:18) states that the Paiute name translates into "divide" or "pass."

Kanabanwits. In Paiute, *kanavuts* means "place where there are willows."

Parussawampits. In Paiute, *paruasuwampits* means a "trickle of water," and may derive from *paruasu 'uip*, the Paiute name for the Virgin river canyon, according to elders interviewed.

Kanab Creek Canyon. This name comes from the Paiute *kanavu 'uip*, meaning "willow canyon" from *kanav*, "willow." Kaibab Paiute elders remembered vividly that the area used to be a stream of water with willows on both sides and wild grass that grew taller than knee-high. Paiute people crossed back and forth on this stream with relative ease before Euroamerican colonization and subsequent flooding in the 1870s that turned the creek bed into a deep gorge now dominated by thorns and tumbleweed. There is a Kanav Spring that A. H. Thompson recorded "as ten miles southeast of Rock Springs and seven miles north of the Colorado River" (Granger 1960:15).

Paguekwash. According to Kaibab Paiute elders, the name could derive from the word meaning "water running." Franklin and Bunte (1993b:7) have rendered this term as *paanukwintu*, noting there is no linguistic relationship between the two terms. Brian's popular book (1992:107), citing Barnes (1960), states that the name derives from a Paiute family name that means fishtail (see also Granger 1960:19). Franklin and Bunte (1993b:7) note that there is a linguistic fit between the Kaibab Paiute term *payukwaši*, as spoken by Tony Tillohash, meaning "fishtail," and the English transliteration Paguekwash.

Tuckup. No meaning or Paiute derivation of the word was given by Paiute elders. Brian (1992:113) cites the name as deriving from the Tucket Mining District. It is likely not a Paiute name.

Toroweap. This place name derives from the Paiute *toru 'uip* which, according to Kaibab elders, means "deep wash" or "deep canyon." Kaibab and Shivwits elders on July 9, 1992 mentioned the word *turampi*, which means plains, desert, or open area (elders said hard clay or sandy), as a possible root word for the canyon. One elder repeatedly noted, however, that the place name did not refer to clay or sand, but to a deep wash or deep canyon. This meaning of the term derived from contemporary oral testimony, contradicts that given by Brian who, citing Palmer (1928), Wilson (1941), a 1932 letter from Grand Canyon National Park Superintendent Tillotson to Frank Bond, Chairman of the Bureau of Geographic Names, and a personal communication with La Van Martineau in her popular book, writes that

Toroweap is a Paiute word meaning either a gully or a dry wash. *It does not mean canyon, valley, or deep gorge.* Toro or tono can also mean greasewood, while weap means canyon. In a 1932 letter to the BGN [Bureau of Geographic

Names], the Superintendent of the Grand Canyon states, "Near Lee's Ferry there lives an old Paiute Indian whom we know only as 'Joedie' and who told me, through an interpreter that Toroweap means 'Garden Spot in the Canyon.' He also says that the common English pronunciation of this word differs from the Paiute pronunciation and they pronounce the word more nearly as if there were no 'r' in it." A Paiute word toayoweap means Cattail Canyon. A variant name is Torowip or Mukoontuweap. Professor Almon Thompson, of Powell's party, named the valley from the Paiute word Mukoomtuweap meaning straight canyon, as the valley is about 25 miles long (Brian 1992:116, emphasis added).

Franklin and Bunte (1993b:7) render the Paiute term as *tuuauip*, or "good-gardening-canyon." The "Joedie" in the above quote who provided the meaning of this place is *Akamanaxwats*, or "Joe Lee," known as Joedie, who was discussed previously. Franklin and Bunte (1993b:7) noted a "possibility that Akamanaxwats might have made this name up on the spot," citing "common Paiute (and Anglo) practice with names outside one's own familiar territory." There is no basis or evidence to support the assumption that the name was spontaneously made up, except for the contradictory meanings of the term provided in this discussion.

Dellenbaugh recorded in his diary that Toroweap valley was so named by Uinkaret Paiute people (Dellenbaugh 1908:192). At the foot of the valley on the edge of Grand Canyon was located a water pocket that Dellenbaugh recorded as *Teram Picavu* [*turavu picavu?*], the Uinkaret Paiute name for the spring.

Tuweap. This name stems from the Paiute word for earth or land, *tuvip*, according to Kaibab elders. Another term given was *tuvipuintu*, which implies a land claim (i.e., "my land," literally "having land"). Kaibab elders recalled that Kaibab people roasted *yaant* (*Agave*) hearts in pits and then dried them as patties on flat rocks for storage in the Tuweep area.

Whitmore Wash. No Paiute name was given for Whitmore Wash. As mentioned earlier, Paiute middens have been investigated at Whitmore Wash that date to 1285 AD. One Kaibab Paiute elder recalled early trips he made down Whitmore Wash, traveling by wagon and foot trail. He remembers seeing Cane Spring near the head of the wash as it enters the inner gorge. Another Kaibab elder remembers the area as cattle country, especially in and around Hack's Canyon. She remembered the presence of wild longhorn cattle in the area. Her family lived in this area during the copper mining period. She also remembers harvesting greens in this location during spring and summer. In addition to yucca fruits (*uus*, *Yucca baccata*) and *yaant* (*Agave*), plants harvested included *tumar*, or Indian spinach (*Stanleya pinnata*), *wa'iv* or Indian ricegrass (*Stipa hymenoides*), which was clipped at the top and seared over hot coals in a winnowing basket lined with pitch to remove the seed head or cover. This same process was used to prepare the ricegrass seeds for planting. Elders also remember harvesting *kuuvi*, a cicada larvae, and a large grasshopper or locust called *arankampits*. Hunting was also plentiful on the Shivwits Plateau in the area of Hack's Canyon. Elders remember hunting deer and porcupine. Porcupine spines were burned off, the entrails were cleaned out, and the carcass stuffed with onions and potatoes. The meat was then roasted in a pit, perhaps wrapped in a gunny sack. It is considered

a delicacy among Paiute people. Antelope were present on top of the plateau. Mountain sheep were not seen in Hack's Canyon, but have been observed down by the Colorado River.

Some elders currently resident at Kaibab were born on the Shivwits Plateau. Later, they moved up north to Kaibab to live. This may reflect patterns of intermarriage among local groups.

Uinkaret Paiute District

Dominguez and Escalante recorded the names *Yubuincariri* and *Ytimpabichis* (Chavez and Warner 1976:89). William Palmer documented the names of local groups in this district and their locations.

Uinkarits: There were two clans living on Trumbull Mountains who were called Uinkarits and Uintkarar. Jointly they claimed the country from Trumbull south to the Colorado River. They were visited both by Escalante and by Major Powell. The latter called them U-ink-arets and the former gives the name Yubuincariris (Palmer 1933:100).

Timpeabichits: On the northern benches of Mt. Trumbull (Arizona strip) and running east into the Toroweap Valley were located the Timpeabits Pahutes. Escalante visited them in 1776 (Chavez and Warner 1976:89). He recorded the name as Ytimpabichis. They were sometimes called Timpe-pa-caba which means water in the rocks (Palmer 1933:100).

A Kaibab Paiute elder knew Palmer and remembers talking to him about the salt cave along the upper Virgin river that was traditionally used by Paiute people. She remembers that Paiute people also dried meat in the salt cave. Another Kaibab elder recalls that people would dig in the salt deposit for the clear, glass-like crystals that were preferred over the upper salt layers. People sucked on the crystals. This elder also recalls another salt mine in Zion.

The Kaibab people referred to the Uinkaret Paiute as *Yuinkariri-ninwin*, or pine mountain (Mt. Trumbull) people (Kelly 1964:32). A spring near Uinkaret Mountain, presumably the site of a major Uinkaret Paiute village recorded by Bishop (Kelly 1947:161), was named *Innupin Picavu*, or "witch-water pocket" (Dellenbaugh 1908:251). Thompson (1939:103) recorded the name as *Do-nu-pits*, or Witches Spring. Near this spring were a series of cinder cones that members of the Powell expedition explored. Various diarists recorded the Paiute name as *Oonagarechits* (Dellenbaugh 1908:254; Thompson 1939:103).

East of this area lay the Antelope Plain, known to the Uinkarets Paiute as *Wonsits Tiravu* [*Wantsi Turavu*]. On the edge of this plateau was another spring that Uinkarets people called *Tiravu Picavu*, or "Pocket of the Plain." The Powell expedition camped at this location based on information given them by Uinkaret Paiute packers (Dellenbaugh 1908:254-255). Brian (1992:141), citing Powell's journals, attributes the term *Wonsits Tiravu* to the Uinkaret Plateau

proper, noting that later it was called Antelope Plains because of large herds observed there in the late 1800s.

Shivwits-Santa Clara District

The term Shivwits derives from the Paiute self-term *sivits*, according to Shivwits Paiute elders. Brian's popular book, citing Barnes' *Arizona Place Names*, notes that the name means "either whitish earth or coyote spring..." (Brian 1992:140).

William Palmer documented the names of local groups in the Shivwits area during the early 1900s. Among these were

Paugaumpatsits: "West of the Uintkarets and on the lower side of the Hurricane Fault a tribe called Pagaumpats were located. The name means cane springs Indians. These were also visited by Escalante who gave them the name 'Pagambachis'" (Palmer 1933:100).

She-bits: The Shebits Indians proper...They were a timid, retiring people who lived for the most part down among the broken and rocky points along the Virgin and Colorado rivers...Their country skirted the Virgin and Colorado rivers fronts from Littlefield, Arizona south and east to Hurricane Fault (Palmer 1933:100).

Shivwits Plateau. According to a Shivwits Paiute person now living at Kaibab, the Shivwits people traditionally lived most of the way down the Shivwits Plateau. Many Shivwits people were born in the area on the Plateau close to the rim (see below for further discussion). The Paiute term for the Plateau is *sivintuvip*. At one point they were to be moved to Burlington, but were eventually moved to their present location (by Ivins?) (Tape 1, side 2, 5/22/92).

Shivwits elders recall that the plateau was an extensive and important gathering area, rich in willow and sage, and well as wildlife for hunting, before Euroamerican colonization. The area around St. George, Utah, was prime farmland. According to one elder, *yaant* (*Agave*) was wrapped up and baked under ashes like bread or mashed into flat patties. The elder's grandmother had personal grinding stones for preparing corn, wheat (from which flour and an oatmeal-like mush was made), meat, dried berries, and seeds. All of these items were dried and stored for winter use.

One Shivwits elder, who is the daughter of Tony Tillohash, recalls that her grandfather, known as Indian Simon, ran cattle on the Shivwits Plateau for a family with the name of Gardner, who were from St. George. In addition to being so employed, this woman's grandfather also was a mail carrier. His route involved crossing the Colorado River at Lee's Ferry to deliver the mail on the other side every several days. Having delivered the mail, he swam back across the river to resume his regular activities. Indian Simon was also involved during the late 1800s, in guiding logs cut in the *kaivavits* forest during the Boulder dam building period. He helped to ensure that the logs made it all the way down the river, and when the job

was finished, he walked back again. According to the Shivwits elder, Indian Simon quit this job after encountering a whirlpool while guiding logs one day on the river. He grabbed a log, but the strong current spun him to the bottom of the river before pushing him back to the surface. During this incident, something told him to "leave this water alone or you'll get hurt."

Shivwits Crossing/Lava Falls. Brian's popular book, citing Dellenbaugh (1904) and Powell (1895), among other more recent sources, "Lava Falls Trail drops over 2,300 feet from Toroweap Valley. It follows an old Indian trail to what was called *Shivwits Crossing, where Indians would cross the Colorado River*" (Brian 1992:117, emphasis added). Whether this is a traditional Paiute name or borrowed by Euroamericans is unclear. The presence of an old Indian trail, however, suggests a known and recognized (named) indigenous location.

Tuunkwint. This is the Paiute name for the Santa Clara river. Shivwits elders said that when the first reservation was established in the Washington area, some people probably stayed "up the Plateau" by the river.

Pocum Cove. According to Shivwits elders interviewed on July 10, 1992, the name may derive from the Paiute word *pakum*, but they were not sure. The meaning of the word was not given.

Boysag Point. According to Brian's popular book (1992:109), the name comes from a Paiute word meaning "bridge." The place is located around mile 150.

Shanub Point. According to the popular books by Brian (1992:109) and Granger (1960:21), the place name may derive from the Paiute word for "dog." The place is located around mile 150.

Shivwits elders interviewed on July 10, 1992 translated the term. In addition, during the focus group discussions, elders used a tribally-archived genealogy book illustrating kinship and demographic information for a large number of Shivwits tribal members. According to the book, several Shivwits people were born south of the present reservation, further down on the Shivwits Plateau, in Arizona. Several of these places are discussed below.

Sanup. The term *sanapi* means "pine sap" or "pine gum" in Paiute. Several Shivwits people were born around Sanup Mountain. Snow family relatives are listed in the genealogy records as having been born at "Sunup Mt."

Tassai. According to Shivwits elders, this is a place in Arizona where many Shivwits people were born. Elders believe the name may derive from the Paiute word *tasa* [*tasua-iv?*]. No meaning for the word was given. The word *tasua-iv* means "dawn." Another similar word, *tasua-vi*, means "ants." The place was said to be near the town of Bunkerville, near Mesquite. The birthplace of several Shivwits people is listed in the genealogy record book as Tassai, Arizona. A woman named Ida Toab was born at Tassai in 1879. Her father, Toab, was born around 1830 at Tuweap Valley.

Tassai was a wintering location where Paiute people stayed. Camps and seasonal residences were established on the sunny slopes of one of a series of hills that characterize the location. According to elders, this place is south of the present highway at a midpoint about 30 miles from the river, and 50 miles from *Sham*, the nickname for the present reservation, named for a leader known as "Uncle Sam."

Parashant/Poverty Mt. Parashant Wash runs past the southwest slope of Poverty Mountain. Parashant, as mentioned above, is a Paiute family name. Some Shivwits people were born around Poverty Mountain. The Snow family line, for example, have traced their ancestry back to the fourth generation. A man named Old Snow was born sometime in the early 1800s (his son was born in 1871) at Parashant, according to the genealogy book.

The place names discussed above and the oral history associated with them clearly illustrate that many Shivwits people were born and resided near the Grand Canyon on the southern tip of the Shivwits Plateau prior to the reservation period. Patterns of intermarriage among individuals from various Southern Paiute districts is apparent from the genealogy records. Relatives of contemporary Shivwits people come from Cedar City, Mountain Meadows, and St. George in Utah, as well as Moccasin, Kaibab, Parashant, Mt. Trumbull, and Parker in Arizona, even as far away as Needles, California.

PLANT RESOURCES

Early ethnographic fieldwork among Southern Paiute people included the recording of Southern Paiute use of plant resources in and around the Grand Canyon. The traditional basis of Paiute plant use focused on irrigated horticulture. Cultivated crops included maize, beans, and squash. Paiute people used a wide range of other plants to supplement irrigated horticulture. Grand Canyon provided important foodstuffs to Paiute people that were collected seasonally, processed and stored for year-round use.

Cultivated Crops

Robert Lowie, who early on worked among the Shivwits Paiute, reported "From the Shivwits the following brief account was obtained. The Indians planted corn (*hawū'ē*) [*hawivi*] and squashes (*párañarō* [meaning a kind of squash; *naxurus* means "squash"]) before white contact. Irrigation was employed" (Lowie 1924:200).

The Paiute gardens that Bradley recorded seeing with Powell on August 26, 1869 (Darrah 1947:69, 131), "apparently were near the mouth of Whitmore Wash. No trace of them or of a Paiute campsite at this point has been recorded" (Euler 1969:18). In addition to the maize, squash and melons observed in the fields, Bradley noted that Paiute shelters were covered with maize stalks and other brush (Darrah 1947:69).

Agave

Kelly reported that mescal or *Agave* was used throughout the year, but that optimum times for gathering it were in winter and spring, when other foodstuffs were scarce. As mentioned, *Agave* served as a principal famine food among Paiute people. *Agave* was found principally "in Kanab Canyon and just below the rim of Grand Canyon (including Nankoweap area)" (Kelly 1964:44). The Paiute term for *Agave* is rendered variously as *yant*, *yaant*, or *nant*. *Yaant* is the most accurate rendering.

Harvesting and Processing

According to Kelly's consultants, "...women fixed nanta every day they camped near Grand Canyon" (Kelly 1964:44). A stone was used to pound or cut the plant off at the base. Half of each leaf was then cut off with a stone knife, leaving what resembled a cabbage head, according to Kelly's consultants. Paiute people fashioned a special bone knife for cutting agave (Kelly 1964:44).

The heads were placed in a basket and carried back to camp. At the camp, women dug a pit about 3 feet deep and 8 to 10 feet in diameter. Stones were placed in the pit and a fire was started. Ashes from the fire were spread evenly along the bottom of the pit. Women who had individually collected agave then dumped their harvests into the communal pit. The agave hearts roasted under a covering of hot rocks, a type of bunchgrass, cedar bark and soil. The oven took on the appearance of a low mound with no steam vent. The *Agave* hearts were left to roast for two nights and one day, after which the women probed the pit to monitor the roasting process. If the food was ready the earthen lining was opened and removed by hand, or baking was allowed to continue. The roasting process took place under the supervision of one woman (Kelly 1964:44).

When the *Agave* hearts were fully roasted, the leaves were peeled from the cooked plant. The hearts were pounded into thin sheets that were spread on a mat of grass to dry. Once dried, the sheets could be eaten or dried further for storage. This process took five days. Portions of the dried sheet could be broken off, soaked in water, squeezed in the hand, mixed with tansy mustard and drunk. The leaves that were peeled off also were dried, pounded, and ground in to a meal. This commmeal-like food was saved for winter, when it was made into a mush or mixed with water and drunk as a beverage. The dried *Agave* was carried back to home camps and stored for future use. Women transported it in baskets and men carried it in sacks or nets (Kelly 1964:45).

According to some of Kelly's consultants, *Agave* blossoms were gathered in large piles and roasted for two days and two nights in an oval earthen oven. Sapir's informants told him that *Agave* stalks also were "roasted in spring when fresh and juicy" (Kelly 1964:45).

A few eyewitness accounts mention Paiute people harvesting *Agave* hearts and mention that they were baked and fashioned into cakes (W.C. Powell, Kelly 1948:403-404).

The extensive quotes in the Executive Summary, given by San Juan Southern Paiute elders, demonstrate that *Agave* roasting was (and still is) much more than simply an everyday, secular food processing activity.

Cactus

Kelly reports that a type of cactus called *tasi* [*tasu*] was "collected in large quantities any time of year, usually when gathering mescal by Colorado Canyon" (Kelly 1964:45). The botanical name for this cactus given in Kelly is *Phellosperma tetrancistra*, distinct from the varieties of *Opuntia* mentioned. This cactus was carried by the roots and placed in a fire to remove the spines. Once these were removed, the meat was eaten without further roasting (Kelly 1964:45). This suggests that the pads, in addition to the fruits, of cactus were consumed.

Dellenbaugh (1908:253) noted that the Powell expedition received compressed wads of cactus fruit in trade from Paiute people. Hiller also recorded that Paiutes consumed cactus fruits as a major food during the fall, and that it was abundant in Grand Canyon near Kanab Creek (Fowler 1972:143).

Yucca

Yucca fruit and fiber were traditionally used by Southern Paiute people. Dellenbaugh (1908:253) mentioned that the Powell expedition acquired dried cakes of yucca fruit (Southern Paiute *uus*, *uusiv*, *Yucca baccata*) from Paiute traders. Baskets also acquired by the expedition were probably partially woven with yucca fiber. Yucca fiber was made into rope and used to tie the logs of rafts together for crossing the Colorado River (Lowie 1924:249).

Willow

Southern Paiute people have traditionally used, and continue to use, willow for manufacturing purposes. On the Kaibab Plateau, W.C. Powell recorded Paiute women carrying infants in "willow baby baskets," the Paiute name for which he wrote as *konunkwas* (Kelly 1948:403). The plant may have been *Rhus trilobata*, sumac, and not willow, given that Paiute people commonly call the sumac or squawbush by the name "willow."

Seeds

The seeds of numerous kinds of plants were used for food by Southern Paiute people. Perhaps the most commonly gathered seeds were those of Indian ricegrass, or *Stipa hymenoides* (formerly *Oryzopsis*, Paiute *wa'iv*). Dellenbaugh (1908:253) noted that the Powell expedition received "bags of food seeds" from Paiute traders, but it is not known what kind of seeds were acquired.

Thompson recorded in his journal a camp of Paiutes parching "grass seed preparatory to grinding" in Oak Spring Valley (Thompson 1939:103).

Wood

Robert Lowie reported that "From the Shivwits I secured a model firedrill (*mārunù+inump*) apparatus (Museum specimen 50.1-8646ab). The hearth (*âx*) was formerly made from the wood of the *qwinúuramp* bush, which grows on the Colorado River, but for lack of this material *samábiù-ù+ip* wood was substituted" (Lowie 1924:222).

Wood from Grand Canyon was also collected and fashioned into tools for digging irrigation ditches. Lowie noted that "Ditches were dug with an implement called *passāū*", which was shaped with a sharp rock. Along the Colorado River driftwood furnished the material, elsewhere a species of willow or the mesquite" (Lowie 1924:200).

Wood also was used to make rafts for crossing the Colorado River. According to Lowie's account, "The raft was called *poBíntsaxàpⁱ*; the logs and crossbeams were tied together with yucca (*ū's*) string" (Lowie 1924:249).

ANIMAL RESOURCES

Several kinds of animals were hunted by Southern Paiute people in and around Grand Canyon. Explorers and other eyewitnesses recorded numerous incidences of Paiute hunting and consumption of animals in the study area. Paiute guides and packers often killed an animal and shared the meat during evening meals in camp with explorers.

Deer

Deer was, and still is, an animal that is hunted by Southern Paiute people for its meat and hide. Jones mentions Paiute hunters returning to a small settlement near Stewart's canyon with a deer, part of which Jones's party traded for (Gregory 1948:139). The valley and spring from which the deer was taken was described as a traditional Paiute camping and hunting location. Given settler occupation in this area in 1872, Paiute people may have lost access to this valley. W.C. Powell noted that the Paiute willow baby baskets were lined with buckskin (Kelly 1948:403-404).

Rabbit

Rabbits were likely the most common animal hunted for its meat and fur, in addition to deer. Dellenbaugh (1908:252, 254) gave a relatively detailed account for the time of rabbit processing and cooking by Paiutes who accompanied the Powell expedition. In other accounts, frequent mention is made of rabbit (Gregory 1948:139, 157, 170).

Mountain Sheep

Paiute people hunted mountain sheep throughout the year. Mountain sheep were found along the rim of the Grand Canyon, among other places further north of the Canyon (Kelly

1964:50). Mountain sheep were even transported across the Colorado River. Lowie noted that among Shivwits Paiute river crossers, "Sometimes a mountain sheep was carried across the Colorado on the swimmer's head" (Lowie 1924:249).

The horns of mountain sheep were traditionally made into spoons by Paiute people. Dellenbaugh (1908:253) recorded that the Powell expedition received mountain sheep horn spoons in trade with Paiute people.

Wildcat

Paiute people hunted and consumed wildcat in and around Grand Canyon. Dellenbaugh (1908:256) and Jones (Gregory 1948:170) recorded incidences of Uinkaret Paiute packers for the Powell expedition skinning and boiling the meat of a wildcat they had killed before reaching that evening's camp. Skins were used for mats, blankets or "rugs," as Bradley described them (Darrah 1947:69).

Porcupine

Several other kinds of animals were hunted and consumed by Paiute people. Jones recorded one Paiute hunter returning to camp with a porcupine (Gregory 1948:139).

SOIL, MINERAL AND STONE RESOURCES

A number of natural materials found in and around Grand Canyon were and still are used by Southern Paiute people for manufacturing and ceremonial purposes. These materials included stone, wood, minerals such as natural salt, and a hematite clay or pigment commonly known as red ochre (Southern Paiute *ompi*).

Stone

Kelly mentions that pipes were made by men. Pipe bowls were fashioned from stone; most of this stone was "a gray-blue-green color obtained in [a] cave of Grand Canyon near [the] river" (Kelly 1964:47). Once collected, this stone was transported back home and shaped into pipe bowls, and drilled with a stone tipped shaft for inserting a cane stem.

Salt

Kelly noted that Paiute people obtained a dark-colored "salt called *timpi-oavi* (rock salt)" from the Grand Canyon (Kelly 1964:55). The San Juan Paiutes traditionally gathered salt from the salt cave at the Little Colorado River junction. According to Kelly (1964:172), the salt was "[c]ollected in a 'cave where the water dripped all the time.'" The cave is described as "situated on Little Colorado, some '30 miles north of Cameron.'" There is a San Juan legend that tells how a supernatural being, *oanungwuts* ("salt person"), visited the San Juan and left a trail to the salt cave. The salt cave remains an extremely sacred site today.

Kaibab and Shivwits elders recall using the salt cave around the now submerged town of St. Thomas in Nevada. The Lake Mead reservoir inundated the town, along with portions of an old Indian trail and wagon road that ran through present Mesquite and Overton.

Pigment

Dellenbaugh recorded that red ochre (*ompi*), used by Southern Paiutes who collected it from "a cave down the side of the Grand Canyon off the Shivwits Plateau," was used to paint the legs of a table in the house of Lyman Hamblin. Hamblin told Dellenbaugh he had gotten the paint from the Paiutes. Dellenbaugh noted that in addition to trading the ochre to the Mormons, the Shivwits Paiute likely traded the hematite to Walapais, Havasupais, Apaches, and perhaps "even as far east as the Pueblos of the Rio Grande" (Dellenbaugh in *The Masterkey* 7 [1933]:85-87).

Kelly reported that there was some use of paint among Paiute people. "A red pigment (*ompi*) looked 'just like red earth'; obtained in Ankati district and near Grand Canyon" (Kelly 1964:66).

Clay

Clay that was unique to the study area also was used for making pottery. Lowie documented that

"The Paiute cooked in earthen kettles (*pambō'n*^o) made of hard clay (*wiáb*^o). According to one hardly convincing Moapa statement these used to be made by a *man* specializing in the art for the rest of his people. This is indeed contradicted by the Shivwits, who say their 'mud buckets' [*pambō'nī*] were made by women, as we should expect. It proved impossible to have a pot made, but a brief description was given. The clay used was of a yellow color but became brownish-black on firing. Only two localities were believed to yield suitable material, one near the Colorado River and the other to the south of the Reservation on a mountain over which the Shivwits originally roamed, near the boundary line of Utah and Arizona" (Lowie 1924:225).

INTERTRIBAL INTERACTION ACROSS THE COLORADO RIVER

The historical record is filled with accounts of Indian people crossing the Colorado River. Most ethnographic accounts support this contention, collectively describing the Colorado River as a place that was regularly crossed at more than two dozen locations. This perspective is shared by contemporary Paiute people who have both oral history and personal experience about crossing the Colorado River.

Only one ethnographer, Isabel Kelly, concluded mistakenly that the Colorado or Grand Canyon was an effective barrier to communication south and southeast. Her consultants indicated

that very few Kaibab people crossed the Colorado. One man had journeyed to Hopi country and returned with knowledge of making pottery. Another man visited the San Juan Paiute and reportedly returned and built the first sweathouse in Kaibab territory (Kelly 1964:86).

The journeys that Kelly documented, as well as trail and river crossing evidence presented in this portion of the chapter, strongly support the position that Paiute people frequently travelled to Grand Canyon, crossed the Colorado River in a variety of locations, and interacted with other Indian people in mutual trade, ceremony, and marriage.

Trails North of the Colorado River

Kelly lists some trail routes that Kaibab Paiute people traveled, gleaned from consultants and from secondary sources. One trail led from Antelope Spring in a direct line to the Canyon, coming out just west of the mouth of Kanab Canyon (Kelly 1964:88). Another trail is said to have run "along the western front" of the Kaibab Plateau to the Grand Canyon. A "branch to the southwest reached [the] canyon just east of [the] mouth of Kanab Creek" (Kelly 1964:88).

Still another trail led from Cane Ranch to the Grand Canyon. According to Kelly, the "trail apparently ran along eastern side of Kaibab Plateau, encircled a peak, and continued to winter camp, just below rim of Colorado gorge" (Kelly 1964:89). She believed that this was the same trail that Dellenbaugh (1909:92) wrote about in that it came "down from the north, reaching the river a few miles below the Little Colorado."

Trails South of the Colorado River

Peach Springs-Diamond Creek Complex

Along the Colorado River frontier between Southern Paiute and Northeastern Pai territories, the Peach Springs-Diamond Creek Canyon complex constituted the largest topographical break in Grand Canyon configuration. It gave Paiutes easy access to the Pai trail network. From the Colorado River's south bank, native trails ascended both canyons at an easy grade. Diamond Creek provided abundant drinking water, and Mesquite and Peach Tree Springs flowed short distances down Peach Springs Canyon.

A male member of the Milkweed Canyon Band Pai who claimed to have been born about 1856, stated the following concerning Paiute-Pai relationships prior to the Walapai War. "They were friends with the Paiutes across the river; they traded. Some were related. The Paiutes stayed a few days to a month to hunt or trade, before the whites came." [Kate Crozier, July 22, 1953, p. 1 in H. F. Dobyns field notes recorded while preparing evidence concerning Pai aboriginal territory to present to the United States Indian Claims Commission.]

Members of Joseph C. Ives' exploring party followed a native guide into Peach Springs Canyon in 1858, passing natives traveling along the trail. "Crossing the plateau north of Truxton Canyon, Ives wrote 'a splendid panorama burst suddenly into view. In the foreground were low

table-hills, intersected by numberless ravines; beyond these a lofty line of bluffs marked the edge of an immense canon...The famous 'Big Canyon' was before us; and for a long time we paused in wondering delight." Anglo-American awe at the scenery was not shared by two Walapai guides who "plunged into a narrow and precipitous ravine that opened at our feet, and we followed as well as we could, stumbling along a rough and rocky pathway...The descent was great and the trail blind and circuitous. A few miles of difficult traveling brought us into a narrow valley flanked by steep and high slopes" (Ives 1861:98-99), which was Peach Springs Canyon near the springs (Dobyns 1954:20).

In 1867 during the Walapai War, Bvt. Lt. Col. William R. Price led a United States cavalry scout into Peach Springs Canyon. Riding down Box Canyon, Price and his command struck Peach Springs Canyon about five miles below Peach Springs. Price sent his pack train up to those springs, and "continued down the bed of New River a hot and tedious ride...for fifteen miles. At this point another large canyon entered...we came upon a small limpid stream of water" which was Diamond Creek. Price returned up the canyon to Peach Springs. A couple of days later, Price led his men out toward Diamond Creek Canyon "on an old Indian trail...We continued on this trail for 20 miles without Sign of Water. We could see in the distance the Valley and Canyon of the River" (U. S. Senate 1936:45-46) but gave up and returned to Peach Springs (Dobyns 1954:18-19). Refugee Paiutes used this trail frequently while residing with the Peach Springs Band Pai.

In 1881, U. S. Army Surgeon Elliott Coues rode through Peach Springs Canyon. "The trail was plain, and though then unimproved, we made the descent on horseback, only finding it convenient to dismount once or twice at some little jump-off" (Garces 1900:II:327).

Soon after the Atlantic and Pacific Railroad Company in 1883 began transcontinental train service and the town of Peach Springs was established on the plateau above Peach Springs, an entrepreneur hauling tourists from the station to the Colorado River bank via Peach Springs Canyon converted the native trail into a Euroamerican wagon road (A. G. 1885:517).

Toroweap Valley-Prospect Canyon Trail Crossing

Convenient as the Peach Springs-Diamond Creek Canyon break was south of the Colorado River, topography north of the stream did not make it the most convenient crossing for Paiute-Pai interaction. Farther upstream, the Toroweap Valley afforded Paiutes ready access to the inner gorge opposite Prospect Canyon, which provided Pai ready access to the inner gorge. "The Prospect Canyon end of this feeder trail gave the Hualapais access to one of the few natural breaks on the opposite rim of the Canyon by which Paiutes were able to descend to the Colorado River to trade with them--the Toroweap Valley trail north of the River" (Dobyns 1954:18; Indian Claims Commission 1953:130 [Tony Tillahash]).

The trail from the Colorado River crossing to the Pai Inter-Canyon east-west trail ascended Prospect Canyon and crossed the plateau separating it from Mohawk Canyon, up which it continued. From the Inter-Canyon Trail perspective: "There is another trail north quite a

ways, trail to *Whala Tev Giova* [a rock shelter in Mohawk Canyon] and around way below to Prospect Valley --the next canyon west of Mohawk Canyon' (JM Aug. 10 p. 8). In Mohawk Canyon this trail is still quite clear because of continued usage" (Dobyns 1954:17-18).

"Between the Hopi mesas and Mojave Valley the trade goods moving between the Pacific Coast and the Rio Grande were carried along two parallel routes. North of the main trail in the Hualapai country lay a much more rugged route twisting through the South Rim gorges breaking into western Grand Canyon. This Inter-Canyon Trail converged with the Rio Grande-Pacific Ocean Trail either in the Cerbat Mountains or in Mojave Valley. It was traversed mainly between local points by Hualapais, and only occasionally by Havasupai traders going to the Cerbat Mountain Band rancherias whose Hualapais traded directly with the Mojaves, or all the way to Mojave Valley. In broader perspective, this section of the trail was only the western section of the Canyon Rim route from Havasupai village to Oraibi known as 'Moqui Trail.' On Hamilton's 1884 map of Arizona, part of the Hualapai portion of this route is shown as such a westward extension of the 'Suppai & Moqui' Trail west of Cataract Canyon to a point in Mohawk Canyon corresponding to the *Whala Kitev Giova* and *Oya Sivli Klavlava* rock shelters, and continuing west into the western Grand Canyon (Hamilton 1884: map). The entire route is a single trail, the eastern portion of which was more heavily traveled--and much easier traveling. It was by this trail that Father Francisco Garces returned to the Mojave Valley from Oraibi in 1776, accompanied from Cataract Canyon by 'two Yavipais Jabesua [Havasupais] who brought mantas, leggings, and pieces of cowhide to trade with the Jamajabs [Mojaves] for shells' (Garces 1900:II:392-413)" (Dobyns 1954:13-14). This was the major inter-ethnic trading path Southern Paiutes could and did reach from Toroweap Valley via the Prospect-Mohawk Canyon north-south feeder trail.

"Havasupai traders had the option of taking one of the paths from their village to the head of Truxton Canyon, there striking into the much easier Rio Grande-Pacific Ocean main trail. The Hualapais themselves used the Havasupai section of the Inter-Canyon Trail as often as the direct route to Oraibi around Cataract Canyon, beyond Havasupai Village following the Havasupai 'Moqui Trail' to Oraibi through Havasupai country (YB May 23 p. 40).

"The main Hualapai trail into Havasupai Village is called simply *Havsoowa Inya'a*--Havasupai Trail. It has no other special name (JM Aug. 20 p 7). The indefatigable Fr. Francisco Garces was the first non-Indian to descend this trail, so far as is known. Lt. Joseph C. Ives found the April sunlight on the plateau oppressively warm and was searching for water--being without guides--when he struck 'the head of a ravine, down which was a well-beaten Indian trail. There was every prospect therefore that we were approaching a settlement similar to that of the Hualapais, on Diamond river. The descent was more rapid' (Ives 1861:105)" (Dobyns 1954:14-15).

Ives failed to reach Havasupai Village because he struck the trail with a vertical space requiring using a ladder which one of his party broke. Having reached Havasupai Village via this trail, Garces required his guides to lead him out by a different route.

"A Mormon party under Jacob Hamblin sighted Cataract Canyon in March of 1863 and struck a trail they were able to ride down. 'We, at one time, traveled about three miles continuously on a trail made with considerable labor in the side of the shale rock. I do not remember of a place in this distance where we could have turned our animals around to return, had we wished to do so' (Corbett 1952:221). These alternative trails all feed into the main Hualapai 'Havasupai Trail' on the plateau.

"The 'Havasupai Trail' strikes off over the plateau southwest toward the Lagoon and Pine Springs, passing some potholes in red rock just east of the modern Hualapai Indian Reservation fence called *Wila Hatoov Giyo'o* (JM Aug. 20 p 7) and a spot just out from Pine Springs known as *Whala Tev Kal Koowa*, 'Place of Large Double-Trunked Pine Trees' (JM Aug. 24 p 10).

"From Pine Springs this trail continued southwest to the head of Diamond Creek Canyon, where it branched right down the canyon and left along the rim to Truxton Canyon (JM Aug. 24 p 3) via *Iryak Tav Kava* on the rim. Fr. Francisco was guided down the right hand fork in 1776, descending the length of Diamond Creek Canyon (Garces 1900:II:410). At the mouth of Peach Springs Canyon he turned up-canyon to cross over to Hindu Canyon ("over some little hills"), following the Hualapai trail to Spencer Canyon and either Milkweed or Mata Widita Canyon where he topped out onto the plateau again before descending the escarpment into the Hualapai Valley (Garces 1900:II:411-412). The section of this route between Mata Widita and Milkweed Canyons and Diamond Creek through Spencer and Hindu Canyons was the route 'The people used to travel that way to Peach Springs, through Hindu Canyon--the old people' (GT Aug. 22 p 3)" (Dobyns 1954:15-16).

Crossing Points

Several locations along the river corridor served as crossing points, which Indian people used to interact with neighbors. Lowie mentioned that "The Shivwits had the following scheme. When there were people who could not swim they and the baggage got on the center part of a log while some swimmers got in front to pull the raft and others in the rear to push it forward. Thus they crossed the Colorado, the only river that required any such device...Another method of carrying goods across was for a swimmer to take his load on his head, holding it with one hand, and taking a long log under the other arm. A child might be carried across with its chin resting on the person's head" (Lowie 1924:249).

Travelers, including Navajos, crossed the river at a place known in Paiute as *parovu* (*parovi* in Kelly 1964:89), meaning "crossing," or what is today known as the Crossing of the Fathers, upstream from Lee's Ferry. Lee's Ferry, in turn, was called *paru* (*pari* in Kelly), meaning "intersection of rivers," and referred to the confluence of the Paria and Colorado (Kelly 1964:89).

Kaibab Paiute people carried on commerce with the San Juan Paiutes, who crossed the Colorado river and journeyed to the Kaibab Plateau to exchange what were likely Navajo rugs for buckskin (Kelly 1964:90). Navajo people traded with Kaibab Paiutes by swimming across

the Colorado River on the "'other side' of Lees Ferry" (Kelly 1964:91). Again, blankets were exchanged for buckskin.

Paiute Refuge Among the Hualapai

One of the most detailed accounts of Paiute people crossing the Colorado River was provided to anthropologist Leslie Spier (1928:360-362) by a Havasupai informant between 1918 and 1921. The time period encompassed by the account is during the Walapai War, which began in 1865. The events involving Paiute visitation to Havasupai and refuge among the Walapai occurred between 1868 and 1879. These are discussed by year for convenience.

1866

On 12 April, Lt. Daniel Loosley reported from Fort Mojave, A. T., hostilities along that post's communication route with the Pacific coast. "At present the Chemehueves and Piutes appear to be causing a little trouble. Some three days ago three Whites were killed by the Piutes between here and Camp Cady. I believe that if the whites will only leave the Indians alone there will be no trouble" (Loosley 1866).

1867

"On May 30th, 1867, the Wallapi Indians said to be about 250 in number attacked the mail at Beal Station, 40 miles from this post. It was guarded by an Infantry Corporal and 3 men from here. There were also present the Mail Carrier and hostler and 4 other citizens with a team, making ten (10) men in all...One of the Citizens...went out of the stockade, contrary to the advise of the Soldiers, when he was mortally wounded and died the following day. They report having killed five Indians. The Indians retired during the night...it is thought that there are a number of Paiutes and Yavapais in this band" (U. S. Senate 1936:42). [It is extremely unlikely that any Yavapais participated in this engagement.] A leader of the attacking Native Americans identified Paiutes as participants.

"One of their number who appeared to be their leader and spoke very good English called out to the men below that they (the Indians) were Hualapais, Paiutes and Navajos, and that they were not going to allow one of the white men to get to the river alive and that the white men should pass over or leave on the road" (Stevenson 1867:1-2).

Between 5 and 6 September, a prospector named James White inadvertently rafted through Grand Canyon from the lower San Juan River to Callville. "On the thirteenth day I got up and the moon was so bright I thought it was day, but it was about three o'clock. I set sail and pretty soon I heard some voices and I hallowed and they hallowed back to me, and pretty soon four or five Indians waded out in the water to their waists and got my raft and pulled me in to shore. I asked them if they were friendly and they said yes. When I got to shore I saw about seventy-five Indians and asked them and they said they were all friendly. I asked for bread and one old squaw gave me some mesquite bread. I asked for more, but she said, 'Me much

papooses!' and would not give me any more. This was about four o'clock in the morning on the thirteenth day when I went out with the Indians. They stole a hand-axe and a revolver from me, and one Indian wanted my coat. He was a Hualapai. He got a gun and was going to kill me, but the chief of the [Pai]Utes said no." (White 1932:48-49).

[Taken at face value, White's reminiscence indicates that he visited a comparatively large Paiute encampment on the north bank of the river, which included at least one visiting and armed Walapai. White's account also documents Paiute utilization of edible pods of the mesquite trees that grow at the low elevations along the Colorado river in the depths of Grand Canyon.]

On September 6, "I went down to my raft about day light and set sail again. I traveled all that day. There were no rapids to amount to anything. That night I met some Indians and traded them a revolver for a dog. They killed the dog and dressed it. I took the hind quarters. They took the forequarters" (White 1932:49). [Although White's reminiscence is too laconic to indicate whether these natives were Paiutes or Pai, it documents dog consumption by one or the other ethnic group. As an engineer-explorer who later ran the river commented: "I very much doubt if White and Strole, after the death of Baker, knew or cared whether Utes, Sioux, Hualapais, or Pai-utes were after them, just so they got away safely" (Stanton and Chalfant 1932:14). About 3 p.m. on his fourteenth day rafting down stream, White reached Callville where Mormons pulled him from the river and fed him. The natives who shared a dog with White may, therefore, have been Grass Spring Band Walapais encamped near present day Pierce Ferry west of Grand Canyon.]

On "October 7th. Lt. Travis returned from Maj. Clendenen's party reporting that when Six miles north of the Spring previously found where they had camped, in moving along through the foothills, they were attacked by a force of over 50 Indians, armed mostly with fire arms...We subsequently learned positively that this was Chirino's [Cherum's] band, and that between 80 and 100 warriors were concentrated there. The Pahutes who live on the opposite bank of the Colorado, and who had heretofore been on friendly terms with the Hualapais, report that 3 Indians were killed in this fight, but as we have no positive information they are not reported" (U.S. Senate 1936:59). [For Paiutes across the Colorado River from the theater of the Walapai War to report Cerbat Mountain Band Walapai battle casualties, they must have been in frequent communication with the embattled western Pai bands.]

1868

In the summer, Walapai Chief Leve sued for peace, and regular army troops from Camp Mojave continued scouting without precipitating engagements. "Knowing of a small band that lived a short distance N. of Willows, on Sept. 4th Col. Young, Guide O'Leary, Indian Interpreters, with five men of Co. "K", moved with me...fresh Indian signs were seen, and they soon made their presence known to us by yelling from all directions;...I moved slowly to the highest grounds, on which a number of them were, when five of them threw down their arms and came in; it proved to be a hunting party of 55 Hualapais and 21 Sovintz [Sebits] Indians (a branch of the Pahutes who live in the neighborhood of Diamond River on S. side of Colorado

River.)...The Captain of the Hualapais in this party was Quam-a-la-poca" (U.S. Senate 1936:74).

"On Monday, [September] 7th, I started for Camp Mojave...From this scout I learned the Ranges of the different Captains...Quam-a-la-poca ranges from Truxton Springs and Tank Range N. and N. E. to Peach Springs, joining there with the [refugee] Sevitz Indians" (U.S. Senate 1936:75).

"I have the honor to Report that on the 4 inst. [October] Cherrum, Kleva-heva, Wassa Merima, Quam-a-la-poca, I have a Rind (and) Amorhoana, Captains, with about 250 Indians (Hualapais) came in to this Post. They were most of Sherrum's band, 150 of the warriors being from N. of the Road.

"There were also in the party two Sevintz Indians with 22 warriors. There were also at the Post at this time 50 Paiutes from up the river" (U.S. Senate 1936:77).

The majority of the refuge Shivwits band Paiutes apparently returned to their ancestral homeland north of the Colorado River. At least two of them chose, however, to remain in Pai country. They married women belonging to the Pai Pine Springs Band and became themselves members of that band. One Paiute sire's family died out, but descendants of "Indian Honga" survive today as members of the Hualapai Tribe of Arizona. Members of this family have served as elected officials of the Tribe. In mid-twentieth century, Pai still lived who were born not long after the Walapai War and who preserved Pai oral history of the refugee Shivwits.

"He said there are three different kinds of tribes across the river--Chimwava, Shivits, and Utes. I don't know to which of these tribes Wilson Honga's grandfather belongs. What he heard was that quite a number of those Indians on the other side came across to live with the Pine Springs Indians.

"That Honga's father was Chimwava--there's different names over there--called Paiutes. One time these Pine Springs Indians were living in Wivwukwa's country, and had big fires on the Prospect Valley side. They built fires, lots of smoke started in that country. That bunch of Chimwava--Paiutes--on the other side saw that and came across, and came to these places where these Indians start fires, and mixed with them and lived with them, because before that quite a number of Utes were living with them. Honga's father and others came over and stayed with them a while. Then when the others went home, he stayed and married a Pine Springs Indian. Honga's father married Wahathama's sister. He belonged at Hapakute and that country.

"There's another man, Paiute, married, too, Patoiva. They raised children from that woman, but every one of them died. None are living. Patoiva died too." All these things that he says were not what he saw happen, but was just a story he heard from his father. That little story that Honga's father and others came across because they saw fires on this side, he heard that story from Honga's father, the Paiute. Some of it he heard from his father. He says the Honga-Walapai marriage must have happened before I was born, because the oldest Honga was

a woman married in Supai. She died. The other one living here, Mrs. Ed Nodman, is old too. She must be married way before I was born. Honga was older than me, too. [Young Beecher, 23 May 1953, pp. 5-6 in H. F. Dobyns field notes recorded while preparing evidence concerning the location and limits of aboriginal Pai territory to present to the United States Indian Claims Commission. Translated by Fred Mahone.]

1889

Most Pai bands participated in the Ghost Dance millenarian movement of 1889-1890. "This dance made its first appearance among the Wallapais in May of 1889. The old chief Surrum being the first convert, and the Paiute medicine men conferred the rights of the 'ghost dance,' and the first dance of the tribe was held at an isolated point, called Grass Springs..." (*Mohave County Miner* Nov. 29, 1890) immediately across the Colorado River from Paiute country.

A Paiute missionary appears to have played a considerable and perhaps key role in transmitting expertise in conducting Ghost Dance rituals from his people to the western band Pai. U. S. Army officers informed federal investigator James Mooney (1896:814) that a Paiute was "inciting" Walapais "to dance for the purpose of causing hurricanes and storms to destroy the whites and such Indians as would not participate in the dances."

Pai oral history preserved the Paiute missionary's name as Panama'ita. Pai shaman Indian Jeff (*Doinhu'ka*) "took Panamita among the Walapai, and then a party of prominent Walapai including Jeff and several recognized chiefs went to St George and witnessed the dance" (Kroeber 1935:198).

A local newspaper attributed the selection of the Grass Springs (*Tanyika*) Ghost Dance ground to Paiute leaders of the millenarian movement. "The Piutes are responsible for the gathering of the various tribes at Grass Springs. The medicine men of that tribe say that the Great Spirit told them to gather all the good Indians at that place and sometime during two moons the Hicos [i.e., *haikoo*, the Pai word for Anglo-Americans] would be totally wiped from the face of the earth by some pestilence and they would become possessors of all the land again. These medicine men keep apart from the rest of the Indians and claim to be in direct communication with the Great Spirit' (*Mohave County Miner* Aug. 17, 1889)" (Dobyns and Euler 1967:18).

As the intense Ghost Dance rites failed to achieve their millenarian goals, Pai dropped out of the movement in early 1891. Consequently, "Old Sherum, head war chief of the Wallapais, in company with one of his lieutenants, is on a visit to the Piutes near Utah. He has gone to consult with the medicine men of that tribe in regard to his ghost dances which of late have begun to lose interest for his savage fanatics..." (*Mohave County Miner* April 25, 1891; Dobyns and Euler 1967:31).

These ethnographic accounts serve to illustrate that the Colorado River was not a formidable barrier. Instead, Indian people crossed it at a variety of locations for various reasons. These crossing patterns will emerge more clearly as eyewitness accounts and other ethnographic information are presented in the next chapter.

CHAPTER FIVE

CHRONOLOGY OF SOUTHERN PAIUTE OCCUPATION

The process of human change in the *Colorado River Corridor* can be understood by compiling eyewitness accounts. Most observers have chosen to organize eyewitness accounts by time periods that seem to reflect particularly important social change processes or factors of change. For example, an analysis of Southern Paiute responses to the arrival of Mormons in the Arizona Strip suggests that Paiute adaptive strategies were radically altered once they lost the power to effectively defend themselves and their traditional lands (Stoffle and Evans 1976). This analysis defined two major periods. The first period, from 1863 to 1873, was defined as a period of encroachment and competition during which Paiute people lost resources but primarily retained most traditional lands (Stoffle and Evans 1976). The period from 1874 to 1909 was defined as a period of domination and reciprocal manipulation, when most lands were lost to Euroamerican and Paiute people were largely powerless to defend the remaining natural resources (Stoffle and Evans 1976).

The following section of this chapter summarizes briefly the historical periods of European and Euroamerican contact and colonization in the *Colorado River Corridor* region, as well as later national efforts to protect and preserve the Grand Canyon environment, and the impacts that these processes and policies had on Southern Paiute people. A subsequent section presents recorded instances of Southern Paiute occupancy and use of the *Colorado River Corridor* and their interactions with outsiders.

ETHNOHISTORICAL SUMMARY

Archaeological research has documented that Southern Paiute people occupied rock shelters and former Pueblo ruins in the north rim portion of the Grand Canyon as early as 1150 AD (Euler 1969:9). Euler (1992:49) has recently revised the date of Paiute arrival to 1300 AD. A Paiute midden near the mouth of Whitmore Wash has been radiocarbon dated at A.D. 1285 (Jones 1986; Fairley 1989:147).

Initial Euroamerican Presence in the Region: 1540-1850

Euroamerican travel into the region of the *Colorado River Corridor* began with Spanish expeditions out of New Spain. Arizona became known to the Spanish as early as 1540 and contacts between the Southern Utes and Spanish at Abiquiu and Santa Fe were made in the

1600s, but explorations to the region were not extensive until the late 1700s. By that time, journeys into the region were fairly common. The Spanish were familiar with the Ute and Paiute territories and both official and unofficial trading took place. The Spanish believed there were riches, especially silver, to be found in the area, so by 1765 the government had "decreed that no person could enter into Indian country without a specific license from the provincial governor" (Cutter 1977:6). In June 1765, an exploring party led by Juan Maria Antonio Rivera was sent northwest from Santa Fe in search of a Paiute guide he had heard could lead him to the Colorado River. The group traveled up through eastern Utah and reached the Upper Colorado River near Moab. One of the explorers, Gregario Sandoval, later accompanied Fray Francisco Atanasio Dominguez and Fray Silvestre Velez de Escalante into the same general area. The Dominguez-Escalante expedition left Santa Fe on July 29, 1776 and took the Spanish explorers into the Grand Canyon region where they came across Southern Paiute Indians living north and south of the Colorado River.

On October 17, Escalante noted that the servants of the expedition obtained some pieces of squash "from the "Parussi Indians," who are identified as the Shivwits Paiutes (Chavez and Warner 1976:83, n330). On October 19, Escalante purchased from Uinkaret Paiutes "about a bushel of seeds and all the cactus pears," some of the latter being "fresh cactus pears already ripened in the sun, and others dried in cakes"...They told us that they called themselves Yubuincariri..." (Chavez and Warner 1976:86, n336). The Uinkarets described themselves not as cultivators but as gatherers of seeds, cactus fruits, pinon nut, jackrabbits and other game. They told Escalante that the Shivwits people planted crops of corn and squash. They identified neighboring Paiutes as "Payatammunis" and "Huascaris," the latter group being identified as the "Cedar Indians" (Chavez and Warner 1976:87, n338, n339). Escalante encountered "Pagampachi" or Kaibab Paiutes on October 22. Kaibab individuals indicated that the "Ytimpabichi" were their neighbors to the north-northwest (Chavez and Warner 1976:89, n350). This term was translated or rendered as "Timpeabits, a Paiute band" (Chavez and Warner 1976:89, n351). Escalante crossed the House Rock Valley on October 24, and after crossing the Paria River, they camped beside the Colorado (Chavez and Warner 1976:94, n364). They attempted to cross the Colorado, knowing that the Kaibab and Uinkarets Paiutes they met had advised them that the river "was very deep except at the ford," and they eventually crossed successfully (Chavez and Warner 1976:95).

On November 7, the expedition came to Navajo Mountain, the name for which Escalante recorded as "Tucane," meaning Black Mountain, and attributed to the Payuchis, or Southern Paiutes (Chavez and Warner 1976:101, n390). Here they met the "Payuchi Yutas," among other Indian peoples such as Utes (Chavez and Warner 1976:102-103). Given the location, there is little doubt that these Paiutes were probably San Juan Paiutes. Bunte and Franklin (1987:42) suggest that the term Payuchi may have referred "to only Paiutes living in the historic occupation zone of the San Juans, whom they thus distinguished from Southern Paiutes in general." The suggestion is based on the diary entry which describes these Paiutes as "the westernmost Payuchis" (Chavez and Warner 1976:101; Bunte and Franklin 1987:42). Upon departing, the expedition found the descending trail to be one maintained with stones and sticks, as well as a

constructed staircase "more than three yards long and two wide" (Chavez and Warner 1976:104; Bunte and Franklin 1987:42).

Early Spanish influence on the Southern Paiutes was principally indirect. No discussion of this indirect impact is complete, however, without recognizing that the primary effect of Spanish exploration was demographic in nature. Imported Old World diseases to which Paiute people had no immunity decimated the Paiute population through their trading networks with other Indian peoples (Stoffle and Evans 1976; Stoffle and Dobyns 1982, 1983). These diseases spread well beyond the Spanish frontier prior to any direct contact. In addition to the demographic collapse among Southern Paiute people caused by contagious diseases, the spread of horses and weapons to the Utes and Navajos increased the mobility of those groups and intensified pressure upon the Southern Paiutes (Kelly and Fowler 1986). One result of the increased contact between the Spanish and Utes was the development of active slave trading. Slave raids by the Utes were devastating to many Southern Paiute bands, although the Kaibab Paiutes appear to have escaped much of the Ute aggression (Malouf and Malouf 1945, Kelly and Fowler 1986).

In 1823, Jose Antonio Vizcarra encountered Paiutes herding goats north of Hopi near White Mesa, a short distance from modern-day Shonto, while on a military campaign against a group of Navajos. He mistakenly assumed the Paiutes were Navajos and attacked, killing four men and taking captives. When he realized they were Paiutes, he released them. Another member of the expedition, Col. Francisco Salazar, encountered San Juan Paiutes near the confluence of the Colorado and San Juan Rivers (Bunte and Franklin 1987:44-46).

The San Juan Paiute were encountered again by the Spanish in 1829. Antonio Armijo headed up a pack train over the Old Spanish Trail. On November 30, Armijo recorded in his diary that "At the water hole of the Payuche: three Indians were found, no trouble ensued, and it was necessary to scale a canyon for which purpose we had to carry the baggage in our arms" (Hafen 1947:94). The editor of the journal noted that the place may have been Piute Canyon or a location near the canyon called Upper Crossing Springs. This trail leads down into the area where San Juan Paiutes cultivated their fields. His journal entry suggests that he passed through the fields and observed an impoundment dam for creek or spring water, which he described as a lake and named it "Las Milpitas," or little cornfields (Bunte and Franklin 1987:46-47).

Anglo exploration in the Grand Canyon region first occurred in the early 1800s when Jedediah Smith traveled in 1826 and 1827 from the Great Salt Lake to the Colorado River (Woodbury 1931, Dale 1918). Smith came across the Shivwits Paiutes living along the Virgin River. In the fall of 1830, William Wolfskill and George Yount attempted to follow Smith's route from the Sevier to the Colorado River (Woodbury 1944:128). The impact of the early explorers and traders was most significant in that these individuals and groups found and reported information about Indian trails that were then followed by others seeking to enter and occupy the area.

Fur trappers were also present in the west in the early years of the nineteenth century and a few entered the Grand Canyon area, but these had little impact. In the late 1820s, Ewing Young and his band of trappers moved up the Colorado River to the Bill Williams Fork but then left the river and proceeded along the south rim of the canyon until reaching San Juan Paiute and Navajo country south of the San Juan River (Hafen 1965:55). The Colorado River below the Glen Canyon had little connection with the history of the fur trade because the "physical character of the country precluded access to the river for the greater part of its length until it emerged from the Grand Cañon near the mouth of the Virgin river" (Chittenden 1935:782). In 1849, a party of packers followed by several wagon trains set out from Salt Lake City for Southern California. These groups traveled through Southern Paiute territory in western Utah near the Virgin River but did not enter the Grand Canyon (Hafen and Hafen 1954).

Increased Euroamerican Pressure: 1850-Present

Euroamerican encroachment in the *Colorado River Corridor* escalated by the mid-1800s and involved both permanent settlers and temporary visitors. Each of these groups had a distinct influence on the region. Permanent settlers had tremendous impact on local resource use and distribution. These included primarily Mormons and cattle ranchers. Temporary visitors, in contrast, had more restricted immediate impact at the local level but served to significantly alter the resource use patterns in the area through their contacts with people outside the area and their influence on policy making. These groups included explorers and surveyors, miners, and tourists.

Permanent Settlers

Sustained contact between Euroamericans and Southern Paiutes began in the mid-1800s when the Mormons in Utah moved south toward the Colorado River. The impact of the Mormons has been well documented. In the words of a Utah historian, "The declarations, and in most cases the intentions, of the Mormon pioneers were friendly and constructive, but they were nevertheless the carriers of cultural conflict and social disorganization as far as the Indians were concerned" (Poll 1978:358). The Mormon settlers moved quickly to occupy areas surrounding key water sources and began raising cattle and sheep (Pendleton 1939, Woodbury 1944). They also utilized Indian crossings of the Colorado River and by 1863 had established ferries south of the mouth of the Virgin River and at and near Grand Wash to supplement the Crossing of the Fathers (Woodbury 1944).

Cattle ranchers, both Mormon and non-Mormon, impacted the ecology of the area. Large numbers of cattle helped disrupt native vegetation and deplete the area. Deliberate changes, such as the removal of pinyon trees, served to further alter existing ecological patterns. By the latter part of the nineteenth century, cattle was transported from the Arizona Strip to other parts of Arizona across the Colorado River (Haskett 1936). Despite the changes, Southern Paiutes continued to use the *Colorado River Corridor* to collect plants, hunt, and gather minerals.

In addition to the direct impact upon the Southern Paiute people and their lifestyles, the presence of permanent settlers in the area altered intertribal relationships. Like the Spanish before them, the Mormons established trading relations with certain Indian groups, often at the expense of others. Especially significant was the decision by the Mormons to promote trading with the Navajos. This, in effect, opened the Southern Paiute territory to Navajos, their traditional enemies.

Temporary Visitors

Despite the more dramatic visible changes to the area brought about by permanent settlers, temporary visitors had a significant impact on the extent to which resources in the area were available to Southern Paiute people. These short term occupants generated local and typically restricted disturbance in the immediate area, but their tendency to bring non-native ideas and expectations with them and spread information about the area to a wide audience proved to be at least as critical for the Paiutes. These persons affected regional and national policy for the area. This, in turn, affected Southern Paiute occupation of the area and access to the resources traditionally collected and utilized in the canyon, including plant resources, animals, and minerals.

After the initial visits to the region by independent trappers and explorers, Euroamerican activity increased due to U.S. government funding of exploration and survey parties. Official national interest in the region included mineral exploration and the search for travel routes via water and railroad. Exploring expeditions through the region include:

- 1) the Fremont expedition to the Rocky Mountains in 1844 that passed through the confluence of the Virgin and Santa Clara Rivers (Fremont 1845),
- 2) Sitgreaves' expedition along the Colorado River in 1852 in search of a navigable route to the interior from the Pacific Coast (Sitgreaves 1853),
- 3) Whipple's 1853-54 survey to ascertain a route for a railroad from the Mississippi River to the Pacific Ocean (U.S. House of Representatives 1856),
- 4) Lieutenant Ives' exploration of the Colorado River in 1857 and 1858 in search of a navigable passage from the mouth of the Colorado River inland (Ives 1861),
- 5) Simpson's explorations across the Great Basin that included two visits to the canyons of the Colorado River below the Crossing of the Fathers (Simpson 1876),
- 6) Macomb's 1859 expedition from Santa Fe to the junction of the Grand and Green Rivers taking the party along the southern side of the Colorado River (Macomb 1876),
- 7) Powell's 1869 and 1871-72 expeditions through the Grand Canyon,

8) Wheeler's several reconnaissance trips between 1869 and 1879 for the purpose of topographic and geologic mapping (Wheeler 1875, USACE 1872, 1874, 1875), and

9) Stanton's 1889-90 railroad survey of the Colorado River (Stanton 1965).

The Mormons, too, were interested in Colorado River navigation by 1855, both as a transportation route and a defense strategy for the south, and they began to investigate its possibilities (Smith 1970). Mormon supported enterprises shipped goods from San Francisco to the mouth of the Colorado River and then up the river to a point near the Grand Canyon in 1866 and 1867. (Arrington 1966:239). The failure of both waterborne and railroad surveys to provide feasible transportation routes through the region led to the abandonment of grand schemes for the canyon. However, the provisions for explorers and surveyors to enter the area and the resulting reports and photographs that accompanied their return turned attention to the region.

Miners were another group of temporary inhabitants of the *Colorado River Corridor* who had a substantial impact on the region. Prospecting in the Grand Canyon began in the late 1860s, but it was not until the 1870s that activity in the area was accelerated. Word of the discovery of gold along the Colorado River within the Grand Canyon in 1871 was quickly transmitted to the east via news reports and word of mouth (Thompson 1939, Kelly 1947). Miners flocked to the canyons for several months before most were convinced that there was not much to be gained there. Mormon reports indicate these individuals were frequently aggressive and disruptive (Cleland and Brooks 1955). Southern Paiute people were excluded from use of the area due to their presence. Passage of the Mining Law of 1872 established individual rights for mining claims and set limits on those rights (BLM nd: 2). The law set the policies by which U.S. citizens could stake claims for both metallic and nonmetallic minerals, but U.S. citizenship was not unilaterally granted to American Indian people until 1924 (Citizenship Act of 1924, 43 Stat. 253, 1923-25). The onslaught of miners to the canyon ended rather quickly, but mining continued in the canyon until the 1970s.

Another category of people who sought to exploit the resources of the Grand Canyon region was that group interested in the timber available there. Both individuals and lumber companies were successful in capturing the resources for their benefit and in controlling the utilization of the land on which they were found. Though the activities of these people were restricted largely to the forests surrounding the canyon, their presence and influence among policy makers impacted the designation of the Grand Canyon region and the speed with which policies were implemented (Morehouse 1993).

The beauty and grandeur of the canyon proved eventually to be as significant for attracting people to the area as the presence of valuable minerals and timber resources there. The desire to preserve the area came initially from preservationists and increasingly from local residents who saw a potential tourist industry on the horizon. The Grand Canyon became recognized as one of several national treasures located in the west that could set the U.S. apart from its European rivals (Runte 1987:27). As early as 1882, Senator Benjamin Harrison of Indiana introduced the first bill to establish Grand Canyon National Park (Congressional Record 1882:3741). That legislation did not succeed, but the canyon had become a recognized tourist spot by 1887, and tourist accommodations quickly became available (Wallace 1961, Poling-Kempes 1989). Also, by 1890, several miners recognized that the canyon held greater economic potential as a tourist attraction than as a source of mineral wealth. They improved existing mining trails for use by tourists and began to actively work to attract more people to the area (Billingsley 1976).

The canyon was rapidly brought into the wake of federal preservation activity that began with the Forest Reserve Act of 1891. That Act authorized the presidents to proclaim permanent forest reserves on the public domain. By 1893, Benjamin Harrison had become president, and, by presidential proclamation, he created the Grand Canyon Forest Reserve within the Arizona Territory. As a Forest Reserve, the area was to be managed for long-term productivity under multiple-use conservation principles (Mackintosh 1991). As a consequence of forest reserve status, the lands within the forest were regulated regarding 1) the taking of fish and wildlife by hunting, trapping, or fishing; 2) removal of timber and timber products; 3) occupancy and use of the lands; 4) control of water flow in structures such as dams or impoundments; and 5) any other use of the land and resources, designated as "special uses." Though the designation of the Grand Canyon Forest Reserve was initially ignored by lumber companies, cattlemen, and miners (Morehouse 1993), the establishment of the reserve put the land within the federal domain and set the stage for future action. Livestock grazing was restricted on forest reserves through the establishment of a permit system in 1901 (Wilkinson and Anderson 1987). At the time of the establishment of the Grand Canyon Forest Reserve, the Southern Paiutes in Arizona were ignored in the reports of both the Commissioner of Indian Affairs and the governor of the Territory of Arizona, within which the reserved lands were found. Their title to the land was therefore not recognized.

Activities to establish a profitable tourist industry in the Grand Canyon continued through the end of the nineteenth and into the twentieth century. Several individuals began the construction of tourist accommodations and competition between them grew. As a result, roads, trails, and railhead access points were developed at multiple places along the south rim (Hughes 1978). Soon, efforts to develop the north rim and the construction of a trail and cable car across the canyon from the south to the north rim were also undertaken (Woodbury 1944). In 1905, the Grand Canyon Forest Reserve was enlarged by another presidential proclamation. From that point forward, all federal action concerning what is today the Grand Canyon National Park was accepted because the land was said to lie within the federal domain. For example, in 1906 Congress authorized the president of the United States to designate from within the Grand Canyon Forest Reserve, the land north and west of the Colorado River, as a game preserve.

That land was the only timbered portion of the Arizona Strip (Senate Report 1586:1). The new designation provided greater protection from fires and created "havens of refuge for the surviving wild birds, game, and fish" within the reserve (House of Representatives Report 4973:1). The authorization was approved because the land "[was] all public land, [was] now in a state of reserve, and [was] protected by Federal custodians" (House Rpt. 4973:1). Subsequently, on November 28, 1906, the area was designated the Grand Canyon National Game Preserve by presidential proclamation. The new designation protected deer while it encouraged the hunting of predatory animals. Hunting mountain lions with dogs became a sport on the north rim, and the first game warden for the Preserve was credited with killing more than 500 lions on the Kaibab Plateau (Hughes 1978). From 1906 to 1923, "more than eight hundred cougars, thirty wolves, nearly five thousand coyotes and more than five hundred bobcats were removed" (Woodbury 1944:192). The consequences of the near elimination of predators did not become evident until the crash of the deer population in the 1920s (Russo 1964). Nevertheless, the management policies and the addition of cattle, sheep and both wild and domestic horses impacted the ecology of the area from the start.

The Southern Paiutes were granted reservations between 1903 and 1907, none of which were within the *Colorado River Corridor*, although the Paiute Strip reservation on which the San Juan Paiute people resided was bounded on the north by the Colorado River. This physical separation from the area reinforced the exclusion of the Southern Paiutes from the canyon and its resources.

In 1907, the head of the Division of Forestry redesignated forest reserves as national forests to be managed for continuing use and development (Hughes 1978). A 1908 presidential proclamation established the Grand Canyon National Monument within the Grand Canyon National Forest. A national monument can be established by presidential proclamation, instead of an act of Congress, only when the land in question is already federally owned (Hartzog 1988). Again, the initial assessment of the land as part of the public domain guided policy making. As a consequence of the new designation, prospecting was forbidden and mining was prohibited on all lands not covered by valid claims. An additional presidential proclamation and an Executive Order within the same year enlarged the Grand Canyon National Game Preserve within the Grand Canyon National Forest and established the Coconino and Kaibab National Forests out of the remaining land of the Grand Canyon National Forest.

The number of visitors to the Grand Canyon grew annually throughout the early 1900s. The first automobiles arrived at the south rim in 1902 and at the north rim in 1909 (Woodbury 1944, Hughes 1978). In 1915, 106,000 tourists visited the Canyon's South Rim (Sen. Rpt. 1082). Tourism became more important than any other economic activity in the Canyon (Hughes 1978). Legislation to create the Grand Canyon National Park continued to be introduced into Congress (see Morehouse 1993). Interest in the creation of a national park at the Grand Canyon was officially entered in the public record as resolutions of the Phoenix Chamber of Commerce in 1915 (Vorkamp 1940 in Morehouse 1993) and the Yavapai County Chamber of Commerce in January 1916 (Cong. Rec. 1916:1292). The idea was promoted by the first director of the National Park Service and influential individuals elsewhere (Shankland 1951) and

finally supported in both houses of Congress. In 1919 Congress established the Grand Canyon National Park to consist of "996 square miles of public land" (S Rpt. 1082: 1). The Act repealed and revoked the 1908 Executive Order and redesignated the lands lying within the new park boundaries. Jurisdiction over the lands was transferred from the Forest Service to the National Park Service at that time. The boundary lines were approved after review by the Department of the Interior, the National Park Service, and the Congressman from Arizona, and it was "believed that the line described in the bill is the proper one to secure a practical administration of both the national park and national forest lands" (Sen. Rpt. 1082:3).

National Park designation shifted the purpose of the Grand Canyon. Consistent with the objective of all parks, the primary purpose of the Grand Canyon National Park became "to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations" (National Park Service Act Section 1). The prohibitions against mining and prospecting that existed for the National Monument were extended to the entire park and private development within the area was restricted. Also, although the concept of the national park has been credited to George Catlin, the western artist who desired to preserve the animals and Indians of the western United States as representations of nature's beauty, the park designation further cut off the Southern Paiutes from their traditional resources (Catlin 1926). At the time of the creation of the park, Coconino County, the Havasupai tribe, and assorted individuals were recognized as possessing rights within the new park. Three hundred ninety-one of the 613,120 acres of the park were privately owned (Cong. Rec. 1919: 1774). The Secretary of the Interior was encouraged to purchase the Bright Angel Toll Road and Trail from Coconino County, the erection of buildings was restricted between privately owned land and the rim of the canyon, and the Havasupai Tribe was allowed to remain within the canyon. The year 1919 was also the year of the first recorded airplane flights over and into the Grand Canyon. The first airport for Grand Canyon was located 20 miles south of the park boundary. Airplanes were used for photography and providing scenic flights for visitors. An airport was established on the south rim and planes also landed and were kept in a park on the north rim (Hughes 1978). In 1923, the U.S. Geological Survey began the operation of a gauging station within the Grand Canyon at the confluence of Bright Angel Creek and the Colorado River. The station recorded fluctuations in river rise and fall and stream discharge.

With the establishment of the Grand Canyon National Park, tourist development on the north rim was pursued in earnest. Bus trips, mule trips into the canyon, and lodging were provided. River trips through the canyon also increased (Lavender 1985, Hughes 1978), especially after the completion of Glen Canyon Dam. The National Park Service began efforts to acquire any private or state-owned land within the park as soon as the area achieved national park status and thus acquired many mining claims as well. As additional land was added to the park, the restrictions on mining and development were extended to the newly acquired lands as well. By November 1974, prior to the 1975 enlargement of the park, John Hance's asbestos mining project had not reverted to the national park (Billingsley 1976:86). The Orphan Mine was also considered active and remained under private ownership until the late 1980s. The Grand Canyon Enlargement Act of 1975 expanded the park boundaries again to include the Grand

Canyon and Marble Canyon National Monuments. The Act also expanded the Havasupai Reservation and designated 95,300 acres as Havasupai Use Lands within which hunting, gathering of plants, and other traditional activities would be permitted. At the same time, the Act generally prohibited the renewal of grazing permits beyond 1985. The Southern Paiutes have remained excluded from any activity in the park, although the 1975 Act authorized and encouraged the Secretary of the Interior to enter cooperative agreements with interested Indian tribes for the protection and interpretation of the Grand Canyon in its entirety and the Kaibab Paiutes received an offer from the Canyon archaeologist to use the natural and cultural resources on the north rim of the Canyon. The north rim has become heavily used by tourists and pressure continues to be exerted for further development of the area.

The next section presents recorded instances of Southern Paiute use of the *Colorado River Corridor*. These observations were recorded by explorers, trappers, and Mormon colonists who kept diaries of their activities in the region of the Grand Canyon. Such individuals also recorded the presence of other American Indian peoples in the area. Besides documenting their observations of Indian peoples, diarists recorded the processes of colonization, change and development in the Grand Canyon region. Recorded instances of these processes are also presented in the following section.

DOCUMENTED HISTORY IN THE *COLORADO RIVER CORRIDOR*

The following eyewitness and oral history accounts are organized by time periods. Within time periods, however, accounts have been kept together by eyewitness. Isolated observations are similarly recorded by time. The following section presents (1) eyewitness accounts of Southern Paiute occupancy and use of the *Colorado River Corridor*, (2) recorded instances of Euroamerican activities in the area of Grand Canyon, and (3) evidence that other Indian people visited and used portions of Southern Paiute territory.

Euroamerican Chroniclers

Documentation on the various journeys into the *Colorado River Corridor* is varied. Many reports and descriptions provide at most a couple of sentences regarding Southern Paiute presence in the region at the time of the visit. However, several individuals kept detailed diaries of their experiences. These individuals and their purposes in the region are briefly described here.

Jacob Hamblin was an Indian agent for the Mormon Church. Hew was called to establish missions and seek suitable places for Mormon expansion into Southern Utah and beyond. He began his work in Southern Utah in 1854 and traveled across the Colorado River in 1858 and 1859 on expeditions to the Moqui (Hopi) Pueblos. Between 1859 and 1863, Hamblin made four additional trips across the Colorado River.

Thales Haskell accompanied Jacob Hamblin on Hamblin's second trip across the Colorado River to visit the Moquis in the fall of 1859. Haskell and one other individual

remained with the Moquis for a year before returning back across the river. He recorded his experiences in a daily journal.

George Y. Bradley was one of Major John Wesley Powell's chief boatmen on the First Colorado River Expedition in 1869. Bradley also assisted with geological work. He kept detailed notes of the journey and recorded many encounters with Paiutes and other Indians in the Grand Canyon region.

John D. Lee was a Mormon pioneer who established several homesteads on and near the Colorado River. His home at the junction of the Paria and Colorado Rivers was established sometime between 1869 and 1872. The location was a major crossing of the river and later became Lee's Ferry.

The Second Colorado River Expedition led by John Wesley Powell began at Green River, Wyoming on May 22, 1871. The expedition left the Crossing of the Fathers on the Colorado River on October 13, 1871. For more than a year from that date, members of the expedition were in and around the Grand Canyon and Colorado River region exploring, mapping, surveying, and taking photographs. All but one participant in the expedition kept journals, and a majority have been published (Morgan 1948-1949). Members of the expedition were often split into groups to accomplish particular tasks, so individual accounts describe different encounters with the Indians living in the region.

Frederick S. Dellenbaugh was an artist and topographer of the Second Colorado River Expedition led by John Wesley Powell. His experiences in 1871 and 1872 were recorded and published as a narrative, *A Canyon Voyage*, in 1908.

Francis Marion Bishop also served as a topographer of the Second Powell Expedition. His journal records his time in the Grand Canyon region between October 1871 and June 1872.

E.O. Beaman began his work in the Grand Canyon region as the photographer to Powell's Second Expedition. In February 1872, Beaman left the expedition and began independent work in the region. He attempted a trip across the Colorado River to visit the Moqui Pueblos in April 1872 but was unsuccessful. He began a second journey in May of that year and successfully traveled across the Colorado River and reached the Moqui Pueblos in August.

Jack Hillers was the second photographer to the Second Colorado River Expedition. He spent considerable time going into the Grand Canyon and its tributaries to photograph the scenery.

W.C. Powell participated in the 1871 Powell Colorado Expedition as an assistant to the party's official photographers. He spent much time in camp preparing photographic plates, and his journal records numerous encounters with Paiutes and other Indians.

Stephen Vandiver Jones was another topographer with the Second Powell Expedition. His journal records his work in the Grand Canyon from October 1871 until December 1872. He accompanied the exploring party through the Grand Canyon and was also charged with completing topographic work in the vicinity of Pipe Springs, Kanab, and Lee's Ferry between August 1 and December 12, 1872. He had frequent encounters with Paiutes and other Indians in the area, and these are recorded in his journal.

Almon Harris Thompson was an astronomer and topographer on the second Powell expedition. His diary records his experiences in the vicinity of the Colorado River from October 1871 to December 1873.

John Hanson Beadle was a newspaper reporter who traveled through the west for five years. He crossed the Colorado River at Lee's Ferry in the early 1870s and encountered Paiutes as he traveled across their territory.

In addition to the diaries, information about Southern Paiutes in the *Colorado River Corridor* is scattered throughout the *Walapai Papers*, a collection of historical reports, documents, and extracts from publications relating to the Hualapai Indians.

As mentioned above, the following accounts are broken into various categories: The first subsection, *Early Historic Accounts of Southern Paiutes*, is broken into categories that include 1) early Spanish and Euroamerican explorers' accounts, 2) entries from various early Euroamerican diarists, named in the headings, from 1859 to 1873, and 3) other miscellaneous accounts from 1875 to 1900. The second subsection, *Chronology of Euroamerican Encroachment*, repeats the same general categorical progression with multiple entries from individual chroniclers grouped together under a separate subheading, and other miscellaneous accounts. Finally, the third subsection, *Chronology of Native American Encroachment*, presents various recorded instances of the presence of other American Indian peoples in the traditional portions Southern Paiute territory along the *Colorado River Corridor*.

EARLY ACCOUNTS OF SOUTHERN PAIUTES AROUND GRAND CANYON

- 1735 Spanish Exploration of Colorado River: "If the Tizon [mistakenly assumed to be the Colorado River] were as wide as the Payuchi said, but nonetheless crossable, the Spaniards were to find out if the Payuchi intelligence concerning a great defensive trough beyond the river might be correct and whether it provided an impassable barrier to penetration of the other side of the river" (Cutter 1977: 10).
- 1765 Spanish Exploration of Colorado River: "The governor in Santa Fe, Tomas Velez Cachupin, now alerted to the possible advantages of more complete knowledge

of the area to the northwest, had determined to send Rivera and his companions once again to the little-known area...Rivera was to locate the Payuchi who had earlier in the year offered to show him the route to the Rio del Tizon (mistakenly assumed to be the Colorado River). To ensure their cooperation he took with him some tobacco and had been warned not to let the Indians have the least cause for displeasure. The instructions also stated that once the great Rio del Tizon had been found, he was to note the nations of natives that inhabited it on both banks, to find out if there were large towns on the other side of the river, and to learn whether or not there were white, bearded strangers dressed in the European manner. If there were no evident danger in doing so, some explorers should cross the river, accompanied by the Payuchi, or the interpreter, as well as by some of those people who were experienced in trade with these natives. In doing so it would be necessary to pretend that they were not Spaniards and to not give reason to anyone to believe that they were there for the purpose of exploration, but rather that they were coming for commerce and trade as was the custom" (Cutter 1977: 9-10).

- 1776 Spanish Contact with Shivwits Paiutes: On October 16, the Dominguez-Escalante expedition's servants obtain squash from the Shivwits Paiutes (Chavez and Warner 1976:83).
- 1776 Spanish Contact with Uinkarets Paiutes: On October 19, the Dominguez-Escalante expedition purchases seeds and cactus fruits from the Uinkaret Paiutes, who describe their Paiute neighbors to them. The expedition had previously encountered the Cedar Paiutes (Chavez and Warner 1976:86-87).
- 1776 Spanish Contact with Kaibab Paiutes: On October 22, "These Indians are called Pagampachi in their language, and their immediate neighbors along the north and northwest, Ytimpabichi" (Dominguez-Escalante Journal 1776, in Warner 1976:89). Footnote identifies Pagampachi as the Kaibab band of the Paiute Indians and Ytimpabichi as the Timpeabits, a Paiute band.
- 1776 Spanish Contact with San Juan Paiutes: On November 7, Dominguez and Escalante travel in the Navajo Mountain area. On November 9, they encounter San Juan Paiute camps in the Weed Bench area (Chavez and Warner 1976:101-103). The diary notes that Paiutes and Hopis "share great enmity" (Chavez and Warner 1976:103). On November 10, they ask through an interpreter if the Paiutes would sell them provisions, but the Paiutes respond that they have none (Chavez and Warner 1976:103-104; Bunte and Franklin 1987:41).
- 1776 "...but as to the points of the compass and the number of days there is much contradiction in the notion of the reverend padre that the transit has itself to seek (i.e. must be sought) through the Yutas who live at the confluence of the rivers to the north of the Moqui of whom I learned that they were friends of New

Mexico, and that, having here passed the Rio Colorado, they roam southwest, descending to the Chemeguet Cajuala who live on the other side, and seeking the Rio de San Felipe, they follow it to where I was" (Garces 1776:469-475, in Alter 1928:55).

- 1823 Vizcarra encounters a group of San Juan Paiutes near White Mesa and, assuming them to be Navajo, kills four and takes seven captives, who are later released when it is realized they are Paiutes (Bunte and Franklin 1987:44-45).
- 1823 Colonel Francisco Salazar, a member of Vizcarra's expedition, encounters San Juan Paiutes at the confluence of the San Juan and Colorado Rivers (Bunte and Franklin 1987:45).
- 1827 Paiute tools: "The Pa Ulches have a number of marble pipes, one of which I obtained & Send you-altho' it has been broken since I have had it in my possession-they told me there was a quantity of the same material in their country.-I also obtained of them, a Knife of Flint which I send you, but it has likewise been broken by accident." (Smith's Letter to Clark, Woodbury 1931:44)
- 1829 Antonio Armijo encounters San Juan Paiutes and documents cultivated fields and water impoundment around Paiute Canyon, east of the Colorado River (Hafen 1947:94-95; Bunte and Franklin 1987:46-47).
- 1841 (Apparently near the Virgin River) "Next day we traveled and found some Indian caches from which we took some corn and squash and melons, leaving in their place some knives and awls and beads. We were soon on the Colorado river." (Adams 1930:11)
- 1841 (Comments of Doctor Lyman, who traveled through the region of the Colorado in 1841, transmitted through T.J. Farnham.) "Piutes.-The northern banks of the Colorado, the region of Severe [sic] river, and those portions of the Timpanigos desert where man can find a snail to eat, are inhabited by a race of Indians, which I have partially described in my former book of travels before mentioned, under the name of Piutes...The food of these Indians is in conformity with the character of the country they inhabit. They collect the seeds of grasses, growing on the margins of the springs and salt ponds, roast and pulverize them between two stones, and then boil them into a thick mush. Upon this they subsist tolerably well while the gathering season continues; but being too stupid and improvident to make provision for the remainder of the year, they are often in the most wretched condition of want. Sometimes they succeed in ensnaring a hare, the flesh of which they eat, and the skin of which they cut into cords with the fur adhering; and braid them together so as to form a sort of cloak with a hole in the middle through which they thrust their heads. The bark of pine trees growing on some of the trap mountains, is also a general article of food; so are the roots!

Ants, grasshoppers, and lizards, are classed among their choicest dainties." (T.J. Farnham, cited in Snow 1929:77-78)

- 1851 Dr. P. G. S. Ten Broeck, a surgeon at Hopi, records in his journal: "I saw three Payoche (San Juan Paiute) Indians today. They live on a triangular piece of land, formed by the junction of the San Juan and the Colorado of the West..." (quoted in Schoolcraft 1860:82-83; reprinted in Euler 1966:70; Bunte and Franklin 1987:56).
- 1853 Paiute cross Colorado River to visit Havasupai: A group of Paiutes crossed the Colorado River to visit Havasupai village. Eyewitness account of the event by Sinyella (a Havasupai elder), oral account was recorded by Spier in 1918-1919 (Spier 1928:360).
- 1859 Shivwits Paiutes: "The Seovietz are a small nomadic tribe, who live by hunting, upon roots, mice, &c., along parts of the valley of the Colorado, in the Grand Wash, and numerous canons and narrow valleys that lead into it. Here and there they plant small fields of corn, wheat, squashes, and melons, but the amount raised furnishes only a small share of their subsistence. South of the Colorado, about New Creek and Diamond Creek, they are quite successful in hunting, but to the north they live a squalid and miserable existence. At the date of our crossing the Colorado, a party of volunteers and Pah-Utes, about seventy in number, had just been collected to go on a scout with General Crook against the Apaches." (Simpson 1876: 37)
- 1859 Paiute Camp on Colorado River: A camp of Indian were observed by Jacob Hamblin's missionary expedition to the Moqui on November 1, 1859. The camp was located on a small creek of alkali water on the trail just above the west bank of the Colorado River near the mouth of the Pahreah River (Corbett 1952:172).
- 1859 Paiute Home on the Colorado River: Jacob Hamblin's Paiute guide said that an Indian lived on the opposite side (eastern bank) of the Colorado River. The next day several "Ute Indians" arrived and talked with Jacob Hamblin just before he crossed the Colorado on November 2, 1859 (Corbett 1952:173).
- 1867 Paiutes cross Colorado River to live with Pine Spring band of Walapai: Eyewitness account of event by Sinyella (a Havasupai elder); oral account was recorded by Spier in 1918-1919 (Spier 1928:360-362). Paiutes crossed river in rafts to escape Mormons. Lived several years [ten or fifteen?] with Pine Spring Walapai and traded regularly with the Havasupai. Arrived and returned as a group.

Haskell's Journal

- 1859 (October 27) "Remained in camp. Traded some with the Indians. They said that the Indian that we wanted to guide us across the Colorado was off on a hunt. We therefore concluded to go to the old Ute trail [the Crossing of the Fathers]. If we could have got a guide we had been thinking of making a boat or raft and going a more direct route and missing some 4 or 5 days of hard traveling. br Hamblin gave the head and entrails of the beef to the Indians and stuffing themselves to their hearts' content, they all left except one old gent who honored us with his presence over night" (Haskell's Journal, 1944:76, brackets in original).
- 1859 (October 28) "Remained in camp...Old Indian loaded himself with bones, scraps of rawhide, & left. Shortly afterwards a young Indian came to camp with antelope skins to trade. br Hamblin I think gave him some amunition for them. 18 miles from mountain camp to this place. Good feed and water here but not much wood" (Haskell's Journal, 1944:76).
- 1859 (October 29) "Got things together and started, leaving several Piutes on the campground. br Shelton stopt behind to drive up the ox. We traveled a short distance when an Indian came running and said that Shelton could not drive the ox and wanted to help. br Crosby went back to help him" (Haskell's Journal, 1944:76).
- 1859 (October 30) "Had a good view of the Colorado, the trail leading us in close to it in this place. Came to quite a large creek emtying into the river [Paria River]" (Haskell's Journal, 1944:76).
- 1859 (October 31) "Very hard pack on our mules, and in some places very dangerous. We however had no bad luck. As we were traveling along we saw a smoke rise and then the fire was suddenly put out. We concluded that we were discovered by Indians...As we were eating some Indians made their apearance, one of which had never seen a white man before. He acted very wild and timid. We gave them some meat which they seemed to relish very much. They apeared to be friendly and one agreed to go with us as pilot" (Haskell's Journal, 1944:77).
- 1859 (November 1) "Traveled a mile or 2 and came to the Utah trail. Went on some distance farther and came to a small creek of alkali water and a camp of Indians...Came to a deep, muddy, nasty ravine leading to the Colorado. Had all we could do to get the animals down into it and after we got down had to unpack several mules before we could get through the river, it being so muddy. We however, after wading through much tribulation in the shape of mud, water, willows, bulrushes, &c. succeeded in getting down to the ford where our 2 Indian guides said that the river was too high to cross and refused to take the lead. We however concluded to try it and bro Hamblin and myself started in. The Indians

having provided themselves with long willows anchored themselves to br Peirce, he holding to one end of the willows and they to the other. We got out a short distance when our guides got frightened and went back to the shore, yelping and powowing, telling us all to come back or we would be drowned. We however went ahead, got into deep water, floundered around a while, and finally took the Indians advice and went back-not in very good humor by the way, as we were all wet up to our middle-packs, blankets, guns &c most all wet-and a devil of a cold night in the bargain. I gave the Indians quite a lecture for being cowards and good-for-nothing skunks for not taking the lead, they being acquainted with the ford. They only said they were afraid" (Haskell's Journal, 1944:77).

- 1859 (November 2) "Guide said there would be an Indian in camp that lived on the other side and knew the ford and would not be afraid. He arrived in due time with several others. They stood on the bank and jabered awhile and finely said that the water was too high. Said we had better wait 8 or 10 days till it got lower...The Indians by this time had all left...[The group crossed anyway.] Saw no more of the Indians" (Haskell's Journal, 1944:78).
- 1859 (November 5, 50 miles from the Colorado according to previous days' estimates of travel) "Saw a big fire to the right of us. Bro. Hamblin and Pierce went onto a high rock and struck up a big light thinking to raise some Indians. In a short time four made their appearance. Said there was plenty of water at their camp which was only about a mile from us" (Haskell's Journal, 1944:79).
- 1859 (November 6) "Heard something yell. Some pronounced it a wolf and some an Indian. I thought it was an Indian. Went to bed. Had not fairly got to sleep when 2 Indians came to camp. Said there was plenty of water at their camp a short distance to the right of the trail. They lay down awhile but soon got so cold that they got up and went to their own camp" (Haskell's Journal, 1944:79-80).
- 1859 (November 7) "Commenced packing at daylight. Soon discovered another Piute coming. He led out and we followed about a mile and a half to water where some four or five of them were camped. We traded for some antelope meat and took breakfast. Remained in camp and let the animals rest. bro Young traded his gun for a pony and blanket with an Indian. bro Shelton went a hunting and discovered some ancient ruins..." Footnote places the travelers, "Near the trail from the Colorado River across the Shato Plateau and Black Mesa, Arizona, to the village of Oraibi, ruined villages and farmlands mark sites once occupied by ancient Pueblo tribes. The particular ruins mentioned by Haskell seem not to have been described by archaeologists" (Haskell's Journal, 1944:80).
- 1859 (November 8) "One Indian volunteered to go with us. Took breakfast, packed up, and started. Traveled 18 miles and camped at Kootsen tooeep. Indians said that we had better keep a good lookout for our animals as we were in Navijoe

country" (Haskell's Journal, 1944:80). Bunte and Franklin (1987:61) render Haskell's "Kootsen tooep" as *ku'utsian tuvwip*, which translates as "my father's older brother's/younger brother's child's country," confirming that these were resident San Juan Paiutes.

Walapai Papers

- 1867 (June 30, Extract from Report of John Feudge, Superintendent, U.S. Agent, Colorado River Indians) "The hostile determination of the chief and his followers arises from the killing of the head chief of their tribe, Wauba-yuma, in the winter of 1865, by some Americans; and because the Mohaves rejected the overtures made them by the disaffected or aggrieved Hualapais to unite with them in conjunction with the Chimihueves and Piutes to exterminate or drive out of the country all the whites, their hatred of the Mohaves has become as great as it is towards the whites" (*Walapai Papers*, U.S. Senate 1936:41).
- 1867 (July 20, Letter to Assistant Adjutant General of the Department of California) "It will also be necessary that there be security on the road East of the river, that the Piutes in the Nanigocian range should by the Exhibition of a large Command be notified that War would be made against them is they did not cease their depredations. On the thorough whipping of the Hualapais, I think they would Consent to be peaceful. They are in Communication and I think a number of the Piutes are on this side of the River" (*Walapai Papers*, U.S. Senate 1936:47).
- 1867 (October 29, Consolidated Report of operations against Indians in the Upper Colorado District to Assistant Adjutant General of the Department of California from Camp Mohave) "The Indian guides, Varanap and Pauline were here sent into Camp Mohave. The former was a prominent Chief of the Paiutes, who I had succeeded in getting to accompany me for the reasons that I would be sure of no outbreak from them while absent, that I wished to get them in hostility with the Hualapais, whose Country adjoins theirs, separated by the Colorado River, and that I wanted them to know the strength of my Command and how much better it was to be at peace than at War. When he left he agreed to get all the Pahutes in to Camp Mohave and have a talk, and to advise them all to come upon the reservation" (*Walapai Papers*, U.S. Senate 1936:62).
- 1869 (April, Report of Brevet Brigadier General of the Eighth U.S. Cavalry, Commanding District of Arizona regarding Hualapai hostilities) "Their ammunition is supposed to be obtained principally from the Mormon Settlements on the Upper Colorado, either directly or through the Pah-Utes" (*Walapai Papers*, U.S. Senate 1936:91).

- 1869 (July 21, Report of Lt. Col. Roger Jones regarding the Hualapais) "It is believed that they obtain ammunition from Mormon settlements on the Upper Colorado, either directly or through the Pah-Utes" (*Walapai Papers*, U.S. Senate 1936:93).
- 1869 (August 26, a few miles above Separation Rapids on the Colorado River) "We found an Indian camp today with gardens made with considerable care. The Indians are probably out in the mountains hunting and have left the gardens to take care of themselves until they return. They had corn, mellons [sic] and squashes growing. We took several squashes, some of them very large, and tonight have cooked one and find it very nice. Wish we had taken more of them. The corn and mellons were not up enough to be eatable. There were two curious *rugs* hung up under the cliff made of wildcat skins and sewed like a mat. They were quite neat looking and very soft, probably used for beds. They had no regular lodges but seemed to live in booths covered with brush and corn-stalks. From signs and scraps of baskets we judge they are Utes, probably Pah-Utes [Paiutes]" (Bradley's Journal, Darrah 1947:69).
- 1870 (September 17) "Yesterday we made the Spring at the Uingkaret [Uinkaret] village, and today we are off for the Canon" (Bishop's Journal, Kelly 1947:161, brackets in original).
- 1870 (September 19) "After resting awhile Mr. Hamblin and our Indian guide (one of the Uingkaret Utes) struck off to try and find a pass for our animals" (Bishop's Journal, Kelly 1947:161). The group was attempting a descent to the river in the vicinity of Toroweap Canyon.
- 1871 "When we arrived on the cliffs before crossing the Colorado, the Piutes living in the Navajo Country came to me and said as they had taken part with the Navajos in raiding on our people, they desired to have a good peace talk. They were about thirty in number..." (Hamblin's diary, Little 1971:104). This meeting took place with San Juan Paiutes on the east side of Ute Ford (Bunte and Franklin 1987:63).

Dellenbaugh's Diary

- 1871 Patnish, San Juan Paiute leader—"The only Indians the settlers dreaded were some renegades, a band of Utes and Navajos, collected by a bold and skillful chief named Patnish, whose 'country' was south of the Colorado around Navajo Mountain. He was reputed to be highly dangerous, and the Kanab people were constantly prepared against his unwelcome visits. He had several handsome stalwart sons, who dressed in white and who generally accompanied him. Though Patnish was so much feared, I do not remember to have heard that he committed any depredations after this time" (Dellenbaugh 1908:167-168).

- 1872 Tapeats Creek-- Dellenbaugh (1908:240) recorded that on September 6 they reached a "fine clear cold creek" that they named "Tapeats Creek, because a Paiute of that name, who had pointed it out to the Major from the Kaibab, claimed it."
- 1872 Shinumo Canyon--"On Wednesday, March 6th, the whole party packed up and left the valley by its narrow canyon outlet, a tributary of the Kanab Canyon. It began eight hundred feet deep and continually increased. We called it Shinumo Canyon because we found everywhere indications of the former presence of that tribe" (Dellenbaugh 1908:184).
- 1872 Mt. Trumbull--"The next day [March 22] we travelled on over hilly country, following a moccasin trail, with here and there cedar groves as we approached nearer to the mountains. On the edge of night traces of water were found in a gulch near the foot of Trumbull...I scoured the vicinity in search of a spring or pocket, but though we found many old wickiups there was no water. The Uinkarets had evidently camped here in wet weather" (Dellenbaugh 1908:186).
- 1872 Separation Rapid--Dellenbaugh reported that "Jacob through one of his Pai Ute friends had information that they [Shivwits Paiute] were preparing to lay an ambush" (Dellenbaugh 1908:243).
- 1872 Oak Spring--"Near the Oak Spring camp was an extensive sheet of lava, seeming to have cooled but a year or two before...Beside this spring one of the men from the ranch had found a human skeleton, covered with fragments of lava, with the decayed remains of a wicker water-jug between the ribs, marking some unrecorded tragedy" (Dellenbaugh 1908:188). March 28.
- 1872 Toroweap--"The following day Jack and Fennemore went down to the brink of the Grand Canyon, at the foot of a sort of valley the Uinkarets called Toroweap..." (Dellenbaugh 1908:192).
- 1872 Black Rock Canyon--"At two o'clock I reached Black Rock Canyon, where there was a water-pocket full of warm and dirty water, but both the mule and I took a drink and I rode on, passing Fort Pierce at sunset. Off on my right I perceived ten or twelve Shewits Indians on foot travelling rapidly along in Indian file, and as the darkness fell and I had to go through some wooded gulches I confess I was a little uncomfortable and kept my rifle in readiness; but I was not molested and reached camp about ten o'clock..." (Dellenbaugh 1908:193). April 20.
- 1872 Paiute guide--May 31--"Towards night we passed another very small settlement called Clarkston, and camped near it, the last houses we would see for some time. Several Pai Utes hung around, and Prof. engaged one called Tom to

accompany us as interpreter and, so far as he might know the country, as guide" (Dellenbaugh 1908:197).

- 1872 (June 1) "In one of the dry gulches we passed a grave, marked by a sandstone slab with E. A. cut on it...They were the remains of Elijah Averett, a young Mormon, who was killed pursuing Pai Utes in 1866" (Dellenbaugh 1908:197-198).
- 1872 (June 2, Table Mt. area) "We could plainly see on the left a high, flat, cliff-bounded summit, which was called Table Mountain, and early in the afternoon we reached a series of 'hog-backs,' up one of which the old Indian trail we were now following took its precarious way" (Dellenbaugh 1908:198).
- 1872 "Arriving at the top we found ourselves almost immediately on the edge of a delightful little valley...down which we proceeded to or three miles to a spring where Dodds and Jacob had made a cache of some flour the year before. The flour had disappeared. We made a camp...Our interpreter that was to be did not enjoy the situation and I think he dreaded meeting with the stranger Indians we might encounter. He declared himself 'heap sick' and begged to be allowed to return, so Prof. gave him several days' rations and we saw him no more" (Dellenbaugh 1908:198-199).
- 1872 Tapeats Creek--Dellenbaugh (1908:240) noted finding "some ancient house ruins not far up the side canyon" of Tapeats Creek. In addition, "I discovered a fine large metate or Indian mill, deeply hollowed out, and foolishly attempted to take it to camp." Upon his arrival, he dropped the grinding stone, breaking it in two, to the consternation of Powell, who told Dellenbaugh he should have left it alone.
- 1872 On August 27, 1872, Frederick Dellenbaugh recorded what may have been a Paiute hut in the vicinity of the Unkar delta, between the mouth of the Little Colorado and Unkar Creek, some 11 miles down the Colorado. He described the structure as a "small abandoned hut of mesquite logs" (Dellenbaugh 1908:224). No one has ever been able to relocate the abandoned hut site recorded by Dellenbaugh (Euler 1969:12-13).
- 1872 Kanab--"After a few days the Major came in from a trip accompanied by several Pai Utes, among whom was Chuaroumpeak, the young chief of the Kaibab band, usually called Frank by the settlers and Chuar by his own people...Frank was a remarkably good man. He had been constantly devoted to the safety and welfare of the whites. A most fluent speaker in his native tongue, he would address his people with long flights of uninterrupted rhetorical skill" (Dellenbaugh 1908:250).
- 1872 Patnish--"Old Patnish came in occasionally. Though he did not look particularly dangerous his eye was keen and his bearing positive" (Dellenbaugh 1908:250).

- 1872 Powell Journey to Uinkaret region--..."we started November 2d, taking with us three of the Kaibab band-Chuar, another called George...and Waytoots..." (Dellenbaugh 1908:250).
- 1872 Spring Near Uinkaret Mt.--"...we arrived at the rocky pool...which we learned now from Chuar the natives called the Innupin (or Oonupin) Picavu, or Witch Water-Pocket. They said the locality was a favourite haunt of witches. These were often troublesome and had to be driven away or they might hurt one" (Dellenbaugh 1908:251).
- 1872 Rabbit Hunting--"The Pai Utes had killed some rabbits, which they now skinned and cooked...Dexterously stripping off the skins they slit open the abdomen, removed the entrails, and, after squeezing out the contents by drawing between thumb and fingers, they replaced the interminable string in the cavity, closing the aperture with the ears, and stowed the carcass in the hot ashes for a few minutes. Then they ate the whole thing with complete satisfaction" (Dellenbaugh 1908:252).
- 1872 Paiute Spirits--"Chuar was reclining...on a bank near the fire. Suddenly he rose to his feet...I asked him what he had heard. 'Oonupits,' he whispered solemnly, never ceasing his watchful gaze...he fired a shot and seemed satisfied that the intruder was driven away or destroyed. He described the noise of the Oonupits as a whistling sound. He and his men had a habit of waking in the night in our various camps and singing, first one beginning very low, the others joining in one by one, and increasing the power as they did so till all were singing in full voice..." According to Dellenbaugh, when asked why they sang, Chuar replied "'to drive away the Oonupits'" (Dellenbaugh 1908:252).
- 1872 Paiute Spirits--"Oonupits or Innupits is the singular, Innupin the plural. It may be translated witch, elf, or goblin, with evil tendencies. On the other, they did not fear a spirit. When on the Kaibab in July with Chuar and several other Indians, Prof...heard a cry something like an Indian halloo." Powell recorded in his diary that Chuar had told him that it was the cry of a spirit, "the spirit of a dead Indian" (Dellenbaugh 1908:252-253n).
- 1872 Uinkaret Chief--(Nov. 6) "...we found there a short, fat, Uinkaret whom Chuar introduced as Teemaroohtekai, chief. In the settlements...he was known as Watermelon...Teemaroohtekai had a companion and next day Prof. and the Major climbed Mt. Trumbull with them" (Dellenbaugh 1908:253).

- 1872 Uinkarets and Shivwits Paiutes (Nov. 9) "Wishing to have a talk with the Shewits we moved...around to Oak Spring, near which some of them were encamped with their kinsmen the Uinkarets. Except for a wilder, more defiant aspect, they differed little from other Pai Utes. Their country being so isolated and unvisited they were surly and independent. The Uinkarets on the other hand were rather genial, more like the Kaivavit band" (Dellenbaugh 1908:253).
- 1872 Powell Trade with Paiutes--"The Major traded for bags of food seeds, baskets, spoons made from mountain sheep's horns, balls of compressed cactus fruit from which the juice had been extracted for a kind of wine, rolls of oose-apple pulp, which they ate like bread, etc., all for the Smithsonian Institution" (Dellenbaugh 1908:253).
- 1872 Meeting with Shivwits Paiute--"With the Shewits the Major and Prof. had a conference...Prof...explained to them what he wanted to do. An agreement was reached by which he was to be permitted without molestation of any kind to go anywhere and everywhere with two Shewits for guides..." An assistant from Powell's party was advised to remain in camp, "so that he would know as little as possible, and should not tell that little to the 'Mormoni' whom the Shewits disliked" (Dellenbaugh 1908:253).
- 1872 Shivwits Guides--"The next day, November 12th, our party divided into three...Prof. with Nathan Adams, one Shewits, named Paantung, and our guide 'Judge,' who may have been a Shewits also for all we could tell, prepared for the entrance into Shewits land" (Dellenbaugh 1908:254).
- 1872 Toroweap Water-Pocket--"the Major, Jones, and I proceeded to the foot of the Toroweap, to a water-pocket near the edge of the Grand Canyon called by the Uinkarets Teram Picavu...we hired Uinkarets to carry our goods nine miles down to the pocket, descending 1200 feet at one point over rough lava" (Dellenbaugh 1908:254).
- 1872 Return to Spring--"After some work at the canyon we went back to the spring on the 14th, the Uinkarets again acting as our pack horses...we killed some rabbits and cooked them on hot coals...found little, round, beaming, Teemaroomtekai, who knew our plans, already there" (Dellenbaugh 1908:254).
- 1872 Paiute Name for Cinder Cones--"I continued measuring and locating the oonagaritchets or cinder-cones, of which there were more than sixty, and got in four more on the 15th [of November]" (Dellenbaugh 1908:254).
- 1872 Another Paiute Spring--"the Major decided to move to another water-pocket the Uinkarets told about, farther east across the lava, a pocket they called Tiravu Picavu or Pocket-of-the-Plain. It was on the edge of the basaltic table overlooking

what they termed the Wonsits Tiravu or Antelope Plain...Jones and I struck along the moccasin trail, leaving our goods to be brought on by the Uinkaret packers" (Dellenbaugh 1908:254-255).

- 1872 Eating Wildcat--"The [Uinkarets] Indians thawed a little under the influence of the fire, but they would barely speak when spoken to. They skinned a wildcat they had killed on the way and boiled the red meat briefly in our kettle and ate it like hungry wolves" (Dellenbaugh 1908:256). November.
- 1872 Mt. Dellenbaugh (Nov.25)--"Prof. had come in on the 25th by way of St. George, having had a successful tour through the Shewits region, all agreements on both sides having been carried out to the letter. he had been two weeks in the wild country...Prof. had climbed Mount Dellenbaugh, though the Shewits objected to Adams's going up and he remained on the trail...On the summit were the ruins of a Shinumo Building circular in shape, twenty feet in diameter, with walls remaining about two feet high. It was not far from the base of this mountain that the Howlands and Dunn were killed, Paantung, Prof.'s guide, saying it was done by some 'no sense' Shewits. Prof. was of the opinion that the guide had been of the party himself" (Dellenbaugh 1908:259).

Dellenbaugh (1909:93) mentions an old trail down Kanab Creek Canyon, which crossed the Colorado into Havasupai territory. Dellenbaugh also mentioned seeing Paiute trails also crossed in Nankoweap and Kwagunt valleys. These trails led down to the river from the eastern front of Kaibab Plateau (Dellenbaugh 1902:326).

- 1872 "On the right were two minor valleys within the canyon called Nancoweap and Kwagunt, named by Powell after the Pai Utes, who have trails coming down into them" (Dellenbaugh 1906:326). Footnote adds: "Kwagunt was the name of a Pai Ute who said he owned this valley--that his father, who used to live there, had given it to him" (Dellenbaugh 1906:326n).

Hillers' Diary

- 1872 (April 19, Colorado River below Hurricane Hill) "Fred and Capt. came down, having finished their work. Capt.'s Indian did not come to pilot him." (Hillers' Diary, Fowler 1972: 105) {Capt. is Captain Dodds.}
- 1872 (May 31, Adair Spring) "Saw lots of ducks. The rest hiding in the reeds which surround the lake... Called it Swallow's park, and Lake Adair. Indian guided us across." (Hillers' Diary, Fowler 1972: 113) Editor's footnote reads, "'Indian Tom,' a Kaibab Paiute, had agreed at Skutumpah to guide the party to Potato Valley (Jones, 'Journal,' p. 128)." (Hillers' Diary, Fowler 1972: 113)

- 1872 (August 13, Lee's ranch at Lonely Dell) "Found the Major, Prof. and wife, Prof. Du Mott [DeMotte] and George Adair. Indian Ben for a guide. 'Quawgunt' [Kwagunt] In the evening Jones, Fred and myself took Mrs. Thompson and Du Mott boat riding." (Hillers' Diary, Fowler 1972: 132-133) Editor's footnote reads, "Kwagunt was a Southern Paiute Indian. As a young child, he and his sister had reputedly been the only survivors of an attack (presumably by Yavapai Indians) on his family's band then camped on the Kaibab Plateau. The children somehow made their way to another band camped near what is now Kanab. Kwagunt Hollow on the Kaibab Plateau is named for him (see Brigham A. Riggs, 'The Life Story of Quag-unt, a Paiute Indian, told to Brigham A. Riggs, a cattleman of Kanab, by the Indian himself,' MS on file Bancroft Library, University of California, Berkeley)." (Hillers' Diary, Fowler 1972: 132-133)
- 1872 (September 15, Grand Canyon near Kanab Wash) "Made fine work today. Lots of cactus apples grow all along the sides of the canon - eat lots of them every day. They are very delicious fruit and I think are very healthy. Indians live on them this season of the year. They also make wine from their juice, which they say makes drunk come." (Hillers' Diary, Fowler 1972: 143)
- 1872 (September 20) "Major and Jones gone to upper Kanab." (Hillers' Diary, Fowler 1972: 145) Editor's footnote reads, "Powell and Jones had gone with Chuarumpeak and another Kaibab Paiute man to upper Kanab Creek and Long Valley. From there, Powell, Jones, and Joseph W. Young, a resident of Long Valley, hiked and waded their way down the East Fork of the Virgin River through Parunuweap Canyon to Shunesburg (Jones, 'Journal,' pp. 160-61). They were apparently the first white men to make the hike." (Hillers' Diary, Fowler 1972: 145)

W.C. Powell's Journal

- 1872 (January 9, Kanab camp) "We found Prof. at Kanab, and we three men went over to the Pah-Ute camp a mile or more away. Found them sitting around their camp fires, ragged, naked and dirty. Talked with Frank awhile, then rode home." (W.C. Powell's Journal, Kelly 1948: 386)
- 1872 (March 21, Kaibab Plateau) "The Pah-Utes prowl about, begging, doing odd jobs, and selling Indian trinkets. Short in stature, half-starved, scantily-clothed, they present a pitiful, abject appearance. The squaws transport their progeny in Konunkwas - willow baby baskets, covered with buckskin...Most of the tribe are now out on the plateau, gathering yant - a species of the rose [*Agave*]. From this product they made a cake, by baking it in the ashes. It is said to taste like roasted chestnuts." (W.C. Powell's Journal, Kelly 1948: 403-404)

- 1872 (April 3, Kanab camp) "The Pah-Ute bows have sinew backs." (W.C. Powell's Journal, Kelly 1948: 406)
- 1872 (April 5, Mount Trumbull) "We start today for Mount Trumbull. A council of the Indians will be held there, and gifts distributed." (W.C. Powell's Journal, Kelly 1948: 406)

S. V. Jones' Journal

- 1872 (February 3, camp near Kanab) "I kept camp alone except for the company of 2 Pa-Utes, who staid as long as they could be anything, then left for Pipe Spring, where the best [rest?] of the tribe have gone." (Jones' Journal, Gregory 1948: 108)
- 1872 (February 10, camp near Kanab) "Got into camp at dark. found old Margats, a Pa-Ute in camp. He agreed to show us a route to the Colorado from Stewart's Ranche for a blanket." (Jones' Journal, Gregory 1948: 109)
- 1872 (April 13, above Berry Spring) "Before breakfast Pa-Ute Frank and another Indian came to see us and remained to talk and eat until we left." (Jones' Journal, Gregory 1948: 118)

{NOTE: Editor's footnote locates Berry Springs, "Berry Springs, on the bank of the Virgin River, opposite the mouth of Quail Creek, was chosen as a winter sheep camp and later as a home site by the "Berry" brothers in the late 60's," and in the "early 70's was the residence of 5 or 6 families." ... Berry Springs was an important station on the Kanab-St. George wagon road to Washington and St. George." (Jones' Journal, Gregory 1948: 115)}

- 1872 (April 12-15, near Harrisburg across the Virgin River) Jones describes passing Paiute wickiups on two occasions and stopping to visit there. (Jones' Journal, Gregory 1948: 117-119)
- 1872 (April 17, Fort Pearce Spring at the base of Hurricane Cliffs) "Met Frank and another Indian coming in to talk as they said, but really to eat. We have arranged a meeting with all the Utes at the Fort Pierce Spring in 6 days from now. Intend distributing some goods the Major procured in Salt Lake City, and sent to Toquerville" (Jones' Journal, Gregory 1948: 119). {NOTE: Frank appears in several journals.}
- 1872 (April 22) "Adair and Hattan went to Toquerville after some goods that the Major had procured in Salt Lake City and shipped down for distribution among the Sheviwits [Shivwits] and Pa-Utes." (Jones' Journal, Gregory 1948: 120)

- 1872 (April 23, Washington) "Started George Adair to Fort Pierce Spring via of Washington with the Indian goods...sent Adair to tell the Indians to come to town and receive their things there...The Indians began to come in the afternoon. Twenty or more slept near the wagon." (Jones' Journal, Gregory 1948: 120)
- 1872 (April 24, Washington) "Indians began coming in early. There were the Sheviwits, to whom this distribution was made, also most of the Santa Clara, and some of the Kaivav band to see. The Sheviwits were arranged in a circle seated on the ground, each band with its chief, of whom there were 3. We had for an interpreter a young man of the Santa Clara band, called George. After getting the names of the men, together with the number of the squaws and papooses belonging to the band, the distribution began. The presents were blankets, shirts, cotton cloth, drill, a few pieces of blue flannel, butcher knives, and some hoes, axes and shovels. About 11 A.M. the natives became very hungry and we gave them some flour and meat, and waited until they had eaten, when the young men gave us a dance, then we finished the distribution. Old Moqueop, an old Sheviwit, made a speech telling them that they must be good "*wano*" Indians or the Americans would make them no more presents. Then Pa-Ute Frank talked awhile and the conference closed. he (Frank) is a good speaker, is a young man and is trying to become chief of all the tribes in southern Utah. There were present [] men of the Sheviwits. There are in the tribe [] squaws, and [] children making a total of []. Counted while they were at dinner 106 Indians, mostly men; but few women or children present. Think the government can be induced to establish an agency for them." (Jones' Journal, Gregory 1948: 120-121)
- 1872 (May 16 - 23, Kanab camp) "Distrib-[uted] some goods to the Pa-Utes on Monday, the 20th. There are in the band - men, women, boys and girls - Total []. Jacob Hamblin will try to persuade them to farm some." (Jones' Journal, Gregory 1948: 126)
- 1872 (May 31, at Kanab preparing for trip to Dirty Devil) "Some Pa-Ute Indians were camped near and several came in before breakfast. One called Tom agreed to go with us. Said that he knew the country as far as to Potato Valley on the headwaters of the Dirty Devil... The outlet of the lake named 'Swallow' was a narrow canon of white sandstone - very pretty. Tom said that it opened into another valley with springs, that into another canon that could be followed to the Paria farm, that we supposed to be about 15 miles distant." (Jones' Journal, Gregory 1948: 128-129) Editor's footnote adds, "As shown on recent maps of the U.S. Geological Survey, Swallow Park is a cliff-enclosed area from which the drainage passes through a slit in a sandstone wall and along Park wash to Kaibab Creek and the Paria River. On its floor is the swamp-rimmed Adair Lake." (Jones' Journal, Gregory 1948: 129)

- 1872 (July 7, Johnson Canyon) "Found Beaman at Johnson waiting for the Major. He had been on the Kaivwav Mountains with Pa-Ute Frank, and had made some fine pictures" (Jones' Journal, Gregory 1948:138).
- 1872 (July 15, Kaibab Plateau) "Thompson, Adair and self taking Pa-Ute Frank and Charley as guides started to try and reach the Colorado from the Kaivwav Mountains [Kaibab Plateau]. Took 6 horses. Started at 10 A.M. Soon saw ahead of us 4 Pa-Ute men and 2 squaws with 3 ponies. Frank said they were going to the mountains to hunt...Made camp at Oak Spring at 6:45 P.M. Some prospectors had been there since we were last, and had built a wick-i-up of Cedar limbs around a tree. In this we stopped. The Pa-Utes camped near and were ready to dispose of any surplus rations. They had killed 3 rabbits so we gave them nothing. Frank and Charley ate with us" (Jones' Journal, Gregory 1948:139).
- 1872 (July 16, Stewart's Canyon and beyond, trying to reach Colorado River) "Three miles up Stewart's Canon came to the houses of John Stewart and Almon [Ammon] Tenney who have a herd of stock and are farming a little. Here the squaws stopped, and one of the men. Three followed us...stopped for dinner at 12:30 P.M. Had carried water from Stewart's Canon. The 3 Indians said they were very hungry but we told them to hunt game. Started at 1:45 P.M. travelled nearly south for 3 miles on the mountain and through small canons or valleys among large timber consisting of pine, fir, spruce, balsam and aspen, following an old Indian trail, and made camp at 3:15 P.M. at a small spring in a beautiful little valley. The Pa-Utes used to camp here and hunt. All the Indians soon started out hunting...Indian 'Bishop' came in near sunset with a deer, and Charley soon after with a porcupine. We traded for one quarter of the venison, and had a good supper" (Jones' Journal, Gregory 1948:139).
- 1872 (July 17, on Kaibab Plateau trying to reach Colorado River) "Followed the old Pa-Ute trail winding around through the canons, and shortly after 9 A.M. reached the brow of the mountain...In the valley below us was a spring and the Indian trail led down the cliff. We did not go down knowing that it would be impossible to get horses to the river...Struck across the mountains without any trail and reached the upper houses in Stewart's canon at dark. The Indians wanted to go down to Tinney's [Tenney's] house, near which the squaws were camped, and did so after supper" (Jones' Journal, Gregory 1948:140).
- 1872 (July 18, Stewart's Canyon) "At Tinney's found all the Indians ready to start for Kanab. A runner had brought word that Ben's squaw had died. She was a sister to Frank's squaw" (Jones' Journal, Gregory 1948:140).
- 1872 (Paria River crossing) Editor's footnote, "As early as 1867 (?) the Mormon pioneers had learned that the mouth of the Paria marked the place where the

Colorado River could be reached by pack trains...Clem Powell records the statement of 'old timers' that the crossing was discovered by tracing sheep stolen by Navajos and driven across the Colorado on the ice. Jacob Hamblin, who previously had crossed the river at the Ute Ford and at the mouth of the Virgin River and at Grand Wash, reports that in October, 1869, "20 white brethren and 20 Paiutes crossed the Colorado where Lee's Ferry now is" (Jones' Journal, Gregory 1948: 143).

- 1872 (August 14, camp at the mouth of the Paria) "Indian Ben went up the Paria Canon after the stock" (Jones' Journal, Gregory 1948:144).
- 1872 (September 12, leaving the Colorado River via Kanab Wash) "Followed the canon until it ran out, then travelled in all directions reaching Kanab at 3 P.M., having rode 30 miles...Saw "No-goots," the chief of the Toquerville Pa-Utes, who is a friend to the whites and came to tell them about the Shivwits" (Jones' Journal, Gregory 1948:155). Editor's footnote describes the decision by Powell to leave the Colorado River at Kanab Wash rather than continuing farther. "As reported by Dellenbaugh, the factors which led to the discontinuation of the river traverse were not only the perilous high water, but also the poor condition of the boats, the reported plot of the Shivwits Indians to ambush the party, and the belief of the topographers that the Colorado below the mouth of the Kanab could be mapped more advantageously from the rim and by descents into side canyons" (Jones' Journal, Gregory 1948:154).
- 1872 (September 17, Kanab Canyon) "Major, with Frank & George, Pa-Ute Indians, and self went up the canon 1 3/8 miles farther and camped. The Major is going to make a Geological Section, I to run Kanab Canon and its branches" (Jones' Journal, Gregory 1948:156).
- 1872 (September 19, Kanab Canon) "The top of this is a plateau [Skutumpah Terrace] stretching for many miles...Making our Indians of service in getting wood and water and taking care of the stock. Just above camp someone had begun a small log house. A few miles to the northeast is the settlement of Upper Kanab" (Jones' Journal, Gregory 1948:156).
- 1872 (September 20, Kanab Creek) "Frank killed two fine rabbits" (Jones' Journal, Gregory 1948:157). {NOTE: Frank is a Paiute guide. See July 7 of Jones' Journal.}
- 1872 (October 30, Kanab camp) "Some of the Santa Clara Pa-Utes have stolen the horses of a small party of Navajo's camped here, and while one has gone in pursuit the rest remain anxiously waiting" (Jones' Journal, Gregory 1948:167).

- 1872 (November 2, trip to Mt. Trumbull) "Frank Hamblin, Adams, Major, Thompson, Fred and self - Indians Frank and George. Made 7 miles to small spring on the lower line of cliffs toward Pipe Spring. Indian Wa-to-its went to Shivwit Mountains" (Jones' Journal, Gregory 1948:167-168).
- 1872 (November 6, camped at water pool about 30 miles east of Mt. Trumbull) "Indian Frank went to the camp of the Uing Karets, and their Chief came to our camp" (Jones' Journal, Gregory 1948:168).
- 1872 (November 9, camp east of Mt. Trumbull) "A camp of Shivwits near and the Uing-karets 2 miles away...Indians all around" (Jones' Journal, Gregory 1948:168-169).
- 1872 (November 10, camp east of Mt. Trumbull) "The Indians came in early with seeds, yant [*Agave*], baskets, etc. to trade" (Jones' Journal, Gregory 1948:169).
- 1872 (November 11, camp east of Mt. Trumbull) "Frank (Indian) started for Kanab" (Jones' Journal, Gregory 1948:169).
- 1872 (November 16, camp east of Mt. Trumbull) "Four Indians packed our things, except blankets, and we started for a water pocket on the north edge of the Basalt plateau...Supper of meat. A rabbit. The Indians had killed a wild cat, and ate that" (Jones' Journal, Gregory 1948:170).
- 1872 (November 18, camp northeast of Mt. Trumbull) "Paid the Indians for their work and let them go" (Jones' Journal, Gregory 1948:171).
- 1872 (November 19, camp northeast of Mt. Trumbull) "Tou-mer-in-tou-cow-av and another Indian came to see us, and staid all night" (Jones' Journal, Gregory 1948:171).
- 1872 (November 21, camp northeast of Mt. Trumbull) "Found 8 Indians in camp. Among them the one who went to St. George and took rations to Thompson down the Grand Wash. He reported that party all right" (Jones' Journal, Gregory 1948:171). {NOTE: It appears these are also Paiutes.}
- 1872 (November 25, spring south of the Vermillion Cliffs called by the Indians, Walk-eUmp-Spits.) "... found one of Wheeler's parties camped there, under charge of Lieut. Dindurdie [Dinwoodie]. They had an Indian guide and were going to the Shivwit Mountains" (Jones' Journal, Gregory 1948:171).

Thompson's Diary

- 1872 (January 5) "Indians in camp" (Thompson 1939:64).
- 1872 (January 6) "Went to the Piute camp tonight to see dances" (Thompson 1939:64).
- 1872 (January 7) "Indians here to trade" (Thompson 1939:64).
- 1872 (January 9) "Worked on line, went to Kanab and Indian camp" (Thompson 1939:65).
- 1872 (March 23) "Broke camp at 7:30 without breakfast. Took a moccasin trail and found a water pocket, 'Rocky Pool' at 10:00 A.M. Camped for the day. Rough. Could not take wagon way we came. No trail between to the Whitmore Ranch between us and Mountain. Fennemore took two views" (Thompson 1939:72). Party is now near Mount Trumbull, travelling from Pipe Springs.
- 1872 (March 24) "Captain Dodds and myself took a trail and followed it to Whitmore's ranch. It is at the old Patite Spring. Jones and Fred went to right of Mount Trumbull. Found a trail leading to Whitmore's Ranch. Johnson went down the wash after fossils and on geology" (Thompson 1939:72).
- 1872 (March 27) "Captain Dodds and Jones took rations and went on trail to river. Will be gone two days...Fred and I climbed a hill, got view of country, and then went to Whitmore's. Saw him. Says he has followed trail up river 12 miles. Goes down valley four or five miles, then turns to right. Is not the old trail of last year but is called the Ute crossing" (Thompson 1939:72).
- 1872 (March 30) "Captain Dodds, Johnson and myself left camp at 10:00 A.M. to try the Indian trail from Whitmore's to river. Left it when 4 miles from Whitmore's and took a side trail; climbed out of valley and went some ten miles on the table. Trail played out. Came back to valley and camped." (Thompson 1939: 73)
- 1872 (April 2) "Captain Dodds and Johnson did not get to river on the trail. Followed it out about fives miles beyond where I left them. [Thompson left two days previous to return to camp after travelling about ten miles down the trail through the valley.] Found many trails but none that took the gulches, so they came back and went to the river near the point where the Major went down. Captain thinks horses could be got to within 1000 to 1500 feet, perhaps all the way (Thompson 1939: 73).
- 1872 (April 5) "Missed the right trail or rather there were so many that we took the wrong one, a stock trail that ran out. Finally struck an old faint one that we

- followed until camping time" (Thompson 1939:74). Now searching for a trail from Whitmore's Ranch to St. George.
- 1872 (April 14) [In St. George.] "Talked with Indians a little" (Thompson 1939:75).
- 1872 (April 15) "Talked with Indians. The Santa Claras say the Mormons will do for them, that the Americans talk but do not do anything. The Shevwits are afraid. Think we want to kill them. Can hardly get an Indian to own himself a Urigkavit or Shevvit. They want to know what we will give them, if anything. Say they are very poor" (Thompson 1939:75).
- 1872 (April 16) "Back in camp. Talked with Shevwits' Chief" (Thompson 1939:75).
- 1872 (April 23) "Went to Washington to meet Indians. Taking George and Jones, and goods" (Thompson 1939:76).
- 1872 (April 24) "Distributing goods to 134 Indians counting squaws and children-warriors, squaws, children" (Thompson 1939:76).
- 1872 (May 18) "Brought Indian goods, together with boxes from Nebeker" (Thompson 1939:77).
- 1872 (May 20) "Distributed goods to Indians. Jacob helped" (Thompson 1939:78).
- 1872 (June 1) Party is heading toward the Paria. "Our Indian Tom, who had joined us at Clarkston, here did not understand the country, and said there was a canon further to north that he did 'je-sue-ge-way'. Told him to 'figure' and on we went. After climbing in and out of two or three shallow gulches we came to a very deep rocky canon which was one Tom understood" (Thompson 1939:79). Thompson continues description of the bottom of the wash, etc. They are in Willis Creek, a branch of the Paria. Indian Tom, apparently a Paiute, stays with the group as guide until June 3. The party is on the overland reconnaissance trip to the Dirty Devil River, so most of the next several days cover ground too far north. They see lots of Indian signs and even some camps. By July they are back at Kanab.
- 1872 (July 14) "At Kanab. Talking with Indians, etc" (Thompson 1939:90).
- 1872 (July 15) "Left Kanab at 10:00. Make 'Oak Spring' Kaibab Plateau at 7:00 P.M. George, Jones, and myself with Frank and Charley, Indians. Three other Indians, two squaws and one papoose, went along" (Thompson 1939:90).
- 1872 (July 16) Frank tells Thompson about hearing the spirit of a dead Indian on the trail that day (Thompson 1939:90).

- 1872 (July 17) "Left Pine Spring at 8:00. Traveled in west-southwest direction for five or six miles, when we came to the canon of the Colorado. At a point exactly west [east?] of Mount Trumbull we were at the bend of the river. On our right the river bore 247 degrees true for 45 miles or to the 'Lava Falls'... Mouth of Kanab Wash bears west, distant to river. 14 miles or 9 in straight line. The Pa Ute trail to river goes down the first or 'Limestone Cliffs' to the right of where we stood and down the cliff to water at a point a little west of south of us..." (Thompson 1939:90, brackets in original).
- 1872 (July 21) "Went to Cave Canon today. Rained. Talked with Jacob. I am certain from Jacob's talk and Ives map, that the Cataract Creek of Ives and Coenina Canon of Frank are the same, and Ives had made a big mistake in placing the little Colorado as far west as he has. It is too far by 60 miles" (Thompson 1939: 91).
- 1872 (September 6) In the Grand Canyon. "Just above our camp on the right is a fine creek 20 feet wide, and 2 feet deep-clear and cold. Call it 'Ta Pits Creek' [Tapeats, name of a friendly Piute]" (Thompson 1939:98, brackets in original).
- 1872 (September 8) "In camp at foot of Kanab Wash. Talked about leaving the river with the Major in the morning. I told him that I thought we had better run one boat to Mount Trumbull, but finally, about night, we decided to quit where we are" (Thompson 1939:99). Footnote: "The unusually high water stages of the river which made boating more dangerous than on the 1869 trip and a reported plot of the Shivwits to ambush the party were factors in making the decision to discontinue the river traverse at the mouth of the Kanab" (Thompson 1939: 99). The group returned to Kanab September 15.
- 1872 (October 11) "Left Kanab at 4:00 P.M. Camped at Navajo Well at 9:00. [Hired Ang-E-quet ad To-qui-tow for Indians. [Assistants.] An Indian came in before we started and told us that ten Navajos and four Utes had crossed at the 'Ford' and gone up the old trail on the Paria with blankets to trade. This confirms the idea that the Parowan raiders are not Navajos" (Thompson 1939:101, brackets in original).
- 1872 (October 22) On or near Kaibab Mountain. "Went south to the canon and then west. The valley we are in drains into Bright Angel Creek. Went on west side of valley of the creek. Saw from our west point the butte on which Quagunt [Kwaugunt] told us the Piutes killed the deer. Saw also the point on which we rode at the time. Made sketch of valley. There is a big spring, as the Indians say, at the head of one branch. Small springs in others. The Indians call the creek 'Pounc-a-gunt' or 'Beaver Creek' and say a long time ago the beavers lived in it, but that now all are killed. Can see the granite along the creek, and the granite capped by limestone on river" (Thompson 1939:102, brackets in original).

- 1872 (October 23) "Went to see the canon S.E. of camp in morning. Came to lake in DeMotte Park for camp. I wish to go from here to the spring west, but Indians do not seem willing. If they do not go I shall be obliged to go to Kanab" (Thompson 1939:102).
- 1872 (October 24) "Indians concluded to go with us. Went in a direction a little west of south, to a spring in canon by noon. Had dinner and went to look at canon of Colorado. Made sketch and took bearings from two points" (Thompson 1939: 102).
- 1872 (October 25) "Broke camp at 8:00. Made Rock Spring at 11:00 and Black Water Spring at 3:00 P.M. About four miles from latter place, met band of Indians, mining.[?] There were only two old men with them, all the rest women and children-about forty. The men were out hunting. It was a novel sight" (Thompson 1939:103).
- 1872 (November 5) Thompson left Pipe Springs to a spring 18 miles away, camped at a spring in red cliffs north of Wild Band Pocket. "Came to Rock Pool or Witches Spring, as the Indians call it (Do-nu-pits)." (Thompson 1939: 103) The party stayed at that place for a couple of days to take bearings of cinder cones (Oo-na-ga-re-chits) on the north of Mount Trumbull and to climb Mt. Trumbull (Thompson 1939:103).
- 1872 (November 9) "Moved camp to Oak Spring. I went to the water pocket at the junction of the was and—Canon. Climbed to the top of the Oo-na-ga-re-chits at the foot. Took bearings and made a sketch of river from the butte, run from the Kaibab to the turn southwest of the Oo-na-ga-re-chits. Saw and noted where the lava that dammed the canon flowed in. Climbed up a long, black ridge into Oak Spring Valley. Saw a camp of Piutes. Rode in and shook hands all around. Saw them parching grass seed preparatory to grinding. Found that the wagon had made the trip to the spring alright. Very cold tonight" (Thompson 1939:103).
- 1872 (November 10) "This morning the Major traded with the Piutes" (Thompson 1939:103-104).
- 1872 (November 13) "Have talked with Indians tonight" (Thompson 1939:104). It appears that Thompson met fairly regularly with the Indians to gain information about locations, etc.
- 1872 (November 14) "Camp near head of a canon a little east of south from Dellenbaugh's mountain, distant perhaps five miles. canon, the Indians say, runs into Colorado west of southern bend. The basalt is at least 500 feet in canon, and to all appearance covers the entire country, since climbing cliff at Pine Spring" (Thompson 1939:105).

- 1872 (November 15) "Moved our camp about 1 1/2 miles this morning, then Pa-an-tung and I went some eight miles to south and climbed a high basalt ridge that I have taken from both Layer [Logan?] and Ellen...I think I can see granite at S. Pa-an-tung says that some 'no-sense' (cat-i-sure) Cherriots killed three American men where we are camped. At Wimp-u-run-cent, pocket in south branch of canon, to Av-e-ku-net, pocket at point marked DR, Pa-an-tung says a creek comes in where Americans hunted gold. It must be Diamond River. At point S. is Sacramento mining district. It may be that at point B. is the bad rapid where Bradley went over" (Thompson 1939:105, parentheses in original). Cherriots are Shivwits (see November 17 diary). Evidence here that the Indians knew where the miners went; miners had already been in the area.
- 1872 (November 16) "Broke camp at 8:00 A.M. Adams and George took the trail, while Pa-an-tung and I went to Dellenbaugh Mountain, climbed it, and noted barometer. Took bearings, etc. Pa-an-tung did not want Adams to climb the mountain with us. We were within about eight miles of the river when on the mountain, the view same as yesterday except the basalt does not seem to continue as far west...Found the ruins of an old Moqui's building on the very summit. It had evidently been used as a lookout or temple of worship. It was circular in shape, and perhaps 20 feet in diameter, with walls now standing-5 feet high" (Thompson 1939:105).
- 1872 (November 17) The Indians went to the Cherriots [Shivwits] camp last night, and about 9:00 this morning came back with Q-ne-tive and another captain. Talked. Left at 11:00. Traveled down the canon, followed it a ways, then crossed a low divide into another canon which we came down into Grand Wash near the old Whitmore Ranch. Found an Indian there with flour, sugar, and bacon" (Thompson 1939:106, brackets in original).
- 1872 (November 18) "Left camp at 8:30 A.M. There is not doubt about the 'Fault' or fold, I think the latter. Came the 'trail'. The white peak called Tanner by us is called Syconth by the Indians. camp on [Virgin]" (Thompson 1939:106, brackets in original).
- 1872 (November 19) "Came to St. George...Paid off Indians, sent telegrams to Kanab" (Thompson 1939:106).
- 1872 (December 10) "Went to Berry Springs; Indians not here" (Thompson 1939:107). Berry Springs visited between stops at Toquerville and Nebekers and another one at Washington.

- 1872 (April, route to the Colorado River via Kanab Wash) "From this point to the Colorado I was accompanied by a party of miners. For the first twenty-five miles after leaving the ranch I found the canons simply long and narrow valleys, hemmed in by cliffs from three to eight hundred feet high. These walls, in many places, are carved with strange figures and signs; and remnants of pottery of excellent workmanship are frequently found bestowed upon the base of the rocks. Occasionally the decayed walls of a hut built of stone and mortar are met with. These relics possessed for us the interest of original discovery, as we were probably the first white men that have ever passed down the canon, the Pah-Utes having always assured explorers that it was impossible to make the river by this route, thus deterring them from the attempt. The Utes state in their traditions that the hieroglyphics upon these canon-walls have existed for many hundred moons, and that the country was once inhabited by a nation who have gone across the river. This nation is supposed to have been the Moquis Pueblos, or 'Dying Town,' as the name is interpreted" (Beaman 1874: 590).
- 1872 (June 7-17, travel from Johnson's Ranch to the Kaibab Mountains along the North Rim) "The greatest difficulty attending this excursion was in obtaining a competent guide, as few white men had ever ventured so near the river in that direction. Even the Pah-Utes had little knowledge of the country, and all agreed that water in the mountains would be very scarce. I finally succeeded in securing the services of Nank, a nominal chief, in that capacity, upon condition that himself and his companions should each have 'a blanket and plenty of powder;' and, after due preparation, we left Kanab on the 14th of June. After three days' travel - a distance of seventy-five miles - we encamped in a little valley near the Grand Canon of the Colorado...The valley in which we camped, although rich and beautiful in fertility, bears the ominous title of 'The Valley of Death;' this from the fact that at one time it was the camping-ground of a tribe of the Pah-Utes, where, the measles breaking out among them, a hundred deaths occurred in a very few days. The place was abandoned, and thereafter avoided by the Indians, unless forced to visit it by a pressing need of water. The second day of our sojourn in the Valley of Death, one of our Indians, who had been out hunting deer, returned, and said that, while wandering among the cliffs, he had distinctly heard some one calling to him. I was somewhat surprised at this information, as this part of the mountain was so little visited, but suggested that it might be a wandering Indian, and asked what tribe the language of the call indicated. Shaking his head gloomily, he answered: 'Koch white man - koch Indian! You wichee Pah-Ute yakhwa. You wichee Pah-Ute ded!' - meaning that it was the voice of the dead calling to him, his superstition teaching him that the valley was haunted; and, as such a locality was of course uncomfortable, the red man proposed at once to leave" (Beaman 1874:593).

- 1872 (August 21, southeast of the Paria River crossing following the Vermilion Cliffs) "Thus far we had followed the Vermilion Cliffs, our course being generally south by east, leaving the river gradually on our right. We were now in a country occupied by a renegade band of Pah-Utes, and the greatest caution became necessary for the safety of our little camp" (Beaman 1874:624).
{NOTE: Beaman's party continued to Moenkopi and the Oraibe, encountering Navajoes and fearing Apaches in their summer hunting grounds along the route.}

John D. Lee's Diary

- 1872 (October 7) A Kaibab Indian took venison to Lee's family at Jacob's Pools after they were robbed by a band of Navajos; told them to hide it in the rocks (Lee's diary, Cleland and Brooks 1955:214).
- 1872 (December 26) On the way to Dell from the Ranch, Lee discovered a messenger (Tocataw) with a message from Hamblin (Lee's diary, Cleland and Brooks 1955:217).
- 1873 (January 11) First launch of the Colorado River ferry boat. Tocataw was at the dinner party aboard (Lee's diary, Cleland and Brooks 1955:219).
- 1873 (February 1) Lee took 12 men from the Arizona Exploring Co. to the dell; they had with them Tocataw, a Paiute (Lee's diary, Cleland and Brooks 1955:224).
- 1873 (February 4) A Kaibab Indian came to Jacob's Pools to get his gun repaired. Named Moa-atts. Seven lodges of Indians were encamped at a spring about 15 miles south (Lee's diary, Cleland and Brooks 1955:225).
- 1873 (February 22) Tokatom, a Paiute, came up and reported the Explorer Co. was at the Little Colorado on the 19th (Lee's diary, Cleland and Brooks 1955:226-227).
- 1873 (March 6) Lee went to a grove of oak up river from the Dell that an Indian had told him of (Lee's diary, Cleland and Brooks 1955:228).
- 1873 (May 7) Four of the Co. came back to the Dell to get more wagons. Hamblin, 3 others, and 3 friendly Indian guides had gone to explore the Rioviridy Walnut grove and the country in general (Lee's diary, Cleland and Brooks 1955:237).
- 1873 (June 4) Piede Jack and 2 emigrants were waiting to cross the Colorado at Lee's Ferry, reported the Little Colorado had dried up (Lee's diary, Cleland and Brooks 1955:242).

- 1873 (July 3) Lee planted peas at Moencropa with the help of a Piede (Paiute) (Lee's diary, Cleland and Brooks 1955:266).
- 1873 (July 7) Shew, a lame Piede, his wife and four children visited Lee, told him Shew was supposed to take of Hamblin's crop in Moencropa (references to Shew throughout this part of the diary) (Lee's diary, Cleland and Brooks 1955:268-269).

Thompson's Diary

- 1873 (July 17) "Came from Pa-Koon Spring to Colorado River. Got observations" (Thompson 1939:112-113). Pa-Koon Spring was reached after travel from St. George to Black Rock Springs and then to Pa-Koon Spring.
- 1873 (July 18) "Came from Colorado River to Pa-Koon Spring. Went to Mo-que-acks wick-e-up. Had watermelons and a big talk. Saw Quetus and other Shewits. When to Pa-Koon Spring, found that Bentley's horse had given out" (Thompson 1939:113).
- 1873 (July 20) On the 19th, Thompson had traveled from Pa-Koon Spring to Cane. "Came from Cane Spring to Black Rock. Left Bentley's horse with the Indians at Cane Spring. They are to bring him in five days to Bentley. I am to give them a hat, a shirt, a pair of pants, a box of capt, two bars of lead, and some powder. They think the horse is mine. I think the heat, no shoes, and some trouble with his water is what ails the horse. Indian's name that is to bring him in is Tar-mu-ga-towt" (Thompson 1939:113).
- 1873 (August 3) "Came from Cottonwood Wash Spring to Kanab. Got in about noon. An Indian boy had been bitten by a rattle snake. Sent to Johnson for alcohol and whiskey...Gave the Indian boy about 1/2 pint of alcohol. Beef came. Rain at night" (Thompson 1939:114).

Accounts from 1875-1900

- 1875 Grazing Rights--"The classic transaction in which Manhattan Island was reputed to have been sold for trinkets valued at \$24, is rivalled by a deal with an Indian Chief at Orderville. The records there show that for a rifle and some ammunition, Chief Quarats granted to the Order the perpetual right to graze its cattle on Buckskin (Kaibab) Mountain" (Pendleton 1939:154).
- 1875 Moccasin Spring--"Since my earliest recollection, Moccasin Spring (Arizona) has been the home of a tribe of Ute Indians, and for many years an Indian Reservation has adjoined the Moccasin Ranch property of the United Order. Thus we have always associated Indians with Moccasin Springs Ranch, and many

interesting stories of them are recalled" (Seegmiller 1939:195). Seegmiller continues to describe incidents near Moccasin, Pipe Springs, and House Rock Springs involving Indians who are camped or living permanently near those areas.

- 1875 Paiute Use and Trade of Red Ochre: "All along the northern side of the Grand Canyon the Indians--at least as far as the Paria river--secured a red paint from the Canyon, in the Shivwits region, for centuries. When the Mormons came they traded for this red paint and used it for painting furniture...The way I found out about it was one day when I was in the house of Lyman Hamblin in Kanab--about 1875--and noticed the legs of a table painted the dull red. On inquiry, Lyman told me he got the paint from the Pai Utes...I followed the thing up, leading to the discovery that the ore came from a cave down the side of the Grand Canyon off the Shivwits plateau...So there was the place where Indians on the north side of the Colorado had been getting red paint, through the Shivwits by trade, probably, and I judge that the Walapais, Havasupais, Apaches--all on the south side--also traded for it. Perhaps even as far east as the Pueblos of the Rio Grande" (Dellenbaugh in *The Masterkey* 7 [1933]:85-87).
- 1875 (May 11, Special Report relative to the Hualapai leaving the Colorado River Reservation) "Another reasons against using force is that a portion of the country where these Indians are at home has been overrun and occupied by miners, and a movement against them would endanger the lives and interests of these citizens. Besides, these Indians are friendly disposed, do not wish to fight, and are seeking employment among the miners, like the Mojaves and Piutes in the same region" (*Walapai Papers*, U.S. Senate 1936:107).
- 1886 (May 22, Report of Captain of the Third Cavalry on the Hualapai Reservation) "Should the Hualpais be starved into war, they could eke out a living on the mescal in the Grand Canon, and obtain plenty of ammunition from the Sevinches (Utes), who live on the north side of the Canon, and who, in turn, would obtain it from the Mormons; or, from the Moquis of Oraybe" (*Walapai Papers*, U.S. Senate 1936:151).
- 1889 Cherum and Pai religious leader learned Ghost Dance from Paiutes.
- 1891 (August 1, Report of the Superintendent of the Herbert Welsh Institute of Fort Mohave, Arizona on the Hualapais) "Such is Cherum, the chief of the Hualapais...He is in constant communication with the Piutes and northern Indians" (*Walapai Papers*, U.S. Senate 1936:151).
- 1900 Destruction of Marble Canyon Trail--"The Marble Canyon Trail, not far from the Shinumo Altar. This trail was used by Navahos and Paiutis for many years. It was recently blown up with dynamite and rendered impassable by cattlemen, to

prevent cattle thieves from crossing the river with stolen stock" (James 1900:vii-viii).

- 1900 The Salt Trail--"About eight miles from the mouth of the Little Colorado is located this old and historic trail [The Old Hopi Salt Trail], long used by Hopituh, Paiutis [San Juan Paiutes], and Navahos. It leads to a salt ledge, extending from the lower end of the Little Colorado, some eight or nine miles, towards the Tanner-French Trail of the Grand Canyon. Owing to the cheapness of salt, and the superior quality of the article purchased of the Indian traders, the aborigines have ceased fetching salt from this ledge; hence the trail is rapidly becoming impassable, and unless something is speedily done to it, not even the agile Hopi and their fearless ponies will be able to use it" (James 1900:239). Further discussion tells how the Hopis would misguide explorers, including Cardenas and Ives, away from this trail and take them instead to the barren region near Lee's Ferry.

CHRONOLOGY OF EUROAMERICAN ENCROACHMENT

- 1826 (At the Virgin River) "Passing down this river some distance, I fell in with a nation of Indians who call themselves *Pa-Ulches* (those Indians as well as the last mentioned, wear rabbit skin robes) who raise some little corn and pumpkins." (Smith's Journal, Dale 1918: 188)
- 1826 (August) "Only a month later Jedediah Smith and his men explored from the Virgin River along the Colorado River through Boulder Canyon to the Black Canyon area. At that point lava cliffs and deep canyons forced them back from the river." (Smith 1987:110)
- 1826 (Jedediah Smith's journey to the Colorado) "The rest of his course is clear. Undoubtedly, he followed the river valley (or close to it) down to its junction with the Colorado, passing the salt cave on the way." (Woodbury 1931:42)
- 1830 "Wolfskill and Yount in the fall of 1830, apparently inspired by Smith's influence, attempted to follow Smith's route from the Sevier River to the Colorado." (Woodbury 1931:41)
- 1855 "When Brigham Young sent missionaries to the Indians at Las Vegas in 1855, he also instructed Rufus Allen and William Bringhamurst to determine the navigability of the Colorado River. Allen made a limited survey of the west bank of Black Canyon in June, and Bringhamurst followed the river east from the Great Bend to Boulder Canyon in December. Both reported those portions navigable." (Smith 1987:114)
- 1858 "Fifteen years before Powell's expedition, Mormon missionaries were sent to the Indians of the southern desert, and as a part of their duty, they made their way

into the territory which was to become the Arizona Strip. Of them all, perhaps none came to know the land as did Jacob Hamblin. In the fall of 1858, discouraged with his work among the Piedes and Paiutes, eager to present his gospel to the Hopi, and financed by government funds appropriated to find a child supposed to have been saved from the massacre at the Mountain Meadows, he set out to cross the Colorado River. With him were eleven other Indian missionaries and a Paiute guide. From their rock fort on the Santa Clara they took a course south and east, and after days of travel, arrived at a place where the Catholic Fathers had forded the stream almost a hundred years before" (Brooks, 1949:291-292).

- 1859 Mormon missionaries cross the Colorado River: In November 1859 Jacob Hamblin's missionary expedition crossed the Colorado River near the mouth of the Pahreah River (Corbett 1952:172-173).
- 1860 Mormon missionaries cross the Colorado River: In March, 1860, Brothers Shelton and Haskell returned from their mission to the Moquis. They had been there for about four months. They crossed the Colorado River at the "Pahreah ford." The river was low which made it easier to cross. No Indians were encountered on the return trip to Santa Clara (Corbett 1952:180-181).
- 1860 Grand Canyon Prospecting—"Prospecting began in the Grand Canyon in the late 1860s, but not many desert rats were attracted to this difficult and challenging region until the middle 1870s, when word of copper and gold along the Colorado River reached other parts of the country. The actual recording of mining claims was local and somewhat haphazard before the passage of the Federal Mining Law in 1872, which set up location and recording procedures" (Billingsley 1976:69).
- 1862 (Describing Mormon trips into Arizona) "Several other trips to the Moquis by different routes resulted in detailed knowledge of northern Arizona and southern Utah. Crossings of the Colorado were explored thoroughly and ferries were established at the south of the Virgin, at the mouth of the Grand Wash (1862) and at the foot of the Grand Wash Cliffs about five miles upstream (Pearce's Ferry, 1863). These supplemented the old Ute ford in Glen Canyon. Further exploration did not reveal a more direct route until 1869, when the crossing later known as Lee's Ferry was discovered" (Woodbury 1944:166).
- 1862 "Stockmen began to graze their herds of cattle and sheep on the plains of the Arizona strip. Some time prior to 1863, W.B. Maxwell established a ranch at Short Creek; not long after, James M. Whitmore located ranches at Pipe Springs and Moccasin, and Ezra Strong of Rockville settled on Kanab Creek. In the spring of 1864, several ranches were established in the mountains and two settlements were started, one at the present site of Kanab, where a small fort was built, and another housing eight families at Berryville (later Glendale) in the north

end of Long Valley. In the fall, Priddy Meeks located in the south end of the valley. Hew was joined the next spring (1865) by several settlers from the Virgin River, who brought livestock for the range and nursery stock for orchards. The new settlement was called Winsor (later Mt. Carmel)" (Woodbury 1944:166).

- 1863 Mormon Ranching on Colorado River: One of the Burgess family, probably Hyrum, had established a herd ground in Black Rock Canyon on the Colorado River as early as March, 1863 (James Bleak *Annals of the Southern Utah Mission, Book A*:176, cited in Larson 1961:236).
- 1864 (Call's Landing created) "Armed with tithing and private resources and several assistants, Call left for the Colorado in November of 1864. On December 17, he located a site, afterwards known as Call's Landing, about twenty miles southeast of present-day Las Vegas and about one hundred and twenty-five miles from St. George...Callville, a kind of half-way house between Salt Lake City and San Francisco, was considered the southernmost outpost of the Mormons in the 1860s" (Arrington 1966: 243).
- 1864 (December 12, Creation of Deseret Mercantile Association, a joint-stock venture) "James Duane Doty, devoted a paragraph of his annual message to the scheme, and suggested that the legislature memorialize Congress to add to Utah that portion of Arizona Territory north and west of the Colorado River which might be involved in the development." (Governor's Message reported in the *Deseret News*, December 14, 1864, cited in Arrington 1966:244)
- 1864 (June) "Apparently Ferry and Butterfield made a second trip in June 1864. From El Dorado Canyon they rowed upriver to Vegas Wash and Circle Valley (Call's Landing) and on into the Grand Canyon, where Indians supposedly reported that the junction of the Green and Grand rivers was only 140 miles away. It is probable that this second Ferry-Butterfield trip was in fact the Octavius D. Gass expedition of 1864 reported by Lt. George M. Wheeler. If so, Gass, Ferry, Butterfield, and an Indian were the first explorers by water from the mouth of the Virgin upriver into the Grand Canyon some nineteen miles. At that point they placed rock markers on each side of the stream, markers that Wheeler located on his 1871 trip" (Smith 1987:117).
- 1866 "Of all the stories of the Arizona Strip, none has as much general interest as does the story of the cattle industry, and none has as much bearing upon the future of this land. This began early, soon after the first exploring trips of Jacob Hamblin, when James M. Whitmore established a ranch at Pipe Springs. In 1866 both he and his herdsman were killed by the Indians, and soon after, Brigham Young bought up the claims as a center for the church-owned cattle herd... Soon after the temple [at St. George] was finished, the church cattle herd was sold to individuals and went under the name of the Winsor Stock Growing Company.

In 1878 it was merged with the Canaan Cattle Company, and between them it did not take long to denude the lush Canaan Valley and the whole Pipe Springs pasturage. In the meantime local cattlemen had formed co-operative herds at Mociac, Ivanpah, Nixon, Parashont, and other watering places. In each the white men had purchased the water from the Indians, giving a pony or a gun for the larger springs, and a blanket, a sheep, or some trinkets for the seeps. In almost every case they moved more cattle to the watering place than the land could support permanently" (Brooks 1949:295-296).

- 1866 "Mormon leaders envisioned making the Colorado what the Mississippi had been - a gateway into the interior of the continent, bringing the facilities of water transportation to Mormon and other villages in the West's heartland. These dreams came very near to realization. For at least two seasons, beginning n 1866, Mormon-supported enterprises shipped goods by water from San Francisco to the mouth of the Colorado, thence six hundred miles upriver to a point near the Grand Canyon" (Arrington 1966:239-240).
- 1866 "In the late summer of 1866, Captain James Andrus was ordered to investigate Indian routes crossing the Colorado River in the rough country between the Kaibab and the mouth of the Green River" (Woodbury 1944:171-172).
- 1867 (April) "In April of 1867, leading Church officials and others in southern Utah undertook an exploring trip to mark a road from St. George to the Grand Wash of the Colorado River, seventy-eight miles southwest...They hoped that it would be possible to navigate the Colorado up to that point, just as they had successfully navigated it downstream. Interest in the project, however, was not forthcoming" (Arrington 1966:249). Footnote adds, "The explorations were made by Erastus Snow, Jesse W. Crosby, Jacob Hamblin, James Andrus, Ira Hatch, David Cameron, and Henry W. Miller)
- 1867 "Callville - its warehouse and facilities - was abandoned long before the completion in May of 1869 of the long-awaited transcontinental railroad" (Arrington 1966: 250).
- 1871 Gold at Kanab Creek--The discovery of gold by George Riley at the mouth of Kanab Creek: "He washed out a few colors but the gold was extremely fine, like flour. His discovery was reported to the world and by February, 1872, hundreds of prospectors were arriving at Pipe Springs and Kanab. They plunged down Kanab Canyon, consumed by the fever, and the rush lasted four months. The men finally realized the truth: the gold was there, as it was in the river sand almost anywhere, but the work was exceedingly hard and the returns were small. Other placer claims were located in 1885, 1891, and 1893, but the result was always the same" (Billingsley 1976:73).

- 1874 First Prospectors--"The first prospectors of record were William Ridenour and S. Crozier, who claimed that they had been driven out of the canyon by Indians in 1874" (Billingsley 1976:69-70).
- 1876 Mormon Colonization in Arizona--"In 1876 there was quite a movement of Mormon colonists from Utah into northern Arizona where a number of settlements were established: For the most part, however, it seems that the newcomers devoted their attention to farming and dairying. Later on they engaged in the production of range cattle" (Haskett 1936:30).
- 1880 Cattle Crossings--"From Utah the cattle crossed the Colorado River at Lee Ferry and Pierce Ferry, the former at the head and the latter at the foot of the Grand Canyon, being ferried across the river at these places. Most of these cattle, however, were dairy stock and oxen" (Haskett 1936:22).
- 1880 Grand Canyon Mine--"Ridenour and three partners in March of 1880 located the Grand Canyon Mine, a copper-and-silver deposit possibly discovered by John D. Lee in 1873" (Billingsley 1976:70).
- 1883 John Hance arrived in the Grand Canyon, built a trail to the river and located an asbestos mine across from Red Canyon: "Hance's chief problem was getting his product across the Colorado River. He solved it by using a small boat above Hance Rapid. Then he packed his ore on burros up the Red Canyon trail. On his claim, which lay about 1,300 feet above the Colorado River, he dug a seventy-five-foot tunnel from which he ran crosscuts, following the tilted layers of rock which contained the thin veins of asbestos. Just to the north of the mouth of the tunnel he had a miners' camp near a small stream of spring water. From there he carried on further prospecting with other miners in the wild north tributary canyons, locating several claims in Clear Creek, Iron Creek and Dry Creek (Vishnu) Canyons" (Billingsley 1976:74).
- 1887 "There are many points where the tourist can comfortably reach the Grand Canyon" (Wallace 1961:269).
- 1890 "William Bass did a little better with several copper and asbestos mines near Havasupai Point, located in 1890. In 1894 he constructed a cable crossing over the river for better access to his asbestos mine and orchard. Difficulties of transportation and limited quantity kept Bass from being a big producer but he built a trail eight miles long from the River to the South Rim, took his product out on burros, and sold it to Eastern buyers. He packed out twenty-five tons of copper ore in 1908. In 1917 he shipped a quantity of asbestos which he sold for fifteen dollars a ton. Like Hance, Bass thought the Canyon was a natural wonder which should be seen by more people. He improved the trail from his home on

the South Rim, where he raised his family, and built another up Muav Canyon to the North Rim at Swamp Point" (Billingsley 1976:75).

- 1890 "In a guest book at the Hance Ranch, a tourist recorded his climb of Coronado Butte on the day in the 1890s when he wrote the inscription" (Butchart 1976:27).
- 1891 (After an attempt to sell Kanab livestock to "Buffalo Bill" Cody for his show.) "The failure of the deal left John W. Young in difficulties. To clear the situation, the Kaibab Land and Cattle Company was organized and money borrowed from New York bankers" (Woodbury 1944:191).
- 1897 "The most ambitious scheme for exploiting the placer gold deposits along the Colorado River was organized in 1897 when Julius F. Stone and Robert B. Stanton formed the Hoskaninni Company to exploit the placer gold deposits in Glen Canyon" (Billingsley 1976:73-74).
- 1900 "About 1900 Hance gave up his mining activities and took up tourism. He acquired considerable fame as a teller of Grand Canyon stories and made a business of taking visitors down his trails to the lower depths" (Billingsley 1976:74).
- 1900 "There seems to be no easily accessible record of authentic climbs in Grand Canyon in modern times, but a wave of unrecorded "first ascents" occurred around the turn of the century when miners and cowboys were penetrating the Grand Canyon. Some of the early tourists were also climbers" (Butchart 1976:26).
- 1900 (After Dan Seegmiller's death in 1899) "After his partner's death, E.D. Woolley began taking parties into the Kaibab and North Rim. He was the most prominent man of the Kanab region and logically the one to take the lead in its development from the north side of the Colorado River. Despite his zealous interest, difficulties of transportation, poor roads, distance from the railroad, slow method of travel, all conspired to prevent significant development. Woolley finally conceived the idea of making a trail from the South Rim (rail terminal) across the Grand Canyon via Bright Angel Creek. For this purpose, he organized the Grand Canyon Transportation Company. The members included himself, T.C. Hoyt, Thomas Chamberlain, Jim Emmett, E.S. Clark, and later (1906) D.D. Rust. A permit was obtained from Arizona to construct a toll trail across the canyon. Governmental regulations forbade tolls, however, and they had to limit their revenue to charges for transportation and guide services" (Woodbury 1944:191).
- 1901 (A trail from the south to the north rim of the Grand Canyon) "E.D. Woolley and Jim Emmett began the trail in 1901. It proved an expensive undertaking and in 1908 Jesse Knight invested \$5,000 to help it along. A cable car was installed for

crossing the river. The car was suspended from the cable track by pulleys and pulled back and forth by a propeller cable wound on drums. This route proved to be an important inlet to the North Rim and Kaibab. The total traffic, however, was relatively small and remained so until better transportation facilities became available" (Woodbury 1944:191-192).

- 1904 "North of the Canyon, copper showings occurred in scattered localities on the Kaibab Plateau. The best developed deposits were near Jacob's Lake and in the Warm Springs Canyon eight miles to the southwest" (E.P. Jennings, *The Copper Deposits of the Kaibab Plateau, Arizona, Transactions of the American Institute of Mining Engineers*, 24: 839-841, cited in Billingsley 1976:77).
- 1909 First Automobile Access--"It was in June, 1909, that the first automobiles were driven through the Kaibab to the North Rim" (Woodbury 1944:193).
- 1915 Tourism--"I am informed that 106,000 tourists visited the south rim of the Grand Canyon during the calendar 1915, but, due to lack of roads, trails, side-trip destinations, etc., this vast throng found little opportunity to obtain a full measure of enjoyment of the marvelous grandeur of this region" (Sen. Rpt. 1082:1-2).
- 1923 "The job was at the bottom of the Grand Canyon, and a week later I was the sole occupant of a one-room rock cabin built on the boulder delta at the confluence of Bright Angel Creek and the main river. It was to be my home for the next fourteen months. I was the first operator of the new U.S.G.S. gauging station where all fluctuations in river rise and fall were recorded and stream discharge (in cubic feet per second) was computed" (Sykes 1976:40).
- 1950 Mining of bat guano from a bat cave located on the north side about 600 feet above the Colorado River was carried on in the 1950s near Mile 265 from Lee's Ferry. Activity at the mine included the use of barges and airplanes to get the guano out, the construction of an airstrip on a large sandbar near the cave, and the installation of a cable tram from the mine to the South Rim (Billingsley 1976: 82-85).

Bishop and Bradley Diaries

- 1869 (August 30, intersection of the Virgin and Colorado Rivers) "...when we came somewhat unexpectedly to the mouth of the Virgin River, a quite large but muddy stream coming in from Utah, along which the Mormons have many settlements. We found three men and a boy (Mormons) fishing just below and immediately landed to learn where we were for we could hardly credit that all our trials were over until they assured us that we were within 20 miles of Callville and all right. They immediately took us to their cabin (they are fishermen) and cooked all they could for us of fish, squashes etc., and we ate until I am very much like the

darkey preacher, too full for utterance. As soon as we got here we sent an Indian up to St. Thomas (about 25 miles) where we are assured Col. Head has sent our mail to..." (Bradley's Journal, Darrah 1947: 72) {NOTE: This passage is of interest because of the coexistence of the Mormon camp with the Paiute camp further up river. (See Bradley's Journal, August 26, 1869.) Also, there were obviously Paiutes in the area since they were able to get one to travel to St. Thomas for the mail.}

- 1871 (October 6) "The [Powell] party reached a point immediately above the Crossing of the Fathers on October 6, and there met Captain Pardyn Dodds and two prospectors, George Riley and John Bonnemort, whom Jacob Hamblin had guided in with mail and some rations...After setting up a base camp at House Rock Springs, 'the Prof.' Thompson [in charge because Major Powell had separated from the group to get supplies], set out on November 9 for Kanab" (Bishop's Journal, Kelly 1947:204). This was an editor's note; the diary did not include these dates.
- 1871 (October 28, at the mouth of the Paria) "About 9 A.M. we heard a shout across the river and some of the boys going down they saw some white men and a number of Indians. Pulling across they found Jacob Ham[b]lin, I.C. Height [Haight], George Adair, and Joseph Mangrum [Mangum]. With them were 8 Navajos from the Agency at Fort Defiance. Ham[b]lin and his party had been over to make a treaty with the Indians, and put a stop to raiding if possible. Had succeeded to his entire satisfaction, and had opened trade with them, and his party were carrying the finest blankets I ever saw over to the settlements to trade for horses, etc. They were under the charge of Co-ne-co, a second-grade chief. Were well formed, and for the most part good looking savages. There were 8 in the party, most of them young men, several with a soft black moustache. They could speak but few English words, but by means of these and our limited knowledge of Spanish and through signs, we were able to understand each other quite well. Their things were crossed in our boats, their animals swimming. Two of the younger members of the party were going to Kanab to spend the winter among the whites" (Jones' Journal, Gregory 1948: 105-106).
- 1871 (November 19) "Killed another wolf [coyote] last night - not so large as the first one. Will not set it tonight as it is a Sabbath day, and I will keep it thus far as I may" (Bishop's Journal, Kelly 1947:204, brackets in original).
- 1871 (November 24) "This morning at 5 o'clock we are roused from our slumbers by the deep clear report of my pistol. I hastened over to the 'Dead Rock' and found Wolf No. E. It was the largest one of the three and proved to be very fat...I have three good skins now and may get another tonight" (Bishop's Journal, Kelly 1947:205-206).

- 1871 (November 28) "Set my pistol last night but no wolf. I think perhaps they will be around tonight and I will try them again and see what success" (Bishop's Journal, Kelly 1947:207). Bishop reports another wolf was shot the next night following an old Indian trail.
- 1871 (December 3) Lee got to Pariah and 6 miles past the settlements left cattle to feed above the mouth of the river (Lee's Diary, Cleland and Brooks 1955:178).
- 1871 (December 25) Road commissioner had not reached the trail with the road [from the river] (Lee's Diary, Cleland and Brooks 1955:179).
- 1871 (October 7th, 8th, and 9th, Crossing of the Fathers) "We will go on down the river to the Paria, reaching there about the first of November, where we will get a train and go to Kanab. Capt. Dodds and the miners go out with the train. Saw gold washing here for the first time. These men say that there is gold all along the river, although they have not found it in paying quantities yet." (Jones' Journal, Gregory 1948: 99) Editor's footnote adds, "This report of gold carried to the Utah settlements by Captain Dodds foreshadowed the mining boom of the eighties during which placers were worked on 21 bars in Glen Canyon, some of which were profitable. To the Indians, the miners were unwelcome. It appears that the Paiutes, also the Utes and Navajos dreaded their coming: "if they find any mines in our country it would bring great evil." Probably because they were thought to be miners who had crossed the Grand Canyon, the Howlands and Dunn, members of Powell's 1969 expedition, were killed by the Shivwits. The history of mining in Glen Canyon is recorded by Gregory in *The San Juan Country*" (Jones' Journal, Gregory 1948: 99).
- 1872 (January 1) "John Stewart came in tonight [the party is camped below the 'Gap' on Kanab wash] and said that they had gone to the Colorado River down the Kanab wash. Found about 12 inches snow on the Kaibab so did not try to get down there. Captain Dodds and Riley got in at 12:00. Found gold in sand in Colorado. (Thompson 1939: 64) The reports of this finding brought gold miners to the area in droves. See Bishop April 3 and April 7 and *Deseret News* article dated June 3, 1872 listed at the end of that journal under PAIUTES.
- 1872 (January 12) Look for stock up Paria River, horses doing well, saw but few of the cattle (Lee's Diary, Cleland and Brooks 1955:180).
- 1872 (January 15) Lee found good place for ranch 5 miles away; found stock 20 miles up the canyons (Lee's Diary, Cleland and Brooks 1955:180).
- 1872 (February 1) Started building a dam on the Paria River; labor and dam and irrigation ditch continued through Mar. 7 (Lee's Diary, Cleland and Brooks 1955:182).

- 1872 (March 11) Samuel Johnson, a Lamanite, led a company of miners (Lee's diary, Cleland and Brooks 1955:184).
- 1872 (March 21) "This evening one, Redman, came up from the Paria and came in to see me and from him I learned that he was one of a party of miners who had been down to the mouth of the Paria and that they had let the "Canon Maid" get away and then took out one of our boats and are using the same notwithstanding she was cached and protected by a shed from the storms and weather. Tried to get a horse this evening to go out to Pipe but could not get one. Will try and send some word to Prof. tomorrow and then he can do as he pleases" (Bishop's Journal, Kelly 1947:225). From this point on, unless otherwise noted, Bishop is in camp near Kanab.
- 1872 (March 31) Company of miners on their way to the Colorado River; ~40 in the group; Lee was advised to leave Paria Ranch, return to House Rock and secure ranches there (Lee's Diary, Cleland and Brooks 1955:184).
- 1872 (April 2) "When I reached home found that Jones and Fennemore had come in from Mt. Trumbull. They left the party all well but in the midst of storms. Jones reports having been down to the river at the foot of Mt. Trumbull on the east" (Bishop's Journal, Kelly 1947:227-228).
- 1872 (April 3) "Miners are swarming in nearly every day" (Bishop's Journal, Kelly 1947:228).
- 1872 (April 4) Lee and 2 men crossed mt west on Navajo Riding Trail toward House Rock (Lee's Diary, Cleland and Brooks 1955:185).
- 1872 (April 5) 2 companies of miners to House Rock - one on the return back, other on the way to the Colorado; met with 3 wagons, 11 people, from Pioche; turned them back (Lee's Diary, Cleland and Brooks 1955:185).
- 1872 (April 7) staked off the springs; another co. of miners on their return trip; miners had intended to secure the springs (Lee's Diary, Cleland and Brooks 1955:186).
- 1872 (April 8) found quite a number of miners at junction of the Paria and Colorado Rivers; had gotten picks, shovels, flour and groceries from miners; 3 miners crossed the river (Lee's Diary, Cleland and Brooks 1955:187).
- 1872 (April 7) "Miners are still pouring in and pouring out, cursing their luck and the man who started them on such a wild goose-chase" (Bishop's Journal, Kelly 1947:229). See Thompson's journal, January 1, 1872.

- 1872 (April 9) "A couple of miners on foot are with me tonight. They [have] only a scanty supply of provisions and a single pair of blankets between them, someone having stolen all their blankets and clothing at Pioch[e], excepting this one pair. I gave them supper and the blanket I got from Dunyon. One of them is a Polander, a shoemaker by trade" (Bishop's Journal, Kelly 1947:229, brackets in original).
- 1872 (April 15, Colorado River at the intersection with Kanab Wash) "The day after our arrival I visited a mining camp, of which one John Riley was chief, a mile and a half down-stream. Expecting to find them hard at work 'panning out,' we were somewhat surprised to find only one person in camp, Riley having gone up the river a week previous with a small rocker to work up a newly-discovered flat, and the others of the company being absent on a 'prospecting trip.' Near the place was a water-fall of three hundred feet into the river from a lateral gulch called Marble Canon" (Beaman 1874:591).
- 1872 (April 18) "Four prospectors camped near us. One man claims to have picked White up at Callville after his voyage through the Canon. Says White was poor, legs a scab-starved, was on San Juan river with Captain Baker and Mr. ... prospecting. The Indians fired on them, killed Baker" (Thompson 1939:75). Footnote adds that this is the story that James White descended the Colorado from Gunnison Crossing to Callville on a raft tied together with buckskin straps and pack ropes, so far without corroboration. Thompson tells more of the tale in his diary on this date.

Lee's Diary

- 1872 (April 22) mining co. from Mowencroppa returned and had found no gold; 3 more miners in from another co.; another co. of 12 arrived to go to the Colorado (Lee's Diary, Cleland and Brooks 1955:189).
- 1872 (April 27) a mining co. left; going to Pipe Springs to wait for supplies (Lee's Diary, Cleland and Brooks 1955:192).
- 1872 (May 5) Lee met Dodd and another of Powell's men on the way to the junction at Lonely Dell (Lee's Diary, Cleland and Brooks 1955:192).
- 1872 (May 8) building cow corral at Jacob's Springs (Lee's Diary, Cleland and Brooks 1955:195).
- 1872 (May 9) Dodds and co. looking for a place where the River runs through the Kaibab Mountains (Lee's Diary, Cleland and Brooks 1955:196).

- 1872 (May 24) Bros. Winsors called on way back to Pipe Springs (Lee's Diary, Cleland and Brooks 1955:198).
- 1872 (May 26) "There are ten or twelve families here all engaged in farming" (Bishop's Journal, Kelly 1947:237). Bishop is at Navajo Wells. A footnote by the editor reads, "Since 1872, nearly all farm land at Paria settlement has been washed out by floods, and the place abandoned."
- 1872 (June 1) 3 miners had been at the Dell and returning to Kanab (Lee's Diary, Cleland and Brooks 1955:199).
- 1872 (June 2) Professors from Powell's corps of typographical engineers were up from Lonely Dell (to Jacob's Pools); were going to cross Colorado River but couldn't because it was so high (Lee's Diary, Cleland and Brooks 1955:200).
- 1872 (July 9) Lee took his horses to the Colorado to water (Lee's Diary, Cleland and Brooks 1955:204).
- 1872 (July 14) Lee and wagons moved along the banks of the Colorado at the foot of the bluffs to the road (Lee's Diary, Cleland and Brooks 1955:205).
- 1872 (July 24) Lee had dinner with Powell's expedition (Lee's Diary, Cleland and Brooks 1955:206).
- 1872 (August 14) some of the Powell expedition took a ride on the Colorado in the boats of the expedition (Lee's Diary, Cleland and Brooks 1955:208).
- 1872 (August 15) Profs Bement and Caralton passed on the way to the Moquis Village; crossed the Colorado River in the Nelly Powell (Lee's Diary, Cleland and Brooks 1955:208).
- 1872 (August 16) Powell started down the river (Lee's Diary, Cleland and Brooks 1955:208).
- 1872 (October 5) 3 miners passed by at Jacob's Pools (Lee's Diary, Cleland and Brooks 1955:215).
- 1872 (October 13) Hamblin, Hill and 2 others through the Dell en route to the Moquis nation (Lee's Diary, Cleland and Brooks 1955:215).

- 1872 (December 26) drove 60 head of young stock to 15 mile creek, a midway ranch between Dell and the Ranch; "inspected winter range' (Lee's Diary, Cleland and Brooks 1955:218).
- 1873 (January 11) First launch of Colorado River ferry boat; two good boats now (Lee's Diary, Cleland and Brooks 1955:219).
- 1873 (January 12) Lee and uncle crossed the Colorado River and explored the country for a road (Lee's Diary, Cleland and Brooks 1955:219).
- 1873 (January 25) Jacob Hamblin and Lee's son returned from Moqui and Navajo country - reported a company of explorers were on their way to Ranch, final destination in the San Francisco Mountains (Lee's Diary, Cleland and Brooks 1955:222).
- 1873 (January 30) Lee working on route to and from the river (Lee's Diary, Cleland and Brooks 1955:223).
- 1873 (February 1) Lee traveled from Dell to Ranch; 4 mile from Dell met Arizona Exploring Co. of 12 men led by Bishop L.W. Roundy; took them to Dell, crossed 9 men, 15 horses and their packs, 3 wagons (Lee's Diary, Cleland and Brooks 1955:224).
- 1873 (February 21) Express left company of Arizona Explorers at the Little Colorado River (Lee's Diary, Cleland and Brooks 1955:226).
- 1873 (February 25) Explorers recrossed the Colorado River; Young decided to send a colony to settle the Little Co. this season [expected to settle in 1 month] (Lee's Diary, Cleland and Brooks 1955:227).
- 1873 (April 3) men to work the wagon road to the ferry in preparation for settlement in Little Colorado in spring; company encamped at the canyon 1/2 mile below the Dell (Lee's Diary, Cleland and Brooks 1955:231).
- 1873 (April 20) Lee received a report that "Jacob Hamblin with a company of 9 waggons En rout for the San francisco Mountains or in the Region Round about. They were expected at the Ferry about 12 noon" (Lee's Diary, Cleland and Brooks 1955:236).
- 1873 (April 28) A man named James Jones reported a company of Mormon emigrants in 40 wagons en route to the San Francisco Mountains (Lee's Diary, Cleland and Brooks 1955:237).

- 1873 (May 7) Four of the company back to the Dell to get more supplies (Lee's Diary, Cleland and Brooks 1955:237).
- 1873 (May 9) 9 wagons crossed; 12 more came and crossed; 15 or 20 people took a boat ride on the Colorado River (Lee's Diary, Cleland and Brooks 1955:238).
- 1873 (May 11) last co. passed - 8 wagons (Lee's Diary, Cleland and Brooks 1955:238).
- 1873 (May 12) took ferry boat and about 12 persons up the river (Lee's Diary, Cleland and Brooks 1955:238).
- 1873 (June 5) 2 emigrants (miners) en route for San Juan River reported 18 wagons at Lee's ranch en route for Little Colorado (Lee's Diary, Cleland and Brooks 1955:243).
- 1873 (June 7) "7 men from the co. of A.Z. Mishenaries came in to See the River and bathe in the Colerad[o]" (Lee's Diary, Cleland and Brooks 1955:243).
- 1873 (June 8) 2 wagons crossed the river (Lee's Diary, Cleland and Brooks 1955:243).
- 1873 (June 17) 2 miners en route to San Juan River (Lee's Diary, Cleland and Brooks 1955:244).
- 1873 (June 25) messengers reported 600 soldiers and 40 baggage wagons en route for the ferry; at Lonely Dell to erect a military post at that point; Lee left on horse over Colorado to take up abode with Mokies, orabias, Piutes, and Navajoes (Lee's Diary, Cleland and Brooks 1955:263).
- 1873 (July 17) Lee went to farm of the natives including oraves, Navajoes, and Paiutes (Lee's Diary, Cleland and Brooks 1955:270).
- 1873 (July 26) soldiers went to upper Pariah settlement instead of the Dell; Wheeler's Division with Powell gone in the direction of the San Juan (Lee's Diary, Cleland and Brooks 1955:277).

Other Accounts

- 1874 Mormon's Road and Mills at Mt. Trumbull: The lumber needed for the Temple in St. George, Utah was obtained by constructing eighty miles of road from St. George to Mount Trumbull. The road was built by 45 men in April of 1874 and two saw mills were established to cut 20,000 feet of lumber daily or about one million feet within three or four months. (James Bleak *Annals of the Southern Utah Mission, Book B 287, 302*, cited in Larson 1961:586).

- 1875 "The leaders of the Order early recognized the opportunities the country afforded for stock and sheep raising, and lost no time in controlling the range by acquiring possession of the watering places in southern Utah and northern Arizona. These ranches include House Rock, Jacobs Pools, Cane Springs, Castle, Elk, and a hundred and fifty acres on the Pahreah River. Many watering places were also controlled on the Kaibab Mountain. In 1875, the Order owned a small band of sheep and fifty cows. By 'taking sheep on shares,' agreeing to give the owners yearly a pound and a half of wool, and further agreeing to double the herds in four years, we find the Order in 1881, paying taxes on 5,000 head of sheep. the cattle had increased ten-fold" (Pendleton 1939:149).

CHRONOLOGY OF NATIVE AMERICAN ENCROACHMENT

- 1776 "The Yutas, enemies of the last two pueblos [Muqui concabe and Oraybe], live on the one and the other side of the Rio Colorado in the very confluences (*juntas*) of the two rivers that compose it. I learned the error of the road, and that the one which I took went to the Yutas, from two Moquis whom I met, who very affably showed me the way to that which I ought to take" (Garces 1776:392-397, in Alter 1928:55).
- 1869 (August 10, intersection of the Little Colorado and Colorado Rivers) "There are signs of Indians here but quite old. Cannot tell whether they are Moquis or Apaches. I think more likely the latter for the Moquis keep close to their villages. We now conclude that we passed the Ute trail Aug. 3 where we saw the pony tracks, and that the loathesome little stream that came in where we found the strata so broken Aug. 4 is not other than the Pah Rhear River." (Bradley's Journal, Darrah 1947: 61)
- 1869 (August 16, intersection of Bright Angel Creek and the Colorado River) "There is another old Moqui ruin where we are camped tonight. Have found the same little fragments of broken crockery as we did before. Have saved a few little specimens." (Bradley's Journal, Darrah 1947: 65)
- 1869 (August 3, just below Monument Canyon on the Colorado River) "Stopped at night just above a small clear creek where had been an Indian camp." (Major Powell's Journal, Darrah 1947: 128) {NOTE: No indication what kind of Indians.}
- 1869 (August 20, near Silver Creek on the Colorado River) "Found remains of old Moquis village on bank, stone houses and pottery. (Found some remains at Silver Creek) (and Mill)." (Major Powell's Journal, Darrah 1947: 130)
- 1871 (October 14) "Camp No. 80. [Beyond Crossing of the Fathers, on the Colorado River] Bishop and myself went on the trail toward Kanab some five miles, but

found no place to climb out. Got back to camp at 2:00 P. M. Found two Navajos in camp. A chief "Aña Grande" and his son. In about an hour seven more came in. They were very lavish in expressions of kindness, hugged us and made long speeches. One had a fine black mustache. They seem a smaller race than the Uintah Utes, but active and intelligent. Seemed to be going to Mormon settlements to trade" (Thompson 1939:57).

- 1871 (November 3) Kanab full of Navajos in to trade (Lee's diary, Cleland and Brooks 1955:173).
- 1871 (November 4) Navajos started to visit the settlements north as far as Beaver (Lee's diary, Cleland and Brooks 1955:173).
- 1871 (November 18) 4 Navajos arrived and camped at Hogon Well (Lee's diary, Cleland and Brooks 1955:176).
- 1872 Navajo crossing--Dellenbaugh reported from Kanab that "A Pai Ute later came in with a report that a fresh party of Navajos on a trading trip had recently come across the Colorado..." (Dellenbaugh 1908:249).
- 1872 (January 19) 15 Navajos appeared at the Dell pleading to be taken across the river toward Lee. Exchanged gifts of blankets, cloth, etc. (Lee's diary, Cleland and Brooks 1955:181).
- 1872 (January 21) Natives helped Lee build a temporary corral (Lee's diary, Cleland and Brooks 1955:181).
- 1872 (January 23) "About sunset 13 Navajo Indians rode into camp. their chief was 'Ah lish kill,' an Indian whom we had seen at 'El Vado de las Padres'. They had some good horses and two jacks, packed with blankets. Gave them flour and peaches" (Thompson 1939:66). Party is now camped on Red Cliff (Paria Plateau) above House Rock Spring.
- 1872 (January 24) "We moved our camp to Mount's Spring [?]. The Navajos left about 8:00 A.M. for Kanab. They had a curious ceremony about sunrise" (Thompson 1939:66).
- 1872 (January 27) Bishop describes a band of Navajos who had come in from Fort Defiance and camped with some of the party at House Rock Spring on January 26. The chief was one of 9 Navajos who had visited the group at the camp at the Crossing of the Fathers October 14. On Jan. 27, the chief and five or six of his band came to the main camp from Kanab to return four horses that had been carried off by some of his band in October and November. The party joined the Navajos in their camp across the creek and ate danced and sang. "After the

dance Chief Antelope took off the various characters and peculiarities of the different Indian tribes in a most ludicrous and laughable [way]. His personification of the way the Pai Utes sat around the fire and smoked and begged was irresistible [pencil sketch in original notes] giving peculiar appearance and style of the old wrinkled Utes as they squat nearly naked around the fire." (Bishop's Journal, Kelly 1947: 218) brackets in original

- 1872 (January 28) "The Navajos pulled out this morning for Kanab and Fort Defiance and home. These Indians are so entirely different from the poor miserable Pai Utes, so dirty, poor and degraded -always begging and always hungry. These are fine and manly looking fellow - too proud to beg- choosing rather to suffer, rather to be pinched and ground by hunger than to ask anything from a white man." (Bishop's Journal, Kelly 1947: 219)
- 1872 (February 16) "There are some 20 Navajos here [in Kanab] now and blankets are for trade" (Bishop's Journal, Kelly 1947: 221).
- 1872 (February 22) Lee continued exchange with Navajos (Lee's diary, Cleland and Brooks 1955:183).
- 1872 (April 29) "Heard from my mare this A.M. [Bishop's horse had been stolen.] A party of miners, among whom were Mr. Rusk and Mr. Warlenweiler, were coming up from a trip over the river into the Navajo's country, and John Mangum happening to be along knew the horse and took her away from the Navajos. I only wish he had taken the rascal or put a bullet through his head. The scoundrel" (Bishop's Journal, Kelly 1947:232).
- 1872 (May 16) report that around mid April 7 Navajos came on their return trip to cross the river again (Lee's diary, Cleland and Brooks 1955:196-197).
- 1872 (June 29) 6 Navajos and a white man appeared on the bluff across Colorado River waiting to cross (Lee's diary, Cleland and Brooks 1955:202).
- 1872 (August 20) 2 Moquis and 2 Jacks packed with blankets to trade with Hamblin (Lee's diary, Cleland and Brooks 1955:209).
- 1872 (October 10) "Last night word came at about 8:00 P.M. that the Navajo's had stolen 70 head of horses and mules from Parowan...The people have seemed to act the fool...Jacob and Charley went to the crossing of the Fathers to try an cut them off if the stock came that way. I don't think the Navajos have had a hand in it at all. It may be the Utes, but more likely is a scare" (Thompson 1939:101).
- 1872 (October 11) "Left Kanab at 4:00 P.M. Camped at Navajo Well at 9:00. [Hired Ang-E-quet ad To-qui-tow for Indians. [Assistants.] An Indian came in before

we started and told us that ten Navajos and four Utes had crossed at the 'Ford' and gone up the old trail on the Paria with blankets to trade. This confirms the idea that the Parowan raiders are not Navajos" (Thompson 1939:101, brackets in original).

1873 (March 7) A mule and horse were returned that some Navajos had stolen (Lee's Diary, Cleland and Brooks 1955:228).

(July 2) at Moencropa, AZ had a visit from Tooby, a "Walipie" [Walpi village, Hopi] chief (Lee's diary, Cleland and Brooks 1955:266).

1873 Beadle describes in detail his time spent with the Navajo Indians in several sections of his book. His Navajo guides led him to cross the Colorado River during his journey (Beadle 1873: 632-633).

1875 "For years women washed, carded, and spun the wool into yarn and wove it into cloth on the hand loom. Some trading with the Navajo Indians proved helpful" (Seegmiller 1939:175).

1875 "Our shoes and boots had excellent wearing qualities, coarse leather, unlined shoes, shoe strings made of leather or buckskin cut fine. After much greasing and stretching they did very well. Buckskin could be purchased from the Indians" (Seegmiller 1939:181).

1900 "The Marble Canyon Trail, not far from the Shinumo Altar. This trail was used by Navahos and Paiutis for many years. It was recently blown up with dynamite and rendered impassable by cattlemen, to prevent cattle thieves from crossing the river with stolen stock" (James 1900:vii-viii).

1900 "About eight miles from the mouth of the Little Colorado is located this old and historic trail [The Old Hopi Salt Trail], long used by Hopituh, Paiutis, and Navahos. It leads to a salt ledge, extending from the lower end of the Little Colorado, some eight or nine miles, towards the Tanner-French Trail of the Grand Canyon. Owing to the cheapness of salt, and the superior quality of the article purchased of the Indian traders, the aborigines have ceased fetching salt from this ledge; hence the trail is rapidly becoming impassable, and unless something is speedily done to it, not even the agile Hopi and their fearless ponies will be able to use it" (James 1900:239). Further discussion tells how the Hopis would misguide explorers, including Cardenas and Ives, away from this trail and take them instead to the barren region near Lee's Ferry.

CHAPTER SIX

ETHNOARCHAEOLOGY

Southern Paiute people expressed concerns for specific locations potentially impacted by Glen Canyon water releases. This chapter presents an analysis of what tribal representatives said about places they visited during the three raft trips through the study area. This type of study is termed ethnoarchaeology because it combines known archaeology site locations with American Indian interpretations. This analysis is presented as a beginning of the ethnoarchaeology study inasmuch as Indian people have visited a small fraction of the known archaeology sites in the study area and less than one third of the sites previously identified by archaeologists as containing Southern Paiute artifacts. Much is yet to be known through visits to these locations.

Ethnoarchaeology is based on what living Indian people perceive as their ancestral places and artifacts. They attribute function and assign meaning to these sites based on the culture of living Indian people. The Indian people may know through oral history the function and meaning that a particular site or artifact had to their ancestors at the time it was occupied. The Ochre Cave site is such a place. It has been used continuously since the beginning of time to provide a religious mineral. Its function has not changed. On the other hand, Indian people do not claim to know the function and meaning of all sites and artifacts when they were first occupied or used. Instead, Indian people place sites and artifacts into generally known and unknown categories, and assign meanings based on how such sites are used or would be used by living Indian people. For example, a place that a hundred years ago Southern Paiute people used to prepare *yaant* (*Agave*) for food is more valuable today as a place to learn about the activities of one's grandmothers than it is a place to process food. Despite the change in function, the place continues to have meaning and function in Southern Paiute culture. Therefore, ethnoarchaeology is about the role that archaeology sites and places play in the culture of living peoples.

METHODS

During the raft trips Southern Paiute tribal representatives were taken to known archaeology sites that contain typical Paiute artifacts, especially a type of brown-ware pottery. Most sites were within the *affected zone* which is defined as all riverain environments, especially those that contain river derived sediments. This zone includes the present beach up to and including the farthest extent of the old high water zone marked by high dunes and mesquite. The

initial raft trip studied archaeology sites along 225 miles, however the study area is 255 miles, so tribal representatives were not able to visit the last 30 miles of the study area. The second raft trip studied archaeology sites along the 15 mile reach upriver from Lee's Ferry to Glen Canyon Dam. The third raft trip, conducted in May of 1993, covered a distance of 296 miles through the *Colorado River Corridor*.

Some of the tribal representatives had been to various locations along the Colorado River before, but no one had visited the entire study area. For this reason, the Grand Canyon and Glen Canyon archaeologists were especially important, for they selected places to visit from among the many known archaeology sites having Southern Paiute artifacts. The archaeologists' knowledge of the Colorado River permitted them to guide the raft boatmen to where the sites were located. This is especially important, because were a raft to pass a site it would be impossible to go back up stream. Because of the archaeologists' guidance, no planned site visits were missed. Once the raft landed, the evaluation of the place was begun by the Indian people. This evaluation had four steps:

- * The first step was for the archaeologists to use previous site survey records to lead the Indian people directly to the archaeology site.
- * The second step was for the archaeologists to read directly from the archaeology site record about how the site looked at the time it was recorded between 1990 and 1991 by archaeologists for the Glen Canyon Environmental Studies. (Many of the sites were first recorded by Euler in the 1960s, and were re-recorded during the recent survey.)
- * The third step was for the Indian people to take time to look at the site and its surroundings. Tribal representatives were provided with a River Guide, note pads, and writing tools. Some representatives also brought their own camera and tape recorder. The Colorado River Indian Tribes video team was at each site during the first raft trip to record the site on video and to record any comments that the Indian people wished to express.
- * The fourth step began once an Indian person had evaluated the site. An ethnographer recorded the person's observations on an Ethnoarchaeology Information form. Forms were used to assure that the same comments were recorded from all Indian representatives at all archaeology sites. A tape recorder was available at all times in case Indian people wished to further comment on an archaeology site.

Formal interviews conducted at specific sites are the core of the Southern Paiute portion of the Glen Canyon EIS. Other types of information, however, will help explain and place into a broader context these site-specific comments. For example, while traveling on the raft Indian people expressed overall impressions of the *Colorado River Corridor* and what it means to Southern Paiute people. One Indian person received three Indian songs from the Canyon.

OVERVIEW OF FINDINGS

The first Southern Paiute raft trip down the Colorado River Corridor began about mid-day on July 16, 1992 and continued without break until mid-morning of July 25, 1992. Tribal representatives traveled on the Colorado River and visited places along its banks for ten days. During this period Indian people stopped and evaluated 22 places where Southern Paiute archaeology materials had been identified by archaeologists. The second raft trip occurred on October 12, 1992. Paiute tribal representatives from Kaibab and the Shivwits band of the Paiute Indian Tribe of Utah visited two stops consisting of eight archaeological sites upriver from Lee's Ferry. The third raft trip began on May 1, 1993 and continued without break until May 16, 1993. Tribal representatives and elders from the Kaibab, Shivwits, and San Juan Paiute tribes traveled a total of 296 miles through the *Colorado River Corridor*. While the focus of the May trip was on ethnobotanical resources (see Chapter Seven), tribal representatives who did not participate in the two previous raft trips were interviewed on five sites during the 1993 raft trip.

Indian people tend to view archaeology sites broadly, consequently Indian people generally decided to talk about spatially large places. For this reason, one Native American place of identification usually includes more than one recorded archaeology site. So there are at least 36 archaeology sites evaluated as part of the 24 American Indian place evaluations.

A total of 124 formal ethnoarchaeology interviews were conducted during the three raft trips. The number of interviews conducted during the first 15-day raft trip totaled 92. Nine additional interviews were conducted during the second one-day upriver raft trip. Twenty-three interviews on five sites were conducted during the May 1993 raft trip. Table 6.1 presents the day when the Indian people visited the site, the name of the place where the interview occurred, the mile where the visit occurred, archaeology site numbers at the site, and the number of interviews conducted at the location.

Many kinds of places were visited during the first raft trip. Stop #1 at Fence Fault was a camping and perhaps a farming area located where a good trail crossed the canyon from one side to the other. Today there are only a few scattering of stone chips and pottery at this location. This site is very different than Stop #19 at Spring Canyon which could have been where Powell observed Indian people farming along a permanent creek. Today at Spring Canyon, Indian artifacts still lay in the rockshelters and paintings cover the rocks. Some places like Nankoweap Canyon (Stop #4) were easy to visit, only requiring Indian people to walk through sand and some mesquite trees. Contrast this with a 500 foot sheer cliff face that must be climbed in order to gain access to the secluded irrigated Indian farms along Deer Creek Canyon (Stop #10). Some places, like the world-famous Salt Cave (Stop #5) and the little known Hematite Cave (Stop #19), inspired so much religious awe that they were only visited by the Indian people. The historic importance of some sites were emphasized by the Indian people. Lava Canyon, Chuar Creek, Chuar Valley, and Chuar Butte (Stop #6) were especially important to some Paiute people because their great grandparents lived there. The area was named after Chuarumpeak, who was Powell's major teacher about Paiute culture and guide along the north rim of the Grand Canyon region. Other sites were of historic and cultural importance because

Table 6.1: Ethnoarchaeology Interviews By Where And When Occurred

Dates And Location	Mile	Number of Interviews
November 12, 1992 Stop A at Ferry Swale (C:2:71, C:2:73, C:2:75, C:2:77, C:2:79)	(near mile -10)	4
November 12, 1992 and May 1, 1993 Stop B at Ninemile Draw (C:2:38, C:2:81, C:2:103)	(near mile -9)	10
July 16, 1992 Stop #1 at Fence Fault (C:5:37)	(near mile 30)	4
Stop #2 at South Canyon (C:5:01)	(near mile 31)	6
July 17, 1992 Stop #3 at Little Nankoweap Creek (C:9:50) buried vessels (C:9:69)	(near mile 52)	6
Stop #4 at Nankoweap Canyon (C:9:1)	(near mile 52)	5
July 18, 1992 and May 5, 1993 Stop #5 at Salt Cave (C:13:3)	(near mile 63)	8
July 18, 1992 Stop #6 at Lava Canyon - Chuar Creek (C:13:7) (not) (C:9:7)	(near mile 65)	5
Stop #7 across from Lava Canyon at Palisades Creek (C:13:272b) stab-lined firepits (C:13:355)	(near mile 65)	6
Stop #8 at Unkar Delta (C:13:1)	(near mile 72)	6
July 20, 1992 Stop #9 at Bedrock Canyon (B:11:282)	(near mile 130)	6
Stop #10 at Deer Creek Valley and Falls	(near mile 136)	5
July 21, 1992 Stop #11 at Kanab Creek Canyon (B:10:251) (B:10:264)	(near mile 143)	4
Stop #12 at Ledges (spring site) (B:10:223)	(near mile 151)	3
Stop #13 at Ledges (rockshelter) (B:10:230)	(near mile 152)	4
July 22, 1992 Stop #14 at Cove Canyon (A:16:160) upstream (roaster, grinding) (A:16:168) downstream (fire-drill)	(near mile 174)	4
Stop #15 below Toroweap Overlook (A:16:154) rockshelter	(near mile 176)	3
July 23, 1992 and May 12, 1993 Stop #16 at Whitmore Wash (A:16:01)	(near mile 187)	7
July 23, 1992 Stop #17 above Parashant Wash (A:15:18)	(near mile 197)	3
Stop #18 at Parashant Wash (A:15:03)	(near mile 198)	3

Table 6.1 (continued)

Dates And Location	Mile	Number of Interviews
Stop #19 at Hematite Cave (A:15:25)	(near mile 200)	10
July 24, 1992		
Stop #20 at Spring Canyon (A:15:42)	(near mile 204)	2
Stop #21 at Indian Canyon (G:03:04)	(near mile 206)	3
July 24, 1992 and May 14, 1993		
Stop #22 at Granite Park (G:03:26), (G:03:27), (G:03:28), (G:03:03) Rockshelter	(near mile 209)	7
	Total	124

they were jointly used by different Indian ethnic groups. For example, Granite Park (Stop #22) is located on the south side of the Colorado River in Walapai traditional territory, but both the Walapai and the Paiute people recognize it may be where the Walapai provided refuge to Shivwits Paiutes in the late 1800s.

SITE-BY-SITE INTERPRETATIONS

This portion of the chapter contains a site-by-site discussion of places visited during the raft trips conducted in July and October of 1992 and May of 1993. These comments were made by the Indian people representing the San Juan Paiute Tribe, the Kaibab Paiute Tribe, and the Shivwits band of the Paiute Indian Tribe of Utah (PITU) during on-site interviews. The interview form that was used to record these thoughts by the tribal representatives is contained in Appendix A.

The site descriptions are drawn from a draft archaeological survey report entitled *The Grand Canyon River Corridor Survey Project: Archaeological Survey along the Colorado River between Glen Canyon Dam and Separation Canyon*, produced by archaeologists at Northern Arizona University and Grand Canyon National Park in cooperation with the Glen Canyon Environmental Studies (Fairley et al. 1991). The site descriptions also provide archaeological interpretations of the cultural remains based on previous surface surveys, partial excavations, and artifactual and feature analysis. The descriptions have been slightly edited to clarify abbreviations and specific sites for stops consisting of multiple sites.

The site-by-site analysis is presented in the order that the sites were visited by the research team. For each site, a name is provided followed by the official site number and a description of the cultural materials present at that location.

For this section, the places and sites visited are termed here *stops*. All stops are named and sequentially numbered. The total of 24 stops visited during the three raft trips consisted of 36 archaeological sites and one place that does not have a site number (Deer Creek). Most stops consisted of a single site, while others consisted of multiple sites in an area. In this section, stops that included multiple sites are given one stop name, followed by the appropriate site numbers.

Stop A: Ferry Swale Sites (AZ:C:2:71, AZ:C:2:73, AZ:C:2:75, AZ:C:2:77, AZ:C:2:79)

This stop is located near mile -10. Grand Canyon archaeologists described the sites as follows:

[AZ:C:2:71] contains two loci (A and B) and includes an artifact scatter and a petroglyph panel. Locus A surrounds a Navajo sandstone boulder and consists of an artifact scatter, with many sherds and lithics placed in a collector's pile. Locus B is situated on a Navajo sandstone cliff face and consists of a petroglyph panel; there is a 1959 brass cap benchmark nearby. In addition to the 32 sherds and circa 60 flakes in the collector's pile, Locus A has a light lithic scatter, a Navajo sandstone mano fragment, and one rim sherd. There is also a pothole in the vicinity. The sherds indicate a mid-to-late Pueblo II Kayenta Anasazi affiliation. The Locus B glyph may be a Style 5 element. It is very faded and on a lightly patinated Navajo sandstone surface; it may not be related to the artifact scatter (Fairley et al. 1991:336).

[AZ:C:2:73] consists of one Late Archaic sheep petroglyph (Style 5) and the historic inscription "Cope 55". The historic inscription is the most obvious and can be seen from 40+ meters away. It is circa 1.2 meters above the top of the alluvial terrace on a well-patinated surface on a slightly overhanging cliff face. The sheep glyph is circa 2.5 meters upstream (east) of the inscription. The bottom of the sheep's belly is 38 centimeters above the present ground surface. There may have been additional petroglyphs on this cliff face at one time but the only indication of their former presence are amorphous pecked blobs and blotches on the sandstone surface near the sheep (Fairley et al. 1991:336).

[AZ:C:2:75] consists of a lithic scatter eroding out of an alluvial terrace cutbank, which is divided into two loci (A and B). Locus A consists of circa 30 flakes in an area measuring 20 by 12 meters. Locus B consists of a small concentration of fire-cracked rock, an associated ash stain, and a scatter of about 25-30 flakes eroding down the cutbank. A 12-foot deep, 24-foot wide arroyo has cut through the site. The lithics are more concentrated and diverse at Locus B. The lithic assemblage reflects early stage reduction and comprises a variety of material types. No ceramics or diagnostic tools were seen; cultural affiliation is unknown (Fairley et al. 1991:337).

[AZ:C:2:77] consists of a large, dispersed lithic scatter measuring 25 by 40 meters. The site contains 60-70 visible flaked lithics, which are concentrated on the first alluvial terrace above the river, and are eroding along a 40 meter cutbank section of the second terrace. A few fire cracked rock fragments were observed at the south end of the first terrace with a some heat-treated flakes. A quartzite river cobble hammerstone was also seen eroding from the second terrace cutbank.

No diagnostic artifacts were seen; cultural affiliation is unknown (Fairley et al. 1991:337).

[AZ:C:2:79] is an Early-mid Pueblo II Anasazi rockshelter with sparse sherds and lithics and a slab wall. The 1.8-meter long wall is of dry-laid Navajo sandstone slabs, and is partially collapsed (it may have been 2-3 courses high). Two sherds and 24 flakes of various raw material types were observed; no tools or groundstone were noted. The flakes are mostly scattered downslope of the shelter and are predominately secondary items (Fairley et al. 1991:337).

Four interviews were conducted at the site. Two Kaibab Paiute representatives commented on the site. One of the representatives interpreted the site as being used for part-time farming, hunting, fishing, gathering foods, camping, and ceremonies prior to hunting. His grandparents traveled to this area in a wagon and stayed for a week before returning home. Grinding stones, flakes, and plants were observed at the site. The other representative interpreted the site as a camping and social gathering place. A few families would meet and interact at the site. The representative observed flakes at the site and believes subsurface cultural materials such as pottery and firepits are present at the site. The site was used in spring, summer, and fall.

Two Shivwits Paiute representatives commented on the stop. One representative interpreted the site as a farming, hunting, fishing, camping, and gathering location. Because the land is flat, he believes that farming could have been done at the site. The mano, flakes, and edible plants present at the site indicate hunting and gathering. The site is connected to other hunting and camping sites up and down the river. He commented that abundant subsurface cultural materials are covered at this site, and that subsurface roasting pits, lithics, and rock walled structures may be present. The other representative interpreted the site as being used for hunting and fishing. Shivwits people continue to use similar sites in other areas for social gatherings. According to the representatives, fishing would have occurred in the spring, and Paiute people would have used the site in winter because winters would be spent in the canyon.

Stop B: Ninemile Draw (AZ:C:2:38, AZ:C:2:81, AZ:C:2:103)

This stop is located near mile -9. The archaeologists described the sites as follows:

[AZ:C:2:38] consists of a petroglyph panel situated at the base of a vertical Navajo sandstone cliff face. The panel is circa 11 meters long (horizontally) and 1.75 meters in height. It has 35+ elements, including "smiley" and rectangular sheep, abstract geometrics, and anthropomorphic figures. Also present are several historic/modern inscriptions (names and letters). The prehistoric figures are all pecked; some stippled and some solid. There is evidence of superimposition of figures and repatination. Additional sheep figures had recently been uncovered at the bottom of the panel, having been buried by terrace sediment; consequently, it is suspected that more elements may remain buried under existing fluvial deposits. Previous site reports mentioned the presence of nondiagnostic white

wares and a mano; lithics were observed during the GCRCS survey in the vicinity (but recorded as AZ:C:2:81). There are two possible prehistoric components at this site: Late Archaic and Pueblo I-III Anasazi (Fairley et al. 1991:333).

[AZ:C:2:81] consists of a lithic scatter with one observed sherd eroding out of a trail cut. There are 50+ secondary and tertiary thinning flakes exposed along the trail leading from the beach to the rock art panel at AZ:C:2:38 in a 10 by 5 meter area. The sherd suggested a Pueblo II Anasazi affiliation (Fairley et al. 1991:338).

[AZ:C:2:103] consists of two historic inscriptions probably related in some way--perhaps inscribed by the same individual or party. They have been solid and stipple-pecked into the Navajo sandstone cliff face. One reads: "S.V.J. 2-22-25" (the middle initial is either a "U" or "V"). The other looks like an S within a circle with the date 1925 (Fairley et al. 1991:342).

A total of ten interviews were conducted at the stop. Five Kaibab Paiute representatives commented on the stop. All agreed that the stop was a camping place used for hunting, gathering, and fishing. One representative stated that the site would have been good for hunting and camping. The high cliffs would have served as a barrier to animals, and it would have been easier to trap them in the corridor. In addition, the site provided plant foods and water. The site may also have been used for agriculture in that the site is a flat landscape. Ceremonies and trade also were mentioned as activities that occurred at the stop. According to one representative, ceremonies to teach young boys to hunt and marriage ceremonies were held at the site. Plants such as cactus, Indian ricegrass (*wa'iv*), Indian spinach (*tumar*, *Stanleya pinnata*), and yucca fruits (*uus*) were gathered at the site. The petroglyphs showing rams, sheep and deer indicate that hunting parties came through the area. Rams were especially hunted in order to balance the herds as a means of animal management. The site is connected to other camping sites or locations where dryland farming was conducted. Another representative mentioned that the site was also connected to sacred places and villages by trails along the river. Some of these trails were secret. The site was used at various times throughout the year. All representatives believe that subsurface cultural materials are present at the site.

Two Shivwits Paiute representatives commented on the stop. Both agreed that it was a camping location. Hunting, gathering plant foods, and meetings would have taken place at the site. Paiute people would harvest the foods and then carry it to the place that they were going to stay for the winter. The father of one of the Shivwits Paiute representatives lived below the Shivwits Plateau. She remembers him telling her that Navajos and Walapais would cross the river and raid them. She also knew of an old Paiute man who lived and farmed in Grand Canyon. This site is connected to other Paiute occupation sites. Subsurface cultural materials are believed to be present at the site. The site was occupied and used as needed throughout the year.

Three San Juan Paiute representatives commented on the stop. The three representatives agreed that the site was probably a camping place that Paiute people would use when traveling.

The site would also have been used to hunt wild goats. The site would have been connected to rockshelters or small caves along the river. Paiute people would have moved back and forth between the sites. Subsurface features and artifacts are believed to be present below the surface. The site would have been used throughout the year.

Stop #1: Fence Fault (AZ:C:5:37)

This site is located near mile 30. The Grand Canyon archaeologists described the site as follows

This is the remains of a Pueblo II Anasazi and late prehistoric-early historic Paiute camp on an eroding slope surface on the downstream side of Fence Fault overlooking the river. The site consists of two partially exposed fire hearth/fire-cracked rock clusters, three sherds, and several flakes. Considering the depositional context of the site, there could be considerably more cultural material still buried in the sand (Fairley et al. 1991:346).

Four interviews were conducted at the site. A San Juan Paiute representative interpreted the site as representing similar sites that were traditionally and are currently used by San Juan Paiute people. Sites such as this were used for farming, hunting and camping, gathering foods and trade with Hopi and other Indian people. In addition, sites like this would have been used as a crossing point. Rituals and ceremonies, including prayers said before crossing the Colorado river, would be performed. Fishing was also done at such spots. According to the San Juan Paiute representative, there is a sacred kinship link between the Paiute people and the Colorado River, which is like a father to the people. Sites such as this one would be connected to shrines where offerings were left. Trails connect the shrines with other locations, such as the salt trail, and people would often walk long distances to visit them. The firepits and pottery sherds observed at the site were perceived to be used for processing and storing food. Ricegrass seeds were specifically mentioned. Pottery was used to store food underground or carry from place to place. Salt may have also been carried back to the home base. The site would have been used seasonally, especially in June, for seed gathering. San Juan Paiute people still teach their children and other younger tribal members about these sites and their religious as well as historic cultural importance.

A Shivwits elder interpreted this site as a hunting, camping and gathering site. Today, sites like this are visited for the purpose of learning and teaching traditional culture. The site was perceived to be associated with burial sites and more permanent winter camp sites. This site would only have been used a short time due to the lack of any natural shelter. Food plants such as ricegrass and cactus fruits as well as pottery sherds at the site indicate gathering as perhaps the primary function, occurring in late spring and summer. More cultural material was thought to be present below the surface. The possibility of a burial at the site was mentioned.

Two Kaibab Paiute representatives commented on the site. Both representatives interpreted the site to be a hunting, camping and gathering location. One representative said the

site would have been used for short term living. In addition to gathering plants such as Indian tea, fishing would also have been conducted at the site. Two species of Indian tea and Indian ricegrass were observed at the site. One representative noted that pottery sherds would have been used to cook and store food. The other representative commented that it could have been a place for cooking and making pots. Flakes also were observed. More ceramics and flakes were perceived to be below the surface. One representative mentioned the possibility of a burial in the rocks at the back of the site. The site would have been used in spring and summer. It was connected to other similar camping sites by trails. Kaibab Paiute people currently use similar kinds of sites in other areas today when traveling, according to the representatives.

Stop #2: South Canyon (AZ:C:5:1)

This site is located near mile 31. The site is described as consisting

of a masonry habitation complex with 12 defined structures situated mostly along an open area on a bench within the Redwall limestone formation, with two contiguous structures located at the mouth of a small solution cave circa 25-30 meters above. On the lower terrace structures are more or less grouped into three areas. On the downstream end are two structures (Structures 1 and 12) with plaza-like walls on either end (Structures 9 and 11). The middle section includes a large masonry structure (Structure 3) associated with a petroglyph boulder. The upstream section consists of habitation rooms and a possible storage room (Structures 4, 5, and 10). Overall, ceramic type diversity makes the site difficult to place culturally, although Kayenta Anasazi ceramics tend to dominate the assemblage, suggesting a Pueblo II affiliation. Two roasting features, one below Structure 11 and one below Structure 7, may be the result of re-use of the site by Paiutes (see site AZ:C:5:3 nearby). The massive size of some of the structures and quantity of trash indicate substantial occupation; the south room complex may be a kiva/plaza (Fairley et al. 1991:344).

Six interviews were conducted at the site. Four Kaibab Paiute representatives commented on the site. Three representatives agreed that the site was a hunting, camping and gathering spot. The fourth did not perceive the site as being traditionally used by Paiute people. Similar sites in other areas are currently used for hunting, gathering, and camping. One representative said that another person's relatives last visited sites like this around Lee's Ferry in the 1950s and 60s. Two Kaibab representatives said the site would also have been used for ritual and ceremonial purposes. One representative said the site would have been used for trade between Kaibab people and the San Juan Paiute and Hopi people. It was, therefore, a crossing site. One representative mentioned that fish harvest ceremonies would be held. The other representative noted that people would always pay respects to the water as a source of life. In addition, ceremonies would have been conducted due to the presence of a burial at the site. One representative expressed that the site was extremely sacred. The presence of stone-walled dwelling structures indicated that people would have stayed longer at this site. Plants present at the site included Indian tea, prickly pear cactus, *Agave*, willow and Indian ricegrass. In addition, petroglyphs and pottery sherds were

present. One representative noted the presence of an arrow-straightening tool. One representative mentioned that the sun spiral petroglyph indicated that the site was used in spring and summer. Two of the four representatives agreed that the site was seasonally used, stretching from winter to summer. Two representatives thought the site would have been used all year. The same three representatives also agreed that more burials and cultural deposits were present below the surface.

One Shivwits representative commented on the site. He perceived the site to have been used for hunting, gathering, camping and shelter. Similar sites in other areas are currently used for the same purposes. The walled structures indicate long-term yearly use. Long-term residence is also indicated by the presence of a burial. According to the Shivwits elder, Indian people would have lived in the structures, chipped stone for hunting tools, collected plants present at the site such as ricegrass, cactus, Indian tea, and lizards. Pottery sherds indicate cooking and storage of food. Indian people would have buried their dead in areas that were not very rocky or in rockshelters. Additional burials were perceived to be present below the surface. Although he did not offer an interpretation of what the petroglyphs could have meant, he perceived them as very important culturally.

One San Juan Paiute representative commented on the site. He perceived that the site was used for hunting, fishing, camping, and gathering foods. He derived this interpretation from the presence of structures and firepits. San Juan people continue to use similar sites around Lee's Ferry and Cameron. This site would have been connected to other hunting, gathering and camping spots. The San Juan representative interpreted a snake petroglyph as symbolizing hunger or drought. He remarked that Indian people would often leave their own tribal symbols so that later visitors would know that other people were there. The site would have been used in June, at a frequency of every other year, depending on rain and plants because "if there is not enough food in one place, they would go to another place they know."

Stop #3: Little Nankoweap Creek (AZ:C:9:50, AZ:C:9:69)

These sites are located near mile 52. Grand Canyon archaeologists described the site as follows

AZ:C:9:50 originally consisted of a single complete Tsegi Orange Ware mug/pitcher eroding out of a cutbank, and nine enigmatic rock rectangular cobbles in an alignment adjacent to Little Nankoweap Creek. The alignment may or may not be cultural. The vessel was stabilized with local cobbles and boulders, then covered with sand. Park Archaeologist Jan Balsom subsequently collected the vessel, and several others that she uncovered in the same locale, on a later visit. This is considered a Late Pueblo I-early Pueblo II Formative site (Fairley et al. 1991:350).

AZ:C:9:69 is an open artifact scatter with roasting pit and alignment features divided into three loci (A-C) with sparse sherds and lithics scattered over the

entire site. The site is situated on a gently sloping terrace amidst saltbush and prickly pear and is almost completely surrounded by mesquite and acacia. There is a large roasting pit (Locus B) in the north-central portion of the site. Several metates and manos are clustered under mesquite trees in the northwest corner of the site (Locus C). To the south, on the slope of a small hill, are several rock alignments (Locus A). The latter may be agricultural features; they follow the hill contours, creating small terraces. Near these alignments is a circular stone feature circa 75 centimeters in diameter; possibly a storage pit. No artifacts or charcoal were observed in association with this feature. This may be a multi-component site, with both Late Pueblo I-early Pueblo II Anasazi and late prehistoric-early historic Paiute occupations (Fairley et al. 1991:353).

A total of seven interviews were conducted at this stop. Four Kaibab Paiute representatives commented on the stop. One representative commented separately on each of the two sites; the other three Kaibab representatives perceived the two sites as one. For the purpose of preventing confusion, the two sites at this stop will be treated as one.

The site is perceived to be one used for a variety of activities, ranging from farming to hunting, camping, food gathering, trade, and ceremonies. Similar sites in other areas are currently used by Kaibab Paiute people for hunting, camping, and gathering foods. The presence of mano and metate grinding stones, *Agave* roasting pits, and plants such as *Agave*, cactus fruits, and Indian ricegrass clearly suggest plant food collection and processing. Other plants present at the site included willow, rabbitbrush, mesquite, Indian tea, and cattail. One Kaibab representative noted that some of these plants also were (and are) used for medicinal purposes. One representative commented that the site was used seasonally every year, from spring to late summer, until the establishment of the National Park and Indian people were prohibited from traditional free access to the area. Another representative thought that the site was used from summer through fall. Two representatives thought that the site would have been used all year long. The site was connected to other permanent and temporary occupation sites by trail. All Kaibab representatives believed that more cultural material was present below the surface. One representative felt that in addition to the possibility of subsurface pottery vessels, firepits and roasting pits, burials also may be present.

One Shivwits Paiute representative commented on the site. He interpreted the site to be used for farming, hunting, camping and gathering foods, in addition to trade with other Paiute groups and holding ceremonies. Similar kinds of sites in other areas are used today for the same purposes. The surface artifacts and features such as grinding stones, lithics, pottery (including an entire pot on a hillside), roasting pits, stone structures and granaries in the cliff face, and what were interpreted as remains of check dams indicate a site that was heavily used. The site would have been used all year round, and the plants and roasting pits would have been harvested in summer. Plants such as mesquite, Indian tea, and cacti were present at the site. According to the Shivwits representative, the site would have been connected to other permanent farming villages by trail. The Shivwits representative felt that more such cultural materials were present below the surface, in addition to burial grounds.

One San Juan Paiute representative commented on the site. He also interpreted the site as being used for farming and ceremonies. He noted the presence of grinding stones and food and medicinal plants at the site. He believed that farming structures and roasting pits were present below the surface. The site would have been occupied seasonally in the summer.

Stop #4: Nankoweap Canyon (AZ:C:9:1)

This site is located near mile 52. The archaeology report states the following regarding the site.

AZ:C:9:1 consists of several loci of alignments, artifacts, and other features that were originally recorded by Robert Euler and re-recorded in various ways by GCRCS crews. Loci A-C were out of the project zone and not re-recorded. What is probably Locus G was re-recorded as sites AZ:C:9:51 and 52. The area that is likely Locus H was re-recorded as site AZ:C:9:53, and what was probably formerly Locus D was re-recorded as site AZ:C:9:80. Loci E, F, I, and J were re-recorded using their original loci designations and are described here. Locus F consists of two granaries in a Muav cliff face. Locus E consists of a sparse artifact scatter, primarily lithics with a few Paiute sherds, associated with an ephemeral charcoal-stained lens.

Locus I consists of a ridge slope with numerous rock alignments oriented perpendicular to the slope and a few Pueblo II Anasazi sherds. Locus J consists of several rock alignments that form terrace-like areas. Locus E is considered a Paiute use area; Locus F is defined as a Pueblo I-III Anasazi focus; and Loci I and J are deemed Mid-late Pueblo II Anasazi occupations (Fairley et al. 1991:348).

Three interviews were conducted at the site. Two Kaibab Paiute representatives commented on the site. One representative interpreted the site as having been used for farming, and both agreed the site also was used for gathering plants. Water collection was also important at this site, according to one of the representatives. Similar sites in other areas are currently used by Kaibab Paiute people for the same purposes. Both representatives pointed out the food and medicinal plants, such as Indian tea and red willow, that are present at the site. Cattail was mentioned as especially important. The representatives noted that these plants thrive in well watered habitats. The creek water also was viewed as especially important at this site. Fish would have been harvested from the creek. The site would have been used in spring and summer.

One San Juan Paiute representative commented on the site. He also interpreted the site as being used for gathering plants. San Juan Paiute people continue to use similar sites in other areas for gathering plants. The site was said to be connected to other occupation sites in the area. This site was seen as special because of the plants that grow only in certain locations such as near creeks. The plants at the site were medicinal plants, according to the San Juan Paiute representative. The plants would have been collected as needed throughout the year.

Stop #5: Salt Cave (AZ:C:13:3)

This site is located near mile 63. The draft archaeological report states that

The site consists of two main areas (referred to here as adits) where abundant salt within shallow alcoves has been mined by the Hopi and perhaps the Havasupai. The largest of these areas is four meters in depth, 1.5 meters in height, and eight meters in length. The second is seven meters in length, a meter to two meters in depth, and less than a meter in height. Salt is forming in many areas along the Tapeats cliff, but appears to have been actively removed from these two areas. The adit to the north has 25-30 red hematite pictograph elements above it. Below this same source area, towards the river's edge, is a long Tapeats slab with four ground, shallow basins along the top of it. No other artifacts were observed (Fairley et al. 1991:356).

Eight interviews were conducted on the site. Five representatives stated that the salt cave is an extremely sacred area to Southern Paiute people, who visit and use the site in addition to the Hopi and Havasupai people. The Paiute representatives entered the cave to offer prayers and collect the rock salt. Salt crystals were then distributed to every research team member, according to traditional custom.

Three Kaibab Paiute representatives commented on the site. All representatives said that the site was used for ritual and ceremonial purposes, including the collection of salt. The sacred nature of this site may have been elevated or enhanced because, as one Kaibab representative stated, the salt cave in the area of St. Thomas, used by Moapa Paiute people, was inundated by the filling of the Lake Mead reservoir. Another Kaibab representative mentioned that another important salt source above Glen Canyon Dam used by Kaibab people also has been inundated. The site is spiritually connected to all other sites. The cave is visited twice a year as needed, in spring and fall, according to the representatives. One representative noted seeing Hopi paintings and a prayer feather in the bushes outside the cave. A third Kaibab Paiute representative knew about the cave because his uncle had told him it was in the canyon. The ceremonial site is also used for collecting salt for trade. The representative believes that Paiute people use the cave along with the Hopi. A trail along the Little Colorado River leads to Kaibab.

One Shivwits Paiute representative commented on the site. He stated that the site was visited and used for ceremonial and salt gathering purposes. The site is connected to camp sites on the rim or in cliffs by trails. He also noted the significance of the water and mesquite in front of the cave. The Shivwits representative believed that artifacts and offerings would be present below the surface at the site. The cave would have been used every year during the same season.

Four San Juan Paiute representatives commented on the site. They also stated that the site is used for ceremonial and salt gathering purposes. The cave is connected to other sites by trail. Every year in September a salt gathering trip would be, and still is, made to the cave. Three other San Juan Paiute representatives remember hearing about the cave from elders. They refer

to the cave as *oavaxa*, which is also the Kaibab name for the Little Colorado River. They mentioned that the cave is used for domestic purposes (gathering salt) rather than ceremonial purposes. Their grandparental generation collected salt in the canyon, and the cave is connected to other living areas in and out of the canyon. It is also connected to food gathering areas. The three representatives also observed the red paint on the north side of the cave, and concluded that it was probably Hopi. According to the representatives, Paiutes informed the Hopi about the cave. Walapai and, later, Navajo, use the cave as well.

Stop #6: Lava Canyon-Chuar Creek (AZ:C:13:7)

This site is located near mile 65. According to the Grand Canyon archaeologists

This is a Mid-late Pueblo II-early Pueblo III Anasazi occupation consisting of two structural outlines (Features 1 and 2), a vertical slab feature (Feature 3), and the northwest corner of another possible structure (Feature 4) eroding down a dune into the boulder field of the Colorado. The more rectangular structural outline has been high-graded by campers for stones to hold down tents and the site has apparently gone through a phase of deterioration since its original recording. Many sherds have disappeared and Features 3 and 4 have come to the surface since the previous investigations. Some fire-cracked rock is present, a few flakes, ashy soil, and rodent bones of questionable affinity; no formal tools were seen. Testing, stabilizing, and/or monitoring are recommended (Fairley et al. 1991:357).

Five interviews were conducted on the site. Three Kaibab Paiute representatives commented on the site. One representative said that the site was used for farming. Another said the site was used for ritual and ceremony. A third mentioned that trade would have occurred at the site. All representatives agreed that the site also functioned as a hunting, camping, and gathering place. Similar kinds of sites in other areas are still used for hunting, camping, gathering, and ceremonial visits. The site is connected to other camping places at Nankoweap by trails in the valleys. All representatives noted the presence of willow, mesquite, cactus, and Indian tea. All representatives also observed the slab-lined firepits and charcoal hearths eroding out of the stream bank. One representative pointed out a medicinal clay at the site as well as the beach-cobble stones, called *katump* in Paiute, used for sweat ceremonies. Other representatives noted the slab-lined roasting pits, and one representative interpreted their use as being multiple, including healing ceremonies using heated rocks and water as in a sweat ceremony. Grinding stone, pot sherds, and flakes were observed by the other representatives. Two representatives believed the site would have been used all year long, and one perceived occupation and use lasting from spring to fall. One representative mentioned the possibility of subsurface burials at the site.

One Shivwits Paiute representative commented on the site. He interpreted the site as being used for year-round farming, hunting, camping, and gathering. Shivwits people still use similar sites in other areas for the same purposes. He noted all of the plants and artifacts

observed by the other representatives (see above). He said the site would be connected to other camping locations and living areas with agricultural fields by trails up the was. He believed there would be subsurface features at the site.

One San Juan Paiute representative commented on the site. He interpreted it as a gathering and trading location. Tribes would gather at the site in June and exchange food and medicinal plants brought down from the highlands for processing at the site, indicated by the presence of pottery, roasting pits, and fire pits.

Stop #7: Palisades Creek-across from Lava Canyon (AZ:C:13:272b, AZ:C:13:355)

These sites are located near mile 65.

AZ:C:13:272b, a Pueblo II Anasazi site, consists of 1-2 masonry structures with a sparse scatter of artifacts, rubble eroding from the dunes, and two probable hearths. One well-defined structure (Feature 1) is probably being exposed by dune erosion. It measures 2.4 by 2.05 meters, and is roughly rectangular in plan view. It is constructed of mostly sandstone river rocks and is currently only one course high, although associated rubble suggests somewhat higher walls originally (but not full height).

Three meters east and upslope of Feature 1 is Feature 2. It consists of a curving linear wall circa four to five meters in length with substantial sediment fill and mesquite in the interior. It may be a buried structure. Circa six to seven meters north of Feature 1 is a curving cluster of mostly small sandstone rocks eroding out of a deflated area. These seem too small for building elements, but they do not look fire-cracked either. Two .75 meters diameter sandstone features about 35 meters northeast of Feature 1 are probable hearths. Feature 5 contains pieces of charcoal and a few distinct upright slabs. Feature 4 consists only of small jumbled sandstone rocks. Artifacts are generally sparse, but include sherds, lithics, a metate, a two-handed mano, and a small mano with a bevelled face that may have also been used as a knife; similar objects were found at AZ:C:13:99A (Fairley et al. 1991:361).

AZ:C:13:355 consists of three roasting/fire features (Feature 1-3) and a few Paiute sherds. Feature 1 is a surface feature that measures 130 centimeters N/S by 140 centimeters E/W. The pit is lined with small sandstone slabs (circa 10-30 centimeters in diameter) and several limestone rocks (with similar dimensions) and rises up to 10 centimeters above the surrounding ground surface. It is eroded on its northwest corner, and charcoal is apparent in the southeast corner. Some of the rocks exhibit fire alteration. No artifacts were observed near the feature. Feature 2 and 3 have been newly-exposed by gullying in the general vicinity of Feature 1. Feature 2 is an eroding hearth buried by 1-2 centimeters of debris fan colluvium and bisected by a shallow gully 10-15 centimeters deep. A Paiute

Brown Ware pot bust is mixed with the ash and charcoal fill. Feature 3 is a buried hearth exposed in profile in an arroyo wall circa 55 centimeters below present ground surface. It has a basin-shaped cross-section, 90 centimeters wide at the top and 20 centimeters thick. This is considered a late prehistoric (A.D. 1200-1600) Paiute site (Fairley et al. 1991:368).

A total of four interviews were conducted at this stop. Four Kaibab Paiute representatives commented on the stop. The other Southern Paiute representatives perceived Palisades Creek as being part of the Lava Canyon-Chuar Creek site.

One Kaibab representative interpreted both sites at the stop as short-term living sites that were used on the way to another location. Another representative interpreted the first site as a hunting, fishing and camping site. The site is connected to other living sites, and was used from spring through summer. Palisades Creek itself was interpreted by one Kaibab representative as a temporary farming area. All representatives noted the roasting pits, firepits, pot sherds, and plants such as mesquite, cactus, and *Agave* at the sites.

Stop #8: Unkar Delta (AZ:C:13:1)

This site is located near mile 72. The archaeologists describe the site as

a large delta complex with numerous habitation, storage, and agricultural features that was partly excavated by Douglas Schwartz and others with the School of American Research in 1967 and 1968. The two seasons of fieldwork revealed 52 sites and two major occupations: an early Cohonina presence about A.D. 900, and a later Western Anasazi occupation between A.D. 1050 and 1150. For further details see the volume *Unkar Delta* by Schwartz, Chapman, and Kepp (1980). The GCRCS crews added three additional sites in the area (Fairley et al. 1991:356).

Six interviews were conducted on the site. Four Kaibab Paiute representatives commented on the site. One representative felt that this site was an ancestral site not used by Paiute people. She described it as an "old people" site. Paiute people currently visit, however, similar ancestral sites in other areas in order to perform ceremonial visitations that reaffirm their connection to the people who came before them. The old people would have lived permanently, farmed, hunted, gathered, and traded at the site. The site would have been connected to other living sites by trails in the valleys and side canyons. The numerous and various kinds of artifacts such as Paiute and Hopi pottery, arrow points and flakes, grinding stones and firepits, as well as the food and medicinal plants, indicated Paiute use and intertribal interaction. Subsurface burials are believed to be present at the site. A second representative offered the same interpretation. A third representative perceived the site as a gathering location that was used in the spring. The fourth representative believed the site to have been a hunting and fishing site that was used throughout the year. He noted the absence of Paiute cultural material and the highly disturbed nature of the site.

One San Juan Paiute representative commented on the site. He interpreted the site as being a hunting, camping and ceremonial site for gathering the red sand present at the location. San Juan Paiute people continue to visit similar sites to collect the red sand and hold ceremonies. The red sand was gathered in April. No other Paiute cultural material was noted, but he did note that the site had a Paiute name, indicating use and short-term occupation.

One Shivwits Paiute representative commented on the site. He interpreted the site as being used for farming, hunting, camping, and gathering foods. He said that Shivwits people currently conduct ceremonial visits to similar sites in other areas. The site was said to be connected to other living and farming sites on the plateau, connected by trails leading out of the delta to valleys and the plateau top. The stone structures, pottery, grinding stones, flakes, and plants such as mesquite, willow, cactus, and arrowweed indicated permanent occupation throughout the year. Subsurface cultural materials, including burials, were perceived to be present at the site.

Stop #9: Bedrock Canyon (AZ:B:11:282)

This site is located near mile 130.

The site consists of an eroding eight-meter diameter roasting feature (Feature 2) located at the top of a sand dune at the mouth of a small canyon with an associated sub-circular rock outline (Feature 1) about 1.5 by 3 m in size adjacent to the arroyo. Feature 1 is a probable wickiup or brush structure; the organic superstructure is gone and all that remains is a cobble surface alignment. Feature 1 lies between two sheep trails and could be easily taken out by a single flash flood. Lithics are present—one heat-treated flake—but no ceramics were observed. This may be a late prehistoric-early historic Paiute/Pai site (Fairley et al. 1991:321).

Six interviews were conducted on the site. Four Kaibab Paiute representatives commented on the site. In contrast to the archaeological interpretation of the rectangular rock ring as a wickiup, all of the Kaibab representatives perceived of the site as a ceremonial healing structure used for treating women experiencing menstruation or difficult labor and childbirth. Women in such conditions were isolated from the community, and the river water would be used in treatment, as would healing rocks typical of the area. The structure is thus perceived as a healing wickiup, different than a secular dwelling. Only women used the site. The mounds and roasting pits are perceived to have been used by medicine people and midwives or other females assisting the patient, who was not allowed to touch herself or feed herself. The rectangular healing rock formation was a signal to males that the site was occupied and that they should avoid the spot. The site is connected to summer homes upstream. Established trails would have allowed access to the site by women whenever they needed to use the site. Artifacts such as small flakes, healing rocks, a hearth or firepit, roasting pit-mound, and the wickiup rock ring itself were observed. Plants included cactus, *Agave*, and mesquite. Medicine would have been brought in to the site from the village. Additional cultural materials, such as pottery, grinding stones, and

basket remains, were perceived to be below the surface at the site. In addition, burials were thought to be potentially present at the site, owing to the possibility that some patients may have died at the site.

One Shivwits Paiute representative commented on the site. He also interpreted the site as a healing site for women. He observed all of the artifacts and plants mentioned above, and reached the same conclusion regarding their functions.

One San Juan Paiute representative commented on the site. He interpreted the site to be a hunting and camping area that is connected to other hunting and camping sites. Cactus fruits and roasting pits were used for cooking and the wickiup structure for camping. The site was used in fall, according to the San Juan representative.

Stop #10: Deer Creek Valley and Falls (no site number)

This place is located near mile 136. No archaeological sites were visited at Deer Creek. Instead, five interviews were conducted about the place as a whole.

Three Kaibab Paiute representatives commented on Deer Creek. One representative did not know if the site was used by Paiute people, but reasoned that the willow, watercress, and cactus plants and water could have been used in spring and summer. The location is thought to be very important. Two Kaibab representatives interpreted the place as being used for farming, hunting, camping, gathering foods, ceremonies, and easy access to water by way of trail out to the north rim. The trails would have connected this place with villages and hunting camps on the rim. The perennial stream was seen as very important. Observed from a distance were camping sites and irrigation canals or walls. Pottery, animal signs, and paintings at Deer Creek spring were observed, in addition to the plants mentioned above. More cultural materials, including burials, are thought to be present at the place. The area was permanently used throughout the year.

One Shivwits Paiute representative commented on the place. He interpreted the place as being used for irrigated farming, hunting, camping, gathering foods, and holding ceremonies. He noted that the irrigation canal may be a trail. Shivwits people currently use similar kinds of places for the same purposes. Trails would have connected this location with other spots. The Shivwits representative noted the abundance of food resources that would have made the place an attractive living area. He observed the artifacts and plants mentioned above, and concluded that the place was permanently occupied throughout the year.

One San Juan Paiute representative commented on Deer Creek. He interpreted the area as being used for farming corn, hunting, camping, gathering foods, and ceremonial collection of medicines. Trade with the Tapeats area was conducted by using trails. He observed medicinal plants, animal signs, and ruins of structures, in addition to the waterfalls which had stories associated with them. The Deer Creek area would have been used throughout the year in a permanent manner.

Stop #11: Kanab Creek Canyon (AZ:B:10:251, AZ:B:10:264)

These sites are located near mile 143.

AZ:B:10:251 consists of an alluvial terrace overlooking lower Kanab Creek with several hearths/roasting features and sparse lithics. The features are typically eroding out of a sandy slope adjacent to ephemeral drainages, and consist of three areas of fire-cracked rock and charcoal-stained soil. Two of the features are quite small (< one meter in diameter), but one, exposed in an arroyo, is closer to two meters in diameter, maybe more. Another feature (Feature 3) is a slab-lined hearth or storage cist circa 75 centimeters in diameter. There is a sparse scatter of lithics over the site. These are mostly small interior Redwall chert flakes, possibly the result of bifacial thinning. The site would have been suitable for small-scale horticulture, however, the lack of artifacts and artifactual diversity (including ceramics) argues against habitation. Then again, much may be buried. A possible Elko Corner-Notched point suggests a late Archaic or Basketmaker affiliation (Fairley et al. 1991:316-317).

AZ:B:10:264 consists of a rock alignment and burned stone scatter of unknown cultural affiliation. The rock alignment is 3.2 meters long and runs northwest to southeast. It is one meter out from a Muav cliff wall, and composed of sandstone and limestone rocks. The site contains a few charcoal fragments and burned rock, one groundstone artifact, and a flake. No chipped stone tools were observed (Fairley et al. 1991:318).

A total of four interviews were conducted on this stop. Three Kaibab Paiute representatives commented on the stop. Two of the three representatives interpreted the stop as being used for farming, camping, gathering foods, ceremonies, trade with the Pai, and as a major access route to and from the Colorado River. The third representative perceived the site as being primarily used for gathering food and water during the summer. Kanab Creek is connected by trails extending all the way to Paiute fields and summer homes around Kaibab and Zion. Trade would have been conducted in spring, summer, and early fall with the Pai people, whose territory lay directly across the river from Kanab Creek. Representatives observed manos, stone cores and flakes, roasting and fire pits, and small rockshelters. Plants observed included *Agave*, cactus, Indian tea, willow, mesquite, and perhaps hackberry. One representative mentioned that Indian tobacco was seen by the waterfalls. Two representatives believed that substantial subsurface cultural materials were present at the location, including burials.

One Shivwits Paiute representative commented on Kanab Creek. His interpretation matched the year-round farming and multiple use nature of the site that was given by two of the Kaibab representatives discussed above. He noted the presence of the artifacts and plants at the site.

Stop #12: Ledges Spring (AZ:B:10:223)

This site is located near mile 151. The archaeologists describe the site as

a large, prominent mescal roasting pit measuring circa 15 meters in diameter. The pit is up to 2.5-3.0 meters high with a distinct cleared spot circa 3 meters in diameter near its center. There are two possible walls built against Muav ledges about 5 meters south of the edge of the mound. The camp affords a level area for living purposes which is hard to come by along this stretch of the river. Resources at the nearby spring must have influenced this choice of site location. When originally recorded several sherds were present and a chert biface fragment ("mescal knife"). Artifacts suggest an early Formative (Basketmaker III-Pueblo I) Virgin Anasazi affiliation (Fairley et al. 1991:313).

Three interviews were conducted on the site. Two Kaibab Paiute representatives commented on the site. Both agreed that the site served as a hunting, camping, and food gathering-processing site. One representative mentioned that Kaibab people continue to use similar kinds of sites in other areas for the same purposes. The site is connected to other living areas by fairly well-defined trails up the natural ledges. The spring and waterfall were seen as important indicators of Paiute use and occupation. One of the representatives noted the spring vegetation including watercress, moss and *Agave*, abundant cactus, mesquite, Indian tea, and mustard plants. The large roasting pits and pottery were used for processing *Agave* and cactus fruits. The site was used from early spring to late fall. Additional subsurface cultural materials are believed to be present at the site.

One Shivwits Paiute representative commented on the site. He interpreted the site as being used for hunting, fishing, camping, and gathering foods. The site is connected to other sites along the river by trails along the canyon. The plants and artifacts noted were the same as mentioned by the Kaibab representatives. The site was periodically used throughout the year, according to the Shivwits representative.

Stop #13: Ledges Rockshelter (AZ:B:10:230)

This site is located near mile 152. According to the archaeologists' description

This site consists of a slight overhang used as a rock shelter, a slightly bermed midden, and a small artifact scatter eroding down the adjacent slope. Ceramics suggest two components: Early-Mid Pueblo II Anasazi and late prehistoric-early historic Paiute. There is burned stone in the midden/discard fan, plus bone fragments (including the distal end of a bighorn sheep humerus), charcoal, and ash. Tools included a couple of cobble groundstone items, a chopper, a flake-scraper, a projectile point tip, and a core. There is also a jumbled pile of Muav talus about 40 centimeters long, 30 centimeters wide, and 25 centimeters high that might pass for a wall that projects from the back of the overhang. The

site has been impacted by colluvial movement and channel runoff through the rockshelter (Fairley et al. 1991:315).

Four interviews were conducted on the site. Three Kaibab Paiute representatives commented on the Ledges rockshelter. All of the representatives generally agreed that the site was used for hunting, fishing, camping, and gathering. Two representatives added trade as a function of the site. The site is connected to the spring site as well as other camping and home sites on the plateau by established trails. Representatives observed firepits, an arrow point, scraping tool, pottery fragments, and grinding stones. Plants present included abundant cactus, *Agave*, cholla cactus, mesquite, Indian tea, and an unknown grass--perhaps ricegrass. One representative mentioned the possibility of a burial nearby due to the cliff faces around the site, in addition to subsurface midden and cultural materials. The site was used in spring and summer on a yearly basis.

One Shivwits Paiute representative commented on the site. He interpreted the site as being primarily a hunting, camping and gathering location. He specifically mentioned deer and mountain sheep. A mountain sheep was spotted near the site. Hunters would sleep at this site while on hunting or fishing trips. An arrowhead, pottery, plants, and the roasting pits were mentioned as typical and the presence of these objects indicated temporary use and occupation of the overhang-rockshelter. The site is connected to the spring site and other sites upriver by trails. The site was used at various times throughout the year.

Stop #14: Cove Canyon-Upstream and Downstream Sites (AZ:A:16:160, AZ:A:16:168)

These sites are located near mile 174.

AZ:A:16:160 is a small fire-cracked rock/roasting pit area on the riverside beach dunes at the mouth of Cove Canyon. No diagnostic artifacts were located, therefore cultural affiliation is unknown. The site measures 40 by 50 meters and consists of five fire-cracked rock areas and a light artifact scatter that included flakes, charcoal, bone, a uni-edge tool, a slab metate, and a mano. The Cove Canyon drainage cuts near the west edge of the site and may have already eroded away a portion of the site (Fairley et al. 1991:305).

AZ:A:16:168 is composed of four cleared spaces with ephemeral rock outlines against a cliff face. All of the features have associated charcoal. The artifact assemblage includes groundstone, manos, a Desert Side-Notched (DSN) projectile point, indented Paiute Utility Ware, a fire-hardened stick, and lithic tools and flakes. The ceramics and DSN point strongly suggest a late prehistoric-early historic Southern Paiute affiliation (Fairley et al. 1991:306).

A total of four interviews were conducted on the stop. Three Kaibab Paiute representatives commented on the sites comprising the stop. Two of the three representatives interpreted the stop as including a farming component, and all agreed that the sites were used for hunting, camping,

gathering foods. One representative mentioned the possibility of healing ceremonies and social gatherings being held at the stop. Two representatives mentioned that their relatives continue to visit similar kinds of sites in other areas for religious reasons. One representative stated that the site was connected to more permanent areas by trails. This site was used seasonally by some families who would have a claim to the spot but used different areas so as to not exhaust the resources of any one area. She mentioned that periodic burning would stimulate new vegetative growth. The representative observed grinding stones, firepits and roasting pits for processing the mesquite, cactus, and tea plants present at the site. The site was used in the spring and fall. Another Kaibab representative mentioned the presence of a firedrill in the rockshelter and a large Paiute pot sherd. She thought the site would have been used from spring through summer to fall. These features also were noted by the third representative, who said the site was likely used in summer.

One Shivwits Paiute representative commented on the stop. He interpreted the entire mouth of Cove Canyon as a single site that was permanently occupied and used for farming, hunting, gathering, trade, and ceremonial purposes. The array of artifacts mentioned above were noted by the Shivwits representative as indicating permanent occupation and use by Paiute people. According to him the site was used continually throughout the year. All representatives believed that subsurface cultural materials are present at the site.

Stop #15: Toroweap Overlook (AZ:A:16:154)

This site is located in the river corridor below the overlook near mile 176.

This site contains two roasting features, a habitation area, and associated artifacts located in a rockshelter measuring 35 meters long by 4 meters wide by 6 meters high. Ceramics indicate that this is a late prehistoric-early historic Pai site. At its northeast end are at least two distinct, but overlapping roasting features. The smaller (one meters diameter) more recent feature sits directly atop the larger (1.75 meters diameter) older feature. In the southwest end of the site is a habitation area with a primary blank biface, chert debitage, a Jeddito Plain sherd, and a Coconino sandstone grinding slab. There is charcoal concentrated around the roasting features and downslope to the southeast, but pieces can be found across the entire site. Cracked bone fragments are also abundant. The debitage is concentrated in a three-meter diameter area in the south-central portion of the shelter adjacent the blank; raw material is the same for both the blank and the flakes. There is a clear and distinct separation of activity areas at this site, with all of the artifacts occurring in the southwest half of the shelter, a little more than 13 meters south of the roasting features (Fairley et al. 1991:303-304).

Three interviews were conducted on the site. Two Kaibab Paiute representatives commented on the site. Both agreed that the site was used for hunting and camping. Gathering foods, fishing, and trade also were mentioned. The site was perceived as one of the stops a person or group would make while traveling up or down river. The representatives observed grinding stones, flakes, points, the large rockshelter and pot sherds present at the site. One of the representatives believed that additional cultural materials were present below the surface. The site was used from spring through summer.

One Shivwits Paiute representative commented on the site. He interpreted the site as a hunting and fishing site that served as a temporary stop along a travel route. He noted the presence of grinding stones, sheep bone fragments, a firepit, pottery sherds, and a Paiute-style arrow point. He also believed that more cultural material was present below the surface. According to this representative, the site was used at various times throughout the year.

Stop #16: Whitmore Wash (AZ:A:16:1)

This site is located near mile 187. The archaeologists describe the site as follows

The site consists of two extremely shallow rockshelters at the base of a Tapeats sandstone cliff about 30 meters from the river with associated perishable artifacts and nearby pictographs. This is a possible multi-component site with Late Archaic-Basketmaker II, Pueblo I-III Virgin Anasazi, and late prehistoric-protohistoric Paiute occupations, followed by a historic visitation in the late 1950s (see below). The pictographs are located southwest of the shelters along the cliff face. There is one main group of hematite pictographs, and several smaller groups which are partially obliterated, some in white. The main shelter area consists of a deeply stratified midden exposed by a small gully about one meters deep. Considerable amounts of charcoal, animal bone, cordage, corn cobs, and matting are visible; some pothunting has occurred. The site was recorded and recommended for excavation by Euler in 1960. The midden (Locus A) was partially excavated in May and June, 1984, and a rock retaining wall built to stop erosion. A prominent, recent historic addition to the site were the words "Wilson Austin - Surveyors, Casa Grande, Ariz.", which were painted in white at the cliff face on the downstream side of the site.

The letters are 25 centimeters high and the panel occupies a 6.75 by 0.6 meter area. These were painted by surveyors working on the Prospect Canyon Dam survey in 1958 or 1959 [Wilson Austin, personal communication, August 1991] (Fairley et al. 1991:301).

Seven interviews were conducted on the site. Three Kaibab Paiute representatives commented on the site. Two of the representatives interpreted the site as being used for hunting, camping, gathering foods, and ceremonies or rituals. Trade was mentioned by one of the representatives as likely. One representative elaborated on her interpretation by stating that the site was a special

location for medicine people, who separated themselves from the community to communicate with the supernatural. The hematite painted figures on the wall of the rockshelter were interpreted as being rams, men, a woman and child and supernatural beings. The site is connected to the ochre cave where the paint was obtained to making the drawings on the wall. Creosote was also present at the site. The site was used by medicine people whenever they needed to use it. Another representative noted other kinds of plants and grinding stones at the site, and thought it would have been used at various times throughout the year. A third representative mentioned the presence of prickly pear cactus and that the petroglyphs may represent a Ghost Dance ceremony. According to her, the site was used in the summer.

A Shivwits Paiute representative interpreted the site as a hunting and ceremonial site. He also believed the site was connected to the hematite cave and observed pottery and hammerstones in and around the rockshelter. He, too, believed the site was used at various times throughout the year.

Three San Juan Paiute representatives commented on the site. They described the site as a hunting site where whole families would spend two to three months. Given the length of occupation, the site was also used for camping, farming, ceremony, and gathering foods. Another indication of Paiute use and occupation is the red ochre writing. The site is said to be connected to smaller hunting camps along the river, as well as to the hematite cave. People would return to Whitmore after using the smaller hunting camps and collecting ochre from the cave. Today, San Juan Paiute people still plant maize fields some distance from settlements, and return to them to harvest the corn. The analogy offered by the representatives is meant to illustrate the transhumant nature of Paiute resource use. Pottery and grinding stones are believed to be present below the surface.

Stop #17: Upstream from Parashant Wash (AZ:A:15:18)

This site is located near mile 197. According to the archaeologists

This is an aceramic rockshelter area with several pictograph panels, groundstone, and evidence of fire use; cultural/temporal affiliation is unknown, but this may be a protohistoric site. The site is situated within a 2-3 meter deep cliff overhang that extends east-west for about 25 meters. The shelter contains a metate, a cleared space, and a fire-blackened ceiling overhead. Charcoal fragments extend the length of the overhang. Four panels of red pictographs are located on boulders in one portion of the shelter; another charcoal pictograph is located slightly further west in what has been designated "Shelter 1". Two flakes and some bone in a packrat midden complete the artifact assemblage. One fire-cracked rock feature is located below and west of Shelter 1 (Fairley et al. 1991:294).

Three interviews were conducted on the site. Two Kaibab Paiute representatives commented on the site. Both agreed the site was used for hunting, gathering, and ceremonial purposes. People would come down to the site to sing songs and dance before hunting mountain sheep. Artifacts

at the site included grinding stones, a scraper, pictographs, a firepit, and plants such as mesquite, creosote and barrel cactus. Indian tea was used for medicinal purposes such as kidney and gall stones. The site is connected to the hematite cave, due to the presence of red petroglyphs. The sites are connected by trails. Both representatives felt that there are subsurface cultural materials at the site. One representative mentioned that there could possibly be a burial of a shaman at the site. The site was used during the hunting season and as needed by medicine people.

The Shivwits Paiute representative interpreted the site as a hunting and ceremonial site. He interpreted the petroglyphs in the rockshelter as a drawing of a mountain sheep, and the grinding area as one for pounding meat. He also noted the presence of plants and said the site is connected to the hematite cave. He believed that animal and cultural remains were present below the surface. According to him, the site was used at various times throughout the year.

Stop #18: Parashant Wash (AZ:A:15:3)

This site is located near mile 198.

This is a multi-component site with a Pueblo II Virgin Anasazi occupation, and later Pai or Paiute and late historic affiliations. It consists of two loci (A and B). Locus A occupies a sandy terrace at the base of a Muav cliff face and talus slopes below. There are numerous roasting pits in this area, suggesting that this was a major activity focus. Historic and recent (post-1950s) material is also present. Protohistoric (Pai or Paiute) use of the area is suggested by the recent appearance of charcoal on the surface of the ground. Locus B consists of three feature areas. Feature 1 is an overhang shelter at the base of the Muav that was used by Pueblo II Virgin Anasazi peoples. A midden downslope contains 1930s-era trash as well as flakes, sherds, and charcoal. Features 2 and 3 are around the bend of the Muav cliff face. Feature 2 is a cleared area with flakes and charcoal and a boot heel. Feature 3 is another cleared area with stacked rocks (Fairley et al. 1991:293).

Three interviews were conducted on the site. Two Kaibab Paiute representatives commented on the site. Both agreed that the site was used for hunting and camping; one of the representatives added farming further up the drainage and food gathering. The site is connected to similar kinds of camping sites, upstream farming sites, and gathering locations. These sites are connected by the drainage which serves as a natural access route with feeder trails leading to and from different sites. Artifacts and features at the site included grinding stones, obsidian, and roasting pits. Plants present were abundant mesquite, creosote, cactus, and perhaps *Agave*. The site was used in spring and summer. In fall, agricultural crops would be harvested further up the drainage. One representative felt that there were subsurface cultural materials present at the site.

A Shivwits Paiute representative interpreted the site as an agricultural and hunting area. It is connected to sites up and down the river. He noted the grinding stones, roasting pits,

rockshelter, chips, pottery fragments, and mesquite plants. He believed similar artifacts were present below the surface. According to this representative, the site was used at various times throughout the year. People would move in and out of the area to gather foods and camp at various times.

Stop #19: Hematite Cave (AZ:A:15:25)

This site is located near mile 200. The archaeological description states that

This is the well-known hematite mine with artifacts that is currently associated with Hualapai use but may also be affiliated with late Pueblo I-early Pueblo II Virgin Anasazi and late prehistoric-early historic Pai/Paiute cultures. The hematite is occurring in stratified sediment and in large, amorphous concentrations in solutional cavities above a bench. There are several hand tools present, which have been used as percussion/grinding devices; no metates were visible. There is a lot of charcoal present on the surface, but no apparent formal fire rings. Ceramics were also observed. The best source for the material is located 20 meters up a side canyon and 15 meters above the bench, although it now appears difficult to access. The hematite itself is the result of infusion from the mafic rocks that flowed over the sediment (Fairley et al. 1991:296).

Ten interviews were conducted on the site. The hematite ochre is known in Paiute as *ompi*. Some of the representatives made the rugged hike up the steep rocky slope and ledge leading to the cave entrance, because there is no other access to the cave. Offerings of tobacco and prayers were said by the Paiute visitors before any interviewing occurred. Representatives who entered the cave each took small amounts of ochre from the cave. A rounded, smooth wooden stick with a rounded end remains in the cave for digging the hematite out. This site is currently used and remains a very sacred site to the Paiute people.

The presence of another hematite cave containing wooden digging implements was documented as early as the 1870s by Dellenbaugh, who published the account in *The Masterkey* (1933; see Chapter Four).

Two Kaibab Paiute representatives commented on the site. Both interpreted the site as being used for ceremonial and clay gathering purposes. One representative's mother has collected ochre from this cave, although the representative mentioned that men mainly gathered the clay, which is said to protect people and things from evil. The site is connected to rockshelters upstream and downstream by trails and paths and to places across the river. Artifacts believed to be present below the surface in the cave include offerings of tobacco and corn meal, even though some offerings are burned. Pottery and basketry were also mentioned as perhaps being present below the surface. The site is used whenever clay is needed for ceremonies.

Five Shivwits Paiute representatives commented on the site. One mentioned that Shivwits people always had some clay on hand. His sister still collects the substance and uses it to ward off her children's bad dreams and "fix the spirit." He noted the paint and wooden digging tool, which was described as 18 inches in length. He believed cultural material is present below the surface in the cave. The site is used any time of year as needed. Another Shivwits representative mentioned that the paint is used to mark the houses of people who have died. It is also used in sundance ceremonies and powwows. Sundance participants drink the paint. A third representative added that all Paiute people know about the sacred red paint. One has to pray before collecting it. The paint was put on the faces of children by their mothers when someone died. Other than its ceremonial use, the site is said to have been used for trade, farming and permanent residence, camping, gathering foods, and hunting. The site is connected to camping, hunting, and gathering sites all along the river. Subsurface features and artifacts are believed to be present below the surface. The site was used as needed.

Three San Juan Paiute representatives commented on the site. The multiple uses of the paint include drinking it for treating chickenpox, as a traditional war paint, painting or writing (rock drawings), decorating jugs and other ceramics, and sprinkling it on burials. The representatives noted that Paiute people have been using the cave for generations since time immemorial without a break. The site is connected to other sites such as Whitmore Wash, where red ochre paintings can be seen. The site was also used for trade. Roasting pits are believed to be present below the surface.

Stop #20: Spring Canyon (AZ:A:15:42)

This site is located near mile 204.

This is an early-middle Pueblo II Virgin Anasazi and late prehistoric-early historic Pai/Paiute site that consists of five shelter and artifact scatter features. Feature 1 is an overhang shelter with a sandstone grinding slab and three slightly-ground basalt cobble stones. The shelter is dry and no additional deposits appear to remain in the shallow fill. Feature 2 is a boulder overhang with charcoal fragments, a few sherds, and a core. A square nail was also found (this area may be related to the historic use at site AZ:A:15:1A). Feature 3 is a large artifact scatter associated with a small rockshelter. The shelter contains lithics, ceramics, fire-cracked rock, and groundstone. Feature 4 is a downslope slump of ceramics and lithics; this area was chosen for placement of the ceramic analysis unit due to its diversity and density of sherds. Feature 5 is a fire-cracked rock scatter that contains a couple of groundstone fragments (Fairley et al. 1991:299).

Two interviews were conducted at the site. One Kaibab Paiute representative commented on the site. She interpreted the site as being used for permanent residence, farming, hunting, gathering foods, and trade. Kaibab people continue to use similar sites for the same purposes in other areas. The site is connected with other food gathering places and hunting locations upstream and down. She noted that the stream was used for irrigation water; she also pointed out the presence

of a rockshelter with a view of the farming area, and abundant vegetation in the canyon. She believed that pottery, basketry, and irrigation ditch remains are present below the surface at the site.

A Shivwits Paiute representative interpreted the site as being used for farming, hunting, gathering, and ceremonies. It is connected to sites up and down the river, including the hematite cave, as well as up the creek to sites on the rim. He noted the presence of the rockshelter, grinding slabs, pictographs, pottery sherds, flakes, and plants. Two or three families occupied the area during the summer or various times throughout the year. He believed more cultural materials are present below the surface at the site.

Stop #21: Indian Canyon (AZ:G:3:4)

This site is located near mile 206. According to the archaeological report

This is a large multi-component site consisting of several roasting features, a rockshelter with a midden, rock art, and historic remains. Feature 1 is actually two multi-component rockshelters with a midden in front. The midden contains charcoal, burned soil, and fire-cracked rock, plus numerous artifacts (sherds, grinding implements). One shelter has several historic mason jars and other trash that may have dated to the 1930s, plus the inscriptions "M BUNDY". On the ceiling of this shelter, below the inscription, are some faint hematite figures. The remaining features are roasting pits. In addition to the historic component, the site may be affiliated with both Pueblo I-III Anasazi and late prehistoric-early historic Pai/Paiute. A concentration of fire-cracked rock with no artifacts was located on the downstream side of Indian Canyon. It was not given a feature number, but was probably affiliated with the main site (Fairley et al. 1991:378).

Three interviews were conducted on the site. Two Kaibab Paiute representatives commented on the site. Both agreed that the site was used for hunting, camping, gathering foods, and ceremonies. One representative added that the site was used for farming and social gatherings, and the other representative mentioned that trade was conducted at the site. Paiute people continue to use similar sites in other areas for the same purposes. The site is connected to other permanent farming sites, food processing sites, and areas for social gatherings with the Pai by river crossings and trails to and from the site. Paiute people swam across the Colorado River to interact with other Indian people. The representatives observed various artifacts at the site that have been arranged on rocks by tourists, including beads, broken points, pottery fragments, and grinding stones. One of the representatives noted that the multiple types and styles of pottery indicated intertribal trade at the site. Features at the site included roasting pits and a rockshelter. Plants at the site were creosote, barrel cactus, and willow (*kanav* in Paiute). The trail coming down from the north is the famous Bundy trail, but the representative pointed out that Paiute people used the trail and occupied the site long before Bundy, who left jars and inscriptions in the rockshelter wall. More cultural materials are believed to be below the surface at the site. The

site was used any time throughout the year as people needed to use it. Trail runners would have used the route frequently, according to one of the representatives.

A Shivwits Paiute representative interpreted the site as being used for hunting, camping, gathering foods, ceremonies, and trade. The large variety of pottery types clearly meant that trade occurred at the site. The site is connected with other living and farming sites up and down river. It is also connected to the hematite cave. Food was needed for ceremonies and social gatherings now known as pow wows, at which trade items were exchanged, food was shared, and hunting ceremonies were performed. The abundant pot sherds, flaked stone, and the large roasting pit and rockshelter indicated trade and large gatherings of Indian people. Abundant cultural material is believed to be present below the surface at the site. The site was used year round, but especially in the summer due to the crops ripening. The Shivwits Paiute representative mentioned that he would prefer it if the Bundy artifacts and inscriptions were removed from the site.

Stop #22: Granite Park (AZ:G:3:26, AZ:G:3:27, AZ:G:3:28, AZ:G:3:3)

These sites are located near mile 209. The sites comprising Granite Park are described by the archaeologists as follows:

AZ:G:3:26 consists of a series of roasting pits exhibiting several different phases of use and existing in various stages of deflation, from pristine to nearly eroded to their original base level. A total of seven features and two activity areas were designated and appear on the site map. The site is dominated by roasting/cooking activity, with fire-cracked rock present across the site. Also present are a variety of sherds (and other artifacts) indicative of late prehistoric-early historic and mid-historic (1850-1900) Pai use. Some flakes and tools were observed, including two biface items and an obsidian point. The bifaces were at activity area A, and the point, a Utah obsidian Desert Side-Notched, was in activity area B near Feature 6. Groundstone was located between Features 4 and 5. Two fragments of pressed purple glass were observed near activity area A; perhaps pieces of a small candy or relish dish (Fairley et al. 1991:380).

AZ:G:3:27 consists of an isolated bedrock mortar in a large (1.45 by .84 meters) Redwall limestone boulder. The upper surface is almost flush with the ground surface. The mortar is in the center of the boulder and is 25 centimeters in diameter and 28 centimeters deep. There is obvious use wear around the rim of the opening and pecked divots at the bottom of the mortar. This item may have been a "hydrofact" originally that was subsequently adopted for cultural use. There are two other "incipient mortars" in river-worn boulders 50 meters at 215 degrees away in a more active (i.e., more subject to erosion by river action) part of the beach/boulder zone. However, these do not display the use wear patterns indicative of cultural use (Fairley et al. 1991:380).

AZ:G:3:28 was divided into six loci of activity (A-F). Locus A consists of two roasting features with fire-cracked rock, ash, and charcoal, and a lithic concentration and smattering of ceramics; Locus B is a light scatter of lithic debitage, including a point base, and a sherd; Locus C is a tight concentration of circa 20 flakes and a sherd; Locus D contains three "blow-out" or "dug-out" areas that may be wickiup depressions with associated flakes and fire-cracked rock, plus additional fire-cracked rock and lithic concentrations and a grouping of buried slabs; Locus E is an area of possible domestic activity, represented by four possible wickiup depressions—some with encircling stone "foundations", and associated lithics, sherds, groundstone, and fire-cracked rock; Locus F has one well-defined roaster, and other fire-cracked rock concentrations that may represent more roasting features. Lithic debitage consisted of a wide variety of cherts and obsidian, and reflected expedient reduction. Pueblo II Formative sherds dominated at loci A, B, and E, while late prehistoric-early historic Pai sherds were seen at loci C, D, and E. The site is likely multi-component and reflects both Pueblo II and protohistoric use (Fairley et al. 1991:380-381).

The rockshelter (Feature 1) portion of AZ:G:3:3 was originally recorded by George Gumerman and Robert Euler on September 4, 1969. The GCRCs crew added four additional roasting features (Features 2 through 5), including them as part of the original site. Feature 1 consists of a shallow overhang or rockshelter and its associated midden on an adjacent slope in front of the shelter. There is a lot of lithic debris here, including obsidian flakes, an Elko base, a biface tip, and groundstone fragments. Charcoal, ashy soil, and fire-cracked rock is also present, but no formal fire features or structures. Ceramics at the shelter suggest both Late Pueblo I-early Pueblo II Formative and late prehistoric-early historic Pai affiliations. The remaining features (Features 2-5) are roasting/burned rock concentrations of varying size and caliber, some with tools, flakes, and ceramics, among other artifacts (Fairley 1991:378).

A total of seven interviews were conducted on the stop. Two Kaibab Paiute representatives commented on the stop. Both agreed that the site was a hunting, fishing, camping, food gathering, and trading location. One of the representatives added that farming, social gatherings, and ceremonies occurred at the site. Paiute people continue to use similar sites in other areas for the same purposes. This site is connected to other camping sites and food gathering and processing sites in addition to farming sites. Using established trails, Indian people gathered together to prepare food for storage and trade. Features and artifacts observed at the site included a rockshelter that the representative did not visit, firepits, roasting pits, three grinding stones, obsidian chips, three bedrock mortars, Paiute pottery sherds forming a single vessel, and plants such as mesquite, Indian tea, creosote, and cactus. Food processing was a major activity at the site owing to the presence of the three bedrock mortars. Women would share tools for processing mesquite and cactus fruits. One representative believes that abundant subsurface cultural materials are present at the site. The site was used all year long, especially from spring through fall to process foods.

Most significantly, perhaps, one Kaibab representative stated that Granite Park was the likely location of the refuge site where Shivwits people stayed in the mid 1800s (see Chapter Four). According to the representative, Shivwits people would have ranged upstream to Granite Park from Diamond Creek. The Kaibab representative noted that Paiute and Pai people still conduct joint ceremonies, interact across the river, and intermarry to this day. She also mentioned that she has relatives living at Peach Springs.

Five Shivwits Paiute representatives commented on the site. One interpreted the Granite Park stop as a farming, hunting, camping, food gathering, and ceremonial location. The site is connected to the Indian Canyon trading site and the hematite cave. He noted the presence of the rockshelter, grinding slabs, bedrock mortars, roasting pits, flaked stone, and the Paiute pottery. He believes that more such cultural material is present below the surface at the site. The site was used year round by Paiute people. Another Shivwits representative interpreted the site as being used for gathering and processing foods, in addition to camping. Two representatives interpreted the site as an Indian camp used for gathering, hunting, farming, ceremony, and trade. This area was called *sivintuvip*, "Shivwits land," as the Shivwits Plateau is still called. Another representative interpreted the site as a wintering camp for gathering foods and trade. The site is connected to other living sites, between which people would move throughout the year. The site were connected by trails and crossings. Artifacts such as grinding stones, pottery, and perhaps burials are believed to be present below the surface at the site.

ETHNOARCHAEOLOGY PATTERNS

Individual Indian people's responses to specific areas and assemblages of artifacts can be better understood by analyzing the patterns of those responses. Taken as a whole, the sum of individual responses begins to approximate what is generally called the cultural system of a people. Individual variation is present within any society, however, the cultural system of the society is defined in terms of shared and agreed upon beliefs, values, and norms. When a cultural domain, such as the meaning and cultural significance of archaeology sites in the *Colorado River Corridor*, has many components and there are many possible interpretations of these components, it requires numerous interviews with a variety of ethnic group members to find what beliefs are shared and agreed upon. The following analysis, therefore, is presented as a work in progress, subject to revision in response to comments by tribal members.

The previous portion of this chapter discussed each site visited by the Indian people. Through this presentation the rich meanings associated with these sites is evident, however there are hundreds of sites within the *Colorado River Corridor* and only a small fraction were visited during the initial raft trips. To what extent, then, can the individual site responses from this non-random set of places be used to project the identity and meaning of all Southern Paiute sites in the study area? The following analysis is presented as an effort to advance tentative conclusions about all sites in the study area.

Types Of Sites

These Paiute people have had, and do have, uses associated with all sites they define as belonging to Southern Paiute people. These uses include (1) permanent residence, (2) camping, (3) farming, (4) ceremony, (5) gathering food, (6) hunting, and (7) trade. Where only one use is mentioned for a site or where a clear primary uses is evident, that site can be classified by that use. Otherwise, sites are perceived as having multiple uses of equal significance and classification is less certain.

Past Uses of Sites

Some locations may have been used for up to a thousand years by Southern Paiute people. Certainly the uses of these sites were changed during this time, but it is beyond the scope of the present study to assess such changes. What is assessed through these American Indian interviews is the total range of uses during this period for all Southern Paiute people.

Sites can be characterized by whether or not they were used by the family of the Indian person being interviewed, as well as by the Southern Paiute people in general. Occasionally, a site is known specifically because it was used by a family member. Questions about family use of a site produce a rich discussion that is qualitatively different from a general discussion of how the ethnic group uses the site. For this reason, separate questions have been asked on this topic.

Table 6.2 illustrates how the tribal representatives perceived Southern Paiute people used the sites visited in the past. As can be seen, all 24 sites are perceived by tribal representatives as having been used by Southern Paiute people. All sites were perceived as having multiple uses, so no site could be categorized in terms of a single use. Even Stop 19, the Hematite Cave, was clearly used for mining red pigment, but other functions caused the site to have six recorded uses. As a result of these responses, common site characterization terms such as *ceremonial* site or *hunting* site should not be used to characterize these Southern Paiute sites.

The most commonly mentioned use of sites was gathering foods (mentioned for every site), closely followed by hunting and camping (23 of 24), followed by ritual and ceremony (22 of 24). Farming and trade were mentioned for the majority of sites (18 of 24) as well, but not for as many sites as the other functions. "Other" uses include visitation of sites out of respect for ancestors, visits that resemble pilgrimages (whether by an individual or group), and visits to show and instruct others about past lifeways. Other uses were mentioned for 15 of the 24 sites.

Table 6.2: Past Ethnic Group Uses of Sites

Stop	Farming	Hunting/ Camping	Ritual/ Ceremony	Gathering Foods	Trade	Other	Did Not Use
Stop A	X	X	X	X		X	
Stop B	X	X	X	X	X	X	
Stop 1	X	X	X	X	X		
Stop 2	X	X	X	X	X	X	
Stop 3	X	X	X	X	X	X	
Stop 4	X	X	X	X		X	
Stop 5			X	X	X		
Stop 6	X	X	X	X	X	X	
Stop 7	X	X	X	X	X	X	
Stop 8	X	X	X	X	X	X	
Stop 9		X	X	X			
Stop 10	X	X	X	X	X	X	
Stop 11	X	X	X	X	X	X	
Stop 12		X	X	X			
Stop 13		X	X	X	X	X	
Stop 14	X	X	X	X	X	X	
Stop 15		X		X	X		
Stop 16	X	X	X	X	X		
Stop 17		X	X	X			
Stop 18	X	X		X			
Stop 19	X	X	X	X	X	X	
Stop 20	X	X	X	X	X		
Stop 21	X	X	X	X	X	X	
Stop 22	X	X	X	X	X	X	

Table 6.3 shows the responses of tribal representatives to the question of whether they or any member of their family had traditionally used the site visited. Indian people recalled some family member using either the site in question or a similar site along the Colorado River. Again, the most frequent mention of site use was gathering foods (22 of 24), followed by hunting and camping (21 of 24). Ceremony and other uses, as defined above, were the next most frequent uses mentioned (14 of 24), followed by farming and trade (13 of 24 and 10 of 24, respectively). In many instances, the Indian person being interviewed knew the name of the relative who used the site in the past. For 16 of the 24 sites, at least one tribal representative mentioned that they or their family did not traditionally use the site in question or similar sites elsewhere.

Current Uses of Sites

Sites can be characterized by current uses as well as past uses. For example, Paiute people a hundred and fifty years ago may have used a site as a full-time residence that involved maintaining an extensive irrigation system for farming, local hunting, seed gathering, and conducting ceremonies. Because Paiute people were forced from the *Colorado River Corridor* and subsequently denied access to the area, they now have different uses for many of these sites, such as to help achieve cultural continuity by taking their children to the site to teach about past lifeways.

Table 6.4 shows the responses of tribal representatives to the question of whether Southern Paiute people currently use either sites visited or similar sites elsewhere. The table shows that for 23 of the 24 sites visited, tribal representatives responded that Southern Paiute people do not currently use the site in question. This is very likely related to the issue of access to National Parks and Recreation Areas. On the other hand, sites *similar to the 24 visited along the Colorado River Corridor* are still used by Southern Paiute people for a variety of purposes. Thus, for example, there are sites similar to the Ninemile Draw Petroglyph Panel site (Stop B), with plants, petroglyphs and other characteristic features that are currently used by Southern Paiute people for hunting and camping, ceremonies, gathering foods, and educational or respectful visitation. For the six use category columns in Table 6.4, then, the uses mentioned refer to uses occurring at sites like the ones visited along the Colorado River. Only Stop A (Ferry Swale) is not currently used; nor are sites similar to it. Only Nankoweap Canyon (Stop 4), is used for farming, hunting, camping, ceremonies, and gathering foods. These uses may occur some distance from the *Colorado River Corridor*, however.

The most commonly mentioned uses of sites similar to those visited are gathering foods (21 of 24), followed closely by hunting and camping (20 of 24), and ceremonies (15 of 24). Other uses (14 of 24) include taking children to these areas and teaching them about how Paiute people lived in the past. These uses were followed by farming (11 of 24) and, as might be expected, trade, which was mentioned at only three of the 24 sites visited.

Table 6.3: Past Family Use of Sites

Stop	Farming	Hunting/ Camping	Ritual/ Ceremony	Gathering Foods	Trade	Other	Did not use
Stop A						X	X
Stop B		X	X	X	X	X	X
Stop 1		X	X	X	X		
Stop 2		X		X		X	
Stop 3	X	X	X	X		X	X
Stop 4	X	X	X	X			
Stop 5			X	X			X
Stop 6	X	X	X	X			X
Stop 7	X	X		X			X
Stop 8	X	X		X		X	X
Stop 9			X				X
Stop 10	X	X		X			X
Stop 11	X	X	X	X	X	X	X
Stop 12		X		X		X	
Stop 13		X		X	X	X	
Stop 14	X	X	X	X		X	X
Stop 15		X		X	X		X
Stop 16	X	X	X	X	X	X	
Stop 17		X	X	X		X	
Stop 18		X		X			X
Stop 19	X	X	X	X	X	X	
Stop 20	X	X		X	X		X
Stop 21	X	X	X	X	X	X	X
Stop 22	X	X	X	X	X	X	X

Table 6.4: Current Ethnic Group Use of Sites

Stop	Farming	Hunting/ Camping	Ritual/ Ceremony	Gathering Foods	Trade	Other	Did not use
Stop A							X
Stop B		X	X	X		X	X
Stop 1	X	X		X	X	X	X
Stop 2		X	X	X		X	X
Stop 3	X	X	X	X		X	X
Stop 4	X	X	X	X			
Stop 5			X	X		X	X
Stop 6	X	X	X	X		X	X
Stop 7		X					X
Stop 8	X	X	X	X		X	X
Stop 9			X				X
Stop 10	X	X	X	X		X	X
Stop 11	X	X	X	X	X	X	X
Stop 12		X		X		X	X
Stop 13		X		X		X	X
Stop 14	X	X		X			X
Stop 15		X		X			X
Stop 16	X	X	X	X			X
Stop 17		X	X	X			X
Stop 18		X		X			X
Stop 19			X	X	X	X	X
Stop 20		X		X			X
Stop 21	X	X	X	X		X	X
Stop 22	X	X	X	X		X	X

Table 6.5 presents the responses of tribal representatives to the question of whether they or any members of their family currently use either the site visited or similar sites elsewhere. Again, 23 of the 24 sites visited were mentioned as not currently being used by tribal representatives or members of their families. Sites similar to the 24 visited, however, are currently used by representatives and/or members of their families for various purposes. The most commonly mentioned current uses by representatives and/or members of their families at sites similar to those visited are gathering foods (19 of 24), followed closely by hunting and camping (18 of 24). Other uses (16 of 24) include taking children to these areas and teaching them about how Paiute people lived in the past. These uses were followed by ceremony (14 of 24), farming (8 of 24), and trade (4 of 24).

Today, most Southern Paiute people do not use in any manner sites along the Colorado River; however, some Paiute people do use these sites as well as take their children to the Colorado River to learn about how Paiute people lived in the past. Even though the rank of uses remained relatively similar between the past and today, the tables do not reflect changes within categories. A fuller understanding of these changes will be derived from further study, but it appears from interview data that fishing has replaced hunting as the primary use in the hunting and camping category, and gathering medicine plants is more important than gathering food plants. These and other types of use changes reflect both how Paiute lifestyles have changed over the past 150 years and a greatly reduced access to these lands. Today, Paiute people can hike into the study area and fish, but they cannot legally hunt deer or mountain sheep. Paiute people can hike into the study area and secretly gather a few medicinal plants, but the extensive gathering and processing of foods like *Agave* and farming are not permitted by federal law.

Gender of Paiutes Who Used Sites

The characteristics of a place are often best understood by whether or not both men and women visited the location. Sites with either minimal or special uses were often only visited by either men or women. They may be ceremonial sites that only women attended, or isolated hunting sites that only men attended. Such sites tended to be visited by fewer people at a time, may have little or no locally available food, and were not visited for long periods. On the other hand, sites with many uses were often visited by whole families who camped together, shared in the processing of food and raw materials, and generally continued normal social life. Such camps tended to be used for longer periods and, because of the effort and energy requirements of larger groups, tended to have either a larger local subsistence base or higher carrying capacity within their hinterlands.

Table 6.6 presents the responses of tribal representatives to two questions concerning 1) whether men, women, or both traditionally used the sites visited, and 2) whether men, women, or both currently use sites like those visited in the study area. According to Indian people interviewed, every site was used in the past by both men and women. Men were mentioned as exclusively using 9 sites, and women were mentioned as exclusively using two sites by at least one tribal representative. Today, fewer Indian people use the sites visited, but similar sites

Table 6.5: Current Family Use of Sites

Stop	Farming	Hunting/ Gathering	Ritual/ Ceremony	Gathering Foods	Trade	Other	Did not use
Stop A							X
Stop B		X	X	X		X	X
Stop 1		X		X		X	
Stop 2		X	X	X		X	X
Stop 3	X	X	X	X			X
Stop 4	X	X	X	X			X
Stop 5			X	X		X	X
Stop 6		X	X	X	X	X	X
Stop 7		X		X	X		X
Stop 8	X	X	X	X		X	X
Stop 9			X				X
Stop 10	X	X		X		X	X
Stop 11	X	X	X	X	X	X	X
Stop 12		X		X		X	X
Stop 13		X		X		X	X
Stop 14		X	X	X		X	X
Stop 15		X		X			X
Stop 16	X	X	X	X		X	X
Stop 17						X	X
Stop 18		X		X			X
Stop 19			X		X	X	X
Stop 20							X
Stop 21	X	X	X	X		X	X
Stop 22	X	X	X	X		X	X

Table 6.6: Past and Current Site User Gender

Stop	Past user gender			Current user gender		
	Men	Women	Both	Men	Women	Both
Stop A			X			
Stop B			X			X
Stop 1	X		X	X		X
Stop 2	X		X			X
Stop 3	X	X	X			X
Stop 4	X		X	X		X
Stop 5	X		X			X
Stop 6			X			X
Stop 7			X			X
Stop 8			X			X
Stop 9		X	X		X	X
Stop 10			X			X
Stop 11			X			X
Stop 12	X		X			X
Stop 13	X		X			X
Stop 14			X			X
Stop 15	X		X			X
Stop 16			X			X
Stop 17			X			X
Stop 18			X			X
Stop 19	X		X	X		X
Stop 20			X			X
Stop 21			X			X
Stop 22			X			X
	n=114			n=65		

along the Colorado River and in other areas are currently used by both men and women (23 of 24). There is missing data for Ferry Swale (Stop A). Men were mentioned as exclusively using sites similar to Fence Fault (Stop 1), Nankoweap Canyon (Stop 4), and the Hematite Cave (Stop 19) by at least one tribal representative. Women were mentioned as exclusively using sites similar to Bedrock Canyon (Stop 9) by at least one tribal representative, in that the rectangular rock ring formation is interpreted to be a female isolation and healing wickiup.

In general, these responses suggest that the *Colorado River Corridor* contains places that were used by whole groups of Southern Paiutes including men, women, and their children. These data suggest that in the past Paiute people lived for long periods along the river as part of their normal way of life. Despite changes in lifestyles and greatly reduced access, today some Southern Paiute families still return to these places or places like them along the Colorado River.

How Sites Are Interconnected

Indian people often view the world as an interconnected whole, created at one time with one generally understood set of relationships between its components. Within Southern Paiute traditional lands were certain patterns by which the land and its resources were utilized. The places along the Colorado River where Indian people lived, farmed, hunted, fished, gathered plants, and conducted ceremonies were interconnected among themselves and with locations elsewhere.

Before Europeans arrived, Southern Paiute people had an intricate web of relationships between places having special resources and people in other areas having access to different but nonetheless equally special resources. Seasonal movement or *transhumant movements* (Stoffle and Evans 1976) within the territory of a local group of Paiute people produced subsistence food and materials for the local Paiute people and a surplus that formed the basis of trading relationships. This wide-ranging network of trading relationships ultimately involved all Southern Paiutes and extended to their neighbors on all boundaries, including across the Colorado River.

Southern Paiute people often interpret archaeological resources in terms of what has been termed an *occupational complex model* (Stoffle, Dobyns, Evans, and Stewart 1984:206-211). This model is discussed elsewhere (Stoffle, Halmo, Olmsted and Evans 1990) but it suggests that the reason why a place was selected as a use site, how the site was used, how often it was used, and ultimately the meaning and significance of the location was a function of its place in the network of trading and transhumant use relationships. For these reasons, and because Southern Paiute people typically evaluate locations in broader terms, each Indian person was asked if the site was connected with other sites in the area and, if so, what kinds of sites, and how would they be connected.

Table 6.7 cross-tabulates whether or not the Indian person perceived a site to be connected with other sites in the area, with each place along the Colorado River visited by the Indian people, with the tribe of the Indian person, with the kinds of sites it is associated with, with how it is connected with these sites. This table is rich with information about the interrelationships between sites. Of the 101 responses to this question, the great majority (79.2%) of Indian people thought there were interconnections between the site in question and other sites. Sites were perceived as being interconnected locally, such as a rockshelter site near a harvesting or processing site, in which the former would be where the people would return at night to camp and eat after processing the food. Another example of local interconnections was the Hematite cave, which was the source of paint and power to be used in ceremonies at rockshelters where red-paint pictographs were produced. Sites were perceived as having regional interconnections because they were being visited and used, and because they were near to somewhere else or on the way to somewhere that Indian people were going. In general, these comments reflect the holistic perspective of the occupational complex model described above.

Cultural Transmission

One informative way of looking at cultural knowledge is by studying the ways it is transmitted. Ultimately cultural knowledge must be transmitted from generation to generation so that it persists. From the perspective of Western culture, when knowledge is not passed on, it is lost. A variety of factors can influence cultural learning; one of these is access to the areas and things being taught about. Indian people rarely use the term *teach* to describe cultural learning. Instead, they talk about showing children or others. The most common means of passing on knowledge is to go to a place and to do an activity at that place. Showing how to do is bound up with showing when to do and showing where to do. For example, children would be taken in the fall of the year to a place where the seeds of a certain plant were ripe and shown by an elder how to gather and process those seeds. The how, when, and where of the activity would become part of the same lesson. One of the most commonly mentioned restrictions on cultural learning is access, because without access to resource locations certain lessons cannot be taught. Another important means of knowledge transmission in addition to experiential learning is through stories.

Even though knowledge may be lost to one generation of a people, it can be recovered by a later generation. *Cultural revitalization* is a term that describes one way that lost cultural knowledge is rediscovered and reintegrated into a living society. Lost knowledge can be acquired in various ways in various societies, but a common means is by a powerful religious person having a vision. Wovoka, a Northern Paiute religious leader, had the vision that began the Ghost Dance movement. Lost knowledge can return to Southern Paiute people because they believe that a person who has prepared themselves properly can *talk to* rocks, water, mountains, and plants. During these conversations, these natural resources convey knowledge about themselves to the members of the living society.

Table 6.7: Interconnectedness of Sites

Tribe	Stop	Is this site connected to other sites in the area?	What kind of sites?	How are they connected?
Kaibab Paiute	A	Yes	few families would come, get together	by the river
Kaibab Paiute	A	Yes	went out some place along the river to more permanent camp	
Shivwits	A	Yes	living spots	hunting areas--in the old days there were mountain goats.
Shivwits	A	Yes	camping/hunting sites	up and down the river
Kaibab Paiute	B	Yes	other trading sites--it is on the way to somewhere else	trade--travel
Kaibab Paiute	B	Yes	camping sites--places where people gather or come together	It takes time to make petroglyphs. People wouldn't stay around if no one to be with.
Kaibab Paiute	B	Yes	something. That was mostly what they wanted to do. Dryland farming.	want to live there.
Kaibab Paiute	B	Yes	Other camping, hunting areas up and down the river	This is a stop, a camping stop. If they're going to stay here and farm awhile they move up and down the river.
Kaibab Paiute	B	Yes	sacred sites, villages	different trails--secret trails
Shivwits	B	Yes	stay at different times at different sites.	Different seasons have different requirements.
Shivwits	B	Yes	Paiute sites--occupation sites. No Navajos lived here--they came later.	Used at the same time.
San Juan Paiute	B	Yes	like a shade place--like a rockshelter [little cave]	move back and forth while here.
Kaibab Paiute	Stop 1	Yes	living sites-camps for hunting game.	by trail
Kaibab Paiute	Stop 1	Yes	Other similar sites--traveling or camping sites.	Grandmother used to travel and stop at noon to make food. Baked bread in a fire pit.
San Juan Paiute	Stop 1	Yes	Shrines--when come on a shrine, make an offering. Give thanks to the creator.	Visit different locations.
Shivwits Paiute	Stop 1	Yes	Burial sites.; Wintering sites--more permanent camps.	Used at different seasons.
Kaibab Paiute	Stop 2	Yes	Connected with other camps and living areas--stayed here longer.	On the bench--connected by trails.
Shivwits Paiute	Stop 2	Yes	similar kinds of sites to other home bases--like the valley.	by trails--he says this is all one site.
Kaibab Paiute	Stop 2	Yes	Other hunting and food gathering sites--like willow to Kanab	Here by trails

Kaibab Paiute	Stop 2	Yes	Other occupation sites	Intermingled with other residents
San Juan Paiute	Stop 2	Yes	Other occupation sites	If there is not enough food in one place, they would go to another place they know.
Kaibab Paiute	Stop 2	Yes	Connected to all other sites. Because all the people had one way of life. Paiutes will not occupy old sites without respect. Used, known, shared with other tribes. Do not feel like invaders. If invaders would not stay here. There are ceremonies to move into places old ones lived.	
Kaibab Paiute	Stop 3	Yes	natural area--Saddle Mountain; over Kaibab Mt.	by trail
Kaibab Paiute	Stop 3	Yes	Other places of permanent or temporary human occupation; Visitations, ceremonies, social, recreation.	By trails--horses--oral communication--had to be a way of coming down to the river.
Kaibab Paiute	Stop 3	Yes	Trails and similar sites	didn't stay in that one area. Traveled up or down the river as needed.
San Juan Paiute	Stop 3	Yes		Different plants and medicines
Kaibab Paiute	Stop 3	Yes	Farming areas	Place to make flour, grind corn
Shivwits Paiute	Stop 3	Yes	Other farming villages.	Trade and visiting.
Kaibab Paiute	Stop 4	Yes	[Connected] to farms up stream and the plateau through valley trail; fields and plateau for hunting--home base	By trail through valley
Kaibab Paiute	Stop 4	Yes		Just one food source. There may be others.
San Juan Paiute	Stop 4	Yes	Occupation sites.	Some plants only grow in certain locations.
Kaibab Paiute	Stop 4	Yes	Farming	Water for farming, medicine plants
Kaibab Paiute	Stop 4	Yes	sites for social and ceremonial gatherings	by trails
Kaibab Paiute	Stop 5	Yes	All other sites	spiritually connected--source of gathering--special place--trails--salt not used every day.
Kaibab Paiute	Stop 5	Yes	Trail along Little Colorado River out to Kaibab	by trail
San Juan Paiute	Stop 5	Yes	Other living areas. Come in from Grand Canyon itself.	living areas--food gathering areas.
Kaibab Paiute	Stop 5	Yes	Hunting camps near by; Fishing--combine activities	
Shivwits Paiute	Stop 5	Yes	Camp sites on top or in cliffs	by trails
San Juan Paiute	Stop 5	No		
Kaibab Paiute	Stop 6	Yes	Places at Nankoweap; other camping area	Trails in the valleys
Shivwits Paiute	Stop 6	Yes	other camps and living areas with fields	by trails up the wash to other living areas

Kaibab Paiute	Stop 6	Yes	Other living areas.	Trail along the river. Just one of the stops people used in the past.
San Juan Paiute	Stop 6	No		
Kaibab Paiute	Stop 6	Yes	connected with hunting sites on Kaibab [Plateau]	Hunting first, trade later
Kaibab Paiute	Stop 7	Yes	Occupation sites	Just probably
Kaibab Paiute	Stop 7	Yes	Other occupation sites	People move from one to another
Kaibab Paiute	Stop 7	Yes	other living sites	just a stopping place
Kaibab Paiute	Stop 7	Yes	Other living sites	Just a short-time living area. No shelter.
San Juan Paiute	Stop 7	No		
Kaibab Paiute	Stop 7	Yes	connected with hunting sites on Kaibab [Plateau]	Hunting first, trade later
Kaibab Paiute	Stop 8	Yes	This one is the primary site where people were traveling to.	
Kaibab Paiute	Stop 8	Yes	occupation sites	other plants growing in area. See what other plants were around
San Juan Paiute	Stop 8	No	Just a place to gather sand.	
Kaibab Paiute	Stop 8	Yes	Trail to top--hunting sites, gathering sites	
Kaibab Paiute	Stop 8	Yes	similar sites--this one was permanent--people left it	trails, valley and wall canyons
Shivwits Paiute	Stop 8	Yes	up on the plateau or stream valley--other living areas/farming areas	by trails leading out of delta to valley or plateau top
Kaibab Paiute	Stop 9	Yes	Settlements--women wouldn't go too far from main village	don't know right now--probably a trail
San Juan Paiute	Stop 9	Yes	Other traveling sites	
Shivwits Paiute	Stop 9	No	Isolated from the others. Go back out to other areas. Did not stay there for extended periods of time.	
Kaibab Paiute	Stop 9	Yes	Places with summer homes--main connection is river--water--downstream from home site.	by trails--site used for all women, so would have been an established route.
Kaibab Paiute	Stop 9	Yes		not a living area site. Moved up or down to live. Lots of medicinal stuff, but no food plants.
Kaibab Paiute	Stop 9	Yes	A living site somewhere else.	Had to be [connected], because this site was not where people lived.
Kaibab Paiute	Stop 10	Yes	hunting camps and other villages on rim	by trails up to top to plateau
San Juan Paiute	Stop 10	Yes	trade	trade
Shivwits Paiute	Stop 10	Yes	Same kinds of valleys--small farming areas like Tapeats	by trails--trade
Kaibab Paiute	Stop 10	No		
Kaibab Paiute	Stop 10	Yes	Some things don't grow here, so they would have to go up or down river to find them.	Really nice area to live longer. Lots of food and water.
Kaibab Paiute	Stop 11	Yes	All the way to Kaibab and on to Zion.	By trails running down canyon to Colorado.

Kaibab Paiute	Stop 11	Yes	Old home sites & camping sites--remains.; Pai country across river.; Old Paiute fields up the canyon--summer homes.	Established trails from north to river and across to Pai country.
Kaibab Paiute	Stop 11	Yes	other living areas	people travel between camp locations
Shivwits Paiute	Stop 11	Yes	trails	more sites like seen in open--cooking or processing sites
Kaibab Paiute	Stop 12	Yes	Other living areas--couldn't sustain too many families--so connected with more permanent villages.	pretty well defined trail--ledges--presence of spring and waterfall.
Kaibab Paiute	Stop 12	don't know		
Shivwits Paiute	Stop 12	Yes	Other sites along the river.	Trails along canyon. Other sites for camping--like next site visited.
Kaibab Paiute	Stop 13	Yes	Other kinds of living sites--farming areas away from this site with adequate soil and water.	Established trail.
Kaibab Paiute	Stop 13	Yes	Maybe other more permanent living sites.	
Kaibab Paiute	Stop 13	Yes	Other sources of water, like spring site up river.	All part of hunting/fishing in area.; Probably a trail.
Kaibab Paiute	Stop 13	Yes	home sites/villages; other camping sites on plateau; healing sites	by trails that were established
Kaibab Paiute	Stop 14	No		
Kaibab Paiute	Stop 14	Yes	Other living areas. Sites that are easy to get to water.	
Shivwits Paiute	Stop 14	Yes	Up and down river--canyon goes to other use sites. Also up to the top.	By uses--need the plant.
Kaibab Paiute	Stop 14	Yes	To more permanent areas--this site was used seasonally by same families--some would have claim but use different areas so one place not overused--let land rest--burn stimulated new plant growth	by trails
Kaibab Paiute	Stop 15	No		
Kaibab Paiute	Stop 15	Yes	Other living sites	One of the stops you would make going up or down the river.
Kaibab Paiute	Stop 15	Yes	Camp-farming areas/rock shelters	Travel to and from during hunting/fishing
Kaibab Paiute	Stop 16	No	Not connected to other sites. This was a special site for medicine people--separated--receive own instructions, this is an isolated site.	Rails on rim and ledges or on bottom between sites.
Kaibab Paiute	Stop 16	No		
Kaibab Paiute	Stop 16	Yes	Living sites, other petroglyph sites, travel sites along trails.	All connected because of the river--one stopover on the way to somewhere else.
Shivwits Paiute	Stop 16	Yes	Along the river. Cave-paint.	Need to live/eat/collect paint.

			Hunting camps. Then return to the big camp at Whitmore. Would stay at Whitmore for months at a time. Umpi cave was source of paint; would bring paint back up to Whitmore rock shelter.	
San Juan Paiute	Stop 16	Yes		
Kaibab Paiute	Stop 17		The cave for paint.	Trails on rim, ledge or bottom along river.
Shivwits Paiute	Stop 17	Yes	Living sites.	Cave for paint--sites up and down the river.
Kaibab Paiute	Stop 17	Yes	other living sites. This was short-term living area. Get ready to go on a hunt.	Kaibab now has mountain sheep songs/dances, but no access to place where these were used. People would come down to sing songs before going out on sheep hunts.
Kaibab Paiute	Stop 18	Yes	Similar kinds of camping sites.; Farming sites upstream.; gathering places.;	The drainage wash is an access route--trail, paths connect the different sites.
Kaibab Paiute	Stop 18	Yes	Other stopovers or living areas	Stop there to cook.
Shivwits Paiute	Stop 18	Yes	Other sites up and down the river.	Mutual use.
Kaibab Paiute	Stop 19	Yes	To the rockshelters upstream and down--places across river.	By trails/paths
Shivwits Paiute	Stop 19	Yes	Other rockshelters with paint.	Camping spots on the way to that spot.
Shivwits Paiute	Stop 19	Yes	I think everything's together--like the plants and the paint. Everything we come upon probably belonged to the Indians.	They are all close together.
Shivwits Paiute	Stop 19	Yes	Whole canyon is related to Paiutes.	tukupits=food
Shivwits Paiute	Stop 19	Yes	Camping sites, hunting sites, food sites.	All connected through living and family.
Shivwits Paiute	Stop 19	Yes	Where they lived.	Some people talked about it a long time ago.
San Juan Paiute	Stop 19	Yes	Take paint from here and "write" the drawings at Whitmore. Writing about what they are doing.	Need paint first to paint there. Pray to paint and maybe have ceremonies at Whitmore.
Kaibab Paiute	Stop 19	Yes	Living area--because did not live there.; Salt mine.	Both part of earth and both used in ceremonies.
Kaibab Paiute	Stop 20	Yes	Other food gathering places, maybe other hunting areas.	This place was permanent. Moved up or downriver to get stuff.
Shivwits Paiute	Stop 20	Yes	Up & down river. Paint from cave site; Up the creek--to rim--sites there. Lots of sites on top.	Joint use.
Kaibab Paiute	Stop 21	Yes	Permanent farming sites, food processing sites, areas for social gatherings with Pai	Crossing at river and trails to and from site--swam across river
Kaibab Paiute	Stop 21	Yes	To other living sites that have more vegetation. Or to sites outside the corridor.	By Trails

Shivwits Paiute	Stop 21	Yes	Up and down river--living sites-- other farming sites--also paint cave.; Hunting and ceremony.	Need food for ceremonies/powwow. Also trade items.
Kaibab Paiute	Stop 22	Yes	Other camping sites and food preparation gathering sites; farming sites--people get together to prepare food for storage and trade.	By Trails.; Refuge site for Shivwits there makes a lot of sense in mid 1800s would have ranged upstream from Diamond Creek. Still mixed Pai and Paiute joint ceremonies and intermarriage continue today.
Kaibab Paiute	Stop 22	Yes	Other living areas.	Places that have more food plants.
Shivwits Paiute	Stop 22	Yes	Trading site; Paint site	All used
Shivwits Paiute	Stop 22	Yes	living areas on Shivwits Plateau-- come here to winter--harvest time, too.	trails and crossings.
Shivwits Paiute	Stop 22	Yes	to other living sites	people would travel between places.
Shivwits Paiute	Stop 22	Yes	places like this where they would camp	They all traveled with each other-- they didn't leave one camp--the whole camp moved from one camp to another.

Table 6.8 presents the responses of tribal representatives to the question of who taught them about either the site visited or similar sites along the Colorado River. The persons mentioned most frequently as teaching tribal representatives about sites were mother and grandfather, each mentioned at all but two of the sites visited (22 of 24). The next most frequently mentioned category of person was friend/neighbor/other person (19 of 24). This category is comprised of persons who are not related to the tribal representatives, and includes elders. Grandmother was the next most frequently mentioned person who served as teachers (18 of 24). Fathers and other relatives each were mentioned at 13 of the 24 sites visited. Other relatives include aunts, uncles, cousins, and in-laws. It is clear that Indian people learn about traditional sites and activities primarily from members of their extended and nuclear families, but tribal elders and non-relatives also play an important role in transmitting traditional cultural knowledge about past lifeways.

As tribal representatives learned from their grandparents, parents, and tribal elders, so too do they instruct their children, grandchildren, young relatives such as nieces and nephews, and other tribal members who are not related. Table 6.9 presents the responses of tribal representatives to the questions, "Who are you currently teaching about the site/sites like this, and what uses are they being taught?" This question was preceded in the interviews by asking, "Are you currently teaching anyone about this site/sites like this?" As Table 6.9 shows, for each of the 24 sites visited along the *Colorado River Corridor*, tribal representatives responded that they were currently teaching others about either the site visited (in cases where the site is well known, such as the Hematite Cave), or sites similar to those visited in the study area. The negative responses, of which there are only four, indicate that one representative out of the total number interviewed at that particular site stated that they were not currently teaching anyone about sites. It should be noted here that in the event the question, "Are you currently teaching anyone about this site/sites like this?" was answered negatively, it was followed up with the question, "Do you intend to teach anyone about this site/sites like this?" This question was unanimously answered "yes." So even though a few tribal representatives are not currently engaged in teaching other tribal members about traditional sites and activities associated with them, they intend to do so in the future.

The second "block" in Table 6.9 shows who tribal representatives mentioned they were currently teaching. As can be readily seen, children were mentioned for all of the 24 sites visited. The category "Friend/Neighbor" is comprised of non-related Southern Paiute youth, as well as any other adult tribal member who is not related to the representative. This category of persons was mentioned for 22 of the 24 sites visited. Other relatives were mentioned for 17 of the 24 sites visited. Grandchildren were mentioned for ten of the 24 sites visited. This relatively low number of mentions may be due to the fact that many of the tribal representatives do not yet have grandchildren. Young people, whether children, nieces, nephews, cousins, or unrelated youth, are currently being taught by adult Paiutes about traditional sites, activities, and lifeways.

Table 6.8: From Whom Did You Learn About This Site or Sites Like This?

Stop	Mother	Father	Grandmother	Grandfather	Other Relative	Friend/ Neighbor/ Other Person	Don't Remember
Stop A		X				X	
Stop B		X		X	X	X	
Stop 1	X	X	X	X	X	X	
Stop 2	X	X	X	X	X	X	
Stop 3	X		X	X	X	X	
Stop 4	X		X	X	X		
Stop 5	X	X	X	X	X	X	
Stop 6	X	X	X	X	X	X	
Stop 7	X		X	X	X		
Stop 8	X	X	X	X	X	X	X
Stop 9	X	X	X		X		X
Stop 10	X	X		X	X	X	
Stop 11	X		X	X			
Stop 12	X			X		X	
Stop 13	X		X	X		X	
Stop 14	X	X	X	X		X	
Stop 15	X	X		X		X	
Stop 16	X		X	X	X	X	
Stop 17	X		X	X		X	
Stop 18	X		X	X		X	
Stop 19	X	X	X	X	X	X	
Stop 20	X	X		X		X	
Stop 21	X		X	X			X
Stop 22	X		X	X		X	

Table 6.9: Who Is Being Currently Taught About The Site, and What Uses Are They Being Taught?

Stop	Are You Teaching Anyone Now?		Who Is Being Taught?					What Uses Are Being Taught?				
	No	Yes	Children	Grandchildren	Other Relative	Friend/ Neighbor	Farming	Hunting/ Camping	Ritual/ Ceremony	Foods	Trade	Other
Stop A		X	X	X		X	X	X	X		X	X
Stop B	X	X	X	X	X	X	X	X	X		X	X
Stop 1	X	X	X	X		X	X	X	X		X	X
Stop 2		X	X	X	X	X	X	X	X		X	X
Stop 3		X	X			X	X	X	X		X	X
Stop 4		X	X			X	X	X	X		X	X
Stop 5		X	X	X	X	X	X	X	X		X	X
Stop 6		X	X	X	X	X	X	X	X		X	X
Stop 7		X	X			X	X	X	X		X	X
Stop 8		X	X	X	X	X	X	X	X		X	X
Stop 9		X	X			X	X	X	X		X	X
Stop 10	X	X	X			X	X	X	X		X	X
Stop 11		X	X			X	X	X	X		X	X
Stop 12		X	X	X	X	X	X	X	X		X	X
Stop 13		X	X	X	X	X	X	X	X		X	X
Stop 14		X	X	X	X	X	X	X	X		X	X
Stop 15		X	X	X	X	X	X	X	X		X	X
Stop 16		X	X			X	X	X	X		X	X
Stop 17		X	X			X	X	X	X		X	X
Stop 18		X	X			X	X	X	X		X	X
Stop 19		X	X			X	X	X	X		X	X
Stop 20		X	X			X	X	X	X		X	X
Stop 21		X	X			X	X	X	X		X	X
Stop 22	X	X	X			X	X	X	X		X	X
	122 interviews		119 interviews					119 interviews				

The third portion of Table 6.9 illustrates what activities or uses of sites are being transmitted to younger generations. The most commonly mentioned uses being taught were hunting/camping and gathering foods (22 of 24 sites). Ceremonial uses were mentioned for 21 of the 24 sites visited. Other uses, which here primarily mean visitation out of respect or to see locations of cultural and historical importance, were mentioned for 19 of the 24 sites visited. The next most frequently mentioned uses of sites being taught were farming (16 of 24) and trade (14 of 24). The pattern of site uses most mentioned (gathering, hunting/camping, ceremony) is generally consistent and holds throughout the above analysis of responses.

Cultural Significance

The question of cultural significance can be asked about any aspect of culture for any society. It seems, however, that the desire to define degrees of significance is more in keeping with Western philosophy, which tends to separate the developed from the undeveloped and the sacred from the secular in the process of choosing between behavior alternatives that result in the least negative impacts to culture. According to this philosophy, it is better to develop less significant natural and cultural landscapes, so that other landscapes can be protected. This study is conducted within a body of law and regulation that reflect this philosophy.

It is possible for Indian people to assign degrees of cultural significance to traditional cultural resources. When they do so, they tend to preface their remarks with statements like, "In our culture all things are perceived as equal." But they understand that in Western culture all things are not perceived as equal. Therefore Indian people must define their cultural resources in Western terms so that priorities for protecting cultural resources can be set by the Indian people themselves (Stoffle and Evans 1990).

There is a growing professional literature regarding how to calculate cultural significance (Stoffle, Halmo, Evans, Olmsted 1990). Much of this literature has focussed on plants, inasmuch as American Indian plants are a subject of great world debates. Other cultural resources and the cultures of other people are now entering these discussions.

The ethnobotany component of this study builds on past work with Indian peoples, especially Southern Paiute people, in order to develop a means of assessing the cultural significance of the sites along the *Colorado River Corridor*. These studies have used efforts at translating Southern Paiute plant concerns into geographic areas, so these then can be protected (see Chapter Seven).

Archaeology sites, like plants, can be assigned an overall evaluation score by Indian people. Unfortunately, unless all sites in a study area can be visited it is difficult to move from the evaluation of visited sites to an evaluation of the sites not visited. In addition, archaeology sites can be viewed as having component parts. The parts of archaeology sites are called *features* for the purposes of this analysis. When Indian people are asked what they perceive to be the features of an archaeology site that contribute to its evaluation, these features can help define categories of archaeology sites. Unlike overall evaluations, the feature-by-feature evaluations can

lead to a model of Native American site interpretation and evaluation that then can help evaluate sites not visited.

Table 6.10 tabulates the responses of tribal representatives to the questions of whether they observed or perceived the presence of various features and how they would rank the feature's importance in defining each of the sites visited. At each site visited, Indian people were asked to assess whether or not all known categories of features were present, and if so, whether or not they were an important factor in Southern Paiute use of the site.

Some explanation of the table is required. The list of features at the left apply to all of the 24 sites visited, which are portrayed as large columns bounded by bold lines. Within each site column, there are four cells. In the first cell, the heading "None" indicates that the feature was either not seen or not perceived to be present at the site. The other three cells contain the significance rankings for each feature. Numbers appearing in these columns indicate that the tribal representatives observed or perceived the feature to be present at the site. A "0" in the significance ranking column indicates that representatives observed or perceived the feature to be present, but chose, for whatever reason, not to rank it. The actual numbers represent the total number of tribal representatives interviewed at each site, signified by the bottom row with the heading "Total."

Using Stop A (Ferry Swale) as an example, one is able to see that, of the four representatives interviewed at the site, all four observed the presence of water and ranked it as being high in significance. In other words, water is an important factor in describing the kind of site Ferry Swale is. Other features were not seen nor perceived to be present at the site; in these instances, the number "4" appears in the "None" cell. For still other features, there were differences in responses, because not all tribal representatives saw or perceived the presence of all features. Sometimes there is disagreement as to what is at a site because Indian people perceive certain features to be located under the ground. Burials, for example, are perceived by some as present but not by others.

Once a list of features that the person perceives to be present is established, the person is asked to evaluate the cultural significance of each feature to Indian people today. A three-point scale (low, medium, high) was used to evaluate each feature. The patterns of these responses document that Indian people generally agree on the degree to which a feature is culturally significant today to Southern Paiute people. The data demonstrate that Indian people perceive sites and locations as consisting of more than just archaeological materials and other remains. Their broader perceptions of a site include natural resources such as plants, animals, and water in a larger spatial area than the more narrowly bounded "site" in archaeological terms. A brief example is presented below.

Table 6.10: Perceived Importance of Features in Describing Sites

	Stop A			Stop B			Stop 1			Stop 2			Stop 3			Stop 4								
	None	Low	Med	High	None	Low	Med	High	None	Low	Med	High	None	Low	Med	High	None	Low	Med	High				
water	0	0	0	4	4	1	1	4	1	0	0	3	1	0	0	5	2	0	0	4	1	0	0	4
plants	0	0	0	4	1	0	0	9	0	0	1	3	1	0	0	5	0	0	1	5	0	0	0	5
animals	2	1	1	0	1	0	2	6	2	1	0	1	2	0	0	4	1	0	0	5	4	0	0	1
mineral	4	0	0	0	10	0	0	0	3	1	0	0	6	0	0	0	4	0	0	0	4	0	0	1
burials	4	0	0	0	10	0	0	0	4	0	0	0	1	0	0	5	3	0	0	2	5	0	0	0
stone structures	3	0	0	1	10	0	0	0	4	0	0	0	0	0	0	6	4	0	0	1	5	0	0	0
wood structures	4	0	0	0	10	0	0	0	3	0	0	0	6	0	0	0	4	0	0	0	5	0	0	0
firepit	4	0	0	0	10	0	0	0	3	1	0	0	6	0	0	0	4	0	0	0	5	0	0	0
roasting pits	4	0	0	0	10	0	0	0	4	0	0	0	6	0	0	0	1	1	0	4	4	0	0	1
rockshelter	4	0	0	0	10	0	0	0	4	0	0	0	2	0	0	3	4	0	0	1	4	0	0	0
rock rings	4	0	0	0	10	0	0	0	4	0	0	0	6	0	0	0	4	0	0	0	4	0	0	1
stone artifacts	4	0	0	0	10	0	0	0	3	0	1	0	5	0	0	1	4	0	0	0	5	0	0	0
trail	4	0	0	0	9	0	0	1	1	1	1	1	1	0	0	5	2	0	0	4	3	0	0	2
petroglyphs	4	0	0	0	0	0	0	10	4	0	0	0	0	0	1	5	4	0	0	0	5	0	0	0
milling stones	2	0	0	2	10	0	0	0	4	0	0	0	6	0	0	0	0	1	0	5	5	0	0	0
bedrock mortar	4	0	0	0	10	0	0	0	3	0	1	0	6	0	0	0	4	0	0	0	5	0	0	0
ceramics	4	0	0	0	10	0	0	0	2	0	2	0	2	0	1	3	3	0	0	2	5	0	0	0
lithics	1	2	0	1	8	0	0	2	0	1	0	3	2	0	2	2	2	0	1	3	5	0	0	0
Total	n = 4			n = 10			n = 4			n = 6			n = 6			n = 5								

Table 6.10: Perceived Importance of Features in Describing Sites (cont.)

Step 5				Step 6				Step 7				Step 8				Step 9				Step 10			
None	Low	Med	High	None	Low	Med	High	None	Low	Med	High	None	Low	Med	High	None	Low	Med	High	None	Low	Med	High
2	0	0	6	1	0	0	4	3	0	0	3	1	0	0	5	2	1	0	3	0	1	0	4
6	0	0	2	0	1	0	4	4	1	0	1	2	0	0	3	1	1	1	3	0	1	0	4
8	0	0	0	3	0	0	1	5	0	0	0	4	0	0	2	3	1	0	1	1	1	0	3
0	0	4	4	4	0	0	1	5	0	0	1	5	0	1	0	6	0	0	0	5	0	0	0
8	0	0	0	4	0	0	1	6	0	0	0	4	0	0	2	5	0	0	1	4	0	0	1
8	0	0	0	5	0	0	0	6	0	0	0	2	0	0	4	2	1	0	3	1	1	0	3
8	0	0	0	5	0	0	0	6	0	0	0	6	0	0	0	6	0	0	0	5	0	0	0
8	0	0	0	0	1	1	3	4	1	0	1	4	0	0	2	3	0	0	3	5	0	0	0
8	0	0	0	2	1	0	2	1	1	1	3	6	0	0	0	2	1	0	3	3	1	0	1
7	0	0	1	5	0	0	0	6	0	0	0	6	0	0	0	6	0	0	0	5	0	0	0
8	0	0	0	4	0	0	1	6	0	0	0	5	0	0	1	4	0	0	2	5	0	0	0
8	0	0	0	5	0	0	0	6	0	0	0	5	0	0	1	6	0	0	0	5	0	0	0
1	4	0	3	0	1	0	4	3	1	0	2	4	0	0	2	4	0	0	2	1	1	0	3
4	0	0	1	5	0	0	0	6	0	0	0	6	0	0	0	6	0	0	0	4	0	0	1
8	0	0	0	2	1	0	2	4	1	0	1	4	0	0	2	6	0	0	0	5	0	0	0
7	0	0	0	5	0	0	0	6	0	0	0	6	0	0	0	6	0	0	0	5	0	0	0
8	0	0	0	2	1	0	2	4	1	0	1	3	1	0	2	5	0	0	1	3	0	1	1
8	0	0	0	2	1	1	1	4	1	0	1	4	0	0	2	4	0	0	2	3	0	1	1
n = 8				n = 5				n = 6				n = 6				n = 6				n = 5			

Table 6.10: Perceived Importance of Features in Describing Sites (cont.)

	Stop 11				Stop 12				Stop 13				Stop 14				Stop 15				Stop 16						
	None	Low	Med	High	None	Low	Med	High	None	Low	Med	High	None	Low	Med	High	None	Low	Med	High	None	Low	Med	High			
0	0	0	0	4	0	0	0	3	1	0	0	0	3	1	0	0	0	3	1	0	0	0	2	1	0	0	6
0	0	0	0	4	1	0	0	2	1	0	0	0	3	0	0	0	0	4	1	0	0	0	2	0	0	1	6
1	0	1	2	1	1	0	0	2	2	0	0	0	2	3	0	0	1	1	2	0	0	0	1	2	0	0	5
3	0	0	1	3	0	0	0	0	4	0	0	0	0	4	0	0	0	0	3	0	0	0	0	6	0	0	1
2	0	0	2	3	0	0	0	0	3	0	0	1	1	4	0	0	0	0	3	0	0	0	0	4	0	0	3
4	0	0	0	0	2	0	0	1	3	0	0	0	1	4	0	0	0	0	3	0	0	0	0	3	0	0	4
4	0	0	0	0	3	0	0	0	4	0	0	0	0	3	0	0	1	1	3	0	0	0	0	7	0	0	0
2	0	1	1	1	3	0	0	0	2	0	1	1	1	2	0	1	1	1	0	0	1	1	1	6	0	0	1
3	0	0	1	1	1	0	1	1	3	0	0	1	1	2	0	0	2	2	2	0	0	0	1	6	0	1	0
2	0	0	2	3	0	0	0	0	0	1	0	3	0	0	0	0	4	1	1	0	0	0	2	4	0	0	3
4	0	0	0	0	3	0	0	0	3	0	1	0	0	4	0	0	0	0	3	0	0	0	0	4	0	3	0
4	0	0	0	0	3	0	0	0	1	0	0	3	0	4	0	0	0	0	0	0	0	0	3	7	0	0	0
1	0	0	3	1	1	0	0	2	1	0	0	3	2	2	0	0	2	2	2	0	0	0	1	4	0	0	3
4	0	0	0	0	3	0	0	0	4	0	0	0	0	4	0	0	0	3	0	0	0	0	0	0	0	0	7
2	0	0	2	2	2	0	0	0	3	0	0	1	2	2	0	0	2	1	1	0	0	0	2	2	0	0	5
4	0	0	0	0	3	0	0	0	4	0	0	0	0	4	0	0	0	0	3	0	0	0	0	4	0	0	3
1	1	1	1	1	1	0	1	1	1	0	1	2	2	2	0	0	2	0	0	0	0	0	3	5	0	0	2
1	0	2	1	1	2	0	1	0	2	0	0	2	2	1	0	1	2	1	2	0	0	0	1	5	0	1	1
	n = 4				n = 3				n = 4				n = 4				n = 3				n = 7						

Table 6.10: Perceived Importance of Features in Describing Sites (cont.)

Stop 17				Stop 18				Stop 19				Stop 20				Stop 21				Stop 22							
None	Low	Med	High	None	Low	Med	High	None	Low	Med	High	None	Low	Med	High	None	Low	Med	High	None	Low	Med	High				
0	0	0	3	1	0	0	2	5	0	0	0	0	0	0	2	0	0	0	0	0	0	0	3	1	0	0	6
0	0	0	3	0	0	0	3	5	0	0	0	0	0	1	1	1	0	0	2	2	0	0	2	2	0	0	5
1	0	0	2	2	0	0	1	9	0	0	0	0	0	0	2	2	0	0	1	4	0	0	1	4	0	0	3
2	0	0	1	3	0	0	0	0	0	3	7	1	0	0	0	3	0	0	0	7	0	0	0	7	0	0	0
2	0	0	1	3	0	0	0	9	0	0	0	1	0	0	0	3	0	0	0	6	0	0	0	6	0	0	1
3	0	0	0	3	0	0	0	9	0	0	0	1	0	0	0	3	0	0	0	7	0	0	0	7	0	0	0
3	0	0	0	2	0	0	0	9	0	0	0	1	0	0	0	3	0	0	0	7	0	0	0	7	0	0	0
1	0	0	1	3	0	0	0	9	0	0	0	1	0	0	0	1	0	0	0	2	0	0	1	6	0	0	1
2	0	0	1	1	0	0	2	9	0	0	0	1	0	0	1	1	0	0	2	1	0	0	2	1	0	1	5
0	0	0	3	2	0	0	1	7	0	0	2	0	0	1	1	0	0	0	3	1	0	0	3	1	0	1	5
3	0	0	0	3	0	0	0	9	0	0	0	1	0	0	0	3	0	0	0	7	0	0	0	7	0	0	0
3	0	0	0	3	0	0	0	9	0	0	0	1	0	0	0	2	0	0	1	7	0	0	1	7	0	0	0
0	0	0	3	1	0	0	2	8	0	0	2	0	0	0	2	1	0	0	2	3	0	0	2	3	0	0	4
0	0	0	3	3	0	0	0	9	0	0	0	1	0	0	1	3	0	0	0	7	0	0	0	7	0	0	0
0	0	0	3	1	0	0	2	9	0	0	0	1	0	0	1	1	0	0	2	1	0	0	2	1	0	0	6
3	0	0	0	3	0	0	0	9	0	0	0	1	0	0	0	3	0	0	0	3	0	0	0	1	0	0	6
3	0	0	0	2	0	0	1	9	0	0	0	0	0	1	1	0	0	0	3	1	0	0	3	1	0	0	6
3	0	0	0	1	0	0	2	9	0	0	0	1	0	0	1	1	0	0	1	1	0	0	2	5	0	0	2
n = 3				n = 3				n = 10				n = 2				n = 3				n = 7							

Ten Southern Paiute representatives were interviewed at Stop B, the Petroglyph Panel site (Ninemile Draw). The archaeological site description provided in the beginning of this chapter lists the typical archaeological items that were found at the site. These include the petroglyphs representing different figures (sheep and anthropomorphic), previously identified ceramics, a mano, and lithics. As can be seen from Table 6.10, nine of the ten representatives observed the petroglyphs; all nine individuals ranked them as highly significant. Four of the ten representatives, however, did not mention water (here meaning the Colorado River). Of the six representatives who mentioned water (the river) as a feature of the site, four ranked it as a highly important feature; two individuals ranked it as being of low and medium significance, respectively. Nine of the ten representatives saw or perceived the presence of plants such as cactus, Indian spinach, ricegrass, and yucca at the site and ranked them as being highly important features of the site, in that these would have been harvested and eaten by Southern Paiute people. Plant features led representatives to conclude, therefore, that one of the site functions was the gathering of plant foods. Because of the animal figures in the petroglyphs, eight representatives perceived the presence of animals at the site as important features. Six of those eight individuals saw animals as a highly important feature, and led them to conclude that hunting and associated ceremonies for hunting deer and mountain sheep were likely other functions of the site. Two of the eight representatives ranked the presence of animals as being of medium significance. With regard to widely scattered lithics, which are not abundant at the site, only two of the ten representatives saw or perceived lithics to be present. These two individuals ranked lithics as being highly important features in describing the site, again likely related to hunting and food gathering activities. One of the ten representatives perceived the presence of a trail that would have provided Southern Paiute people with access to and from the site, and ranked it as being a highly significant feature.

What becomes clear from the above example is that the Southern Paiute people interviewed perceive the Ninemile Draw-Petroglyph Panel site to be more than just a prehistoric rock art site. It is also a hunting, camping, food gathering, and ceremonial site. These interpretations are logical outcomes of observing archaeological materials, but also interpreting connections between these physical remains and other natural resources present at the locality.

In general, the sum of the evaluation scores for the features perceived to be present at a site is associated with the overall cultural significance of the site. The exact relationship of features significance to overall site evaluation is not yet understood, because some features contribute more to the overall evaluation than others. For example, a high significance fire pit does not contribute the same to overall site evaluation as a high significance human burial. Further analysis and further data collection may reveal the extent to which an American Indian model of archaeology site evaluation can be developed. It is sufficient to conclude that feature-by-feature analysis will help non-Indian people better understand how Indian people evaluate sites, but the overall cultural significance score is the bottom line for policy and decision making.

Table 6.11 presents the overall cultural significance of each site by each place the Indian people visited. Except for Stop A, Stop 5, and Stop 7 (Ferry Swale, Salt Cave, and Lava

Table 6.11: Stated Overall Significance of Sites

Stop	Overall Significance			
	<i>Low</i>	<i>Medium</i>	<i>High</i>	<i>No Response</i>
Stop A	1	2	1	0
Stop B	0	1	8	1
Stop 1	0	0	4	0
Stop 2	0	0	6	0
Stop 3	1	0	5	0
Stop 4	0	1	4	0
Stop 5	0	4	4	0
Stop 6	0	1	4	0
Stop 7	0	4	2	0
Stop 8	1	0	5	0
Stop 9	1	0	4	1
Stop 10	1	0	4	0
Stop 11	0	0	4	0
Stop 12	0	1	2	0
Stop 13	0	0	4	0
Stop 14	0	0	4	0
Stop 15	0	0	2	1
Stop 16	1	1	5	0
Stop 17	0	0	3	0
Stop 18	0	0	3	0
Stop 19	0	0	2	1
Stop 20	0	0	2	0
Stop 21	0	1	2	0
Stop 22	0	0	7	0

Canyon at Palisades Creek, respectively), the majority of tribal representatives interviewed at each site perceived the site to be of high cultural significance to Southern Paiute people today. In terms of all sites, 88% (21 of 24) are perceived to be of high cultural significance. In only two cases (Stop A, Ferry Swale, and Stop 7, Lava Canyon at Palisades) did the majority (though small) of tribal representatives rank the site as being of medium significance. For Stop 5 (Salt Cave), the eight representatives interviewed split; four ranked the site as being of medium significance, and four ranked the site as being of high significance. Excluding "no responses," there were 11 cases of unanimous agreement among tribal representatives' responses of ranking sites as being of high cultural significance (see Table 6.11). Tribal representatives took seriously the responsibility of evaluating each site for its cultural significance, as is indicated by the range of responses to the question of overall significance.

CHAPTER SEVEN

ETHNOBOTANY

This chapter presents the findings of the ethnobotanical raft trip through the *Colorado River Corridor*, which occurred between May 1, 1993, and May 16, 1993. A total of 296 miles was traveled, encompassing all 255 miles of the study area. The chapter is divided into several sections. Following a brief summary of the methods used during the site visits, an overview of findings is presented. The next section provides the botanical description of each of the sites visited during the May raft trip. Subsections in each site description section describe the botanical characteristics of each ecozone within that site. Lists of observed plants in each ecozone are provided. The ecozone subsection is followed by another that summarizes the ethnographic data elicited from Southern Paiute representatives on plant species that they identified as being culturally significant. The next section presents a statistical analysis and discussion of Southern Paiute plant use patterns. The first part of the final section presents a quantitative discussion of the cultural significance of each plant species identified by Southern Paiute representatives. The second part of the final section uses plant significance scores to calculate the cultural significance of ethnobotanical sites visited in the *Colorado River Corridor*.

METHODS

Each of the tribal governments appointed tribal members who are knowledgeable about plants to represent them on the May river trip. An Indian elder was hired as a Native American Project Assistant and participated in the trip as well. Arthur Phillips, III, a botanist with extensive experience in the Grand Canyon, came on the trip to assist in the selection of sites to visit and to provide the scientific classification of each plant identified by Indian participants and a site description of the locations where the plants were found growing. Finally, four ethnographers from the University of Arizona conducted interviews on the trip.

During the river trip, Southern Paiute tribal representatives were taken to places along the river with significant botanical specimens. Native American plant concerns derive in part from the cultural values associated with specific plants as well as the places, or ecozones, where various plants grow together. For this reason, the study incorporated a holistic ecozone approach. Using this method, all ecozones represented at a place were visited by the Indian participants. The botanist provided a site characterization at each location where interviews occurred. The study involved five ecozones as identified in an article by R. Roy Johnson in *Colorado River Ecology and Dam Management* (1991) and modified by Arthur Phillips, the trip botanist. These included the (1) canyon wall, (2) desert (USDZ), (3) old riparian (OHWZ), (4)

new riparian (NHWZ) and (5) side canyon riparian ecozones. Plant growth on the canyon wall is very restricted; seeps and springs provide isolated habitats at various points along the river. The desert, old riparian, and new riparian ecozones developed as linear bands running parallel to the river. The desert ecozone is the uppermost band of vegetation and is beyond the direct influence of the river. The old riparian zone lies between the desert and new riparian zones. The plants in this zone grow beyond the old flood zone of the river, but their roots are within reach of flood water. The new riparian zone lies closest to the river within what was the scour zone prior to the operation of Glen Canyon Dam. Finally, the side canyon riparian zone is the zone within the influence of sidestreams flowing into the Colorado River. A portion of all sites was within the *affected zone* which is defined as all riverine environments, especially those that contain river derived sediments. This zone includes the present beach up to and including the farthest extent of the old high water zone marked by high dunes and mesquite. In addition, plants along the canyon wall and in the desert regions above the *affected zone* were included to more fully characterize the Southern Paiute ethnobotanical use of the *Colorado River Corridor*.

Arthur Phillips was particularly important to this study because his extensive knowledge of the plants located in the canyon made it possible for him to guide trip participants to sites where a wide variety of plants were found. Many plants are present at numerous places along the river and Dr. Phillips was able to identify plants that would be seen again in order to help balance interviews conducted on plants over the entire 15 day trip. Tribal representatives were provided with a Grand Canyon River Guide, note pads, and writing tools. Some representatives brought along their own cameras and tape recorders to further record their experiences and ideas. At each botanical site, once the raft had landed, the Indian participants walked over the site and identified plants they wanted to talk about. The procedure at each site had three steps:

- * Arthur Phillips led the Indian participants to the botanical site.
- * Indian participants walked around the site and surveyed the plants located there.
- * Indian participants provided information about culturally significant plants through a formal interview process.

When an Indian person had located a plant of importance, he or she was seated within view of the plant. An ethnographer recorded the individual's observations on an ethnobotany information form. Forms were used to insure that the same comments were recorded from all Indian representatives at all botanical sites. A tape recorder was available at all times in case Indian people wished to further comment on an ethnobotany interview. When time approached to leave an area, Dr. Phillips was consulted to see if there were any plants there that would not be seen at a later site. If so, then Indian people were told of those plants.

OVERVIEW OF FINDINGS

The Colorado River ethnobotanical trip began on the morning of May 1, 1993 with a motor trip upriver from Lees Ferry to the Glen Canyon Dam. Two stops were made in the upper

portion of the river and tribal representatives talked about plants there. The boats returned to Lees Ferry the night of May 1, 1993. The raft trip began on the morning of May 2, 1993 and continued without break until the morning of May 16, 1993. Tribal representatives traveled on the Colorado River and visited places along its banks for a total of 15 days.

Southern Paiute representatives were involved in learning and sharing information in three principal ways on the river trip. First, botanical characterization and ethnobotanical interview sites were the places where Arthur Phillips provided a characterization of the place and Indian people completed interviews about individual plants. During the 15-day trip, Indian people stopped and described plants at 21 sites. Eleven of these sites had been visited during the 1992 ethnoarchaeology river trip. These places were revisited on the recommendations of the Indian people. The remaining ten sites were chosen by Arthur Phillips, the trip botanist.

Finally, Southern Paiute representatives learned about the *Colorado River Corridor* and the effects of the Glen Canyon Dam at additional places along the River that were visited during stops or as overnight camps. At these locations, Indian people walked around the place, observed the existing condition of the plants and surrounding area, and noted the effects of water release from the Dam.

A total of 243 formal ethnobotany interviews were conducted at 21 sites during the river trip. Table 7.1 presents the day when the Indian people visited the site, the name of the place where the interviews occurred, the mile where the visit occurred, and the number of interviews conducted at the location.

Table 7.1. Ethnobotany Interviews By Where and When Occurred

Date and Location	Mile	Number of Interviews
Day 1: May 1, 1993		
Site #1 at Ferry Swale	(near mile -11)	41
Site #2 at Ninemile Draw (Petroglyph Panel)	(near mile -10)	9
Day 2: May 2, 1993		
Site #3 at Jackass Canyon	(near mile 8)	25
Day 3: May 3, 1993		
Site #4 at Buck Farm Canyon	(near mile 41)	23
Day 4: May 4, 1993		
Site #5 at Nankoweap Creek	(near mile 52)	23
Day 5: May 5, 1993		
Site #6 above the Little Colorado River	(near mile 61)	18
Day 8: May 8, 1993		
Site #7 at Stone Creek	(near mile 131)	20
Site #8 at Deer Creek Valley and Falls	(near mile 136)	6

Day 9: May 9, 1993		
Site #9 at Kanab Creek	(near mile 143)	10
Site #10 at Matkatamiba Canyon	(near mile 148)	11
Day 10: May 10, 1993		
Site #11 at Ledges (spring site)	(near mile 151)	0
Site #12 at National Canyon	(near mile 166)	4
Site #13 at Fern Glen Canyon	(near mile 168)	4
Day 12: May 12, 1993		
Site #14 at Vulcan's Anvil	(near mile 178)	13
Site #15 at Whitmore Wash	(near mile 188)	8
Day 13: May 13, 1993		
Site #16 at Parashant Wash	(near mile 198)	1
Site #17 at Ompi (Hematite) Cave	(near mile 200)	5
Site #18 at Spring Canyon	(near mile 204)	5
Day 14: May 14, 1993		
Site #19 at Granite Park	(near mile 209)	9
Site #20 at Travertine Canyon	(near mile 229)	2
Day 15: May 15, 1993		
Site #21 at Bridge Canyon	(near mile 235)	6
Day 16: May 16, 1993		
Leave Colorado River at Pearce Ferry	(near mile 281)	Total 243

Within the five ecozones studied, plants were found in five topographical areas, as shown in Table 7.2. Several sites had plants growing within more than one ecozone or topographical area (see Figure 1 in Executive Summary). For example, at Site #1, plants growing within the old riparian, new riparian, and desert ecozones were located on gravel sand bars. At Site #3, plants growing within the old riparian ecozone were located on the delta and within the side canyon, and plants growing within the desert ecozone were located within the side canyon there.

Table 7.2. Ecozone and Topographical Areas Visited

Ecozone Location	Topography
Canyon Wall	Delta
Desert (UDSZ)	Side Canyon
Old Riparian (OHWZ)	Wash or Drain
New Riparian (NHWZ)	Sand/Gravel Bar
Side Canyon Riparian	High Desert Slopes

Indian people identified plants of importance to Southern Paiute people at all 21 botanical sites studied. At some places there were many different kinds of plants while at others there were only a few separate plant species. At the first site, an Indian person sat in one spot and identified twelve plants that were important to Southern Paiute people. The number of interviews per site decreased downriver because more and more of the plants at each new site had been discussed upriver.

SITE-BY-SITE ANALYSIS

Vegetation and Flora of the Grand Canyon

Vegetation along the Colorado River below Glen Canyon Dam is predominantly desert in its affinities. The hot, dry climate of the Inner Gorge does not support woodland, or even plants of many of the scrub communities of the plateau country. The vegetation of Marble Canyon is a mixture of plants from several sources: a few warm-adapted Great Basin Desert species grow with the most cold-adapted species from the Mohave Desert and a number of plants that are adapted to a wide range of elevations and climates. Downstream, the number of hot desert species gradually increases, and by the time the mouth of the Little Colorado River is reached, species of the Mohave and Sonoran Deserts predominate. The number of hot desert species gradually and progressively continues to increase downstream all the way to the Grand Wash Cliffs, responding to the hotter, drier summer climate and milder winter conditions.

Vegetation of the Inner Gorge of the Grand Canyon shows the influence of the Colorado River as a narrow corridor along which Mohave and Sonoran Desert plants are found far to the east of their centers of distribution west and south of the Grand Canyon. While river trips progress downstream along the corridor, plants have slowly migrated upstream, and what we note as "first occurrences" are actually "last occurrences" reflecting the point at which a plant reaches some environmental limiting factor which halts its upstream migration. Thus the diversity of the hot desert flora is greatest at the Grand Wash Cliffs; upstream, these species gradually drop out as the distance from the Mohave Desert increases. Creosote bush, white bursage, ocotillo, and Whipple yucca are just a few of the plants that are found only in the lower part of the Grand Canyon, disappearing as conditions become unfavorable upstream. White brittlebush, a Sonoran Desert plant, extends upstream to a point about 40 miles below Lees Ferry, while beavertail cactus, a plant which grows in both deserts, reaches nearly to the dam. These plants are exceptional in their environmental tolerances.

Riparian vegetation along the Colorado River and side stream and seep plants form an important component of the flora that is dependent on a moisture source apart from rainfall. Riparian and wetland plants in the Grand Canyon tend to be widespread species, able to tolerate wider variations in environmental conditions than the desert species as long as their moisture source is present. Thus plants like tamarisk (an exotic species from the Mediterranean), coyote willow, and seepwillow found along the Colorado River shoreline are widespread in such habitats throughout the Southwest. The riparian strip along the current Colorado River shoreline has developed since the construction of Glen Canyon Dam. The dam controls major, silt-laden

spring floods which once occurred through Grand Canyon every few years, scouring the shoreline, depositing large amounts of sand, and allowing only herbaceous plants to grow below the high water line of the floods. The "old high water line" can still be seen in many places, marked by a line of mesquite, catclaw acacia, Apache-plume, and netleaf hackberry high above the present shoreline. The presence of riparian zone along the prevailing shoreline is beneficial to birds, wildlife, and river runners, but it is not the situation that prevailed before the gates of the dam were closed.

Some 800 species of plants have been collected along the Colorado River, on the desert slopes of the Inner Gorge, and along the lower reaches of side canyons. This is a diverse flora reflecting the many habitats of the Canyon and the many sources nearby from which plants have migrated.

Collection Site Descriptions

A site description and list of plant species observed is provided below for each of the 21 collection sites included in the project. In the species lists, the 68 species of plants that were identified as culturally significant by the Southern Paiute participants and on which interviews were conducted are highlighted in bold at each site, whether or not interviews were held there. Nomenclature in this section follows the *Annotated Checklist of Vascular Plants of Grand Canyon National Park* (Phillips, Phillips, and Bernzott 1987).

Site #1: Ferry Swale

This site is located near river mile -11. Plant surveys and interviews at the Ferry Swale site were conducted in three ecozones: New Riparian (Ecozone iv), Old Riparian (Ecozone iii), and Desert (Ecozone ii). In general, the site is on a large, relatively flat sand and gravel or cobble bench deposited by the river during times of pre-dam high water. The site is about 250 feet wide and is along the inside of a broad curve in the river, and deposits probably represent the location of a large eddy at high water. Little or no deposit on the bar is from side canyons, and only the portion on the talus slope along the canyon wall is not of alluvial origin.

Ecozone iv, New Riparian; Topography iv, Gravel/Sand Bar

This area is along the current riparian strand of the Colorado River. The outer areas are submerged frequently by the river, depending on water release levels from Glen Canyon Dam, and the area is a narrow (ca. 30 feet) strip between the river and the steep outer edge of the bench. The beach area is fairly open with dense herbaceous vegetation of grasses and herbaceous plants, including numerous exotic species, and a few scattered tamarisk (*Tamarix chinensis*) and Emory seepwillow (*Baccharis emoryi*). The substrate is entirely river-deposited sand with scattered gravels and cobbles. The list of observed plant species in this ecozone include:

Artemisia ludoviciana

Aster spinosus

Aster subulatus
Baccharis emoryi
Bromus rubens
Bromus tectorum
Erodium cicutarium
Celtis reticulata (seedling)
Festuca octoflora
Gnaphalium sp.
Gutierrezia microcephala
Medicago sativa
Mentha arvensis

Oenothera hookeri
Plantago major
Salsola iberica
Sporobolus sp.
Stanleya pinnata
Tamarix chinensis
Taraxacum officinale

Ecozone iii, Old Riparian; Topography iv, Gravel/Sand Bar

The upper bench extends from a fairly steep 12-foot slope at its outer edge representing the river channel at high water to the base of Navajo sandstone cliffs or talus slopes at the canyon walls. The terrace is fairly flat, although there are low places which were formed as backwaters and areas with some current when the bench was last inundated. These areas tend to be somewhat saline. The terrace, or at least portions of it, was probably last flooded during high water releases from the dam in June, 1983. It is fairly uniformly vegetated by four-wing saltbush (*Atriplex canescens*), desert globemallow (*Sphaeralcea ambigua*), Torrey Indian-tea (*Ephedra torreyana*), and grizzly bear cactus (*Opuntia erinacea*). The list of observed plant species in this ecozone include:

Agave utahensis var. *kaibabensis*
Artemisia ludoviciana
Astragalus tephrodes
Atriplex canescens
Bromus rubens
Chaenactis fremontii
Coleogyne ramosissima
Descurainia pinnata
Echinocereus triglochidiatus var.
melanocanthus
Echinocereus engelmannii
Ephedra torreyana
Erodium cicutarium

Gutierrezia microcephala
Lepidium fremontii
Malacothrix glabrata
Opuntia erinacea
Oryzopsis hymenoides
Plantago insularis
Plantago purshii
Rumex hymenosepalus
Salsola iberica
Sphaeralcea ambigua
Vulpia octoflora
Yucca angustissima

Ecozone ii, Desert; Topography iv, Gravel/Sand Bar

A steep talus slope supporting desert vegetation occurs discontinuously along the base of the Navajo sandstone wall at the inner edge of the upper terrace. This talus is very rocky and is composed of sandstone rock slabs which have fallen from the massive vertical cliffs, and is structurally not directly influenced by the river. The substrate on the talus slope is sand, which

probably originated from multiple sources, i.e., from dunes along the river, by blowing off the canyon rims, and from weathering of the sandstone cliffs above. About half of the plants on the slopes are also found on the terrace; the rest, including desert almond (*Prunus fasciculata*), pineapple cactus (*Sclerocactus parviflorus*), hispid coldenia (*Tiquilia latior*), and scorpionweed (*Phacelia corrugata*) are more often found on desert slopes above the influence of the river. The list of observed plant species in this ecozone include:

<i>Artemisia ludoviciana</i>	<i>Lepidium montanum</i>
<i>Aristida</i> sp.	<i>Opuntia erinacea</i>
<i>Bromus rubens</i>	<i>Phacelia corrugata</i>
<i>Castilleja chromosa</i>	<i>Plantago insularis</i>
<i>Ephedra torreyana</i>	<i>Prunus fasciculata</i>
<i>Erodium cicutarium</i>	<i>Sclerocactus parviflorus</i>
<i>Gutierrezia microcephala</i>	<i>Tiquilia latior</i>
<i>Lepidium fremontii</i>	

Site #2: Ninemile Draw (Petroglyph Panel)

This site is located near river mile -10. Plant surveys and interviews at the Petroglyph Panel Site were conducted in two zones, the New Riparian (Ecozone iv) and Old Riparian (Ecozone iii). The site is similar in its morphology to the Ferry Swale site and is located on a large, relatively flat sand and gravel or cobble bench deposited by the river during times of pre-dam high water. Like the previous site, it is along the inside of a broad curve in the river, and deposits probably represent the location of a large eddy at high water. Little or no deposit on the bar is from side canyons. The inside of the bar abuts directly against the sandstone walls of the canyon.

Ecozone iv, New Riparian; Topography iv, Gravel/Sand Bar

A narrow New Riparian Zone along the riparian strand of the Colorado River is present along the Colorado River shoreline. This beach zone is dominated by a dense mature stand of tamarisk along its inner edge; the area near the river receives periodic flooding, and is influenced by current fluctuations in river level; it has a sparse cover of various herbaceous plant species. The inner edge of the zone is a fairly steep sandy bank leading up to the wide Old Riparian Zone bench above. The substrate is entirely river-deposited sand with scattered gravels and cobbles. The list of observed plant species in this ecozone include:

<i>Bromus rubens</i>	<i>Medicago sativa</i>
<i>Baccharis emoryi</i>	<i>Salsola iberica</i>
<i>Chaenactis fremontii</i>	<i>Stanleya pinnata</i>
<i>Festuca octoflora</i>	
<i>Hordeum jubatum</i>	

Ecozone iii, Old Riparian; Topography iv, Gravel/Sand Bar

Similar to the Ferry Swale site, the high water zone bench extends from a fairly steep 12-foot slope at its outer edge representing the river channel at high water to the base of Navajo sandstone cliffs at the canyon walls. The terrace is fairly flat, although it slopes gently toward the back wall and there are somewhat saline low places which were formed as backwaters when the bench was last inundated. The terrace, or at least portions of it, was probably last flooded during high water releases from the dam in June, 1983. The site is strongly dominated by four-wing saltbush with scattered desert globemallow and Torrey Indian-tea. Desert seepweed (*Suaeda torreyana*) is abundant, especially in depressions which tend to be more saline, and sand sagebrush (*Artemisia filifolia*) occurs in areas where the sand is looser and deeper along the canyon wall. Soils are sandy throughout the area. The list of observed plant species in this ecozone include:

Allionia incarnata
Artemisia filifolia
Atriplex canescens
Bromus rubens
Chaenactis fremontii
Datura meteloides
Ephedra torreyana
Hordeum jubatum
Lepidium montanum

Malacothrix glabrata
Oenothera pallida
Opuntia erinacea
Phacelia corrugata
Sphaeralcea ambigua
Suaeda torreyana
Tiquilia latior

Site #3: Jackass Canyon

This site is located near river mile 8 on the left side. The Jackass Canyon site consists of a large boulder and sand delta along the Colorado River at the mouth of Jackass Canyon to the old high water line, and the floor and desert slopes of Jackass Canyon itself. Interviews were conducted in Old Riparian and Desert ecozones. The New Riparian zone along the river is fairly limited in extent, and no interviews were conducted there. Most of the area of the delta lies between the New Riparian zone and Old High Water line, as is typical of most deltas that have been formed at the mouths of side canyons in the Grand Canyon corridor. The delta itself resulted from flash floods in Jackass Canyon bringing down boulders and cobbles, and the sand which forms the delta substrate was deposited by the Colorado River at high water stages and as wind blown sand along the river corridor. The floor of Jackass Canyon is periodically scoured by flash floods, and the desert slopes above the canyon floor are talus slope habitats above the influence of the creek or the river.

Ecozone iii, Old Riparian; Topography i, Delta, and ii, Side Canyon

Most of the Jackass Canyon delta is within the Old Riparian zone, above the influence of normal post-Glen Canyon Dam outflows. The topography is designated as Delta at interview sites that were general across the Old Riparian zone, and as Side Canyon when they are directly

within the channel of Jackass Creek at normal flows as it crosses the delta. The upper extent of the Old Riparian zone is delimited by a fairly broad zone of Apache-plume (*Fallugia paradoxa*) across the upper portion of the delta, and by a narrow zone of netleaf hackberry (*Celtis reticulata*) where the talus slope meets the delta away from the mouth of Jackass Canyon. The delta itself is open and vegetated by a variety of shrubs, including long-leaf brickell-bush (*Brickellia longifolia*) on most of the delta, tamarisk and coyote willow (*Salix exigua*) across the lower part, and four-wing saltbush in areas away from the river. The list of observed plant species in this ecozone include:

Amsonia tomentosa var. *stenophylla*
Aster spinosus
Astragalus tephrodes
Atriplex canescens
Brickellia longifolia
Bromus rubens
Celtis reticulata
Fallugia paradoxa
Hordeum jubatum
Oenothera pallida

Opuntia basilaris
Oryzopsis hymenoides
Rumex hymenosepalus
Salix exigua
Salsola iberica
Sphaeralcea grossulariaefolia
Stephanomeria exigua
Tamarix chinensis

Ecozone ii, Desert; Topography ii, Side Canyon

This includes the area above the Old Riparian zone and combines the desert talus slopes and side canyon floor in a single, rather complex zone. The talus slopes are steep and rocky with a substrate of Hermit shale and rocks and boulders of Coconino sandstone and Hermit shale. Dominant plants on the slopes include narrowleaf yucca (*Yucca angustissima*), Anderson wolfberry (*Lycium andersonii*), Torrey Indian-tea, beavertail cactus (*Opuntia basilaris*), Prince's-plume (*Stanleya pinnata*), and gooseberryleaf globemallow (*Sphaeralcea grossulariaefolia*). The side canyon floor is very bouldery with a red sand substrate, and is subject to periodic flash flooding. There is no permanent moisture in the canyon, and there are no side canyon riparian plant species indicative of a sustained water source. Common plants along the side canyon floor include beavertail cactus, Grizzly bear cactus, rubber rabbitbrush (*Chrysothamnus nauseosus*), Torrey Indian-tea, Louisiana wormwood (*Artemisia ludoviciana*), and three-leaf snakeweed (*Gutierrezia microcephala*). The list of observed plant species in this ecozone include:

Amsonia tomentosa var. *stenophylla*
Aristida purpurea
Artemisia ludoviciana
Bromus rubens
Chrysothamnus nauseosus
Encelia frutescens var. *resinosa*
Ephedra torreyana
Gutierrezia microcephala

Lepidium fremontii
Lycium andersonii
Malacothrix glabrata
Mirabilis multiflora
Opuntia basilaris
Opuntia erinacea
Oryzopsis hymenoides
Rhus trilobata var. *simplicifolia*

Salix exigua
Stanleya pinnata
Stipa comata
Yucca angustissima

Tiquilia latior
Xylorhiza tortifolia

Site #4: Buck Farm Canyon

This site is located near river mile 41 on the right side. Buck Farm Canyon is a steep-walled side canyon with permanent water in the narrow portion beginning approximately one-quarter mile upstream from its delta at the Colorado River. Interviews were conducted in the Side Canyon Riparian and Old Riparian ecozones. The delta is typical of most, with deep river sand deposits atop and among large cobbles and boulders which have been brought down the side canyon at times of severe flooding.

Ecozone v, Side Canyon Riparian; Topography ii, Side Canyon

This area includes the narrow, shaded side canyon with its perennial stream. The canyon walls have numerous seeps, especially on the south side, and these are heavily vegetated with moisture-requiring plants, including maidenhair fern (*Adiantum capillus-veneris*), red columbine (*Aquilegia triternata*), giant helleborine orchid (*Epipactis gigantea*), and pink thistle (*Cirsium* sp.), an undescribed species abundant along the Grand Canyon). The canyon floor is occasionally scoured, and supports little woody vegetation in narrow parts; however, in wider areas with good soil California redbud (*Cercis occidentalis* var. *orbiculata*) is abundant and Fremont cottonwood (*Populus fremontii*) is occasional. Flowing water begins along the creek several hundred yards from the upper end of the delta, and continues upstream for a distance of about one-half mile from the Colorado River at which point the group turned around at a waterfall. The canyon floor is in Muav limestone, the high cliffs of the canyon walls are Redwall limestone, and intrusions of Temple Butte formation occur between the Muav and Redwall through much of Buck Farm Canyon. The list of observed plant species in this ecozone include:

Adiantum capillus-veneris
Agave utahensis var. *utahensis*
Aquilegia triternata
Baccharis pterinoides
Baccharis salicifolia
Brickellia longifolia
Cercis occidentalis var. *orbiculata*
Cirsium sp.
Epipactis gigantea
Maurandya antirrhiniflora
Muhlenbergia asperifolia

Nicotiana trigonophylla
Populus fremontii
Rhamnus betulaeifolia
Salix exigua
Solidago sp.
Stanleya pinnata
Tamarix chinensis
Typha latifolia
Veronica anagallis-aquatica

Ecozone iii, Old Riparian zone; Topography i, Delta

A large delta is present at the mouth of Buck Farm Canyon, typically composed of boulders and cobbles from side canyon flash floods and mud flows and sand deposited by high water in the Colorado River. This delta has more dunes than the delta at Jackass Canyon, especially in its downstream portion. The Buck Farm delta is notable in being the first location for Torrey mesquite (*Prosopis glandulosa* var. *torreyana*) below Lees Ferry; it occurs at the Old High Water line at the upper part of the delta. Notable stands of arrowweed (*Tessaria sericea*) occur on the higher dunes, and long-leaf brickell-bush, four-wing saltbush, Torrey Indian-tea, and giant dropseed (*Sporobolus giganteus*) are widespread in rockier areas of the delta with more stabilized sandy substrate. Fetid marigold (*Dyssodia pentachaeta*), on which an interview was conducted, was present in stabilized sandy habitat among boulders at the upper end of the delta. Interviews were conducted only in the Old Riparian portion of the delta; none were in the New Riparian zone near the Colorado River. The list of observed plant species in this ecozone include:

Atriplex canescens

Brickellia longifolia

Bromus rubens

Dyssodia pentachaeta

Ephedra torreyana

Galium stellatum

Gutierrezia microcephala

Haplopappus spinulosus var. *gooddingii*

Lepidium fremontii

Opuntia basilaris

Oryzopsis hymenoides

Prosopis glandulosa var. *torreyana*

Salsola iberica

Sporobolus giganteus

Stephanomeria pauciflora

Tamarix chinensis

Tessaria sericea

Site #5: Nankoweap Creek

This site is located near river mile 52. The Nankoweap Creek collection sites are about 200 yards up Nankoweap Creek from the Colorado River (Old Riparian ecozone), and along the immediate river shoreline (New Riparian ecozone). The creek site is in the lower flood plain of the creek as it runs through the large, complex delta system present at this location. Both sites are within the area that was flooded by old high water events in the Colorado River.

Ecozone iii, Old Riparian; Topography i, Delta

Nankoweap Creek flooded in early 1993 and was still running swiftly at the time of our visit; the floods were sufficient to remove herbaceous aquatic vegetation along the creek but not high enough to affect the upper portions of its immediate flood plain. The area is very rocky with water worn cobbles and boulders of all rock types brought deposited by Nankoweap Creek floods. Old channels and ridges make the local topography rugged. The next higher level is more stabilized and has not been flooded for some time. Both levels historically have been

subjected to flooding both by high pre-Glen Canyon Dam flows in the Colorado River and by severe flash flooding of Nankoweap Creek. Interviews were conducted along the creek, including some plants that are directly dependent on the permanently flowing stream, and in the lower flood plain along Nankoweap Creek, an area that was not flooded this year and only occasionally and briefly receives moisture from the creek at times of high runoff. The list of observed plant species in this ecozone include:

<i>Acacia greggii</i>	<i>Oryzopsis hymenoides</i>
<i>Atriplex canescens</i>	<i>Populus fremontii</i>
<i>Baccharis salicifolia</i>	<i>Prosopis glandulosa</i> var. <i>torreyana</i>
<i>Chrysothamnus nauseosus</i>	<i>Salix exigua</i>
<i>Dyssodia pentachaeta</i>	<i>Sporobolus giganteus</i>
<i>Echinocereus engelmannii</i>	<i>Tamarix chinensis</i>
<i>Encelia farinosa</i>	<i>Tiquilia latior</i>
<i>Equisetum laevigatum</i>	<i>Yucca baccata</i>
<i>Gutierrezia microcephala</i>	
<i>Haplopappus spinulosus</i> var. <i>gooddingii</i>	
<i>Opuntia erinacea</i>	

Ecozone iv, New Riparian; Topography i, Delta

The Colorado River shoreline is somewhat indefinite at the outer edge of the Nankoweap delta. There is an area of boulders and wet sand about 100 feet across that is frequently flooded with shallow water from the river. The area has little vegetation as a result of water fluctuations; however, there are small "islands" of sand near the river that remain above water much of the time and have a few plants. An interview was conducted on wire lettuce (*Stephanomeria tenuifolia*) growing in such a habitat. This is generally not an aquatic species and usually occurs at drier sites. The list of observed plant species in this ecozone include:

<i>Baccharis salicifolia</i>	<i>Stephanomeria tenuifolia</i>
<i>Equisetum laevigatum</i>	<i>Tamarix chinensis</i>
<i>Sonchus oleraceus</i>	

Site #6: Above Little Colorado River

This site is located at river mile 61 on the right side. The site includes a small beach and delta area and desert slopes and dry desert drainages across the Colorado River and slightly upstream from the mouth of the Little Colorado River. The two general areas are separated by a low cliff of Tapeats sandstone. Areas below the cliff were subject to periodic flooding by pre-dam high water in the Colorado River, while the desert slopes above the cliffs have not been flooded by the river in historic times. Interviews were conducted in the Old Riparian, Desert, and Canyon Wall ecozones.

Ecozone iii, Old Riparian; Topography i, Delta

This zone includes a narrow, steep dune upstream and a somewhat broader boulder beach with sand in the center downstream. The delta is at the mouth of a short, steep side canyon draining the lower slopes of Chuar Butte. The upper part of the zone is defined by the base of Tapeats sandstone ledges. Indian ricegrass (*Oryzopsis hymenoides*) and spiny aster (*Aster spinosus*) dominate sandy, rocky areas, with a narrow band of tamarisk along the shoreline (New Riparian ecozone) and scattered catclaw acacia (*Acacia greggii*) at the upper boundary along the cliffs. Turpentine broom (*Thamnosma montana*) was found in rocky areas with stabilized sand substrate in the upper portion of the delta. The list of observed plant species in this ecozone include:

<i>Acacia greggii</i>	<i>Opuntia erinacea</i>
<i>Apocynum cannabinum</i>	<i>Oryzopsis hymenoides</i>
<i>Aristida purpurea</i>	<i>Salix exigua</i>
<i>Aster spinosus</i>	<i>Salsola iberica</i>
<i>Bromus rubens</i>	<i>Sphaeralcea grossulariaefolia</i>
<i>Dicoria brandegei</i>	<i>Stanleya pinnata</i>
<i>Dyssodia pentachaeta</i>	<i>Stephanomeria tenuifolia</i>
<i>Ephedra torreyana</i>	<i>Tamarix chinensis</i>
<i>Gutierrezia microcephala</i>	<i>Thamnosma montana</i>
<i>Haplopappus acradenius</i>	
<i>Lepidium fremontii</i>	

Ecozone ii, Desert; Topography ii, Side Canyon

This collection site centered around the open desert slopes of a small, dry drainage with an isolated occurrence of a black sagebrush (*Artemisia bigelovii*) on the north-facing slope and a dominant occurrence of beavertail cactus on the south-facing slope. The slopes above the drainage floor are Bright Angel shale, while the floor of the wash is Tapeats sandstone. Vegetation at the site is typical of the desert in the area, and represent the upstream limit of well-developed Mohave Desert in the Grand Canyon. Cacti and small shrubs are scattered on the slopes with loose gravels and shale; the plants of interest are above the effects of periodic runoff in the drainage. The north-facing slope (with black sagebrush) has more big galleta grass (*Hilaria rigida*), grizzly bear cactus, and three-leaf snakeweed; while the south-facing slope has more beavertail cactus (rare on the opposite slope), and exclusively supports white brittlebush (*Encelia farinosa*). The list of observed plant species in this ecozone include:

<i>Artemisia bigelovii</i>	<i>Eriogonum inflatum</i>
<i>Brickellia atractyloides</i>	<i>Erioneuron pulchellum</i>
<i>Dyssodia pentachaeta</i>	<i>Galium stellatum</i>
<i>Echinocactus polycephalus</i>	<i>Gutierrezia microcephala</i>
<i>Encelia farinosa</i>	<i>Haplopappus spinulosus</i> var. <i>gooddingii</i>
<i>Ephedra torreyana</i>	<i>Hilaria rigida</i>

Opuntia basilaris
Opuntia erinacea
Sphaeralcea grossulariaefolia

Tiquilia latior

Ecozone i, Canyon Wall; Topography v, High Desert Slopes

This interview site is along a narrow ridge of Bright Angel shale between the Colorado River and the side canyon described in 6B. The ridge gently descends through a series of low outcrops and shaly slopes. The ridgetop is dominated by typical desert plants, including white brittlebush, desert-trumpet (*Eriogonum inflatum*), beavertail cactus, fluffgrass (*Erioneuron pulchellum*), and various Mohave Desert spring annuals, now mostly dried up. The mouth of the Little Colorado River is visible across the Colorado River and a short distance downstream. Observed plant species in this ecozone include:

Brickellia atractyloides
Bromus rubens
Chorizanthe brevicornu
Dyssodia pentachaeta
Encelia farinosa
Ephedra torreyana
Erioneuron pulchellum
Eriogonum inflatum
Galium stellatum
Haplopappus spinulosus var. *gooddingii*

Lepidium lasiocarpum
Nemacladus glanduliferus
Oenothera cavernae
Opuntia basilaris
Plantago insularis
Porophyllum gracile
Sphaeralcea grossulariaefolia

Site #7: Stone Creek

This site is located near river mile 131 on the right side. Stone Creek is an open side canyon in a broad, sunny valley with a permanently flowing stream. A trail leads from the beach to the top of a waterfall over the diabase (basalt) sill, then follows the creek for several miles. The collection site was from the top of the lower waterfall to a point approximately one-half mile upstream, and included interviews in the Side Canyon Riparian Ecozone along the creek and Desert Ecozone on slopes above the influence of the stream but within the Stone Creek valley.

Ecozone ii, Desert; Topography ii, Side Canyon

This is the interview site for purple sage (*Salvia dorrii*), located on desert slopes of Hakatai shale above Stone Creek. The site is a short distance above the Stone Creek flood plain adjacent to some medium-sized Fremont cottonwoods growing along the creek; it is on a steep, fairly densely vegetated northwest-facing slope with red soils and loose shale. Purple sage is one of the dominant plants on the slope; it reaches to the base of the slope but is above the influence of the creek. Observed plant species in this ecozone include:

Acacia greggii
Agave utahensis var. *utahensis*
Aristida purpurea
Artemisia ludoviciana
Aster sp.
Bromus rubens
Cryptantha sp.
Ephedra nevadensis
Eriogonum inflatum

Haplopappus spinulosus
Hilaria rigida
Lycium andersonii
Muhlenbergia porteri
Populus fremontii (base of slope)
Salvia dorrii
Sarcostemma cynanchoides
Sphaeralcea grossulariaefolia

Ecozone v, Side Canyon Riparian; Topography ii, Side Canyon

Stone Creek has an open, broad canyon floor with a permanent, meandering stream and numerous large seeps which support marshes. The canyon floor has a diversity of microhabitats depending on differences in substrate and moisture. The wettest sites, in the marshes, support giant common reed (*Phragmites australis*), sawgrass (*Cladium californicum*), and smooth sumac (*Rhus glabra*). Along the stream, Emory seepwillow and squawbush (*Rhus trilobata* var. *simplicifolia*) with occasional giant common reed are abundant in places, along with maidenhair fern and cardinal monkeyflower (*Mimulus cardinalis*). Open, drier rocky sites support catclaw acacia, Nevada Indian-tea (*Ephedra nevadensis*), Utah agave (*Agave utahensis* var. *utahensis*) and Kaibab agave (*Agave utahensis* var. *kaibabensis*). A few large Fremont cottonwoods grow along the stream near the edges of the floodplain and in the marshes. The list of observed plant species in this ecozone include:

Acacia greggii
Adiantum capillus-veneris
Agave utahensis var. *kaibabensis*
Agave utahensis var. *utahensis*
Andropogon glomeratus
Apocynum cannabinum
Artemisia bigelovii
Baccharis emoryi
Bromus rubens
Cirsium sp.
Cladium californicum
Datura meteloides
Ephedra nevadensis

Fallugia paradoxa
Imperata brevifolia
Mimulus cardinalis
Muhlenbergia asperifolia
Oenothera hookeri
Phragmites australis
Populus fremontii
Rhus glabra
Rhus trilobata var. *simplicifolia*
Solidago sp.
Tamarix chinensis

Site #8: Deer Creek Valley and Falls

This site is located near river mile 136 on the right side. Deer Creek Valley opens up to a lush, broad valley upstream from the narrow chasm where Deer Creek passes through the Tapeats sandstone at the top of Deer Creek Falls. The collection site included the area from the upper end of the chasm to the spring where water issues from a hole in the Redwall limestone

high above the valley. Interviews were all conducted in the Side Canyon Riparian Ecozone, which was here defined to encompass the valley floor affected directly or indirectly by the stream. The species list includes a wider area than the interview sites in order to present a more comprehensive overview of the ethnobotanical potential of this important site.

Deer Creek is a permanent stream with a well-developed side canyon riparian community. Large cottonwoods dominate along the stream through much of the valley, and a marsh-like understory of giant common reed and willow is along the creek nearly continuously. Coyote willow is the more common of the willows; Gooddings willow (*Salix gooddingii*) is also present. Emory seepwillow and seepwillow (*Baccharis salicifolia*) are both abundant along the stream's edge. Away from the water but still within the lower valley is a good diversity of other shrubs, including squawbush, Anderson wolfberry, and graythorn (*Ziziphus obtusifolia*). One large Parry century plant (*Agave parryi*) and several offsets are also along the trail. The vegetation is dense for most of the one-half mile upstream to the point where the trail leaves the main creek to go up a steep slope to the spring and waterfall. The area at the base of the falls issuing from the spring, one-quarter mile from Deer Creek itself, has numerous large redbuds. The list of observed plant species in the side canyon riparian ecozone include:

<i>Acacia greggii</i>	<i>Gutierrezia microcephala</i>
<i>Acourtia wrightii</i>	<i>Haplopappus acradenius</i>
<i>Adiantum capillus-veneris</i>	<i>Lycium andersonii</i>
<i>Agave parryi</i>	<i>Nasturtium officinale</i>
<i>Artemisia ludoviciana</i>	<i>Nicotiana trigonophylla</i>
<i>Astragalus praelongus</i>	<i>Nolina microcarpa</i>
<i>Atriplex canescens</i>	<i>Oenothera caespitosa</i>
<i>Baccharis emoryi</i>	<i>Opuntia phaeacantha</i>
<i>Baccharis salicifolia</i>	<i>Penstemon</i> sp.
<i>Brickellia longifolia</i>	<i>Phragmites australis</i>
<i>Bromus rubens</i>	<i>Populus fremontii</i>
<i>Cercis occidentalis</i> var. <i>orbiculata</i>	<i>Porophyllum gracile</i>
<i>Cirsium</i> sp.	<i>Psilostrophe sparsiflora</i>
<i>Datura meteloides</i>	<i>Ptelea trifoliata</i> ssp. <i>pallida</i>
<i>Descurainia pinnata</i>	<i>Rhus trilobata</i> var. <i>simplicifolia</i>
<i>Echinocereus triglochidiatus</i> var. <i>melanocanthus</i>	<i>Robinia neomexicana</i>
<i>Encelia farinosa</i>	<i>Salix exigua</i>
<i>Ephedra nevadensis</i>	<i>Salix gooddingii</i>
<i>Equisetum laevigatum</i>	<i>Sphaeralcea grossulariaefolia</i>
<i>Erigeron lobatus</i>	<i>Stephanomeria tenuifolia</i>
<i>Fallugia paradoxa</i>	<i>Ziziphus obtusifolia</i>
<i>Ferocactus acanthodes</i>	

Site #9: Kanab Creek

This site is located near river mile 143. Kanab Creek is a major side canyon confined within steep, narrow walls which enters the Colorado River with little gradient. The floor of the canyon is gravelly and cobbly, and above the lowest level of the creek are benches composed of wind-deposited sand and talus from the steep walls. There are seeps of greatly varying sizes issuing from the canyon walls. Interviews were conducted in three ecozones at Kanab Creek: New Riparian, Side Canyon Riparian, and Desert.

Ecozone iv, New Riparian; Topography i, Delta

This study site was of limited extent and encompassed the area immediately around an interview site for seepwillow. The site was actually along the Colorado River slightly upstream from Kanab Creek. The side canyon has little if any influence on the site, so its location near the mouth of Kanab Creek is incidental. The site is typical of rocky slopes reaching the river without the presence of a side canyon delta or sand bar; a thin riparian zone line of vegetation is present at a level somewhat above the current shoreline representing an undetermined flow rate somewhat higher than the present regime. Dominant plants along the shore include seepwillow, tamarisk, smooth scouring rush (*Equisetum laevigatum*), and camelthorn (*Alhagi camelorum*), the latter an exotic, noxious weed apparently distributed during high water in 1983 and now forming a dense, spiny thicket along the river in this section of the canyon up to the 1983 flood line. Observed plant species in this ecozone include:

Alhagi camelorum
Andropogon glomeratus
Aristida purpurea
Artemisia ludoviciana
Baccharis salicifolia
Cynodon dactylon
Dyssodia pentachaeta

Equisetum laevigatum
Gutierrezia microcephala
Haplopappus spinulosus var. *gooddingii*
Stephanomeria tenuifolia
Tamarix chinensis

Ecozone v, Side Canyon Riparian; Topography ii, Side Canyon

The floor of Kanab Canyon encompassed the largest portion of the collection site, and included approximately the first half-mile above the mouth of Kanab Creek. The floor of the canyon was scoured by flash flooding in early 1993; much vegetation was lost, rocks were re-distributed, and new soil was deposited. Few woody or perennial plants survive along the canyon floor, although scattered individuals from before the flood remain. The creek has returned to a confined channel, leaving dry, unvegetated silt and gravel bars in the flooded area. The species list also includes some higher gravel bars along the sides of the channel that were not affected by the recent high water, and some seeps along the floor of the canyon that have notable stands of canyon grape (*Vitis arizonica*). The list of observed plant species in this ecozone include:

Acacia greggii
Baccharis salicifolia
Brickellia longifolia
Bromus rubens
Datura meteloides
Gaillardia pinnatifida
Galium stellatum
Haplopappus spinulosus var. *gooddingii*
Melilotus sp.
Nolina microcarpa
Parthenocissus vitacea
Populus fremontii

Porophyllum gracile
Sphaeralcea grossulariaefolia
Stanleya pinnata
Stephanomeria tenuifolia
Tamarix chinensis
Tessaria sericea
Typha latifolia
Vitis arizonica
Xylorhiza tortifolia

Ecozone ii, Desert; Topography ii, Side Canyon

An interview was conducted on claretcup cactus (*Echinocereus triglochidiatus* var. *melanocanthus*) on a desert slope located within the walls of Kanab Canyon. The site is a talus slope and stabilized sand dune on the north side of Kanab Creek, above the influence of the creek or riparian zone and about 0.2 mile from the Colorado River. The sand at the site was probably windblown from beaches along the river, and numerous rocks from the cliffs above are incorporated into the dune. The sand is stabilized by catclaw acacia, Nevada Indian-tea, Engelmann prickly-pear cactus, and red brome (*Bromus rubens*). A rock fall from the top of the cliff directly across Kanab Creek from the site in January, 1993 during the time the creek was in flood splashed this hillside with muddy water, still evident on all of the perennials at the time of our visit, and threw a few rocks onto the dune. A USGS gauging station at the site was destroyed. The list of observed plant species in this ecozone include:

Acacia greggii
Agave utahensis var. *utahensis*
Allionia incarnata
Artemisia ludoviciana
Brickellia coulteri
Bromus rubens
Echinocereus triglochidiatus var. *melanocanthus*
Ephedra nevadensis
Erodium cicutarium

Ferocactus acanthodes
Gaillardia pinnatifida
Muhlenbergia porteri
Opuntia phaeacantha
Sphaeralcea grossulariaefolia
Stephanomeria tenuifolia
Tessaria sericea
Xylorhiza tortifolia

Site #10: Matkatamiba Canyon

This site is located near river mile 148 on the left side. The collection site is an opening in Matkatamiba Canyon located at the upstream end of a short chasm leading from the confluence with the Colorado River and before the walls close in to form a narrow, gravel-floored canyon. The open area includes an alcove and open slope with large seeps, a

number of small trees growing in stable sites not disturbed by any but the largest of flash floods, and a perennial stream running through a series of small sluices and pools over Muav limestone bedrock. Interviews were conducted in Side Canyon Riparian and Desert ecozones.

Ecozone v, Side Canyon Riparian; Topography ii, Side Canyon

This included the major portion of the floor of the canyon within the collection site, and encompassed a diversity of microsites within a short distance, varying from shaded active seeps with maidenhair fern, giant helleborine orchid, cardinal monkeyflower, and golden columbine (*Aquilegia chrysantha*) to sunny, drier sites with narrowleaf yucca, catclaw acacia, seepwillow, and California redbud. A large, open seep is present at the lower end of the alcove, supporting birchleaf buckthorn (*Rhamnus betulaefolia*), canyon grape, and McDougall's flaveria (*Flaveria mcdougallii*), a rare endemic species in this part of the canyon. A malodorous locoweed (*Astragalus praelongus*) was also noted on the open seep. A number of moisture-dependent herbaceous plants occur in gravels along the creek bed where permanent water is available. Observed plant species in this ecozone include:

- | | |
|---|--------------------------------------|
| <i>Acacia greggii</i> | <i>Fraxinus anomala</i> |
| <i>Adiantum capillus-veneris</i> | <i>Hilaria rigida</i> |
| <i>Aquilegia chrysantha</i> | <i>Maurandya antirrhiniflora</i> |
| <i>Aristida purpurea</i> | <i>Mimulus cardinalis</i> |
| <i>Astragalus praelongus</i> | <i>Muhlenbergia asperifolia</i> |
| <i>Baccharis salicifolia</i> | <i>Nicotiana trigonophylla</i> |
| <i>Brickellia longifolia</i> | <i>Nolina microcarpa</i> |
| <i>Bromus rubens</i> | <i>Rhamnus betulaefolia</i> |
| <i>Camissonia walkeri</i> | <i>Salvia davidsonii</i> |
| <i>Cercis occidentalis</i> var. <i>orbiculata</i> | <i>Sphaeralcea ambigua</i> |
| <i>Cladium californicum</i> | <i>Sphaeralcea grossulariaefolia</i> |
| <i>Datura meteloides</i> | <i>Tamarix chinensis</i> |
| <i>Epipactis gigantea</i> | <i>Vitis arizonica</i> |
| <i>Erigeron lobatus</i> | <i>Yucca angustissima</i> |
| <i>Flaveria mcdougallii</i> | |

Ecozone ii, Desert; Topography ii, Side Canyon

A single interview on claretcup cactus was conducted on a steep desert slope above the chasm in lower Matkatamiba Canyon. Although not distant from the open seep, the site receives no influence from moisture sources within the canyon and supports typical desert vegetation. The site is a steep, narrow talus slope with Muav limestone boulders and soils of local origin. The site is in shade due to the high walls several hours each day. Observed plant species in this ecozone include:

- | | |
|--|------------------------------|
| <i>Acacia greggii</i> | <i>Astragalus praelongus</i> |
| <i>Agave utahensis</i> var. <i>utahensis</i> | <i>Bromus rubens</i> |

<i>Echinocereus triglochidiatus</i>	var.	<i>Lepidium lasiocarpum</i>
<i>melanocanthus</i>		<i>Muhlenbergia porteri</i>
<i>Encelia farinosa</i>		<i>Pleurocoronis pluriseta</i>
<i>Ephedra nevadensis</i>		<i>Porophyllum gracile</i>
<i>Ferocactus acanthodes</i>		<i>Stanleya pinnata</i>
<i>Gutierrezia microcephala</i>		<i>Xylorhiza tortifolia</i>
<i>Haplopappus spinulosus</i>	var. <i>gooddingii</i>	

Site #11: Ledges Spring Site

This site is located near river mile 151. The Ledges seep is a large, active travertine-forming seep area originating from calcium carbonate-enriched springs and seeps apparently at the base of the Redwall limestone and running down over several shelves and benches of Muav limestone below. Although no interviews were conducted at this site, it is included as a study site as it is representative of a specialized habitat in Grand Canyon. Many species on which previous interviews were conducted were found here.

The area is open and receives several hours of direct sun during midday. Level areas are dominated by sawgrass and birchleaf buckthorn, and cascades have golden columbine, maidenhair fern, and rockmat (*Petrophytum caespitosum*). Lower areas near the Colorado River also have seepwillow and coyote willow. McDougall's flaveria is abundant in moist, saline areas away from flowing water. This site is typical of travertine seep areas which are abundant in this part of the Canyon. The species list includes desert plants found at xeric sites within the general area influenced by the seep. The list of observed plant species at this site includes:

<i>Adiantum capillus-veneris</i>	<i>Galium stellatum</i>
<i>Agave utahensis</i> var. <i>kaibabensis</i>	<i>Hilaria rigida</i>
<i>Andropogon glomeratus</i>	<i>Hordeum jubatum</i>
<i>Aquilegia chrysantha</i>	<i>Imperata brevifolia</i>
<i>Aristida purpurea</i>	<i>Medicago sativa</i>
<i>Astragalus praelongus</i>	<i>Muhlenbergia asperifolia</i>
<i>Baccharis emoryi</i>	<i>Oenothera hookeri</i>
<i>Baccharis salicifolia</i>	<i>Opuntia erinacea</i>
<i>Brickellia longifolia</i>	<i>Petrophytum caespitosum</i>
<i>Cladium californicum</i>	<i>Porophyllum gracile</i>
<i>Dyssodia pentachaeta</i>	<i>Rhamnus betulaefolia</i>
<i>Encelia farinosa</i>	<i>Salix exigua</i>
<i>Ephedra nevadensis</i>	<i>Sarcostemma cynanchoides</i>
<i>Epipactis gigantea</i>	<i>Sisyrinchium demissum</i>
<i>Equisetum laevigatum</i>	<i>Stephanomeria tenuifolia</i>
<i>Eriogonum inflatum</i>	<i>Tamarix chinensis</i>
<i>Erioneuron pulchellum</i>	<i>Thelypodium</i> sp.
<i>Ferocactus acanthodes</i>	
<i>Flaveria mcdougallii</i>	

Site #12: National Canyon

This site is located near river mile 166 on the left side. The National Canyon delta is representative of large boulder beach deltas at the mouths of side canyons in this portion of the Grand Canyon. The delta is within the New Riparian zone, although most of it is flooded only during the highest water releases from Glen Canyon Dam. Much of it was inundated by the high flows in June, 1983, resulting in a sand and silt recharge. Silt- and sand-laden Colorado River flows in January-February 1993 left a new wide sand bar across the front and lower end of the beach. The boulders originate from flash floods and mudflows from National Canyon, which has a well-defined channel along the back wall for normal runoff.

Ecozone iv, New Riparian; Topography i, Delta

The National Canyon delta is a fairly flat, relatively uniform area with boulders partially buried in sand. Large individuals of desert broom (*Baccharis sarothroides*) are the most abundant species across the entire delta. Coyote willow is scattered along the outer part of the beach, and tamarisk grows in sandy areas. Some of the higher points near the National Canyon channel along the rear portion of the delta are somewhat stabilized and support fluffgrass, globe mallow, and three-leaved snakeweed. A single black sagebrush was found among boulders at the rear of the beach just above the bank of the National Canyon channel. Observed plant species in this ecozone include:

Andropogon glomeratus
Artemisia bigelovii
Artemisia ludoviciana
Aster spinosus
Baccharis emoryi
Baccharis salicifolia
Baccharis sarothroides
Brickellia longifolia
Bromus rubens
Camissonia multijuga
Cryptantha racemosa
Cynodon dactylon
Datura meteloides
Erioneuron pulchellum
Galium stellatum

Gutierrezia microcephala
Haplopappus acradenius
Muhlenbergia asperifolia
Nicotiana trigonophylla
Rhus trilobata var. *simplicifolia*
Salix exigua
Sarcostemma cynanchoides
Sphaeralcea grossulariaefolia
Sporobolus cryptandrus
Stanleya pinnata
Stephanomeria tenuifolia
Tamarix chinensis

Site #13: Fern Glen Canyon

This site is located near river mile 168 on the right side. Fern Glen is a narrow side canyon with a rocky, dry floor in its lower portions and a small permanently running stream in the upper part where the canyon narrows and the floor is of bedrock or shallow gravels. The lower part of the canyon has large boulders, mostly from the walls above. A few narrow

shelves of desert vegetation occur on small talus slopes. Numerous large seeps are on the walls in the upper portion of the canyon. Interviews were conducted in the Side Canyon Riparian ecozone along the floor, and in the Desert ecozone at one isolated point on a talus slope near the mouth of the canyon.

Ecozone v, Side Canyon Riparian; Topography ii, Side Canyon

The floor of the canyon and seeps on lower canyon walls are included in this zone. The walls gradually narrow upstream from the delta, and extensive seep areas are found in moist alcove areas and ledges along the narrow Muav limestone walls, with enough permanent moisture to support a profusion of maidenhair fern, giving the canyon its name. The seeps also support giant helleborine orchid, cardinal monkeyflower, and McDougall's flaveria. Scratchgrass (*Muhlenbergia asperifolia*), although observed previously, was first interviewed on here; it occurs on narrow shelves along the seeps. A few velvet ash trees (*Fraxinus pennsylvanica* ssp. *velutina*) occur in gravels along the canyon floor in areas where there is subsurface moisture. In the lower part of the canyon, below the zone of surface moisture, there are benches of thick catclaw and narrow-leaf brickell-bush. Observed plant species in this ecozone include:

Acacia greggii
Acourtia wrightii
Adiantum capillus-veneris
Baccharis sarothroides
Brickellia longifolia
Bromus rubens
Camissonia multijuga
Cryptantha racemosa
Datura meteloides
Epipactis gigantea
Eucnide urens

Flaveria mcdougallii
Fraxinus pennsylvanica ssp. *velutina*
Maurandya antirrhiniflora
Mimulus cardinalis
Muhlenbergia asperifolia
Solanum douglasii
Tamarix chinensis

Ecozone ii, Desert; Topography ii, Side Canyon

This was the first interview site for California barrel cactus (*Ferocactus acanthodes*). The isolated site is on a steep, narrow, isolated talus slope near the mouth of the canyon but high enough to be above the influence of the side canyon drainage and Colorado River high water zone. The talus has an abundance of sharp Muav limestone rocks and boulders. Its lower slopes, adjacent to the canyon floor, have a thicket of catclaw acacia, while white brittlebush and California barrel cactus are dominant on the upper part of the slope. This is very different habitat from the canyon floor and general environment of Fern Glen Canyon. The list of observed plant species in this ecozone include:

Acacia greggii
Agave utahensis var. *utahensis*

Brickellia coulteri
Brickellia longifolia

Bromus rubens
Camissonia multijuga
Cryptantha racemosa
Descurainia pinnata
Echinocereus triglochidiatus var.
melanocanthus
Encelia farinosa
Ephedra nevadensis
Erigeron lobatus
Ferocactus acanthodes
Galium aparine

Galium stellatum
Lycium pallidum
Nicotiana trigonophylla
Opuntia erinacea
Opuntia phaeacantha
Parietaria sp.
Pleurocoronis pluriseta
Sarcostemma cynanchoides
Stanleya pinnata
Ziziphus obtusifolia

Site #14: Vulcan's Anvil

This site is located near river mile 178 on the left side. The beach area just upstream from Vulcan's Anvil consists of a small, narrow delta with boulders deposited by a dry, steep side stream, and a larger sandy area which was deposited primarily by the Colorado River during periods of high water. The front portion of the dune is fairly steep, and was recharged with sand in early 1993. The back portion is somewhat level except where it is bisected by the side stream, and changes abruptly into desert along a line of mesquite at its upper boundary. Interviews were conducted in both the New Riparian and Old Riparian zones.

Ecozone iv, New Riparian; Topography i, Delta

The site is on the dune just behind the tamarisk zone, forming a continuous line across the front of the beach. The site includes the dry wash cutting through the beach and active dunes. The area has been heavily impacted by camping, as evidenced by trails, campsites, and dune erosion on slopes. Perennial grasses (dropseed; *Sporobolus* spp.) cover much of the area that has not been disturbed. Russian thistle (*Salsola iberica*), on which interviews were conducted, grows on the edge of the dune sloping into the wash; dead plants from previous years and new seedlings are present. Red brome is dense on most areas of the dune not recently disturbed by camping. The list of observed plant species in this ecozone includes:

Acacia greggii
Artemisia ludoviciana
Atriplex canescens
Baccharis salicifolia
Baccharis sarothroides
Brickellia longifolia
Bromus rubens
Camissonia multijuga
Conyza canadensis
Cynodon dactylon
Dicoria brandegei

Erodium cicutarium
Haplopappus acradenius
Hordeum jubatum
Lepidium lasiocarpum
Oenothera hookeri
Oenothera pallida
Salsola iberica
Sphaeralcea grossulariaefolia
Sporobolus contractus
Sporobolus giganteus
Sporobolus airoides

Stephanomeria tenuifolia
Tamarix chinensis

Tessaria sericea

Ecozone iii, Old Riparian; Topography i, Delta

This area is in the Old High Water zone and is marked by a rather dense line of Torrey mesquite and graythorn at its upper end. The soil is sandy, representing old river deposits. A dense, luxuriant growth of red brome was in this zone this spring, especially under the mesquites. The lower part of the zone gradually transitions to New Riparian depending on dune height and position with respect to a secondary channel from the drainage to the river. Tamarisk and desert broom line this drainage. The Old Riparian zone is rockier, with thinner, more stabilized sand, and is less impacted by river runners. Dominant plants in the zone besides mesquite and graythorn include catclaw acacia, creosotebush (*Larrea tridentata*), four-wing saltbush, and white bursage (*Ambrosia dumosa*). The list of observed plant species in this ecozone includes:

Acacia greggii
Ambrosia dumosa
Atriplex canescens
Baccharis sarothroides
Battarrea stevenii
Bebbia juncea
Bromus rubens
Descurainia pinnata
Erigeron lobatus
Gutierrezia microcephala
Larrea tridentata
Lepidium fremontii
Lepidium lasiocarpum
Lycium andersonii

Malcomia africana
Nicotiana trigonophylla
Phoradendron californicum
Porophyllum gracile
Prosopis glandulosa var. *torreyana*
Sphaeralcea grossulariaefolia
Sporobolus airoides
Stanleya pinnata
Stephanomeria exigua
Tessaria sericea
Vulpia octoflora
Ziziphus obtusifolia

Site #15: Whitmore Wash

This site is located at river mile 188 on the right side. The Whitmore Wash collection site is located at the pictograph site about 1/4 mile upstream from the mouth of Whitmore Wash. The study area includes the New Riparian ecozone, a fairly wide area of deep sand deposits and dunes, a narrow Old Riparian zone, and steep, rocky Desert zone on slopes from the upper limit of the old high water zone to the base of the massive cliffs with the pictograph inscriptions. Interviews were conducted in all three ecozones.

Ecozone iv, New Riparian; Topography iv, Gravel/Sand Bar

This area is designated as Gravel/Sand Bar instead of delta because its deposition has come principally from high flows of the Colorado River rather than from a side canyon. It is

marked by dense arrowweed with patches of smooth scouring rush, broad-leaved cattail (*Typha latifolia*), and tamarisk. Extensive dunes at the back of the beach have an unusually vigorous and dense stand of arrowweed, and the beach front along the river received considerable sand recharge from silt-laden high water in early 1993. A broad, low sand bar at the water line is alternately flooded and temporarily exposed at the current flow regime. This bar has large stands of smooth scouring rush, patches of broad-leaved cattail, and young coyote willow and seedling tamarisk. A few mature Torrey mesquite reach the river's edge on a steep 12-foot high bank in the downstream portion of the beach; this may represent an Old High Water deposit. Observed plant species in this ecozone include:

<i>Acacia greggii</i>	<i>Salix exigua</i>
<i>Baccharis salicifolia</i>	<i>Sarcostemma cynanchoides</i>
<i>Baccharis sarothroides</i>	<i>Tamarix chinensis</i>
<i>Bromus rubens</i>	<i>Tessaria sericea</i>
<i>Descurainia pinnata</i>	<i>Typha latifolia</i>
<i>Equisetum laevigatum</i>	
<i>Muhlenbergia asperifolia</i>	
<i>Prosopis glandulosa</i> var. <i>torreyana</i>	

Ecozone iii, Old Riparian; Topography iv, Gravel/Sand Bar

This is a fairly narrow zone with uneven topography of old river sand and gravel deposits. It is marked by dense thickets of old growth Torrey mesquite with a dense, vigorous understory of yellow tansy mustard (*Descurainia pinnata*), which increases abruptly from the New Riparian zone. A few creosotebush, catclaw, and white bursage are scattered among the mesquites. Observed plant species in this ecozone include:

<i>Acacia greggii</i>	<i>Larrea tridentata</i>
<i>Bromus rubens</i>	<i>Lepidium lasiocarpum</i>
<i>Cassia covesii</i>	<i>Prosopis glandulosa</i> var. <i>torreyana</i>
<i>Descurainia pinnata</i>	<i>Stanleya pinnata</i>
<i>Encelia farinosa</i>	
<i>Ferocactus acanthodes</i>	

Ecozone ii, Desert; Topography v, High Desert Slopes

The desert portion of the study area is on a steep, sandy talus slope between the upper margin of the New Riparian zone and the base of massive cliffs with petroglyphs. The zone is on a Bright Angel shale slope with sandstone flakes and sand blown up from the beach below. It is dominated by creosotebush and beavertail cactus; the lower part of the zone has dense red brome and Indian plantain (*Plantago insularis*). The list of observed plant species in this ecozone includes:

<i>Ambrosia dumosa</i>	<i>Atriplex canescens</i>
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Bromus rubens
Camissonia multijuga
Chorizanthe brevicornu
Cryptantha sp.
Encelia farinosa
Eriogonum inflatum
Ferocactus acanthodes
Larrea tridentata

Lepidium lasiocarpum
Mammillaria sp.
Opuntia basilaris
Perityle emoryi
Plantago insularis

Site #16: Parashant Wash

This site is located near river mile 198 on the right side. A single interview was conducted at Parashant Wash, on a log of velvet ash which was deposited at this site in early 1991. It originally grew in Havasu Canyon and was washed out during a flash flood in the summer of 1990. The log was sampled and a cross section was sent to the University of Arizona Tree Ring Lab for analysis prior to its coming to rest at Parashant. It subsequently sprouted and has grown, albeit marginally, since it came to rest here. No other velvet ash trees are present at the site; however, they do occur occasionally on New Riparian zone beaches in this part of the Grand Canyon, so the species could potentially become established.

New Riparian Ecozone

The collection site is at the outer edge of a large boulder and sand delta within the New Riparian zone at the mouth of Parashant Creek. The delta is dominated by desert broom, which is abundant among the boulders. The site is typical of deltas along the river in the lower Grand Canyon and is similar to National Canyon floristically. Parashant Creek cuts across the delta in a defined gravelly channel. Old Riparian zone mesquites ring the delta against cliffs, and behind the delta is a higher sand and gravel bar deposited at high water and dominated by creosotebush. Species lists were prepared for the New Riparian, Old Riparian, and Desert ecozones at Parashant, although the collection site included only the New Riparian zone on the delta. The list of observed plant species in the New Riparian ecozone includes:

Acacia greggii
Aristida purpurea
Artemisia ludoviciana
Aster spinosus
Baccharis sarothroides
Bebbia juncea
Bromus rubens
Bromus sp.
Camissonia multijuga
Cynodon dactylon
Dyssodia pentachaeta
Encelia farinosa

Fraxinus pennsylvanica ssp. *velutina*
Gutierrezia microcephala
Hedeoma nanum
Hordeum jubatum
Melampodium leucanthum
Melilotus alba
Mortonia scabrella var. *utahensis*
Oenothera pallida
Opuntia erinacea
Opuntia phaeacantha
Penstemon eatoni
Phragmites australis

Salsola iberica
Sporobolus contractus
Tamarix chinensis

Vulpia octoflora
Xanthium strumarium

Observed plant species in the Old Riparian ecozone include:

Acacia greggii
Baccharis sarothroides
Bromus rubens
Comyza canadensis
Descurainia pinnata
Encelia farinosa
Gutierrezia microcephala
Larrea tridentata
Lycium andersonii

Mirabilis bigelovii
Phoradendron californicum
Porophyllum gracile
Prosopis glandulosa var. *torreyana*
Sphaeralcea grossulariaefolia
Stanleya pinnata
Trixis californica

The list of observed plant species in the Desert ecozone includes:

Acacia greggii
Agave utahensis var. *utahensis*
Ambrosia dumosa
Bromus rubens
Camissonia multijuga
Encelia farinosa

Ferocactus acanthodes
Fouquieria splendens
Galium stellatum
Larrea tridentata
Yucca whipplei

Site #17: Hematite Cave

This site is located near river mile 200. The collection site at the Ompi Cave centered on the Desert Ecozone, located along a steep, bouldery wash below the cliffs where the cave is located. However, it was necessary to cross well-developed New Riparian and Old Riparian ecozones to reach the cave, and these zones are included for completeness. The lower zones are typical of those at other stops in this section of the canyon; the desert zone supports several species not observed at previous sites on the trip.

Ecozone ii, Desert; Topography v, High Desert Slopes

The site is in a small alcove of desert vegetation above the New Riparian zone and at the base of the cliff with Ompi Cave. The site is bouldery and has been subject to severe flash flooding events in the past. Sufficient time has passed since the last such event that the soil is well stabilized. The site is below a small waterfall in a poorly defined drainage. The desert vegetation at the site shows the increasing species diversity of the Mohave Desert at downstream locations in the lower Grand Canyon. The list of observed plant species in this ecozone includes:

Abutilon incanum

Acacia greggii

Bromus rubens
Echinocereus triglochidiatus var.
melanocanthus
Encelia farinosa
Encelia frutescens var. *resinosa*
Ephedra nevadensis
Erioneuron pulchellum
Ferocactus acanthodes
Fouquieria splendens
Gutierrezia microcephala
Haplopappus spinulosus var. *gooddingii*
Janusia gracilis

Larrea tridentata
Lepidium lasiocarpum
Lycium fremontii
Mammillaria sp.
Opuntia basilaris
Pleurocoronis pluriseta
Porophyllum gracile
Salazaria mexicana
Sphaeralcea ambigua
Sphaeralcea grossulariaefolia

Ecozone iii, Old Riparian

The Old High Water zone here is fairly narrow and not well differentiated. It differs from the desert above in having less slope, more sand and soil, and a less dissected drainage with abundant catclaw acacia and Torrey mesquite. It differs from the New Riparian zone below in having more catclaw acacia, Torrey mesquite, and white brittlebush and an abrupt soil change from encrusted, stable sand in this zone to loose water-washed and wind-blown sand below. Observed plant species in this ecozone include:

Acacia greggii
Baccharis sarothroides
Bebbia juncea
Bromus rubens
Encelia farinosa
Ephedra nevadensis
Ferocactus acanthodes
Gutierrezia microcephala
Haplopappus acradenius

Lycium fremontii
Phoradendron californicum
Porophyllum gracile
Prosopis glandulosa var. *torreyana*
Sphaeralcea grossulariaefolia
Sporobolus airoides

Ecozone iv, New Riparian

This zone is a fairly narrow sandy beach with a recent sand deposit near the shore. Observed plant species in this ecozone include:

Acacia greggii (few; small individuals)
Aristida purpurea
Baccharis salicifolia
Baccharis sarothroides
Brickellia longifolia
Bromus rubens
Cynodon dactylon

Dyssodia pentachaeta
Equisetum laevigatum
Haplopappus acradenius
Melilotus alba
Oenothera pallida
Polypogon monspeliensis
Prosopis glandulosa var. *torreyana* (few)

Sarcostemma cynanchoides
Tamarix chinensis

Tessaria sericea

Site #18: Spring Canyon

This site is located at river mile 204 on the right side. The collection site at Spring Canyon was entirely in the Side Canyon Riparian ecozone and included the floor of the canyon for a distance of approximately one-half mile from the Colorado River. The lower portion of the site is a coarse gravel creek bed without surface water; upstream, where the canyon becomes narrower, surface water appears and there is a substantial permanent flow. Seeps and springs occur along the banks in several locations.

Ecozone v, Side Canyon Riparian; Topography ii, Side Canyon

Spring Canyon flashed in early 1993 and scouring out its bed and removing much vegetation from its gravel floor. It widened and deepened the channel, eroding the banks and depositing willow, arrowweed, seepwillow, and mesquite trees in the channel and into the Colorado River. At the mouth of the canyon, a large piece of the Old High Water zone bank sand deposit was eroded, leaving a large open area and only a narrow ridge with Old Riparian mesquite. The flood apparently deepened the creek channel by 2-3 feet in places, leaving a rough gravel floor mostly devoid of vegetation. Some willow, tamarisk, and seepwillow re-deposited in the lower part of the creek bed are beginning to sprout and will probably survive. Upstream from the rock shelter the damage is less apparent and consists mostly of channel deepening. The sides of the channel are heavily vegetated with seepwillow and coyote willow and, where there is sand, arrowweed. These banks were not disturbed by the flood. Graythorn also forms thickets in drier places. The banks are dense with large shrubs in the area with flowing water, which has formed a narrow stream meandering across the newly scoured creek bed. The site is typical of open, running side stream sites in the lower Grand Canyon. The list of observed plant species in this ecozone includes:

Acacia greggii
Artemisia ludoviciana
Baccharis salicifolia
Baccharis sarothroides
Brickellia longifolia
Bromus rubens
Camissonia multijuga
Cercis occidentalis var. *orbiculata*
Coryza canadensis
Cynodon dactylon
Datura meteloides
Epipactis gigantea
Erigeron lobatus
Gutierrezia microcephala

Hedeoma nanum
Hordeum jubatum
Lycium fremontii
Maurandya antirrhiniflora
Nicotiana trigonophylla
Opuntia chlorotica
Perityle emoryi
Phoradendron californicum
Phragmites australis
Prosopis glandulosa var. *torreyana*
Salix exigua
Salix gooddingii
Sarcostemma cynanchoides
Solanum douglasii

Site #20: Travertine Canyon

This site is located near river mile 229 on the left side. The collection site at Travertine Canyon was a limited area along the creek and on a small seep at the base of the lower falls. This is below the chasm and to the right of the falls on the wall; the plant on which an interview was conducted is present only on the seep, upon which it is dependent for moisture, rather than the creek. The collection site was designated as Side Canyon Riparian ecozone. A species list was also prepared for the beach area (New Riparian ecozone); however, no interviews were conducted there.

Ecozone v, Side Canyon Riparian; Topography ii, Side Canyon

The seep area is along a narrow shelf about 25 feet long, in a small shaded overhang near the top of the falls along Travertine Canyon. Plants on the seep include crimson monkeyflower, golden columbine, and a rather small amount of maidenhair fern. Spiny rush (*Juncus acutus* var. *sphaerocarpus*) was present on one side of the seep; this was the only place it was noted. The species list includes plants on the seep and in the immediate vicinity. The list of observed plant species in this ecozone includes:

Acacia greggii
Adiantum capillus-veneris
Aquilegia chrysantha
Artemisia ludoviciana
Brickellia longifolia
Camissonia multijuga
Euclide urens
Juncus acutus var. *sphaerocarpus*

Mimulus cardinalis
Nicotiana trigonophylla
Parietaria sp.
Pleurocoronis pluriseta
Sonchus oleraceus

Ecozone iv, New Riparian

The list of observed plant species in the New Riparian ecozone includes:

Acacia greggii
Ambrosia dumosa
Aristida purpurea
Aster spinosus
Bebbia juncea
Brickellia longifolia
Bromus rubens
Datura meteloides
Haplopappus acradenius
Porophyllum gracile

Prosopis glandulosa var. *torreyana*
Sarcostemma cynanchoides
Sporobolus airoides
Sporobolus giganteus
Stephanomeria exigua
Tessaria sericea
Vulpia octoflora

Site #21: Bridge Canyon

This site is located near river mile 235 on the left side. The Bridge Canyon collection site includes a short stretch along the densely vegetated creek just above the point where it enters the delta, and desert slopes and sand dune areas above the creek and at the upper end of the beach area. Interviews were conducted in Desert and Side Canyon Riparian ecozones. No interviews were held in the New and Old Riparian zones on the delta at the mouth of Bridge Canyon.

Ecozone v, Side Canyon Riparian; Topography ii, Side Canyon

Bridge Canyon has a small perennial stream in a narrow canyon with dense side canyon riparian vegetation. Seepwillow is dominant, with dense cardinal monkeyflower and patches of smooth scouring rush along the stream. Pink thistle is also abundant, and there are dense stands of broad-leaved cattail and sawgrass present. The study area was limited to a small area near the end of the side canyon riparian zone, and the species list does not reflect the true diversity of the site as a whole. Observed plant species in this ecozone include:

Acacia greggii
Baccharis salicifolia
Brickellia longifolia
Bromus rubens
Centaureum calycosum
Cirsium sp.
Cladium californicum
Cynodon dactylon
Encelia farinosa
Equisetum laevigatum

Erigeron lobatus
Imperata brevifolia
Mimulus cardinalis
Nicotiana trigonophylla
Rhus trilobata var. *trilobata*
Sonchus oleraceus
Tamarix chinensis
Tessaria sericea
Typha latifolia

Ecozone ii, Desert; Topography ii, Side Canyon

This portion of the site is on east-facing desert slopes above bridge Canyon on rugged, rocky Vishnu schist. There is little soil or talus on the slopes; the plants grow in small soil pockets or in crevices in the rocks. The lower portion is on sand, probably the upper end of the Old Riparian zone but without mesquite. Sand dropseed (*Sporobolus cryptandrus*) and white bursage are abundant in the sandy areas, while various cacti, desert shrubs, and Whipple yucca (*Yucca whipplei*) are on the rocky desert slopes. Observed plant species in this ecozone include:

Acacia greggii
Ambrosia dumosa
Bebbia juncea
Bromus rubens
Camissonia multijuga
Descurainia pinnata

Encelia farinosa
Ephedra nevadensis
Eriogonum wrightii
Ferocactus acanthodes
Fouquieria splendens
Mirabilis bigelovii

Site #20: Travertine Canyon

This site is located near river mile 229 on the left side. The collection site at Travertine Canyon was a limited area along the creek and on a small seep at the base of the lower falls. This is below the chasm and to the right of the falls on the wall; the plant on which an interview was conducted is present only on the seep, upon which it is dependent for moisture, rather than the creek. The collection site was designated as Side Canyon Riparian ecozone. A species list was also prepared for the beach area (New Riparian ecozone); however, no interviews were conducted there.

Ecozone v, Side Canyon Riparian; Topography ii, Side Canyon

The seep area is along a narrow shelf about 25 feet long, in a small shaded overhang near the top of the falls along Travertine Canyon. Plants on the seep include crimson monkeyflower, golden columbine, and a rather small amount of maidenhair fern. Spiny rush (*Juncus acutus* var. *sphaerocarpus*) was present on one side of the seep; this was the only place it was noted. The species list includes plants on the seep and in the immediate vicinity. The list of observed plant species in this ecozone includes:

Acacia greggii
Adiantum capillus-veneris
Aquilegia chrysantha
Artemisia ludoviciana
Brickellia longifolia
Camissonia multijuga
Euclide urens
Juncus acutus var. *sphaerocarpus*

Mimulus cardinalis
Nicotiana trigonophylla
Parietaria sp.
Pleurocoronis pluriseta
Sonchus oleraceus

Ecozone iv, New Riparian

The list of observed plant species in the New Riparian ecozone includes:

Acacia greggii
Ambrosia dumosa
Aristida purpurea
Aster spinosus
Bebbia juncea
Brickellia longifolia
Bromus rubens
Datura meteloides
Haplopappus acradenius
Porophyllum gracile

Prosopis glandulosa var. *torreyana*
Sarcostemma cynanchoides
Sporobolus airoides
Sporobolus giganteus
Stephanomeria exigua
Tessaria sericea
Vulpia octoflora

Site #21: Bridge Canyon

This site is located near river mile 235 on the left side. The Bridge Canyon collection site includes a short stretch along the densely vegetated creek just above the point where it enters the delta, and desert slopes and sand dune areas above the creek and at the upper end of the beach area. Interviews were conducted in Desert and Side Canyon Riparian ecozones. No interviews were held in the New and Old Riparian zones on the delta at the mouth of Bridge Canyon.

Ecozone v, Side Canyon Riparian; Topography ii, Side Canyon

Bridge Canyon has a small perennial stream in a narrow canyon with dense side canyon riparian vegetation. Seepwillow is dominant, with dense cardinal monkeyflower and patches of smooth scouring rush along the stream. Pink thistle is also abundant, and there are dense stands of broad-leaved cattail and sawgrass present. The study area was limited to a small area near the end of the side canyon riparian zone, and the species list does not reflect the true diversity of the site as a whole. Observed plant species in this ecozone include:

Acacia greggii
Baccharis salicifolia
Brickellia longifolia
Bromus rubens
Centaurium calycosum
Cirsium sp.
Cladium californicum
Cynodon dactylon
Encelia farinosa
Equisetum laevigatum

Erigeron lobatus
Imperata brevifolia
Mimulus cardinalis
Nicotiana trigonophylla
Rhus trilobata var. *trilobata*
Sonchus oleraceus
Tamarix chinensis
Tessaria sericea
Typha latifolia

Ecozone ii, Desert; Topography ii, Side Canyon

This portion of the site is on east-facing desert slopes above bridge Canyon on rugged, rocky Vishnu schist. There is little soil or talus on the slopes; the plants grow in small soil pockets or in crevices in the rocks. The lower portion is on sand, probably the upper end of the Old Riparian zone but without mesquite. Sand dropseed (*Sporobolus cryptandrus*) and white bursage are abundant in the sandy areas, while various cacti, desert shrubs, and Whipple yucca (*Yucca whipplei*) are on the rocky desert slopes. Observed plant species in this ecozone include:

Acacia greggii
Ambrosia dumosa
Bebbia juncea
Bromus rubens
Camissonia multijuga
Descurainia pinnata

Encelia farinosa
Ephedra nevadensis
Eriogonum wrightii
Ferocactus acanthodes
Fouquieria splendens
Mirabilis bigelovii

Peucephyllum schottii
Pleurocoronis pluriseta
Porophyllum gracile
Sporobolus cryptandrus

Tessaria sericea
Trixis californica
Yucca whipplei

Within these ecozones and plant communities exist numerous species of plants that Southern Paiute people found to be useful for food, medicine, ritual, and manufacture. The following section briefly summarizes the functions that plants had, and continue to have, in Southern Paiute social and cultural lifeways.

SOUTHERN PAIUTE PLANT RESOURCES

Southern Paiute people identified 68 species of plants in the course of visiting selected locations along the *Colorado River Corridor*. Table 7.3 list these plants with their scientific, common, and Paiute names. Many of these plants have multiple uses for food, medicine, ceremony, and construction. Distinct plant parts have one or more properties that make multiple uses feasible. Some of these plants are no longer used, but the majority of species remain important to Paiute social, economic, and ceremonial lifeways. Information is passed down to younger generations, through stories and experiential lessons involving use of the plant for a particular purpose. The majority of these plants also are present in other areas outside of the *Colorado River Corridor*, and it is in these other areas that Paiute people harvest most of their plant resources. One reason for this is that access to Grand Canyon National Park for traditional subsistence and religious activities by Paiute people have increasingly been restricted.

Southern Paiute Identified Plants

This section of the chapter lists each of the plant species identified by San Juan, Kaibab, and Shivwits Paiute tribal representatives during the ethnobotanical field trip. For each plant identified, a brief summary is given of the plants' uses, the plant parts used for various purposes, harvest, storage, and preparation and management techniques. The data clearly indicate that plants continue to be highly important cultural resources to Southern Paiute people, who perceive many of the species identified as becoming increasingly rare in reservation areas. In addition, they perceive many species of traditional plants to be potentially adversely affected by Glen Canyon water release.

Table 7.3. Southern Paiute Plant Species Identified

Botanical Name	Common Name	Paiute Name
<i>Abutilon incanum</i>	Indian mallow	NR*
<i>Agave utahensis</i> var. <i>kaibabensis</i>	Kaibab agave	<i>kaiva uusiv</i>
<i>Agave utahensis</i> var. <i>utahensis</i>	Utah agave	<i>vaant</i>
<i>Ambrosia dumosa</i>	White bursage	<i>tumpisangwav</i>
<i>Artemisia bigelovii</i>	Black sagebrush	<i>sangwav</i>
<i>Artemisia filifolia</i>	Sand sagebrush	<i>chumav</i>
<i>Artemisia ludoviciana</i>	Louisiana wormwood	<i>huipatasangwav</i>
<i>Astragalus praelongus</i>	(Locoweed group)	NR
<i>Astragalus tephrodes</i>	no common name	NR
<i>Atriplex canescens</i>	Four-wing saltbush	<i>skump, tono</i>
<i>Baccharis salicifolia</i>	Seepwillow	<i>koauw kanav</i>
<i>Battarrea stevenii</i>	Mushroom	<i>unapyi op</i>
<i>Cercis occidentalis</i> var. <i>orbiculata</i>	California redbud	<i>mausi</i>
<i>Chrysothamnus nauseosus</i>	Rubber rabbitbrush	<i>sikomp</i>
<i>Cirsium</i> sp. (undescribed)	Pink thistle	<i>manavip</i>
<i>Datura meteloides</i>	Sacred datura, jimsonweed	<i>momomp</i>
<i>Descurainia pinnata</i>	Yellow tansy mustard	NR
<i>Dyssodia pentachaeta</i>	Fetid marigold	<i>sakwapi</i>
<i>Echinocereus triglochidiatus</i>	Claretcup cactus	<i>chuamanav.i'mamanavi</i>
<i>Encelia farinosa</i>	White brittlebush	NR
<i>Encelia frutescens</i> var. <i>resinosa</i>	no common name	<i>sana ich, tuwich</i>
<i>Ephedra nevadensis</i>	Nevada Indian tea	<i>tup, tup</i>
<i>Ephedra torreyana</i>	Torrey Indian tea	<i>u'tup, tupi</i>
<i>Equisetum laevigatum</i>	Smooth scouring rush	<i>sakwa-ivi-p</i>
<i>Fallugia paradoxa</i>	Apache plume	<i>muup</i>
<i>Ferocactus acanthodes</i>	California barrel cactus	<i>avatu tash, manav, tash</i>
<i>Fraxinus pennsylvanica</i>	Velvet ash	NR
<i>Gutierrezia microcephala</i>	Three-leaf snakeweed	<i>vainup, waarump</i>
<i>Juncus acutus</i> var. <i>sphaerocarpus</i>	Spiny rush	<i>pauv</i>
<i>Larrea tridentata</i>	Creosote bush	<i>vatanb</i>
<i>Lycium andersonii</i>	Anderson wolfberry	<i>u'upwivi</i>
<i>Lycium fremontii</i>	Fremont wolfberry	<i>u'up</i>
<i>Mentha arvensis</i>	Field mint	NR
<i>Mirabilis multiflora</i>	Colorado four-o'clock	<i>tukwivi</i>
<i>Muhlenbergia asperifolia</i>	Scratchgrass	<i>wichavi ma'ap</i>
<i>Nasturtium officinale</i>	Watercress	<i>patavh, panpaxhnanar</i>
<i>Nicotiana trigonophylla</i>	Desert tobacco	<i>koap, nungwukoap</i>
<i>Nolina microcarpa</i>	Beargrass	<i>ata wiisiv</i>
<i>Oenothera pallida</i>	Pale evening primrose	<i>sixo</i>
<i>Opuntia basilaris</i>	Beavertail cactus	<i>manav</i>
<i>Opuntia erinacea</i>	Grizzly bear cactus	<i>yuavip</i>
<i>Opuntia phaeacantha</i>	Engelmann prickly pear	<i>manav</i>
<i>Oryzopsis hymenoides</i>	Indian ricegrass	<i>wa'iv</i>
<i>Parthenocissus vitacea</i>	Virginia creeper	<i>patowanamauv</i>

Table 7.3 continued

Botanical Name	Common Name	Paiute Name
<i>Phragmites australis</i>	Giant common reed	<i>paxamp</i>
<i>Populus fremontii</i>	Fremont cottonwood	<i>sovip</i>
<i>Prosopis glandulosa</i> var. <i>torreyana</i>	Torrey mesquite	<i>opimp</i>
<i>Rhus trilobata</i> var. <i>simplicifolia</i>	Squawbush	<i>suuv, shuuvi</i>
<i>Rhus trilobata</i> var. <i>trilobata</i>	Squawbush	<i>suuv, shuuvi</i>
<i>Rumex hymenosepalus</i>	Wild rhubarb	<i>ku'u</i>
<i>Salix exigua</i>	Coyote willow	<i>kanav</i>
<i>Salix gooddingii</i>	Goodding willow	<i>pakanav</i>
<i>Salsola iberica</i>	Russian thistle, tumbleweed	<i>manavip</i>
<i>Salvia davidsonii</i>	Davidson sage	<i>nungwukoap</i>
<i>Salvia dorrii</i>	Purple sage, desert sage	<i>kanarukoap</i>
<i>Sclerocactus parviflorus</i>	Pineapple cactus	NR
<i>Sonchus oleraceus</i>	Common sow-thistle	<i>mamoiv, mamuiv</i>
<i>Sphaeralcea ambigua</i>	Desert globemallow	<i>tupwiv</i>
<i>Stanleya pinnata</i>	Prince's plume, Indian spinach	<i>tumar</i>
<i>Stephanomeria tenuifolia</i>	Wire lettuce	<i>tuwishanakup</i>
<i>Tamarix chinensis</i>	Tamarisk, salt cedar	<i>pantumaavu</i>
<i>Tessaria sericea</i>	Arrowweed	NR
<i>Thamnosia montana</i>	Turpentine broom	<i>kaiva sixwana</i>
<i>Typha latifolia</i>	Broad-leaved cattail	<i>pantusahwav, tó'iv</i>
<i>Vitis arizonica</i>	Canyon grape	NR
<i>Yucca angustissima</i>	Narrowleaf yucca	<i>uusiv, wiisiv</i>
<i>Yucca baccata</i>	Banana yucca	<i>uusiv, wiisiv</i>
<i>Yucca whipplei</i>	Whipple yucca	NR

*NR = Paiute name not remembered

Abutilon incanum

Indian mallow (Paiute name not remembered) was used as a traditional medicine and spice. Both the leaves and roots were boiled to make a medicinal tea. The leaves were also used as seasoning for food, and the roots were eaten as well. Leaves and roots could be stored for use throughout the year. The plant is no longer used.

Agave utahensis var. *kaibabensis*

The Kaibab *Agave* was at one time a main food source for Southern Paiute people. People travelled to Grand Canyon to harvest and pit roast the heart of the plant. *Agave* could also be dried and made into flat cakes after roasting. *Agave* (Paiute *yaant*, *kaiva uusiv*) is still used today.

Agave utahensis var. *utahensis*

Like the Kaibab *Agave*, the Utah *Agave* (*yaant*) is a traditional food for Southern Paiute people. It is still used for food, fiber, construction, and shampoo. Stalks are cut when dry to be used for construction. Leaves are cut and shredded to be made into a fiber used in construction. *Agave* fiber is preferred for string or rope in that it is perceived to be strongest. After pulling off the leaves, the heart of the *Agave* was roasted and eaten. It was especially important as a food source when nothing else was available. The roots are mixed with water to make a shampoo.

Ambrosia dumosa

White bursage (*tumpi sangwav*, "rock sage") is a traditional medicine plant that is still used today. The leaves and stems are broken off and used. To relieve a sore throat, *Ambrosia* can be chewed raw and the juice swallowed or mashed, boiled and drunk as a tea. It is also effective as a cleansing agent and deodorant. When used for cleansing, *Ambrosia* is mashed and combined with a small amount of water. The resulting mixture can then be rubbed all over the body. It is particularly useful on the feet and underarms.

Artemisia bigelovii

Sagebrush (*sangwav*) has been an important medicinal and ceremonial plant for the Southern Paiute people for many generations and continues to be used today. The upper several inches of the plant are cut for use. Sage can be chewed raw or boiled as a tea for relief of a sore throat or stomach ache. The juice or tea is swallowed and the plant remains are spit out. Sage is also used in ceremonies for purification. In sweat lodges and homes, sage is burned as incense and the smoke inhaled in order to ward off evil. Fresh sage is also held over the mouth and nose and used as a vaporizer in the sweat lodge. When dancing, sage is rubbed on the dancer's shield. Sage is collected and used only as needed; care is taken to ensure it is not wasted. The needed plant parts are collected from the east side of the plant.

Descurainia pinnata

Yellow tansy mustard (Paiute name not remembered) was a main source of food for Southern Paiutes. The seeds are collected seasonally and then dried for use all year. A special winnowing song is sung when the seeds are being separated from their husks. When dry, the little red seeds are ground into mush or paste or made into bread. They are also used for flavoring in foods. Tansy mustard has been replaced by other food sources and no longer grows at Kaibab, but some Paiute people still harvest its seeds for food today.

Dyssodia pentachaeta

The fetid marigold (*sakwapi*) is a medicinal plant that is dried and boiled to be used as a blood purifier. It aids the kidneys and removes toxic blood. It is used as a tonic, and is still used today.

Echinocereus triglochidiatus var. *melanocanthus*

The claretcup cactus (Paiute *chuamanav*) is a traditional medicinal plant that is still in use today to remove warts. The top of the cactus is cut off and kept moist. The top is burned to remove the spines and then the remaining portion is placed on the wart until the cactus dries. Fresh slices of cactus are applied until the wart changes color and becomes soft. Then, the wart is cut off and more cactus is rubbed on the area where the wart was growing. The plant is still used today.

Encelia farinosa

White brittlebush (Paiute name not remembered) is a medicinal plant. The young shoots, stems, leaves and flowers are mashed and pounded to make a drink as a mild cure for venereal disease. Before use, a doctor prays to the plant for it to heal the person. Water is added to the leaves and the solution is drunk. The leaves are left in the glass. Fresh water is added and the process repeated several times. *E. farinosa* is generally used with two other plants, but it also can be used alone. The plant is still used today.

Encelia frutescens var. *resinosa*

This species of *Encelia* (Paiute *sana ich* or *tuwich*) is an important medicinal plant. It must be used along with two other plants to cure mild cases of venereal disease. The plants are cut and boiled, and the resulting tea is drunk. If the tea does not cure the disease, the individual will go to the sweat lodge. There, more tea is boiled outside at the lodge fire, and the individual drinks large quantities before entering the sweat lodge. The individual continues to drink the tea until the disease goes away. The plant is still used today.

Battarea stevenii

This species of mushroom (Paiute *unapyi op*) is eaten fresh. Dried mushrooms are used in games, the powder being put on one's face.

Cercis occidentalis var. *orbiculata*

California redbud (*mausi*) was used to make the highest quality bows. Today, bows are made from this plant to teach young people about the traditional practices of the Southern Paiute people. The straight stems or branches are cut, dried awhile, and placed under fire ashes to warm it and permit bending. The bow is shaped first with an ax and then a knife.

Chrysothamnus nauseosus

Sikomp, or rabbitbrush, is a traditional Southern Paiute plant used for construction and for fuel. It is second to squawbush in terms of preference for materials for making baskets and woven water jugs among San Juan Paiute people. It is also eaten by cows when other food sources are scarce. Young shoots and stems are used today for the same purposes.

Cirsium sp.

This botanically undescribed species of pink thistle (Paiute *manavip*) is a medicinal plant used as a poultice. After removing the spines at the edges of the leaves, the leaves are boiled and then placed on burns or other wounds as a bandage. It can be used in combination with other medicine. Like other traditional medicinal plants, pink thistle is important to Southern Paiute people for maintaining their well-being. The plant is still used today. According to one representative, by relying on western medicine rather than medicinal plants, Southern Paiute people will lose part of themselves. With use, the plant will thrive and come back.

Datura meteloides

Sacred datura or jimsonweed, known in Paiute as *momomp*, is a traditional medicinal plant used as a painkiller for toothaches and as a poultice for treating fungal infections. For toothache, a piece of root is cut and applied directly to the tooth. For fungal infections, the leaves are picked fresh and boiled right away. They are then applied as a poultice. One individual reported having been advised to use *Datura* to treat a fungal infection her husband had gotten while fighting in the jungles in the Pacific during World War II. He had been unsuccessfully treated by the Veterans Administration hospital but was cured by a poultice made from boiled *Datura* leaves. *Datura* is also used by some medicine people, but it is not commonly used in ceremony because it is powerful and causes severe intoxication and hallucinations when too much is absorbed by the body. When used, it is applied to the body as a lotion. *Datura* is picked from the east. It is still used today by medicine people.

Descurainia pinnata

Yellow tansy mustard (Paiute name not remembered) was a main source of food for Southern Paiutes. The seeds are collected seasonally and then dried for use all year. A special winnowing song is sung when the seeds are being separated from their husks. When dry, the little red seeds are ground into mush or paste or made into bread. They are also used for flavoring in foods. Tansy mustard has been replaced by other food sources and no longer grows at Kaibab, but some Paiute people still harvest its seeds for food today.

Dyssodia pentachaeta

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Echinocereus triglochidiatus var. *melanocanthus*

The claretcup cactus (Paiute *chuamanav*) is a traditional medicinal plant that is still in use today to remove warts. The top of the cactus is cut off and kept moist. The top is burned to remove the spines and then the remaining portion is placed on the wart until the cactus dries. Fresh slices of cactus are applied until the wart changes color and becomes soft. Then, the wart is cut off and more cactus is rubbed on the area where the wart was growing. The plant is still used today.

Encelia farinosa

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This species of *Encelia* (Paiute *sana ich* or *tuwich*) is an important medicinal plant. It must be used along with two other plants to cure mild cases of venereal disease. The plants are cut and boiled, and the resulting tea is drunk. If the tea does not cure the disease, the individual will go to the sweat lodge. There, more tea is boiled outside at the lodge fire, and the individual drinks large quantities before entering the sweat lodge. The individual continues to drink the tea until the disease goes away. The plant is still used today.

Ephedra nevadensis

This species of Indian tea (Paiute *u'tup*) makes a strong tea used for cleaning out the kidneys. It has a different taste from other varieties of *Ephedra*. The dried stems are boiled, and can be stored for year-round use. The plant is still used today.

Ephedra torreyana

Nevada Indian tea (*u'tup*) is a well-known medicinal tea among the Southern Paiute people. It is used for colds, for aches and pains, and as a general system cleanser. Women cannot use it during menstruation and at childbirth because at those times they must not have anything hot or cold. The stems were dried in bundles and then boiled for tea when needed. The greener stems are fresher and have more power and would be gathered in sufficient quantities to last all year. Indian tea is also used simply as a beverage. *Ephedra* continues to be used today and is an important link both to the Earth and to the old ways of the Southern Paiutes. Mountain plants are purer and stronger. Stems should be picked from the east side of the plant. According to one representative, these plants were once told what to do and what they're good for. People have to talk to them and tell them what ails them; the plants grow to help the people. The plant is still used today.

Equisetum laevigatum

The smooth scouring rush (Paiute *sakwa-i'vi-p*) is an important medicinal plant. When needed, the leaves are gathered, dried, and boiled as a tea. It can be mixed with peppermint for flavor. One representative stated that Southern Paiute use of this plant is an important way for people to go back to depending on nature for cures. It is a healthy alternative to the pills commonly prescribed by doctors. The plant is still used today.

Fallugia paradoxa

The long straight stems of Apache plume (*muup*, *puiup*) are still used to make arrows for hunting rabbits and for selling to tourists. The plant is managed by annual burning, which encourages new, straight young shoots.

Ferocactus acanthodes

The pulpy pads of California barrel cactus (*avatu tash*, *manav*) are used as an emergency source of food and water, particularly for people lost in the desert or when water is in short supply. The cactus can grow to about three feet tall and provide water for five or six people. Today, the pads are also cooked in an oven.

Fraxinus pennsylvanica ssp. *velutina*

The velvet ash (Paiute name not remembered) is an important ceremonial plant. It is a natural hardwood and the preferred tree for many uses. It is used in construction, especially for making bows, arrows and drum frames. It is also used to make the staff used in pow-wow dancing. Velvet ash is used for fuel in the Native American Church during ceremonies because it is a slow burning wood. The branches can be stored after being shaped for the specific item being made. They are harvested in late fall. Wood is collected throughout the year.

Gutierrezia microcephala

Matchweed (Paiute *waarump*, *yainup*) is so named because it is used to start fires. The whole plant is a good fire starter when dry. It can also be used for snake bites. The plant is pounded and then soaked or boiled. The juice and pulp are then applied directly to the place where the bite occurred. The process is repeated three or four times. The plant is the subject of an important traditional Paiute story, as well as being used for teaching.

Juncus acutus var. *sphaerocarpus*

The spiny rush (*pauv*) is an important plant for basket making. The long, stem-like leaves are split and dried, and rehydrated before use. Mats are also made out of the leaves. The rush is harvested in spring and fall. Cutting leaves at the bottom serves the management function of pruning, encouraging fresh new growth.

Larrea tridentata

Creosote bush, or "greasewood" (Paiute *yatump*, *yatumb*), as it is commonly referred to by Indian people, is a traditional Southern Paiute medicinal plant used for a variety of medicinal purposes. This important plant is still used today. To collect the young shoots, leaves, stems and flowers, an individual must stand on the north side toward the sun to pray for it. Creosote is used for any kind of sickness, both inside and outside the body. The leaves, flowers, and young shoots can be boiled and drunk as a tea for stomach aches, cancer, or other stomach ailments. It helps clean out the kidneys as well. The stems and leaves can also be boiled and then cotton dipped into the solution to be applied to skin sores, rashes, measles, small pox, or chicken pox. For infants, the entire body can be immersed in the solution. Athlete's foot is also treated with the solution. Creosote is also dried, ground into a powder and applied to skin wounds. Creosote bush is also used in the sweat lodge. It is sprinkled dry on the rocks and helps with respiration. Harvest techniques for creosote are equivalent to the management function of pruning, which encourages fresh new growth.

Lycium andersonii

Wolfberry (*u'up*, *u'upwivi*) is a traditional Southern Paiute food plant that continues to be used today. It has become difficult to find in some areas, so known locations where the plants

grow are remembered year after year. The berries are eaten fresh or mashed to make a juice. The berries can be dried and stored and mixed with water for year-round use.

Lycium fremontii

The berries of this species of wolfberry (*u'up*) are eaten and can be harvested by hand. In the past, Southern Paiute people would collect the berries by holding a basket under a branch and using a tool made out of willow to pull the berries off the branch. The berries can be dried, ground and used as a jam. They are preferred when fresh but can also be dried and stored. The dried berries are then boiled in water before they are eaten. Wolfberry is gathered and taken to ceremonies as well. The seeds are planted to increase availability.

Mentha arvensis

Field mint (Paiute name not remembered) is a traditional medicinal plant that is still used today. The plant is harvested in the spring. It is pulled up by its roots and the leaves are then boiled and drunk as a tea. The leaves can be dried and stored for year-round use or used fresh when they are green.

Mirabilis multiflora

Colorado four-o'clock (*tukwivi*) is a medicinal plant that serves as the exclusive treatment for syphilis. It is the only powerful medicine for that form of venereal disease. Individuals must pay to obtain it, and the plant must be prayed to in order for the remedy to work. The entire plant (stems, leaves, flowers, and roots) is pulled up and boiled in approximately three inches of water, and apparently consumed as a tea. The plant can be harvested all year long. It is still used by the San Juan Paiute people.

Muhlenbergia asperifolia

Scratchgrass (Paiute *wichavi ma'ap*) is a medicinal plant that was traditionally used by Paiute people. The fresh leaves and stems were mashed into a paste and applied to bee or ant stings. The plant is no longer used.

Nasturtium officinale

Watercress (*pamavu; pahunaxunanar*, "plant that grows in the water") is a traditional food plant. The entire plant may be pulled up and then the roots cut off before use. The stems and leaves are eaten fresh as salad greens and boiled like spinach or fried with shortening and eaten with meat. The plant is still used today.

Nicotiana trigonophylla

Indian tobacco (*nungwukoap*) is a traditional ceremonial plant that is still used today. It is used as regular tobacco in cigarettes. The tobacco is collected during the summer months, and enough is gathered to last through the winter. It is dried, crumbled, and then rolled into cigarettes to be smoked. It is frequently mixed with sage, or red willow. It is sold and traded with other Indian people. This type of Indian tobacco is said by some representatives to be only occasionally used in ceremonies. Harvesting techniques for Indian tobacco serve the management function of pruning.

Nolina microcarpa

The long leaves of beargrass (*ata wiisiv*) are used in the construction of large burden baskets, straw hats, sandals, mats, and seed beaters. The long leaves are preferred. Women gathered and used the plants. For weaving the above items, the leaves are used fresh because they crack when dry. The leaves are scraped with a knife and split two ways to use as a starter for the bottom of a basket. Whole baskets can be made from beargrass as well. It is still used today.

Oenothera pallida

Pale evening primrose (*sixo*) is found at Kaibab, although it is becoming increasingly hard to find. The nut-like seeds and flowers are used for food. The flowers are eaten as greens. It is harvested in the fall, and is still used today.

Opuntia basilaris

The beavertail cactus (*manav*) is a food plant. The pads are cut into strips to extract the moisture. The fruits and seeds are used to make jam or eaten fresh, like strawberries. The plant is still used today.

Opuntia erinacea

Prickly pear cactus (*yuavip*) is a traditional food plant that is still used by Southern Paiute people. The fruit is knocked off with a stick and two sticks are then used to pick it up. Before it is eaten, the spines are burned off or scraped off with a knife. The outer leaves are removed. The fruit were traditionally roasted in hot ashes and are now baked for approximately three hours in a traditional oven. Shivwits people can no longer gather it in some of their traditional areas because of contamination caused by the atomic bomb testing.

Opuntia phaeacantha

This species of prickly pear (Paiute name not remembered) is a traditional food plant that is widely used in the spring. It is collected once or maybe twice a season. The fruit is first cut

off the plant. Gloves are used to pick up the fruit, and then a knife is used to scrape off the spines until the surface is smooth. The fruit is then rinsed and taken inside to be baked. The plant continues to be used today.

Oryzopsis hymenoides

Indian rice grass (Paiute *wa'i* or *wa'iv*) is a traditional Southern Paiute food plant. There are many stories about plants and animals associated with this plant. Ceremonies were possibly held before harvest, and the people would sing and pray for the plant before gathering it. It is still used today, and representatives believe its uses should be taught to the children so they can survive off the land. It is also an important food source for animals and therefore important to the Southern Paiute people. The seeds can be gathered in the palm of the hand when they ripen in the spring. The seeds are then rubbed between two hands to remove the chaff. Seed covers are also burned off or winnowed in a special basket. Seeds are ground into a flour and roasted in ashes to make a kind of bread. They are also ground and mixed with water to make a mush or gravy. The plant can also be cut in half and the top taken home. Alternately, the entire plant can be uprooted and taken to a central location where the seeds are shaken off. The plants are then returned to the place they were found growing and replanted. Seeds can be stored for year-round use. The plant is actively managed by Paiute people by selecting, storing, and replanting seeds.

Parthenocissus vitacea

The Virginia creeper (*patowanamauv*, "vines that grow long") is used for shade. The plants are planted around and near shade houses. The vines grow over the frame of the structure, providing living shade. Cuttings are transplanted from areas where they are found and hand watered to encourage growth.

Phragmites australis

The stems and leaves of the giant common reed (*paxamp*) are used for shade, making windbreaks and other structures, and for ceremonial mats for the Sun Dance. The fresh green stems and leaves are woven to make these items. The plant is still used today.

Populus fremontii

The Fremont cottonwood (*sovip*) is a tree that is used for a wide variety of secular and sacred purposes. Smaller leaved branches are used in the construction of the cry lodge, a funeral ceremony structure, windbreaks, shelters, sheds or ramadas, and drum frames. Slingshots, pipes, dolls, flutes, and noisemakers are made from branches and leaves as well. Flowers are eaten as food and made into necklaces. The trunk or logs from the tree serve as center poles in the Sun Dance ceremony. The whole tree provides shade in a ceremonial context as well as in everyday situations. The roots are used to make traps and traded to the Hopis, who use the roots to make kachinas. Dead wood is used as fuel. Pruning encourages continued fresh new growth.

Prosopis glandulosa var. *torreyana*

Mesquite (*opimp*) is a food and fuel plant. The beans are extracted from the pod and eaten fresh, or mashed and ground into a juicy pulp that is consumed as a beverage. The beans can be dried and stored for use throughout the year. The wood is used as fuel and for construction. As most Americans are aware, mesquite wood makes a hot, slow burning coal in a fire, and Southern Paiute people prefer the wood of mesquite for this reason.

Rhus trilobata var. *simplicifolia*

This variety of squawbush (*suuv*, *shuuv*) serves a variety of purposes. The berry (*i'is*) and seed are eaten fresh. The berries are also mashed into a beverage. The young shoots and stems are used for making baskets, among them the Navajo wedding basket (which is made exclusively by the San Juan Paiutes), cradleboards, water jugs, threshers, and pinenut containers. This plant is the "Paiute willow," in that it is viewed as being superior to willow for basketmaking purposes and, therefore, preferred. Materials for basketmaking as well as finished products are sold for cash. The sticky sap within the branches is used as a paste, as it hardens while drying. Dead wood is burned as fuel. Harvesting techniques serve the management function of pruning, which ensures future new growth.

Rhus trilobata var. *trilobata*

Like *R. trilobata* var. *simplicifolia*, this variety of squawbush (*shuv*) is used for basketmaking and food. Young shoots are used for baskets and the berry is eaten. Unlike the other variety, not as many uses were mentioned by representatives for this variety of squawbush. Harvesting techniques serve the management function of pruning, which ensures future new growth.

Rumex hymenosepalus

The stems of wild rhubarb (*ku'u*) are eaten fresh or boiled as greens with added sugar. They are harvested when the weather turns warm (spring) and the flowers and stalks of the plant turn red in color.

Salix exigua

The coyote willow (*kanav*) is used for a number of purposes. Young shoots, leaves and branches are used in the sweatlodge and, in Sun Dance ceremonies, shoots are woven into a holder and placemat for water or placed upright on the altar, some painted red and black. Sun Dance houses are made in part of willow, as are houses and sheds. Young shoots and stems, dried, split, and rehydrated after storage, are woven into baskets, water jugs, hats, and cradleboards. Moisture can be extracted from the stems of willow in an emergency. Dry branches are used as fire kindling. The bark of this willow has two uses. It is chewed as a medicine for headaches and is also woven into effigies and figurines. Willow is used to teach

younger generations about traditional plant use and basketmaking. Harvesting techniques serve the management function of pruning, which fosters fresh new growth of the plant for continued use.

Salix gooddingii

This species of willow (*pakanav*) is used much like coyote willow. Young shoots and branches are used for making baskets, cradleboards, corrals, and shade houses. Dead wood is used for fuel. Harvesting techniques serve the management function of pruning, which fosters fresh new growth of the plant for continued use.

The individual Gooddings willow identified by Paiute representatives is located at Granite Park, and reputedly is a willow that Powell photographed and used for shade during one of his Grand Canyon expeditions in the early 1870s. The old tree leans dramatically to the right as one views it from the river, and has suffered from serving as a boat tying post for river runners. The project botanist stated that every time he sees the tree when travelling downriver, he thinks it will be the last time he sees it standing. The old willow is at risk, and river runners and Paiute representatives alike would like to see the tree protected, perhaps by fencing it off to prevent boaters from using it to tie up.

Salsola iberica

The young shoots of Russian thistle or tumbleweed (Paiute *manavip*) are used for food. The fresh shoots are boiled, mixed with shortening, and salted to taste. The shoots are harvested in May.

Salvia davidsonii

The leaves of Davidson sage (*nungwukoap*) are used as a ceremonial tobacco. The dried leaves are smoked. The leaves, harvested in June, July, and August, can be dried and stored for use throughout the year. Harvesting techniques serve the management function of pruning, which encourages new growth.

Salvia dorrii

Purple or desert sage (*kanarakoap*) has ceremonial and medicinal functions. The stems and leaves of the plant are used for healing and purification, burned as an incense, and used in sweatlodges as part of Native American Church ceremonies. Dried leaves are smoked as medicine as well as regular cigarettes. San Juan people smoke this tobacco in sheep corrals while praying for the health of their sheep. The flowers of the plant contain seeds that can be collected, stored, and replanted. Stems and leaves are harvested in spring and summer, and can also be stored for use throughout the year. Planting seeds ensures the continued availability of the plant. As one representative commented, the knowledge has to be passed down and the plant has to be used or it will disappear.

Sclerocactus parviflorus

The succulent stems of pineapple cactus (Paiute name not remembered) are used as food. These stems are cleaned of spines with a knife or by roasting in a pit. When done, the skin is removed and the stems are cut and eaten. The stems are also fried with eggs. The stems can be harvested throughout the year.

Sonchus oleraceus

The common sow-thistle (*mamuiv*, *mamoiv*) is used for food and medicine. The roots are eaten raw as food and for medicinal purposes. The milky sap from the stalk is ingested as a diarrhea medicine. The roots are collected in late spring and early fall. The roots could be dried and stored for use throughout the year.

Sphaeralcea ambigua

The flower buds of desert globemallow (*tupwiv*) were used as food. The plant is no longer used.

Stanleya pinnata

The fresh green leaves of Prince's plume or Indian spinach (Paiute *tumar*) are eaten as salad greens or boiled as a spinach. The leaves are harvested in spring and can be stored for use throughout the year.

Stephanomeria tenuifolia

The stems and sap of wire lettuce (*tuwishanakoup*) are chewed fresh like gum. The plant parts can be harvested throughout the year.

Tamarix chinensis

The stems or branches of the tamarisk or salt-cedar tree (Paiute *pantumauv*) are used for building shadehouses and cradleboards. The young shoots are fashioned into arrows. Dead wood is used for fuel. The young shoots can be stored, but branches for shade house construction are harvested in spring and summer, because the leaved branches provide the shade. Harvest techniques serve the management function of pruning, which fosters new growth. Cuttings are also transplanted near homes.

Tessaria sericea

The young shoots and stems of arrowweed (Paiute name not remembered) are used to make arrows, firestarters, baskets, and shelters. These items are today made for craft displays. The materials can be dried and stored for use throughout the year.

Thamnosma montana

Turpentine broom (*kaivai sixwana*) is used as a medicine and deodorizer. The stems and leaves are boiled and drunk as a tea to relieve pain and rheumatism. The young shoots, stems, flowers, fruit, and seeds can also be boiled with the vapors serving as an air freshener and antiseptic to kill germs in the house. These plant parts are also ground and mashed into a powder and placed in shoes as a foot powder. The powder is also mixed with water and sprinkled about the house as another method of deodorizing and killing germs in the home. The parts can be stored for use throughout the year.

Typha latifolia

The broad-leaved cattail (*pantu'sahwav*) is an extremely important plant used for a number of purposes. The stems and leaves are used to make mats that are used in the Sun Dance ceremony. During the ceremony, moisture contained within the stalks and leaves of the cattail mats is the only source of water ingested by participants in the ceremony. The moisture-bearing stalks are used to treat dehydration. Stalks are likewise eaten as food, as are seeds and roots. Young stalks are also woven into baskets, used in wickiups, windbreaks, sheds, and for shade. Dry stalks are used in games as arrows. Cattail is harvested during the summer months. Cutting stalks at their base serves the management function of pruning, which fosters fresh new growth. Stalks can be dried and stored, and rehydrated with water when ready to use.

Vitis arizonica

The canyon grape (Paiute name not remembered) is used as food. The fruit is eaten fresh. The leaves are used as a poultice or boiled as a tea to treat a sore throat. Some Paiute people transplant cuttings of the canyon grape near their homes and cultivate them. The plant is perceived by some to be increasingly hard to find.

Yucca angustissima

The narrowleaf yucca (*uusiv, wiisiv*) is used for a number of purposes. The roots of this plant are used to make shampoo, being mashed and mixed with water. Leaves are used to weave sandals. Stems or stalks are used in making baskets and water jugs. Dead leaves are made into a dye for baskets. Dry material is used for kindling. The seeds in the flower at the top of the stalk are eaten as food. Southern Paiute people transplant cuttings of the narrowleaf yucca from the wild to their dooryards.

Yucca baccata

Like the narrowleaf yucca, the banana yucca (also called *uusiv*, *wiisiv*) has several uses. The flower is eaten as a food. Flowers are harvested in fall when they turn black, an indication that they are ripe and taste sweet. Flowers can be cut green and stored, because they will ripen in storage. The fibers from the leaves are used to make string and rope. Fiber ropes made from the banana yucca and *Agave* are perceived to be the strongest, and both fibers are therefore preferred for this purpose. Fibers can be dried and stored, and are rehydrated when ready to use. Stems from this yucca are used in the making of shoes, baskets, and hairbrushes. Dried stems are used as firestarters. Paiute people transplant cuttings of this yucca from the wild to their dooryards as well.

Yucca whipplei

The roots of the Whipple yucca (Paiute name not remembered) are used to make shampoo. The roots are rubbed in the hands or mixed in water. Both methods generate suds and the solution is used to wash one's hair. The roots can be harvested throughout the year.

ETHNOBOTANICAL PATTERNS

This section of the chapter presents the tabulated responses of tribal representatives to a series of questions regarding past and current plant uses, as well as specific uses for plants and patterns of cultural transmission. The previous section and this section serve to describe and analyze the variables that allow a calculation of plant cultural significance. Cultural significance is discussed in the next section.

Ethnic Group Uses of Plants

All of the 68 species of plants identified by Southern Paiute representatives in the *Colorado River Corridor* were said to have been traditionally used for one or more purposes. Table 7.4 presents the responses of tribal representatives to the question of what each of the 68 plants was used for. For each of the plant species identified, the total number of traditional uses is shown in the far right cell.

Past Ethnic Group Uses of Plants

Nearly half (47%, 32 of 68) of the plants were traditionally used for more than one purpose. Sixteen percent (11 of 68) of the plants identified had three or more traditional uses. Food was mentioned as a use for 56% (38 of 68) of the plants identified. The next most frequently mentioned use was medicine. Medicinal uses were mentioned for 24 of the 68 plants (35%). Medicinal uses are closely followed by construction uses, mentioned for 22 of the 68 plants (32%). Twelve of the 68 plants (18%) identified were mentioned as having utility as fuel. Ceremonial uses were mentioned for 11 of the 68 plants (16%). "Other" uses include recreational uses, selling plants (or parts) for cash income, and miscellaneous minor

<i>Phragmites australis</i>			X	X				2
<i>Populus fremontii</i>	X		X	X	X		X	5
<i>Prosopis glandulosa</i> var. <i>torreyana</i>	X			X	X			3
<i>Rhus trilobata</i> var. <i>simplicifolia</i>	X			X	X			3
<i>Rhus trilobata</i> var. <i>trilobata</i>	X			X				2
<i>Rumex hymenosepalus</i>	X							1
<i>Salix exigua</i>	X	X	X	X	X			5
<i>Salix gooddingii</i>				X	X		X	3
<i>Salsola iberica</i>	X							1
<i>Salvia davidsonii</i>			X					1
<i>Salvia dorrii</i>	X	X	X				X	4
<i>Sclerocactus parviflorus</i>	X							1
<i>Sonchus oleraceus</i>	X	X						2
<i>Sphaeralcea ambigua</i>	X							1
<i>Stanleya pinnata</i>	X							1
<i>Stephanomeria tenuifolia</i>							X	1
<i>Tamarix chinensis</i>				X	X			2
<i>Tessaria sericea</i>				X				1
<i>Thamnosma montana</i>		X						1
<i>Typha latifolia</i>	X	X	X	X			X	5
<i>Vitis arizonica</i>	X	X						2
<i>Yucca angustissima</i>	X			X			X	3
<i>Yucca baccata</i>	X			X	X			3
<i>Yucca whipplei</i>							X	1
Total	38	24	11	22	12	1	8	116

uses (i.e., cactus needles for tattooing). Eight of the 68 plants (12%) were mentioned as having other uses.

Current Ethnic Group Uses of Plants

Table 7.5 shows the responses of tribal representatives to the question of whether the plants identified are currently used by Southern Paiute people. Of the 68 plant species identified as being traditionally used, 91% (62 of 68) are currently used by Southern Paiute people for one or more purposes. Conversely, only 9% (6 of 68) of the plants identified as being traditionally used are no longer used today by Paiute people. Of the 62 plants currently used by Southern Paiute people, 25 (40%) are used for more than one purpose. Moreover, ten (40%) of the 25 multipurpose plants are used for three or more purposes. The ten plants with three or more uses represent 15% of all plants identified.

In terms of uses, food was mentioned as a use for 46% (31 of 68) of the plants that are currently used. Medicinal uses were mentioned for 32% (22 of 68) of the plants that are currently used. Medicine is closely followed by construction uses, mentioned for 31% (21 of 68) of the plants used today. Ceremonial and fuel uses each were mentioned for 15% (10 of 68) of the plants that are currently used. Nine percent (6 of 68) of the plants used today were mentioned as having other uses.

Comparing Tables 7.4 and 7.5, the data demonstrate that plants remain useful and important cultural resources to Southern Paiute people. Not only are the majority of plants that were traditionally used still used today, they are by and large used for the same purposes. Looked at on a species-by-species basis, some uses have dropped out of the traditional inventory of uses, but for most of the plants identified, the pattern of multiple uses holds.

Family Uses of Plants

As with culturally important sites, the *Colorado River Corridor* ethnobotanical research sought to document whether tribal representatives who participated in the study and their families traditionally used the plants they identified, and for what purposes. Table 7.6 presents the responses of representatives to this question.

Past Family Uses of Plants

Table 7.6 shows that 96% (65 of 68) of the plants identified were traditionally used by at least one representative and/or members of their family. In only three cases were plants identified not used traditionally by the representative and/or their family. The three cases represent only 4% of the total number of plants identified.

Of the 65 plants identified as having been used traditionally by at least one tribal representative and/or members of their family, 26 or 40% were used for more than one purpose.

Table 7.5: Current Ethnic Group Uses of Species

Botanical name	Food	Medicine	Ceremony	Construction	Teaching		Total
					Fuel	about culture Other	
<i>Abutilon incanum</i>							0
<i>Agave utahensis</i> var. <i>kaibabensis</i>	X			X			2
<i>Agave utahensis</i> var. <i>utahensis</i>	X			X		X	3
<i>Ambrosia dumosa</i>		X					1
<i>Artemisia bigelovii</i>		X	X				2
<i>Artemisia filifolia</i>							0
<i>Artemisia ludoviciana</i>		X					1
<i>Astragalus praelongus</i>							0
<i>Astragalus tephrodes</i>							0
<i>Atriplex canescens</i>				X	X		2
<i>Baccharis salicifolia</i>	X						1
<i>Battarrea stevenii</i>	X					X	2
<i>Cercis occidentalis</i> var. <i>orbiculata</i>				X			1
<i>Chrysothamnus nauseosus</i>				X			1
<i>Cirsium</i> sp. (undescribed)		X					1
<i>Datura meteloides</i>		X					1
<i>Descurainia pinnata</i>	X						1
<i>Dyssodia pentachaeta</i>	X	X					2
<i>Echinocereus triglochidiatus</i> var. <i>melanocanthus</i>		X					1
<i>Encelia farinosa</i>		X					1
<i>Encelia frutescens</i> var. <i>resinosa</i>		X					1
<i>Ephedra nevadensis</i>	X	X					2
<i>Ephedra torreyana</i>	X	X					2
<i>Equisetum laevigatum</i>		X					1
<i>Fallugia paradoxa</i>				X			1
<i>Ferocactus acanthodes</i>	X						1
<i>Fraxinus pennsylvanica</i> ssp. <i>velutina</i>			X	X	X		3
<i>Gutierrezia microcephala</i>		X			X		2
<i>Juncus acutus</i> var. <i>sphaerocarpus</i>				X			1
<i>Larrea tridentata</i>		X	X				2
<i>Lycium andersonii</i>	X						1
<i>Lycium fremontii</i>	X						1
<i>Mentha arvensis</i>		X					1
<i>Mirabilis multiflora</i>		X					1
<i>Muhlenbergia asperifolia</i>							0
<i>Nasturtium officinale</i>	X						1
<i>Nicotiana trigonophylla</i>	X		X				2
<i>Nolina microcarpa</i>				X			1
<i>Oenothera pallida</i>							0
<i>Opuntia basilaris</i>	X						1
<i>Opuntia erinacea</i>	X						1
<i>Opuntia phaeacantha</i>	X						1
<i>Oryzopsis hymenoides</i>	X						1
<i>Parthenocissus vitacea</i>				X			1
<i>Phragmites australis</i>			X				1
<i>Populus fremontii</i>	X		X	X	X	X	5

<i>Prosopis glandulosa</i> var. <i>torreyana</i>	X			X	X			3
<i>Rhus trilobata</i> var. <i>simplicifolia</i>	X			X	X	X		4
<i>Rhus trilobata</i> var. <i>trilobata</i>	X			X				2
<i>Rumex hymenosepalus</i>	X							1
<i>Salix exigua</i>		X	X	X	X			4
<i>Salix gooddingii</i>				X	X			2
<i>Salsola iberica</i>	X							1
<i>Salvia davidsonii</i>			X					1
<i>Salvia dorrii</i>	X	X	X				X	4
<i>Sclerocactus parviflorus</i>	X							1
<i>Sonchus oleraceus</i>	X	X						2
<i>Sphaeralcea ambigua</i>								0
<i>Stanleya pinnata</i>	X							1
<i>Stephanomeria tenuifolia</i>							X	1
<i>Tamarix chinensis</i>				X	X			2
<i>Tessaria sericea</i>				X				1
<i>Thamnosma montana</i>		X						1
<i>Typha latifolia</i>	X	X	X	X				4
<i>Vitis arizonica</i>	X	X						2
<i>Yucca angustissima</i>	X			X			X	3
<i>Yucca baccata</i>	X			X	X			3
<i>Yucca whipplei</i>							X	1
Total	31	22	10	21	10	2	6	102

Table 7.6: Past Family Uses of Species

Botanical name	Food	Medicine	Ceremony	Construction	Fuel	Teaching about culture	Other	Total
<i>Abutilon incanum</i>		X						1
<i>Agave utahensis</i> var. <i>kaibabensis</i>	X			X				2
<i>Agave utahensis</i> var. <i>utahensis</i>	X			X				2
<i>Ambrosia dumosa</i>		X						1
<i>Artemisia bigelovii</i>		X	X					2
<i>Artemisia filifolia</i>					X			1
<i>Artemisia ludoviciana</i>		X						1
<i>Astragalus praelongus</i>								0
<i>Astragalus tephrodes</i>	X							1
<i>Atriplex canescens</i>				X	X			2
<i>Baccharis salicifolia</i>	X							1
<i>Battarrea stevenii</i>	X						X	2
<i>Cercis occidentalis</i> var. <i>orbiculata</i>				X				1
<i>Chrysothamnus nauseosus</i>				X	X			2
<i>Cirsium</i> sp. (undescribed)		X						1
<i>Datura meteloides</i>		X	X					2
<i>Descurainia pinnata</i>	X							1
<i>Dyssodia pentachaeta</i>	X	X						2
<i>Echinocereus triglochidiatus</i> var. <i>melanocanthus</i>		X						1
<i>Encelia farinosa</i>		X						1
<i>Encelia frutescens</i> var. <i>resinosa</i>		X						1
<i>Ephedra nevadensis</i>	X	X						2
<i>Ephedra torreyana</i>	X	X						2
<i>Equisetum laevigatum</i>		X						1
<i>Fallugia paradoxa</i>				X				1
<i>Ferocactus acanthodes</i>	X							1
<i>Fraxinus pennsylvanica</i> ssp. <i>velutina</i>			X	X	X			3
<i>Gutierrezia microcephala</i>		X			X	X		3
<i>Juncus acutus</i> var. <i>sphaerocarpus</i>				X				1
<i>Larrea tridentata</i>		X	X					2
<i>Lycium andersonii</i>	X							1
<i>Lycium fremontii</i>	X							1
<i>Mentha arvensis</i>		X						1
<i>Mirabilis multiflora</i>		X						1
<i>Muhlenbergia asperifolia</i>		X						1
<i>Nasturtium officinale</i>	X							1
<i>Nicotiana trigonophylla</i>	X							1
<i>Nolina microcarpa</i>				X				1
<i>Oenothera pallida</i>	X							1
<i>Opuntia basilaris</i>	X							1
<i>Opuntia erinacea</i>	X							1
<i>Opuntia phaeacantha</i>	X							1
<i>Oryzopsis hymenoides</i>	X							1
<i>Parthenocissus vitacea</i>				X				1

Phragmites australis				X				1
Populus fremontii	X		X	X	X		X	5
Prosopis glandulosa var. torreyana	X			X	X			3
Rhus trilobata var. simplicifolia	X			X	X			3
Rhus trilobata var. trilobata	X			X				2
Rumex hymenosepalus	X							1
Salix exigua		X	X	X	X			4
Salix gooddingii				X	X			2
Salsola iberica								0
Salvia davidsonii								0
Salvia dorrii	X	X	X					3
Sclerocactus parviflorus	X							1
Sonchus oleraceus	X	X						2
Sphaeralcea ambigua	X							1
Stanleya pinnata	X							1
Stephanomeria tenuifolia							X	1
Tamarix chinensis				X	X			2
Tessaria sericea				X				1
Thamnosma montana		X						1
Typha latifolia	X		X	X			X	4
Vitis arizonica	X	X						2
Yucca angustissima	X			X			X	3
Yucca baccata	X			X	X			3
Yucca whipplei							X	1
Total	33	23	8	22	12	1	6	105

The 26 plants with more than one use represent 38% of all identified plants. Of the 26 plants having more than one use function, ten (38%) had three or more traditional uses. The ten plants having three or more uses represent 15% of all plants identified.

In terms of uses, food was mentioned as a family use for 49% (33 of 68) of the plants identified. Medicinal uses were mentioned for 34% (23 of 68) of the plants, closely followed by construction uses, which were mentioned for 32% (22 of 68) of the plants. Eighteen percent (12 of 68) of the plants identified were mentioned as having use as fuel. Ceremonial uses were mentioned for 12% (8 of 68) of the identified plants. Other uses were mentioned for 9% (6 of 68) of the plants. The data in Table 7.6 show that, like the Southern Paiute ethnic group as a whole, representatives and their families have a history of traditional plant use.

Current Family Uses of Plants

As with ethnic group uses of plants, the question of whether or not representatives and/or members of their family currently used the plants they identified was asked. Table 7.7 presents the responses regarding current family plant use.

Eighty-seven percent (59 of 68) of the plants identified as being traditionally used by at least one representative and/or members of their family are still used today. This percentage reflects a 9% drop in the total number of plants identified as being traditionally used by representatives and/or members of their families. Of the 59 plants currently used by at least one tribal representative and /or members of their family, 25 (42%) are used for more than one purpose. The 25 plants used for more than one purpose represent 37% of all plants identified. Of the 25 plants used for more than one purpose, nine (36%) are used for three or more purposes. The nine plants used for three or more purposes represent 13% of all plants identified.

In terms of uses, food was mentioned as a current family use for 43% (29 of 68) of the identified plants. Medicinal uses followed in frequency of mention, stated as being a current family use for 31% (21 of 68) of the identified plants. Construction uses were mentioned for 28% (19 of 68) of the plants. Fuel as a current family use was mentioned for 15% (10 of 68) of the plants, closely followed by ceremonial uses, which were mentioned for 13% (9 of 68) of the plants.

Plants mentioned as being currently used for teaching by representatives and/or members of their family comprise 8% (6 of 68) of all of the plants identified. Other uses were mentioned for 7% (5 of 68) of the identified plants. The low percentage and number of mentions of teaching as a plant use in Table 7.7 (as well as in the previous tables) is somewhat misleading in the context of questions surrounding the issue of plant use. For this reason, teaching has not been discussed in the context of the preceding tables. The issue of teaching will be more fully discussed and become more clear in the following section on cultural transmission.

Table 7.7: Current Family Uses of Species

Botanical name	Food	Medicine	Ceremony	Construction	Fuel	Teaching about culture	Other	Total
<i>Abutilon incanum</i>								0
<i>Agave utahensis</i> var. <i>kaibabensis</i>				X				1
<i>Agave utahensis</i> var. <i>utahensis</i>	X					X		2
<i>Ambrosia dumosa</i>		X						1
<i>Artemisia bigelovii</i>		X	X					2
<i>Artemisia filifolia</i>								0
<i>Artemisia ludoviciana</i>		X						1
<i>Astragalus praelongus</i>								0
<i>Astragalus tephrodes</i>								0
<i>Atriplex canescens</i>				X	X			2
<i>Baccharis salicifolia</i>	X							1
<i>Battarrea stevenii</i>	X						X	2
<i>Cercis occidentalis</i> var. <i>orbiculata</i>				X		X		2
<i>Chrysothamnus nauseosus</i>				X				1
<i>Cirsium</i> sp. (undescribed)		X						1
<i>Datura meteloides</i>		X						1
<i>Descurainia pinnata</i>								0
<i>Dyssodia pentachaeta</i>	X	X						2
<i>Echinocereus triglochidiatus</i> var. <i>melanocanthus</i>		X						1
<i>Encelia farinosa</i>		X						1
<i>Encelia frutescens</i> var. <i>resinosa</i>		X						1
<i>Ephedra nevadensis</i>	X	X						2
<i>Ephedra torreyana</i>	X	X						2
<i>Equisetum laevigatum</i>		X						1
<i>Fallugia paradoxa</i>				X				1
<i>Ferocactus acanthodes</i>	X							1
<i>Fraxinus pennsylvanica</i> ssp. <i>velutina</i>			X	X	X			3
<i>Gutierrezia microcephala</i>		X			X			2
<i>Juncus acutus</i> var. <i>sphaerocarpus</i>				X				1
<i>Larrea tridentata</i>		X	X					2
<i>Lycium andersonii</i>	X							1
<i>Lycium fremontii</i>	X							1
<i>Mentha arvensis</i>		X						1
<i>Mirabilis multiflora</i>		X						1
<i>Muhlenbergia asperifolia</i>								0
<i>Nasturtium officinale</i>	X							1
<i>Nicotiana trigonophylla</i>	X							1
<i>Nolina microcarpa</i>				X				1
<i>Oenothera pallida</i>	X							1
<i>Opuntia basilaris</i>	X							1
<i>Opuntia erinacea</i>	X							1
<i>Opuntia phaeacantha</i>	X							1
<i>Oryzopsis hymenoides</i>	X							1
<i>Parthenocissus vitacea</i>				X				1
<i>Phragmites australis</i>			X					1
<i>Populus fremontii</i>	X		X	X	X	X	X	6
<i>Prosopis glandulosa</i> var. <i>torreyana</i>	X				X			2

Rhus trilobata var. simplicifolia	X			X	X	X		4
Rhus trilobata var. trilobata	X			X				2
Rumex hymenosepalus	X							1
Salix exigua		X	X	X	X			4
Salix gooddingii			X	X	X			3
Salsola iberica	X							1
Salvia davidsonii								0
Salvia dorrii	X	X	X					3
Sclerocactus parviflorus								0
Sonchus oleraceus	X	X						2
Sphaeralcea ambigua								0
Stanleya pinnata	X							1
Stephanomeria tenuifolia							X	1
Tamarix chinensis				X	X			2
Tessaria sericea				X		X		2
Thamnosma montana		X						1
Typha latifolia	X		X	X		X		4
Vitis arizonica	X	X						2
Yucca angustissima	X			X			X	3
Yucca baccata	X			X	X			3
Yucca whipplei							X	1
Total	29	21	9	19	10	6	5	99

Like the Southern Paiute ethnic group as a whole, individual representatives and members of their families continue to use the vast majority of plants identified in the *Colorado River Corridor* study area for a number of purposes. The numbers of plants used and patterns of uses appear to be generally consistent at both the ethnic group and individual/family levels.

Cultural Transmission

For each plant they identified, tribal representatives were asked from whom they learned about the plant. Table 7.8 presents the representatives' responses to this question. Grandfather was mentioned for 75% (51 of 68) of the plants identified. Grandmother was the next most frequently mentioned person, mentioned for 68% (46 of 68) of identified plants. Mother was mentioned for 60% (41 of 68) of identified plants. Other relatives (aunts, uncles, in-laws) were mentioned for 38% (26 of 68) of the identified plants. Father was mentioned for only 31% (21 of 68) of all identified plants. "Other person," meaning non-relatives, was mentioned for 18% (12 of 68) of the identified plants. Clearly, tribal representatives learned about plants and their uses primarily from their grandparents, mothers, and other relatives. So the extended family and nuclear family play important roles in transmitting traditional cultural knowledge about plants. Fathers appear to play a more minor role among relatives in transmitting traditional knowledge.

Tribal representatives were also asked whether they were currently involved in transmitting traditional cultural knowledge about plants to younger generations, who they are teaching, and what plant uses are being taught. Table 7.9 presents the responses to these questions.

Table 7.9 illustrates that Paiute representatives are actively engaged in transmitting traditional cultural knowledge about plants to younger generations. "Yes" was mentioned by representatives for 90% (61 of 68) of the identified plants. "No" was mentioned for 43% (29 of 68) of the plants. This percentage is misleading, however, in that it reflects mostly single responses in situations of multiple interviews and where only one interview was conducted. Almost all representatives are currently teaching about plants.

With regard to who is being taught, the category of non-related Southern Paiute youth was mentioned for 57% (39 of 68) of the identified plants. Other relatives, including cousins, nieces, and nephews, were mentioned as the people being taught for 40% (27 of 68) of the plants, closely followed by children, mentioned for 38% (26 of 68) of the plants identified. Friends and neighbors (non-relatives) were mentioned for 32% (22 of 68) of the plants, while grandchildren were mentioned for 24% (16 of 68) of the plants identified by tribal representatives. The low mention of grandchildren may be due to many representatives not yet having grandchildren. What is suggested by the data is that non-related tribal youth are the focus of cultural transmission by elders and representatives. Being the third most frequently mentioned group of individuals, children may in fact have already been taught traditional knowledge about plants, so teaching has now shifted to relatives outside of the immediate family and to non-relatives.

Table 7.8: From Whom Did You Learn About This Plant?

Botanical name	Mother	Father	Grandmother	Grandfather	Other Relative	Friend, Neighbor, Other Person
<i>Abutilon incanum</i>	X	X				
<i>Agave utahensis</i> var. <i>kaibabensis</i>	X		X	X		X
<i>Agave utahensis</i> var. <i>utahensis</i>	X			X		
<i>Ambrosia dumosa</i>	X	X	X	X		
<i>Artemisia bigelovii</i>	X		X	X	X	X
<i>Artemisia filifolia</i>			X	X		
<i>Artemisia ludoviciana</i>	X		X	X	X	
<i>Astragalus praelongus</i>	X			X		
<i>Astragalus tephrodes</i>			X	X		
<i>Atriplex canescens</i>	X		X	X		
<i>Baccharis salicifolia</i>				X		
<i>Battarrea stevenii</i>	X	X	X	X		
<i>Cercis occidentalis</i> var. <i>orbiculata</i>			X	X		
<i>Chrysothamnus nauseosus</i>		X	X		X	
<i>Cirsium</i> sp. (undescribed)				X		
<i>Datura meteloides</i>	X		X	X	X	X
<i>Descurainia pinnata</i>			X	X		
<i>Dyssodia pentachaeta</i>	X		X	X		
<i>Echinocereus triglochidiatus</i> var. <i>melanocanthus</i>	X			X	X	
<i>Encelia farinosa</i>	X		X	X	X	
<i>Encelia frutescens</i> var. <i>resinosa</i>					X	
<i>Ephedra nevadensis</i>	X	X			X	
<i>Ephedra torreyana</i>	X	X	X	X		
<i>Equisetum laevigatum</i>	X					
<i>Fallugia paradoxa</i>				X		
<i>Ferocactus acanthodes</i>	X	X	X	X		
<i>Fraxinus pennsylvanica</i> ssp. <i>velutina</i>			X		X	
<i>Gutierrezia microcephala</i>			X	X	X	X
<i>Juncus acutus</i> var. <i>sphaerocarpus</i>			X	X		
<i>Larrea tridentata</i>	X	X	X	X	X	
<i>Lycium andersonii</i>	X		X	X		
<i>Lycium fremontii</i>	X		X	X		
<i>Mentha arvensis</i>	X		X	X		
<i>Mirabilis multiflora</i>		X				
<i>Muhlenbergia asperifolia</i>	X			X		
<i>Nasturtium officinale</i>			X	X	X	
<i>Nicotiana trigonophylla</i>					X	
<i>Nolina microcarpa</i>	X		X		X	
<i>Oenothera pallida</i>	X		X	X		X
<i>Opuntia basilaris</i>	X		X		X	
<i>Opuntia erinacea</i>	X	X	X	X		

<i>Opuntia phaeacantha</i>	X	X				
<i>Oryzopsis hymenoides</i>	X	X	X	X	X	
<i>Parthenocissus vitacea</i>					X	
<i>Phragmites australis</i>						
<i>Populus fremontii</i>	X	X	X	X	X	X
<i>Prosopis glandulosa</i> var. <i>torreyana</i>		X	X		X	X
<i>Rhus trilobata</i> var. <i>simplicifolia</i>	X		X	X	X	
<i>Rhus trilobata</i> var. <i>trilobata</i>			X	X		X
<i>Rumex hymenosepalus</i>	X		X	X	X	
<i>Salix exigua</i>	X		X	X	X	X
<i>Salix gooddingii</i>	X	X	X	X		
<i>Salsola iberica</i>					X	
<i>Salvia davidsonii</i>					X	
<i>Salvia dorrii</i>		X	X	X	X	X
<i>Sclerocactus parviflorus</i>	X			X		
<i>Sonchus oleraceus</i>		X				
<i>Sphaeralcea ambigua</i>	X		X	X		
<i>Stanleya pinnata</i>	X			X		
<i>Stephanomeria tenuifolia</i>			X	X		
<i>Tamarix chinensis</i>	X	X	X	X		
<i>Tessaria sericea</i>		X	X	X		X
<i>Thamnosma montana</i>	X	X	X	X		
<i>Typha latifolia</i>	X		X	X	X	X
<i>Vitis arizonica</i>	X			X		
<i>Yucca angustissima</i>	X		X	X		
<i>Yucca baccata</i>			X	X		
<i>Yucca whipplei</i>			X	X		
Total	41	21	46	51	26	12

In terms of plant uses being taught, food was the most frequently mentioned use being taught, being mentioned for 51% (35 of 68) of the plants. Medicinal uses were mentioned for 34% (23 of 68) of the identified plants, followed by construction uses, which were mentioned for 29% (20 of 68) of the plants. Ceremonial uses are being taught for 18% (12 of 68) of the plants, while fuel and other uses each were mentioned for 13% (9 of 68) of the identified plants. Clearly, food, medicine, and construction uses (the latter for traditional structures as well as arts and crafts) are the primary uses being taught to Southern Paiute young people.

Plants are clearly important resources to Southern Paiute people. The importance of plants is reflected in continued reliance upon these resources by Indian people for food, medicine, and making traditional items. The importance of plants is further indicated by the fact that knowledge concerning them, and their uses, is currently being transmitted to younger generations of Southern Paiute people. Information on plant uses (traditional and current), storage, management, and preference can be quantified and calculated as a cultural significance score to impress upon non-Indian people the importance of these resources in the hopes that they might be protected from potential adverse impacts. The next section of this chapter discusses the method of calculating the cultural significance of Indian plants.

CALCULATING THE CULTURAL SIGNIFICANCE OF PLANTS

Scientists have recently begun to quantify aspects of American Indian plant use in order to assess cultural significance. Quantification is in part derived from Indian interpretation of plants and their significance. Collaboration is essential so that significance reflects the indigenous perspective regarding cultural significance.

Nancy Turner (1988) developed a formula for calculating the cultural importance of plants to Salish people of the northwestern United States. Turner's work is especially important because of the number of variables she incorporated into the cultural significance formula. Turner's formula was revised by our research team to calculate the cultural significance of plants traditionally used by Owens Valley Paiute, Western Shoshone, and Southern Paiute peoples (Stoffle, Halmo, Evans, and Olmsted 1990). These plants were potentially impacted by the Yucca Mountain High-Level Radioactive Waste Project in Nevada. In addition, the cultural significance of Ute, Southern Paiute, and Gosiute plants was calculated to help characterize three valleys that were slated to undergo construction for an Air Force training facility (Halmo, Stoffle, and Evans 1993). In each case, the Turner formula was adapted to reflect the ways in which Indian people evaluated plants and also to maximize procedures for protecting plants. Plants are inherently difficult to protect, and potential adverse impacts to them are difficult to mitigate; successful cases are rare (Lerner 1987; Peri, Patterson, and Goodrich 1982).

Following the procedures for calculating the cultural significance of plants identified at Yucca Mountain, we have calculated an Index of Cultural Significance (ICS) for each plant identified by Southern Paiute representatives in the *Colorado River Corridor*. Our calculation of an ICS derives from revising some of Turner's assumptions regarding *quality* of plant use, *intensity* of plant use, and *exclusivity* of plant use (Stoffle, Halmo, Evans, and Olmsted 1990:422-424; Turner 1988:278).

Quality of use includes the number of uses and/or the number of plant parts used for specific purposes. In contrast to Turner, however, individual plant parts used for a specific purpose were added as values, but not ranked in terms of contribution to survival (Stoffle, Halmo, Evans, and Olmsted 1990:422-423). Instead, each use and plant part used were assigned an equal value of 1. Multiple use plants and plants that had many useful parts thus had higher values in the quality of use category.

Storage and management were added as a variables and assigned values in revising Turner's intensity of use category. Values in this category ranged from 1 to 5, based on whether the plant was simply collected and used, stored for a period of time, or actively maintained through manipulations such as transplanting, burning, or cultivation. Intensively managed plants were given a value of 5. Depending on the length of time a plant was stored, values of between 3 and 4 were given. This procedure is generally consistent with Turner's intensity of use component (Turner 1988:281, Table 2).

Exclusivity of use values were simplified such that preferred species or those that are the exclusive species for achieving any particular purposes were assigned a value of 2. A value of 1 was assigned to plants that were one of several possible sources for a specific purpose (Stoffle, Halmo, Evans, and Olmsted 1990:424).

To supplement the above factors, we added a *contemporary use* category. The ethnobotanical survey instrument contained questions regarding the contemporary use of plants and whether or not traditional knowledge about them is being transmitted to younger generations. Contemporary use of plants is augmented by the fact that traditional use information is being transmitted from elders to members of younger generations. For this category, then, plants which are currently used were given a value of 2, and plants no longer being used were assigned a value of 1 (Stoffle, Halmo, Evans, and Olmsted 1990:424). Using these revised criteria, the ICS score is calculated using the following equation:

$$ICS = p/u \times i \times e \times c$$

where ICS is equal to the quality of use (p/u), measured as the total number of uses and/or parts used for a specific purpose, multiplied by the intensity of use (i), the exclusivity of use (e), and the contemporary use (c) values (Stoffle, Halmo, Evans, and Olmsted 1990:422-425). While the assigning of values is necessarily an etic process performed by ethnographers, it is important to point out that Indian people participated in developing the criteria for each use category. The values assigned take into account the Indian perspective as

much as possible. Table 7.10 lists the 68 species of plants identified by Southern Paiute representatives in the study area, along with the ICS scores for each. The scores are listed from highest to lowest.

Cultural Triage

Indian people generally want to protect all individual plants when confronted with the prospect of development projects destroying plants in traditional lands. We have termed this response *holistic conservation* (Stoffle and Evans 1990). It is likely that development will proceed somewhere, however, because ownership and thus authority over decisions about land use in most traditional lands have been lost to the dominant society. As a consequence, Indian people are faced with a forced choice situation in which they must single out certain plants for special protection, knowing that doing so increases the probability that other plants are more likely to be destroyed. We have termed this response *cultural triage* (Stoffle and Evans 1990).

Egalitarian Triage

Plants can be triaged by calculating their cultural significance. We have developed two procedures for calculating the cultural significance of plants. One procedure is termed *egalitarian triage* (Stoffle, Halmo, Evans, and Olmsted 1990:421), which simply involves tallying the number of plants identified by members of an ethnic group to determine the significance of an area.

Weighted Triage

A second procedure involves using a *weighted triage* score (Stoffle, Halmo, Evans, and Olmsted 1990:421), which involves adding the ICS scores for each plant identified by an ethnic group to produce a numeric value for all plant resources in a study area.

AREA SIGNIFICANCE BASED ON PLANTS

Contemporary American Indian people have lost traditional cultural resources to scientific and development interests (Stoffle, Halmo, Olmsted, and Evans 1990, Vecsey 1991). For Indian people, the significance of these resources derives from their meaning in ethnic, religious, cultural, and historic contexts rather than scientific and economic contexts. To these Indian people, individual cultural resources are integral components of large areas where the resources were used as part of traditional ways of life (Curtis 1992:66-67). So from the Indian perspective, specific cultural resources are intimate parts of *sacred geographic areas* (Walker 1991).

Protection of individual Indian plants is rarely feasible because most Indian plants are commonly found in plant communities and are generally dense in particular ecozones, rather than being rare and endangered plants. It may therefore be more feasible to protect areas

Table 7.10. Index of Cultural Significance for Southern Paiute Plants in the Colorado River Corridor

Plant Species	ICS	Plant Species	ICS
<i>Typha latifolia</i>	280	<i>Agave utahensis</i> var. <i>kalibabensis</i>	18
<i>Rhus trilobata</i> var. <i>simplicifolia</i>	260	<i>Encelia frutescens</i> var. <i>resinosa</i>	16
<i>Salix exigua</i>	170	<i>Chrysothamnus nauseosus</i>	16
<i>Populus fremontii</i>	160	<i>Cercis occidentalis</i> var. <i>orbiculata</i>	16
<i>Yucca baccata</i>	120	<i>Oenothera pallida</i>	12
<i>Salix gooddingii</i>	100	<i>Lycium fremontii</i>	12
<i>Nolina microcarpa</i>	100	<i>Dyssodia pentachaeta</i>	12
<i>Gutierrezia microcephala</i>	100	<i>Baccharis salicifolia</i>	12
<i>Larrea tridentata</i>	80	<i>Abutilon incanum</i>	12
<i>Fraxinus pennsylvanica</i> ssp. <i>velutina</i>	72	<i>Sclerocactus parviflorus</i>	10
<i>Yucca angustissima</i>	60	<i>Salvia davidsonii</i>	10
<i>Salvia dorrii</i>	60	<i>Parthenocissus vitacea</i>	10
<i>Nicotiana trigonophylla</i>	60	<i>Mentha arvensis</i>	10
<i>Artemisia bigelovii</i>	54	<i>Fallugia paradoxa</i>	10
<i>Prosopis glandulosa</i> var. <i>torrevana</i>	48	<i>Phragmites australis</i>	8
<i>Tamarix chinensis</i>	40	<i>Opuntia phaeacantha</i>	8
<i>Ephedra torrevana</i>	40	<i>Encelia farinosa</i>	8
<i>Thamnosma montana</i>	36	<i>Stanleya pinnata</i>	6
<i>Tessaria sericea</i>	30	<i>Equisetum laevigatum</i>	6
<i>Opuntia erinacea</i>	30	<i>Ambrosia dumosa</i>	6
<i>Lycium andersonii</i>	30	<i>Stephanomeria tenuifolia</i>	4
<i>Ephedra nevadensis</i>	30	<i>Nasturtium officinale</i>	4
<i>Agave utahensis</i> var. <i>utahensis</i>	30	<i>Battarrea stevenii</i>	4
<i>Datura meteloides</i>	24	<i>Ferocactus acanthodes</i>	4
<i>Artemisia ludoviciana</i>	24	<i>Artemisia filifolia</i>	3
<i>Vitis arizonica</i>	20	<i>Yucca whipplei</i>	2
<i>Rhus trilobata</i> var. <i>trilobata</i>	20	<i>Salsola iberica</i>	2
<i>Orzopsis hymenoides</i>	20	<i>Rumex hymenosepalus</i>	2
<i>Opuntia basilaris</i>	20	<i>Muhlenbergia asperifolia</i>	2
<i>Mirabilis multiflora</i>	20	<i>Echinocereus triglochidiatus</i> var.	2
<i>Juncus acutus</i> var. <i>sphaerocarpus</i>	20	<i>Cirsium</i> sp.	2
<i>Sonchus oleraceus</i>	18	<i>Astragalus proelongus</i>	2
<i>Descurainia pinnata</i>	18	<i>Sphaeralcea ambigua</i>	1
<i>Atriplex canescens</i>	18	<i>Astragalus tephrodes</i>	1

where significant combinations of Indian plants grow than to protect individual plants. To assess the significance of an area based on the plant resources present, a meaningful unit of area is defined and Spatial Area Significance (SAS) scores are calculated. For example, the authors identified seven local use areas during the Yucca Mountain project. When Spatial Area Significance (SAS) scores were calculated using both egalitarian triage and weighted triage

procedures, policy relevant differences were demonstrated (Stoffle, Halmo, Evans, and Olmsted 1990:429).

To assess the SAS of places within the *Colorado River Corridor*, both sites and ecozones were defined as meaningful units of area. Site descriptions are important for providing a sense of the make up of each location at which plants were identified by Southern Paiute people. Sites were visited along the entire length of the study area and include locations within each of the three desert zones found within the canyon, the Great Basin, Mohave, and Sonoran zones (Carothers and Brown 1991). However, the 21 sites represent only a fraction of the sites along the Colorado River between Lees Ferry and Pearce Ferry. In addition, management decisions will affect plants within ecozones. Therefore, a spatial area analysis of plants by ecozone is also provided.

Site Analysis

Two hundred five different species of plants (202 species and 3 varieties) were identified by the trip botanist on the May 1993 river trip. The number of species found at each site is recorded in Table 7.11.

The information in Table 7.11 is very helpful for understanding Southern Paiute use of plant resources in the *Colorado River Corridor*. The first three columns of the table show the distribution of all plants identified by the trip botanist among the 21 sites visited. The 205 species identified were fairly evenly distributed among the sites. Each site contained between 11 and 22 percent of all the species identified on the trip. The majority of species were present at more than one site. The number of plants at each site that were located exclusively at that site also are shown in Table 7.11. Site 1, Ferry Swale, contained the largest number of species that were exclusive to that site; a little more than one quarter of the species identified at Ferry Swale were found nowhere else on the trip. At the other 20 sites, the number of plant species found exclusively at any particular site was one-sixth or less, as shown.

The second half of the table provides information about the plants identified by the Southern Paiute representatives. Sixty-eight plants were identified by Indian participants as having cultural significance to Southern Paiute people. As shown in Table 7.11, fourteen of these plants were exclusive; they were not present at more than one site visited on the trip. Clearly, Southern Paiute representatives did not identify equal numbers of plants at all sites. They were able to identify between 8 and 26 plants at each site. The percent of all plant species present at a site that were recognized by the Indian people ranged from a high of 73 percent at Nankoweap Creek to a low of 29 percent at Travertine Canyon. At six sites Southern Paiute representatives identified over half of the species present. The sites where Indian people identified the largest percent of plant species are located in and at the mouth of side canyons with complex delta systems and perennial streams and in areas of deep and wide sand deposits and dunes. Southern Paiute representatives identified less than 40 percent of the plants at only six of the sites visited.

Table 7.11. Number of Plant Species Found at Colorado River Corridor Sites

Site	All Plants			Southern Paiute Plants		
	Number of Species Exclusive to Site	Total Number of Species at Site	Percent of All 205 Species Identified on Trip	Number of Species Exclusive to Site	Total Number of Species at Site	Percent of All Species at Site
1 Ferry Swale	12	46	22 %	2	18	39 %
2 Ninemile Draw	1	22	11 %	1	9	41 %
3 Jackass Canyon	3	35	17 %	1	21	60 %
4 Buck Farm Canyon	3	34	17 %	0	20	59 %
5 Nankoweap Creek	1	22	11 %	1	16	73 %
6 Little Colorado River	5	36	18 %	1	14	39 %
7 Stone Creek	4	36	18 %	1	15	42 %
8 Deer Creek	7	42	20 %	1	26	62 %
9 Kanab Creek	3	38	19 %	1	20	53 %
10 Matkatamiba Canyon	3	42	20 %	1	19	45 %
11 Ledges	3	37	18 %	0	13	35 %
12 National Canyon	0	27	13 %	0	12	44 %
13 Fern Glen Canyon	2	38	19 %	0	14	37 %
14 Vulcan's Anvil	2	42	20 %	1	17	40 %
15 Whitmore Wash	1	29	14 %	0	16	55 %
16 Parashant Wash	5	46	22 %	0	20	43 %
17 Ompi (Hematite) Cave	4	41	20 %	1	18	44 %
18 Spring Canyon	1	32	16 %	0	14	44 %
19 Granite Park	6	45	22 %	0	14	31 %
20 Travertine Canyon	1	28	14 %	1	8	29 %
21 Bridge Canyon	4	34	17 %	1	15	44 %

Two of the six sites with the lowest percent of identified plants are located at active seeps on rocky ledges. The remaining sites include an area of extensive terraces crossed by dry washes, a flat sand and gravel bench, and narrow side canyons with rocky dry floors and narrow shelves of desert vegetation on talus slopes.

Site Significance

Indian people tend to interpret sites as related components of larger areas. In areas of former residence, such as spring and marshland oases or riverine deltas, and in less permanent camping and food processing areas, plants were important resources. Each site was evaluated in terms of the plant resources it contained. A Site Significance (SS) score was calculated using both the egalitarian triage and weighted triage procedures. The egalitarian triage SS score (ETS)

was calculated by adding the total number of plants identified by Indian people in a local use area. The weighted triage SS score (WTS) was calculated by adding the ICS values for the total number of plants identified at the site.

In Table 7.12 the 21 sites are ranked by their SS scores, derived from both the egalitarian triage and the weighted triage procedures. The two procedures yield different results, as shown. The relative ranking of the sites is altered when the relative contributions of the plants to Southern Paiute people are included in the calculation.

Table 7.12. Site Significance Scores of Southern Paiute Plant Resources

Site	Site Significance			
	Rank	ETS	Rank	WTS
8 Deer Creek	1	26	1	1,180
4 Buck Farm Canyon	3	20	2	1,068
18 Spring Canyon	14	14	3	912
9 Kanab Creek	3	20	4	902
3 Jackass Canyon	2	21	5	897
5 Nankoweap Creek	10	16	6	782
12 National Canyon	19	12	7	756
7 Stone Creek	12	15	8	752
15 Whitmore Wash	10	16	9	748
6 Little Colorado River	14	14	10	542
16 Parashant Wash	3	20	11	540
21 Bridge Canyon	12	15	12	536
10 Matkatamiba Canyon	6	19	13	527
14 Vulcan's Anvil	9	17	14	494
17 Ompi (Hematite) Cave	7	18	15	445
19 Granite Park	14	14	16	408
1 Ferry Swale	7	18	17	402
11 Ledges	18	13	18	338
13 Fern Glen Canyon	14	14	19	334
20 Travertine Canyon	21	8	20	230
2 Ninemile Draw	20	9	21	136

There is no direct relationship between the cultural significance of a site based on the weighted triage calculations and the number of plants identified, whether that is measured in absolute number of plants seen, or calculated as a percentage of the total plants present at a site. The sites with the highest WTS are located in and at the mouth of side canyons with complex delta systems and perennial streams. In contrast, sites with the lowest WTS scores are located on gravel and cobble benches that have not been recently replenished with nutrient-laden sands,

such as Ninemile Draw, or are rocky areas with active seeps, such as in Travertine Canyon.

Ecozone Analysis

The Colorado River directly affects the vegetation and flora of the Grand Canyon and has helped to establish the five distinct ecozones found there. Riparian vegetation is characterized by strong patterns of zonation parallel to river channels. Flooding and soil gradients are the mechanisms by which the zones are created and maintained (Stevens 1989). The two hundred five plant species identified in the May 1993 trip are distributed among the five ecozones as shown in Table 7.13.

Table 7.13. Number of Plant Species Found Within Each Ecozone

Ecozone	All Plants			Southern Paiute Plants		
	Number of Species Exclusive to Ecozone	Total Number of Species Within Ecozone	Percent of All 205 Species Identified on Trip	Number of Species Exclusive to Ecozone	Total Number of Species Within Ecozone	Percent of All Species Within Ecozone
Canyon Wall	2	17	8 %	0	4	24 %
Desert	22	92	45 %	6	37	40 %
Old Riparian	16	90	44 %	6	42	47 %
New Riparian	21	85	41 %	1	31	36 %
Side Canyon Riparian	36	103	50 %	9	45	44 %

The information in Table 7.13 helps to characterize the plant resources in the *Colorado River Corridor*. The first three columns show the distribution of all plants identified by the trip botanist. With the exception of the canyon wall ecozone, each of the ecozones contained a significant percent of all species identified. Of the 205 plant species, slightly more than half were found growing in more than one ecozone. The remaining 97 species are limited in their ecozone distribution. Knowledge of the distribution of the plant species is important for understanding the impacts of Glen Canyon Dam water release on particular ecozones. Plants that cannot grow in the undisturbed ecozones will potentially be lost if the ecozones in which they live are adversely affected. The number of plants exclusive to each ecozone also are shown in Table 7.13.

The second half of Table 7.13 provides information about the plants identified by Southern Paiute representatives. Of the 68 Southern Paiute plants, 46 were found in more than one ecozone and 22 were exclusive, as shown. Southern Paiute representatives identified between one fourth and one half of the plant species present within each of the ecozones, ranging from a low of 24 percent on the canyon wall to a high of 47 percent in the old riparian ecozone. Each ecozone will be briefly discussed here.

Canyon Wall

The canyon wall ecozone supports the fewest number of plant species of any zone, and only two of the species found there were not found elsewhere in the canyon. Likewise, only four species of plants identified by Southern Paiute representatives were found in this zone, and none of those were exclusive to the canyon wall.

Desert

The desert ecozone has a large number of plant species, forty percent of which were identified by Southern Paiute representatives. Although this zone is not directly impacted by the Colorado River, Indian participants noted that the presence of the river affected the dispersal of the seeds of these plants.

Old Riparian

The old riparian ecozone contains a wide diversity of plant species. Southern Paiute representatives identified nearly half of the species in this zone as having cultural significance for them. Since 1980, plant cover in this zone has declined ten thousand square feet per year (Carothers and Brown 1991). The causes of that decline include a reduction in the germination of seedlings and the loss of the annual watering and nutrient replacement that occurred with natural flooding. It has been suggested that controlled high flows from the dam may be necessary to maintain the viability of the old riparian ecozone (Carothers and Brown 1991).

New Riparian

The new riparian ecozone is closest to the Colorado River and is directly impacted by the river flow. For example, the plants in this ecozone suffered the highest mortality in the 1983 flood, especially the very shallow-rooted clonal species like arrowweed. As a result of that flood, an estimated 95 percent of the cattail marshes in the study area were lost to scouring. The most apparent decline in riparian plants since the flood has been the losses of arrowweed, cattails, giant reed, and four species of *Baccharis* (Carothers and Brown 1991). Over one third of the plants identified in this zone, including the arrowweed, cattails, and *Baccharis salicifolia*, were identified by Southern Paiute representatives. Still, the new riparian ecozone is an artifact resulting from the construction of the Glen Canyon Dam. It does not represent pre-dam vegetative conditions along the river banks. Not surprisingly, therefore, Southern Paiute representatives identified only one plant exclusive to this zone.

In addition to the direct effects of water on the vegetation of the new riparian ecozone, reproduction of plants growing along the river's edge is impacted by the water flow. This is true both for plants, such as tamarisk (*Tamarix*), that reproduce primarily from seeds, and those, such as willow (*Salix*), that spread clonally through underground roots. Tamarisk is an introduced species that has become dominant since the construction of Glen Canyon Dam. There is evidence that a stable discharge regime may be used to shift the dominance from tamarisk to native species such as willow (Stevens 1989). The effect of any introduction of artificial flooding will depend on the timing of that flooding. Flooding in spring or early summer, during the production and spread of tamarisk seeds, will be likely to favor tamarisk. In contrast, the germination of native riparian shrubs will be favored over tamarisk in late summer floods occurring in August or September to correspond with late-summer rainstorms (Stevens 1989, Carothers and Brown 1991).

Side Canyon Riparian

The side canyon riparian ecozone is the most diverse of the five ecozones included in this study. The presence of perennial streams, such as those at Buck Farm Canyon and Stone Creek, make it possible for plants that require moisture to thrive in these areas. Forty-four percent of the plants found in this zone were identified as culturally significant for the Southern Paiute people. Several species of plants identified by Southern Paiute representatives in the side canyons are also present in the new riparian ecozone. Given the damaging effects of recent flash floods in the side canyons, such as the 1993 Havasu Canyon flood, the plants in the new riparian zone may take on greater significance. This will be further discussed in Chapter Eight.

Ecozone Significance

The differential effects of the rate and timing of water released from the Glen Canyon Dam underlie the importance of evaluating each ecozone in terms of the plant resources present there. An Ecozone Significance (ES) score was calculated using both the egalitarian triage and weighted triage procedures.

In Table 7.14 the five ecozones are ranked by the ES scores, derived from both the egalitarian triage and the weighted triage procedures. The two procedures yield different results with distinct policy implications. A greater number of plants were identified by Southern Paiute representatives in the old riparian zone than the new riparian zone. Nevertheless, the contributions to the Southern Paiutes made by the plants in the new riparian zone results in a higher weighted triage score for this ecozone. Flooding may be necessary for the maintenance of the old riparian zone but can have deleterious effects on the plants growing at the water's edge. Significantly, the plants most damaged by the 1983 flood included cattail, *Typha latifolia*, the plant with the highest ICS.

Table 7.14. Ecozone Significance Scores Based on Southern Paiute Plant Resources

Ecozone	Ecozone Significance			
	Rank	ETS	Rank	WTS
Canyon Wall	5	4	5	80
Desert	3	37	3	1,435
Old Riparian	2	42	4	1,307
New Riparian	4	31	2	1,522
Side Canyon Riparian	1	45	1	1,931

Summary and Implications for Water Release Management

Southern Paiute representatives identified 68 plant species in the *Colorado River Corridor* on the May 1993 ethnobotany trip. They provided information regarding plant collection, preparation and use for each of the plants identified. Cultural significance scores were calculated for each plant based on information provided by the Indian people. Spatial area significance scores were then calculated for each of the 21 sites visited on the trip and for the five ecozones in the study area. The results of these calculations demonstrate that many plants are important Southern Paiute cultural resources within the *Colorado River Corridor*.

The Southern Paiute representatives expressed the desire to protect the plant resources in the study area. Many of the culturally significant plants grow in the riparian ecozones that are directly and indirectly influenced by water releases from Glen Canyon Dam. Every effort should be made to prevent large floods like the 1983 flood from occurring at the Dam. Also, in order to protect the vegetation of the new riparian ecozone and maintain the vitality of the old riparian ecozone, a flow regime that eliminates artificial, man-made scouring floods and maintains the water level as regular as possible is the preferred water release alternative.

CHAPTER EIGHT

MITIGATION RECOMMENDATIONS

Tribal representatives were asked what they thought should be done to protect traditional sites and plants along the *Colorado River Corridor*. Each interview contained a discussion of what the Indian representatives perceived was occurring to archaeology sites and plants and what should be done to protect sites and plants. The recommendations primarily derive from these interviews, but some recommendations were tape recorded during the raft trips.

Indian people who visited sites were cautious about making a policy statement without being certain about all the issues. In this case, they were uncertain about what the Glen Canyon EIS water release options mean in terms of general environmental change and on a site-by-site basis. In addition, it was not possible to visit most of the Southern Paiute archaeology sites recorded in the study area. Some of the most knowledgeable tribal members did not participate on the raft trips because of concerns for their health.

Indian people noted that archaeology sites are but one aspect of what makes places culturally significant. Plants, animals, sources of power, and locations of historical importance contribute to the cultural significance of places. It is impossible for a single study to analyze all of these cultural elements.

This chapter presents the protection recommendations made by tribal representatives as they visited archaeological sites and were interviewed next to traditional plants. These recommendations formed the basis of Indian government discussions which led to a series of specific recommendations. The official recommendations made by the Indian governments are the conclusion of this chapter.

Summary of Archaeology Recommendations

Indian people made a number of recommendations to protect archaeology sites, but a few examples will illustrate the range of concerns and mitigation recommendations. Indian people observed that some traditional sites have already been washed away and for these sites nothing can be done. Other sites are near the water and the Indian people recommended that the water releases be adjusted so that these sites are not destroyed. Still other types of sites are near the

upper limits of the traditional Colorado River flooding, and these sites are perceived of as being primarily impacted by tourists.

Tourist behavior, however, was perceived as being associated with water release policies. As Glen Canyon water erodes more and more beaches, tourists are forced to camp at fewer and fewer places. When tourists camp they walk around the area and pick up Indian artifacts. The more tourists at a camp, the more damage to the artifacts. Indian people recognized that their own recommendations, like restricting access to certain archaeology sites, could further concentrate tourists and potentially increase damage to other archaeology sites. The relationship between water release policies, tourist behaviors, and archaeology sites was complex, but one that Indian people perceived as essential for protecting places of cultural significance.

The most common recommendations made by the tribal representatives are:

- * restrict access to certain archaeology sites
- * not to advertise the location of other sites in brochures
- * ask boatmen not to tell about the location of sites
- * ask the NPS to develop tourist orientation lectures and documents that specifically discussed the cultural significance of certain Indian sites and the regulations about where tourists should and should not visit. Indian people should help develop these orientation materials
- * build consultation relationships between the federal agencies and the Southern Paiute tribes

Indian representatives generally evaluated the GCEIS water release options in terms of which one would be most like the normal flow of the Colorado River and, therefore, would do the least damage directly to archaeology sites through erosion and would do the least damage indirectly by concentrating tourists onto certain portions of *Colorado River Corridor*. It was not clear to the Indian people, at the time of the raft trip, which of the options would accomplish these goals, so they requested that these issues be raised with their governments.

Table 8.1 presents the first-choice recommendations of tribal representatives for protecting archaeological sites visited in the *Colorado River Corridor*. The table is arranged by tribe and by site, so that for each site visited, the comments and recommendations of each representative who was interviewed at the site can be read. Table 8.2 lists the second-choice, or alternative recommendations made by tribal representatives regarding the protection of archaeological sites. The structure of Table 8.2 is the same as that of Table 8.1.

The two tables reiterate the recommendations summarized above. Most of the tribal representatives interviewed did not have alternative recommendations to their first choices for archaeological site protection.

Summary of Plant Recommendations

During the May 1993 ethnobotanical raft trip, tribal representatives were asked whether they thought the plant species they identified were being affected by current Glen Canyon Dam water release policy. Table 8.3 presents the responses of tribal representatives to this question. The table is structured by site and by plant species identified at the site.

As can be seen from the comments, tribal representatives believed that many of the plants are believed to be affected by current Glen Canyon Dam water release policy. The perception is that the changing volume of water released from the dam is flooding, or may potentially flood, species located from the river margin to the old high water zone. Side canyon and some desert ecozone plants are not perceived as being affected, unless seed dispersal results in establishment of plant species closer to the river. Their primary concerns are to reduce erosion and uprooting of plants caused by fluctuation in river level, especially high water floods caused by rapid water release.

Tribal representatives were also asked to make recommendations for the protection of plant species in the *Colorado River Corridor* study area. Table 8.4 presents the first and second-choice recommendations made by representatives regarding plants. A brief summary of the recommendations shows that the clear first choice is to stop or reduce the release of water from the dam. Some of the representatives also perceived access by tourists to areas where Paiute plants grow as an adverse impact, and recommended that access be restricted or otherwise limited. Trampling and clearing or picking vegetation is perceived to be occurring at the hands of visitors.

As Table 8.4 shows, those representatives who made alternative recommendations regarding plants generally recommended transplanting important species to other areas in the study area. Growth requirements, especially moisture, were seen as critical for transplanting. That is, plants should be moved to another area that has the same basic ecological characteristics in terms of soil, moisture, and light. For some of the representatives, transplanting is explicitly bound up with the issue of access for harvesting by Indian people. Some of the plants are perceived to be becoming increasingly rare or difficult to find on reservation lands and in surrounding areas because of a number of factors (grazing, housing development requiring land clearing, etc.). Access to plant stands for harvest and use by Paiute people is implicit in the recommendations to transplant made by other representatives. Special protection was recommended by tribal representatives for the Gooddings willow at Granite Park. Many of the recommendations regarding this tree were informal, and not part of the formal plant interview process.

Table 8.1: First Recommendation for Protection of Sites Visited

Tribe	Study area site	First recommendation for Protecting the Site
Kaibab Paiute	Stop 1	close to campsite with people going through it. Fence would kind of ruin Grand Canyon experience but would alert them regarding presence.
Kaibab Paiute	Stop 1	Needs protection. Bury it under the sand.
San Juan Paiute	Stop 1	Tourists-also by increase in river flow [apparently this refers to what he thought the impacts were.]; ; Keep river as it is -- just right.
Shivwits Paiute	Stop 1	We made tracks-so should not publicize site. Keep information about the site restricted from public.
Kaibab Paiute	Stop 2	Fence off whole ledge.; Keep off-limits to tourists.; Keep access open to Indian vegetation.
Shivwits Paiute	Stop 2	Don't tell anyone-put off limits because of burial sites-all such sites should be put off-limits.
Kaibab Paiute	Stop 2	Make it off-limits--keep access to Indian visitation
Kaibab Paiute	Stop 2	No access
San Juan Paiute	Stop 2	It needs protection, because of the burials and spirits. Protect the burials--no access. Indian way is to avoid it. Need to say prayers before entering it.
Kaibab Paiute	Stop 2	Had on mind before started out. Just now allow the number of people who have come down. Just have to stop all this activity. Maybe just one spot in canyon that they go to. Put a stop to all of it. management would have to include protection. Archaeology will have to stop. Respect for places has already happened--trash dumping, competition with the river. River is to be respected. Not to be challenged.
Kaibab Paiute	Stop 3	Have NPS take whole area off-limits even where we're camped.
Kaibab Paiute	Stop 3	No visitations--put off-limits--people are destructive. Only value of past is monetary.
Kaibab Paiute	Stop 3	make it restricted to general public. No trails--erase the trails. No stopping at all. Revegetation of the trail areas. Take it off the guide map.
San Juan Paiute	Stop 3	Needs protection. Possibly fencing.
Kaibab Paiute	Stop 3	No access, because of the number of artifacts.
Shivwits Paiute	Stop 3	Place certain areas off-limits to boaters who come down the river.
Kaibab Paiute	Stop 4	Make access to creek and upstream off-limits. Maybe remove or rebury and establish recreational campgrounds where nothing would be disturbed.
Kaibab Paiute	Stop 4	Do not need to restrict access to this site.
San Juan Paiute	Stop 4	Doesn't need protection. Without water the plants won't grow.
Kaibab Paiute	Stop 4	No publicity about it. If you don't tell people, they won't find it. Only herbologists would recognize anything there.
Kaibab Paiute	Stop 4	no visitations--put off-limits--people are destructive
Kaibab Paiute	Stop 5	Already covered [with water] one source [of salt]--do not flood this one--protect--keep off-limits to visitation--open to tribal access and use--salt needed for ceremonies
Shivwits Paiute	Stop 5	Put it off-limits--were signs of human presence; Thinks it is off-limits, but boaters go there. Keep open to Indian people.
San Juan Paiute	Stop 5	Fence or something. Can just go in there. [Make a] rule against stopping.
Kaibab Paiute	Stop 5	Make off-limits--no information on maps
Kaibab Paiute	Stop 6	put site off-limits to people who come down river--only authorized archaeologists and Indian people for ceremony.
Shivwits Paiute	Stop 6	keep it off limits--eventually will be disturbed further
Kaibab Paiute	Stop 6	Stop the Dam. Don't let people stop there. Save what is left.
San Juan Paiute	Stop 6	Do not mention to tourists. Known as sacred areas.
Kaibab Paiute	Stop 6	Take off map. No info on location. Put in literature the penalties for going on site. Teach river runners about rules.
Kaibab Paiute	Stop 7	no access
Kaibab Paiute	Stop 7	No publicity.

Kaibab Paiute	Stop 7	restricting hiking, no overnights
Kaibab Paiute	Stop 7	Make a different trail for the hikers closer to shore so they don't go near the site
San Juan Paiute	Stop 7	Do not mention to tourists. Known as sacred areas.
Kaibab Paiute	Stop 7	Take off map. No info on location. Put in literature the penalties for going on site. Teach river runners about rules.
Kaibab Paiute	Stop 8	make sure the water level isn't raised to cover the area.; cut down on the accessibility. Take out the trail.
Kaibab Paiute	Stop 8	no publication. Don't publicize it.
San Juan Paiute	Stop 8	Ruins there, but no Paiute things. The name is there so will have some sand somewhere to protect from the tourists.
Kaibab Paiute	Stop 8	Yes, can be protected. It is still important even though it has been tore up. Take off maps. Stop tourists from visiting site.
Kaibab Paiute	Stop 8	put it off-limits--this one has to be protected; close connection to identity--will enrich young people's sense of identity;
Shivwits Paiute	Stop 8	would like to see it be off-limits--keep open to Indian access; Trail through house is awful, sad.
Kaibab Paiute	Stop 9	take it off map--keep off-limits to non-Indians and non-Paiutes--tell river companies and NPS to do this
San Juan Paiute	Stop 9	Do not need protection--not much to see there.
Shivwits Paiute	Stop 9	Put it off-limits.
Kaibab Paiute	Stop 9	leave it--do not bother it--no visitors--if Indian people need it, should be able to use it--keep off-limits to others
Kaibab Paiute	Stop 9	Make it inaccessible and off-limits to everyone except Paiute people.
Kaibab Paiute	Stop 9	Needs to be protected. No publicity. No access.
Kaibab Paiute	Stop 10	keep it off-limits to tourists--tell NPS
San Juan Paiute	Stop 10	Does need protection. Needs fencing on top. Let tourists see the bottom part.
Shivwits Paiute	Stop 10	Keep out
	Stop 10	No publicity. You don't know that there's a site there unless you look for it specifically.
Kaibab Paiute	Stop 10	Make it inaccessible to non-Indians. No publicity. Trail is too well established. Needs some kind of protection. People will trash it.
Kaibab Paiute	Stop 11	Make it inaccessible to people. Maybe could stop upriver from it. Stop hiking in there.
Kaibab Paiute	Stop 11	Should remain open to Paiute people. Keep off-limits to others because of vandalism.
Kaibab Paiute	Stop 11	No publication. No access.
Shivwits Paiute	Stop 11	[Make it] off-limits.
Kaibab Paiute	Stop 12	Make it a day stop, no camping allowed. Campers have cleared areas for tents--looked for artifacts--picked clean.
Kaibab Paiute	Stop 12	Needs protection. No publicity.
Shivwits Paiute	Stop 12	Keep out--don't tell anyone about the place.
Kaibab Paiute	Stop 13	put it off-limits to people--no visitation; limit water fluctuation
Kaibab Paiute	Stop 13	No publication and no access.
Kaibab Paiute	Stop 13	Keep out.
Kaibab Paiute	Stop 13	No more hikes should be allowed to shelter--protectit--limit access except for Indian people
Kaibab Paiute	Stop 14	No publication.
Kaibab Paiute	Stop 14	Make it inaccessible, although it's so high, there might not be many people who go there.
Shivwits Paiute	Stop 14	Keep out. Protect from use by tourists.
Kaibab Paiute	Stop 14	make them off-limits to tourists
Kaibab Paiute	Stop 15	No access. No publication.
Kaibab Paiute	Stop 15	Close the stop. [No access.]
Kaibab Paiute	Stop 15	Protect--eliminating access/knowledge of site.

Kaibab Paiute	Stop 16	Do whatever can to protect it--do not bother it--people may have to use it again in developing medicine ways--apprentices have to use for training--need purification ceremonies
Kaibab Paiute	Stop 16	no publication, no access.
Kaibab Paiute	Stop 16	Reduce access, physical and information.
Shivwits Paiute	Stop 16	Preserve it. Reduce access. Clean off graffiti from boat trip expedition. It also attracts more tourists. Tourist pick at site.
Kaibab Paiute	Stop 17	Make it off-limits--ample time for photos and analysis--only value now is to Indian people. Give Shivwits another site if flooded--allow them to decide on disposition of remains.
Shivwits Paiute	Stop 17	Off-limits.
Kaibab Paiute	Stop 17	Make [the site] inaccessible.
Kaibab Paiute	Stop 18	If people camp out then put up a fence to protect site further up in wash on sand terrace. Give Shivwits another site for use if flooded because it is a low site.
Kaibab Paiute	Stop 18	No publication.
Shivwits Paiute	Stop 18	Need to have a check for artifacts at pickup point. Add big fine.
Kaibab Paiute	Stop 19	Safeguard and keep available to tribes--off-limits to all others. Don't let water get high enough to flood this spot.
Shivwits Paiute	Stop 19	Keep non-Indians out of the site.
Kaibab Paiute	Stop 19	Keep people out.; Restrict [who?]
Kaibab Paiute	Stop 20	Rebuild the shoreline so they can't stop.; Take it out of the guidebooks--Make it not so well known.
Shivwits Paiute	Stop 20	All covered up now. So keep it covered up.
Kaibab Paiute	Stop 21	Should be allowed to remain a crossing for Paiute people. Do not allow access to non-Paiutes--access for Paiute and Pai.
Kaibab Paiute	Stop 21	Have the commercial trips cease making that one of their tour areas.; Have the NPS restrict the area
Shivwits Paiute	Stop 21	Remove Bundy jars because they are turning it into a Bundy site. Remove Bundy writing on walls.
Kaibab Paiute	Stop 22	Should be a similar place--remove mortars and give to tribes if flooded.; Need to do ceremonies before used again.; Do not put in museums.; Women need to learn processing food--needed to survive.; Keep off-limits to visitors except tribes.
Kaibab Paiute	Stop 22	Erase the trails.; Restrict access.
Shivwits Paiute	Stop 22	

Table 8.2: Second Recommendation for Protecting Sites Visited

Tribe	Study Area Site	Second Recommendation for Protecting Site
Kaibab Paiute	Stop 1	No access, but that limits the camping areas.
Shivwits Paiute	Stop 1	If find a site it is hard to keep people away.
Kaibab Paiute	Stop 2	Too late--when initially found good that NPS notifies us. Already disturbed.
Shivwits Paiute	Stop 2	None--leave it alone in place--disturbance will get worse though.
Kaibab Paiute	Stop 2	No--put it off-limits
Kaibab Paiute	Stop 2	Leave it alone
Kaibab Paiute	Stop 3	Move it to a different site higher up or in Paiute country if going to be impacted.
Kaibab Paiute	Stop 3	Remove items--repatriate to Paiutes--have ceremonies conducted.
Kaibab Paiute	Stop 3	Make a trail that goes away from the site and not to it.
Kaibab Paiute	Stop 4	Remove and rebury if inundated [by river water.]
Kaibab Paiute	Stop 4	remove and repatriate to Paitues--allow them to conduct ceremonies if going to be destroyed to appease ancestors
Shivwits Paiute	Stop 5	Wouldn't be right to let water destroy [the site]--want to save it.
San Juan Paiute	Stop 5	Should not be mentioned to tourists on river trips.
Kaibab Paiute	Stop 6	If flooded, have tribes decide what to do with remains and artifacts.
Shivwits Paiute	Stop 6	wrong to destroy with flood water.
San Juan Paiute	Stop 6	Only way.
Kaibab Paiute	Stop 7	Only a lunch stop for rafters. No overnights.
San Juan Paiute	Stop 7	Only way.
Kaibab Paiute	Stop 8	repatriate for reburial or education conduct appropriate ceremonies
Shivwits Paiute	Stop 8	Flooding would mess up the lower parts--if flooded. Remove all artifacts and give to Paiute people to take care of.
Kaibab Paiute	Stop 9	control water release
Kaibab Paiute	Stop 9	If flooded, allow tribes to set up different site in same general area
Kaibab Paiute	Stop 10	control water releases to protect [the resources]
Kaibab Paiute	Stop 11	natural flood. Do not increase Colorado River volume of flow.
Kaibab Paiute	Stop 12	Leave water low enough so as not to submerge.
Kaibab Paiute	Stop 13	Allow Indians to visit and do ceremonies if it is going to be harmed--don't want to be blamed by ancestors for destruction--we will be held accountable--will have to make peace with those that were there--if children can't see, we have to tell them something about it.
Kaibab Paiute	Stop 14	Allow tribal people to decide disposition of artifacts and have ceremony if will be destroyed to show we have done our part re: responsibility to land so ancestors won't be angered by lack of interest or action.
Kaibab Paiute	Stop 15	Maybe build up the area at the bottom to make climbing up to the site difficult. ; Change the landing so the boats can't unload. Make it hard to park.
Kaibab Paiute	Stop 16	If flooded by water release--allow tribal access to other areas in canyon to do this--canyon equals power--water, people
Kaibab Paiute	Stop 16	Engineer shore so cannot stop.
Kaibab Paiute	Stop 22	None.

Table 8.3: Is This Species Being Affected By the Glen Canyon Water Release?

Site Name	Botanical Name	Do you believe [species] here is being affected by Glen Canyon water release?
Ferry Swale	<i>Agave utahensis</i> var. <i>kaibabensis</i>	They can be uprooted if there is too much water.
	<i>Astragalus tephrodes</i>	No, not really.
	<i>Atriplex canescens</i>	no
	<i>Descurainia pinnata</i>	Yes, a fragile plant that can be easily washed away.
	<i>Descurainia pinnata</i>	A lot are dependent on rain. No, the water doesn't bother it; it might wash out some of it.
	<i>Descurainia pinnata</i>	It can be uprooted if the water gets too strong.
	<i>Ephedra torreyana</i>	Yes. Off and on running water is eroding it and uprooting it.
	<i>Ephedra torreyana</i>	No.
	<i>Mentha arvensis</i>	It can be uprooted if the water gets too high.
	<i>Mentha arvensis</i>	This plant would be gone. If wash away would not be there anymore.
	<i>Opuntia erinacea</i>	No.
	<i>Opuntia erinacea</i>	It will be. If the fluctuation is high and fast, it will kill it. It needs some water, but not a lot.
	<i>Opuntia erinacea</i>	No. It could not reach it with water. Tourists would come to see pretty sight and it would be good. Do not release water and take away the plants and sand. It would be like that wall there.
	<i>Oryzopsis hymenoides</i>	not impacted by water
	<i>Rumex hymenosepalus</i>	no
Petroglyph Panel	<i>Sclerocactus parviflorus</i>	No. It is protected because it is here on high.
	<i>Sphaeralcea ambigua</i>	Not really. Too much water will kill it.
	<i>Yucca angustissima</i>	It doe make a difference, because too much water will kill it. On the other hand, it does need water.
	<i>Artemisia filifolia</i>	don't think so
Jackass Canyon	<i>Datura meteloides</i>	yes
	<i>Ephedra torreyana</i>	Yes, from big flood
	<i>Stanleya pinnata</i>	Too much water flow will uproot it. These plants are much bigger than at home, so they must be getting more water.
	<i>Encelia frutescens</i> var. <i>resinosa</i>	Yes, if growing nearer, if growing nearer. Would be impacted - floods keep it from growing down there.
	<i>Lycium andersonii</i>	No, too high up.
	<i>Mirabilis multiflora</i>	No, too far from water area.
	<i>Oenothera pallida</i>	Not really affected. The creator put it here, and the the Creator will provide for it. The river flows will not affect it.
	<i>Opuntia basilaris</i>	No.
	<i>Oryzopsis hymenoides</i>	Some irrigation from water would help this plant.
	<i>Oryzopsis hymenoides</i>	The waterflow will definitely affect it. If the water flow is high, it will uproot it and possibly destroy it.

	<i>Rhus trilobata</i> var. <i>simplicifolia</i>	No
	<i>Rhus trilobata</i> var. <i>simplicifolia</i>	Don't know
	<i>Rhus trilobata</i> var. <i>simplicifolia</i>	Yes, might be affected if growing along the river.
	<i>Rumex hymenosepalus</i>	only if it transplants itself down farther by the water - none seen close to the water
	<i>Salix exigua</i>	Yes, the fluctuation of water causes erosion. When the water is low it gets too dry.
	<i>Salix exigua</i>	No, won't be affected. It grows here all the time.
Buck Farm Canyon	<i>Cercis occidentalis</i> var. <i>orbiculata</i>	when near river affected by flood
	<i>Dyssodia pentachaeta</i>	no
	<i>Ephedra torreyana</i>	no, it grows all over.
	<i>Nicotiana trigonophylla</i>	Yes, if seeds are down below; affect the seeds below.
	<i>Populus fremontii</i>	Yes, by the river margin wash away by floods and high water release; This one here not.
	<i>Populus fremontii</i>	No.
	<i>Salix exigua</i>	Yes, protect it.
	<i>Typha latifolia</i>	Erosion - being or been washed away
	<i>Typha latifolia</i>	Definitely - in lower part; erosion, being or been washed away
	<i>Typha latifolia</i>	No.
Nankoweap Creek	<i>Atriplex canescens</i>	Yes.
	<i>Chrysothamnus nauseosus</i>	no - water don't come this far
	<i>Chrysothamnus nauseosus</i>	yes
	<i>Equisetum laevigatum</i>	I think so. Last time there was just a small stream and more tea. An increased water flow would make the tea even more sparse.
	<i>Gutierrezia microcephala</i>	maybe if present downriver--closer to the river- being washed away by high water`
	<i>Gutierrezia microcephala</i>	No. first time seen grow out of the mouth of the canyon
	<i>Gutierrezia microcephala</i>	It might. Could uproot it and wash it away.
	<i>Salix exigua</i>	Might wash it away. But water helps it grow better.
	<i>Stephanomeria tenuifolia</i>	Yes.
	<i>Yucca baccata</i>	yes, more moisture in the aire; this plant likes drier
	<i>Yucca baccata</i>	No.
	<i>Yucca baccata</i>	Yes.
	Little Colorado River	<i>Artemisia bigelovii</i>
<i>Artemisia bigelovii</i>		Yes, seeds mighty; down there and grow; if water comes, the seed will be carried away.
<i>Encelia farinosa</i>		Yes, seeds are washed away and do not grow down lower.

	<i>Gutierrezia microcephala</i>	Yes.
	<i>Opuntia basilaris</i>	Don't know - too high. More moisture in the air now.
	<i>Oryzopsis hymenoides</i>	Yes, pretty close to the river, vulnerable to flood--will be washed away and grow somewhere else where Southern Paiutes can't gather it.
	<i>Stephanomeria tenuifolia</i>	maybe - if the water comes up this way
	<i>Thamnosma montana</i>	maybe - if water comes high enough up through this wash
	<i>Thamnosma montana</i>	Yes, if grown by river, if water rise up it might be gone.
Stone Creek	<i>Agave utahensis</i> var. <i>kaibabensis</i>	yes, maybe not - affected a little; closer to river, yes - by fluctuation, water level flooding them
	<i>Agave utahensis</i> var. <i>utahensis</i>	No - high.
	<i>Artemisia bigelovii</i>	maybe if it grows close to the water - people trample on it, kill it, sleep on it or pull it because they think it's not an important or pretty plant - close by the river it would be affected
	<i>Cirsium</i> sp. (undescribed)	Definitely. The roots aren't particularly long; it wouldn't take much to uproot it.
	<i>Datura meteloides</i>	No.
	<i>Fallugia paradoxa</i>	Yes, he saw some along the beach when we were coming upriver.
	<i>Lycium andersonii</i>	No.
	<i>Populus fremontii</i>	Probably, but maybe not much. Trees closer to the river could become uprooted.
	<i>Populus fremontii</i>	Yep
	<i>Rhus trilobata</i> var. <i>simplicifolia</i>	If it were to go close to the water
	<i>Rhus trilobata</i> var. <i>simplicifolia</i>	Yes, too much water will kill it.
	<i>Salvia dorrii</i>	Yes, disruption of natural cycle
	<i>Salvia dorrii</i>	No.
	<i>Salvia dorrii</i>	Yes, if seeds grow down there by the river and then floods would affect it.
Deer Creek	<i>Nasturtium officinale</i>	No, not up here. Yes, if present along the river margin; don't know.
	<i>Nasturtium officinale</i>	Yes, because grow along the River close to the water. Seed will grow along like the Winslow plant - "camel thorn"
	<i>Opuntia phaeacantha</i>	No.
Kanab Creek	<i>Baccharis salicifolia</i>	Right now, in a good way. Providing sufficient water for it. If the flow is not overly heavy than it won't uproot it.
	<i>Datura meteloides</i>	Yes, disturbance of the natural cycle, flash floods. There may be some closer to the river farther down.
	<i>Echinocereus triglochidiatus</i> var. <i>melanocanthus</i>	yes, the eroding of the soil. Habitat is being removed. If the water came up higher than it would erode the land around it and kill it.
	<i>Nolina microcarpa</i>	don't know - here affected by flash floods
	<i>Oryzopsis hymenoides</i>	possibly, if the water rises higher than it is not - the rice grass is on the sandy areas
	<i>Parthenocissus vitacea</i>	No - up in higher ground
	<i>Vitis arizonica</i>	Not really. Should not be uprooted.

Matkatamiba Canyon	<i>Astragalus praelongus</i>	Maybe yes, they grow close to the water.
	<i>Echinocereus triglochidiatus</i> var. <i>melanocanthus</i>	Yes, seed would be washed away.
	<i>Nicotiana trigonophylla</i>	No - here endangered by flash floods
	<i>Nolina microcarpa</i>	Yes, seed might go to river and be destroyed.
	<i>Salvia davidsonii</i>	No - here endangered by flash floods
	<i>Vitis arizonica</i>	No.
	<i>Yucca angustissima</i>	Yes, if grows along the river the seed from here would go there.
National Canyon	<i>Artemisia bigelovii</i>	Yes, there's not a lot of it. The amount of water that has come through has destroyed the growth potential. Not dependent on running water.
	<i>Artemisia ludoviciana</i>	Yes, floods get here.
	<i>Tamarix chinensis</i>	Yes
Fern Glen Canyon	<i>Ferocactus acanthodes</i>	Yes,
	<i>Muhlenbergia asperifolia</i>	Probably not. [The plant is] up in a side canyon.
Vulcan's Anvil	<i>Ambrosia dumosa</i>	Yes, affected its seeds lower down.
	<i>Larrea tridentata</i>	Yes, changes in moisture in air from amount of water. Health ones are green, others are drier.
	<i>Larrea tridentata</i>	Could be, if some grow lower near the water.
	<i>Larrea tridentata</i>	Yes, if it is in the canyon lower down.
	mushroom	Yes, seeds are washed away
	<i>Prosopis glandulosa</i> var. <i>torreyana</i>	Yes, raising of water erodes trees near river banks.
	<i>Prosopis glandulosa</i> var. <i>torreyana</i>	probably only those trees that are near the water - haven't seen any really near the water, but if they were I guess they would be affected
	<i>Salsola iberica</i>	Yes, directly affected by flooding here.
	<i>Tessaria sericea</i>	Yes, close to the river being eroded or washed away.
	<i>Tessaria sericea</i>	Yes, it grows by the water. It could easily be washed away, maybe has been washed away in some areas.
Whitmore Wash	<i>Opuntia basilaris</i>	DK
	<i>Prosopis glandulosa</i> var. <i>torreyana</i>	Probably because of so much water coming down. The trees are green because of so much water coming down.
	<i>Salix exigua</i>	Yes, wash it away.
	<i>Tamarix chinensis</i>	Yes, because it's really close to the water. Everything is green.
	<i>Tessaria sericea</i>	Yes. There will always be lots of them growing in one place. This isn't as thick.
	<i>Tessaria sericea</i>	oh yeah, would wash away
	<i>Typha latifolia</i>	It is getting lots of good fresh water here.
	<i>Typha latifolia</i>	Oh yeah...
Parashant Wash	<i>Fraxinus pennsylvanica</i> ssp. <i>velutina</i>	definitely - it is a past victim of flooding
Hematite Cave	<i>Abutilon incanum</i>	Yes, needs to grow in dry climate - more water in river make it moist and humid.
	<i>Ephedra nevadensis</i>	No, too high above the river.

	<i>Lycium fremontii</i>	No, high enough to stay.
Spring Canyon	<i>Datura meteloides</i>	no
	<i>Phragmites australis</i>	No - high water erode them but they grow back. Natural floods in the past washed away plants, but they came back (pre-dam).
	<i>Prosopis glandulosa</i> var. <i>torreyana</i>	Yes, flow should be regulated.
	<i>Salix exigua</i>	It is affected by floods, knocked down.
	<i>Sonchus oleraceus</i>	No. won't affect. Will make it grow more - flood will wash it, but won't be that big.
Granite Park	<i>Larrea tridentata</i>	Possibility - Don't know how.
	<i>Lycium fremontii</i>	not being affected
	<i>Lycium fremontii</i>	Yes, it might be. Probably that's the only way it gets its water. That's why they're nice and big.
	<i>Oenothera pallida</i>	Yes, it gets its water from the dam. Maybe sometimes it doesn't get that much water when the other plants are near like this.
	<i>Opuntia phaeacantha</i>	No - not affected - too far up.
	<i>Prosopis glandulosa</i> var. <i>torreyana</i>	No - nothing can kill them.
	<i>Salix gooddingii</i>	Yes, could be uprooted. And a little rush might do it.
	<i>Salix gooddingii</i>	Yes, cause running here close to it. Could wash it away.
Travertine Canyon	<i>Juncus acutus</i> var. <i>sphaerocarpus</i>	No, not with water like this.
Bridge Canyon	<i>Ferocactus acanthodes</i>	If there were lots and lots of water it would be.
	<i>Rhus trilobata</i> var. <i>trilobata</i>	Yes, If it gets uprooted it might not grow again.
	<i>Typha latifolia</i>	No - high water erode them but they grow back. Natural floods in the past washed away plants, but they came back (pre-dam).
	<i>Yucca whipplei</i>	Don't know.

Table 8.4: Recommendations For Protection Of Species In The Study Area

Site Name	Botanical Name	First Recommendation	Second Recommendation
Ferry Swale	<i>Agave utahensis</i> var. <i>kaibabensis</i>	Leave it alone.	
	<i>Astragalus tephrodes</i>	leave it alone.	
	<i>Atriplex canescens</i>	Just leave it.	
	<i>Descurainia pinnata</i>	No water release.	Transplant seeds higher so not washed away here, transplant back at Kaibab.
	<i>Descurainia pinnata</i>	Don't know	
	<i>Descurainia pinnata</i>	Leave it alone.	
	<i>Ephedra torreyana</i>	Don't release water.	It's here, the water will destroy it. Transplant is okay, too, but acting like God - it won't be where it was.
	<i>Ephedra torreyana</i>	Don't release water.	Can it be transplanted? Try.
	<i>Ephedra torreyana</i>	No.	
	<i>Mentha arvensis</i>	Leave it alone.	
	<i>Mentha arvensis</i>	Leave it alone.	
	<i>Mentha arvensis</i>	not release the water too much. so the plant can still be there	
	<i>Opuntia erinacea</i>	Just leave it alone.	
	<i>Opuntia erinacea</i>	In order to balance out, not let a lot of water to come through. The cactus is natural to this area.	
	<i>Opuntia erinacea</i>	See above.	
	<i>Oryzopsis hymenoides</i>	If in lower area, nothing to do to protect it.	
	<i>Rumex hymenosepalus</i>	Leave it alone.	
	<i>Sclerocactus parviflorus</i>	Don't let it get lost and not able to bring back if it is affected by the water - if have to, move and replant it	
	<i>Sclerocactus parviflorus</i>	No.	
	<i>Sphaeralcea ambigua</i>	Leave it alone.	
<i>Yucca angustissima</i>	If the flow was adequate they would grow. Regulate the flow to something less than big flood.		
Petroglyph Panel	<i>Artemisia filifolia</i>	Let it stay there.	
	<i>Datura meteloides</i>	Keep water lower than this level [level where sitting].	
	<i>Ephedra torreyana</i>	Need to keep the water down. Maybe it would be safe.	
	<i>Stanleya pinnata</i>	Leave it alone.	
Jackass Canyon	<i>Encelia frutescens</i> var. <i>resinosa</i>	Keep water levels lower.	
	<i>Lycium andersonii</i>	No.	
	<i>Mirabilis multiflora</i>	No.	

		It's hard for her to respond to this question, because the creator put the plant here. Children today are not familiar with plants, and they don't really have a need for it. Our people don't gather it. the plant will disappear, if people don't use it. Ang	
	<i>Oenothera pallida</i>		
	<i>Opuntia basilaris</i>	No.	
	<i>Oryzopsis hymenoides</i>	No.	
	<i>Oryzopsis hymenoides</i>	Not to bother it, leave it alone. Let it remain standing where the creator intended it to stay. It will be there for those who need it.	
	<i>Rhus trilobata</i> var. <i>simplicifolia</i>	Make sure it isn't disturbed. Inform hikers not to disturb or pick; pamphlets telling it is a traditional plant, do not disturb	try to transplant in a higher area
	<i>Rhus trilobata</i> var. <i>simplicifolia</i>	nature protects it b y the rock around it; don't have other recommendations	
	<i>Rhus trilobata</i> var. <i>simplicifolia</i>		
	<i>Rumex hymenosepalus</i>	Keep it away from people; people are causing a lot of red ants and these will affect the plants if they try to eat on the rhubarb	
	<i>Salix exigua</i>	Keep the river as it is - no large fluctuation in level	Transplant to other moist areas within the canyon
	<i>Salix exigua</i>	Cows would eat the bush - keep them away from the stalks.	
Buck Farm Canyon	<i>Cercis occidentalis</i> var. <i>orbiculata</i>	Keep water low.	
	<i>Dyssodia pentachaeta</i>	leave it	
	<i>Ephedra torreyana</i>	Leave it alone	
	<i>Nicotiana trigonophylla</i>	Lower water levels.	
	<i>Populus fremontii</i>	Plant more cottonwood in sites/areas like this one	Stop water release; transplant if can be
	<i>Populus fremontii</i>	make sure it doesn't get cut down	
	<i>Salix exigua</i>	Don't raise it [water] up too high.	
	<i>Typha latifolia</i>	Control the water release	Transplant
	<i>Typha latifolia</i>	Stop the water release	Transplant
	<i>Typha latifolia</i>	Start making them grow more	
	<i>Typha latifolia</i>	Keep water flow low.	
Nankoweap Creek	<i>Atriplex canescens</i>	Keep the water level down.	
	<i>Chrysothamnus nauseosus</i>	don't have much - it naturally grows itself out here, gets all the water it needs	
	<i>Chrysothamnus nauseosus</i>	lower water	
	<i>Equisetum laevigatum</i>	Just leave it as it is.	
	<i>Gutierrezia microcephala</i>	maintaining water control	Try transplanting it - not sure if can
	<i>Gutierrezia microcephala</i>	could protect by rocks so people can't get at it	
	<i>Gutierrezia microcephala</i>	Just leave it there. The creator put it there.	

	<i>Salix exigua</i>	Don't destroy it, because all Indian people use it. But some ranchers and farmers want to be rid of it. They call it "bushes." Scraped it all away at Moccasin.	
	<i>Stephanomeria tenuifolia</i>	Keep the water down.	
	<i>Yucca baccata</i>	Tell non-Indians to leave it alone; do not disturb it	
	<i>Yucca baccata</i>	Protected from the water up here; naturally grows as part of nature	
Little Colorado River	<i>Artemisia bigelovii</i>	Don't disturb the plants; keep water pure, natural	Transplant to areas where it is readily accessible to us
	<i>Artemisia bigelovii</i>	Keep lower water.	
	<i>Encelia farinosa</i>	Low water.	
	<i>Gutierrezia microcephala</i>	Keeping water low.	
	<i>Opuntia basilaris</i>	Leave it as it is. Don't disturb it.	
	<i>Oryzopsis hymenoides</i>	Make areas with rice grass off limits or at least make them aware of plant and not to disturb.	water release control, transplanting
	<i>Stephanomeria tenuifolia</i>	make sure water doesn't come up this high	
	<i>Thamnosma montana</i>	Keep it so water doesn't come up to here and flood it - only this one plant in this side canyon	
	<i>Thamnosma montana</i>	Keep water level low, like the way it is down.	
Stone Creek	<i>Agave utahensis</i> var. <i>kaibabensis</i>	stop the water release; keep it within limits	probably could be transplanted
	<i>Agave utahensis</i> var. <i>utahensis</i>	Make sure people hiking around don't kill, uproot, try to transplant somewhere else	Try to plant it more around the area.
		keep it so it stays plentiful in this area - sometimes people don't see or know how important it is - because it is not a pretty plant it is not that important to them, but to us it is - I think they need some education about the plants and how important	
	<i>Artemisia bigelovii</i>		
	<i>Cirsium</i> sp. (undescribed)	Just let it be.	
	<i>Fallugia paradoxa</i>	Keep the water low.	
	<i>Lycium andersonii</i>	that it isn't taken out of the area	
	<i>Populus fremontii</i>	Just leave them standing.	
	<i>Populus fremontii</i>	Keep the water down low.	
	<i>Rhus trilobata</i> var. <i>simplicifolia</i>	just so it's made more plentiful; always hard to find - when you find it go back every year to the same place	Make sure it's kept here and protected. Make people aware of what it is so they're not careless and taking it out of this area for one reason or other
	<i>Rhus trilobata</i> var. <i>simplicifolia</i>	Try to leave it where it's at. Leave it alone.	
	<i>Salvia dorrii</i>	Do not disturb it.	Keep regime like it is.
	<i>Salvia dorrii</i>	Let it grow where it wants to grow, don't try to change it and make it unable to grow places.	Let them grow naturally.

	<i>Salvia dorrii</i>	Protect seeds by getting the water level down.	
Deer Creek	<i>Nasturtium officinale</i>	Keep it undisturbed.	Try to transplant to other fresh water sources.
	<i>Nasturtium officinale</i>	Keep the water low.	
	<i>Opuntia phaeacantha</i>	Let it grow the way it's growing now; it needs to be kept that way.	
Kanab Creek	<i>Baccharis salicifolia</i>	not have heavy, rapid flows of water. Enough to provide water, but not uproot it.	
	<i>Datura meteloides</i>	Not disturbing it.	Try to transplant it.
	<i>Echinocereus triglochidiatus</i> var. <i>melanocanthus</i>	Don't have a water flow that will disrupt this plant.	
	<i>Nolina microcarpa</i>	Leave it as it is.	See it can transplant.
	<i>Oryzopsis hymenoides</i>	Don't let the water overflow onto the grass.	
	<i>Vitis arizonica</i>	The seeps are sufficient for its growth. But any more water would destroy it.	
Matkatamiba Canyon	<i>Astragalus praelongus</i>	Keep the water down where it is.	
	<i>Echinocereus triglochidiatus</i> var. <i>melanocanthus</i>	Let water down.	
	<i>Nicotiana trigonophylla</i>	Keep it where it's at - not disturb.	Try to transplant seeds.
	<i>Nolina microcarpa</i>	Keep water level down.	
	<i>Salvia davidsonii</i>	Keep it where it's at - not disturb.	Try to transplant seeds.
	<i>Vitis arizonica</i>	None.	
	<i>Yucca angustissima</i>	Keep water level down.	
National Canyon	<i>Artemisia bigelovii</i>	No protection needed.	
	<i>Artemisia ludoviciana</i>	Keep it low.	
	<i>Tamarix chinensis</i>	Keep water low.	
Fern Glen Canyon	<i>Ferocactus acanthodes</i>	Leaving water down	
	<i>Muhlenbergia asperifolia</i>	No	
Vulcan's Anvil	<i>Ambrosia dumosa</i>	Lower water.	
	<i>Battarrea stevenii</i>	Keep water level down	
	<i>Larrea tridentata</i>	Control the water release. Keep level change consistent.	Do not disturb it - only use appropriately.
	<i>Larrea tridentata</i>	Ensure that it isn't flooded over, that the sand that it grows in doesn't get washed away.	that people are made aware of what an important plant it is
	<i>Larrea tridentata</i>	Keep the water down.	
	<i>Prosopis glandulosa</i> var. <i>torreyana</i>	Control water release - keep at consistent level.	
	<i>Prosopis glandulosa</i> var. <i>torreyana</i>	That it's let grow like it should, not taken down or reduced in the number of trees that should be by the water or the by the number of people, tourists that are coming down	leave it like it is
	<i>Salsola iberica</i>	Keep water down.	
	<i>Tessaria sericea</i>	Control water release - keep at one level.	No.
	<i>Tessaria sericea</i>	so the water isn't let rise high enough to cover or wash away the arrowweed	
Whitmore Wash	<i>Prosopis glandulosa</i> var. <i>torreyana</i>	won't destroy them.	None
	<i>Salix exigua</i>	Keep it low.	

	<i>Tamarix chinensis</i>	Leave it alone.	None
	<i>Tessaria sericea</i>	Control it so this stays protected.	NR
	<i>Tessaria sericea</i>	Keep water level low.	
	<i>Typha latifolia</i>	It should be really sacred to Indians because it's used in Sundance	
	<i>Typha latifolia</i>	Water stays steady as it is now.	
Parashant Wash	<i>Fraxinus pennsylvanica</i> ssp. <i>velutina</i>	Need control of water release - keep low and steady	To try and transplant it if possible
Hematite Cave	<i>Abutilon incanum</i>	Protected because high and rare - not too many people know it.	
	<i>Ephedra nevadensis</i>	Grows all over - non-Paiutes don't know what it's used for. Mormons still use it.	
	<i>Lycium fremontii</i>	Not be bothered. If it's transplanted it won't grow.	
Spring Canyon	<i>Datura meteloides</i>	Leave it alone. Doesn't need protection.	
	<i>Phragmites australis</i>	No need to protect - will come back naturally.	
	<i>Prosopis glandulosa</i> var. <i>torreyana</i>	Taking care of it. No burning.	no
	<i>Salix exigua</i>	Just leave it alone if they [people] ever come on to it.	
	<i>Sonchus oleraceus</i>	Won't die - roots will come up again naturally.	
Granite Park	<i>Larrea tridentata</i>	Protect it with a fence around it.	
	<i>Lycium fremontii</i>	Tell young people what it was used for; protect them - people may come back and want to learn.	
	<i>Lycium fremontii</i>	Just fence it up.	
	<i>Oenothera pallida</i>	Same as this area here. If it was one plant or 2 or 3 plants I'd say just fence it here, but there's a lot of things here.	
	<i>Opuntia phaeacantha</i>	Protect it - leave alone so young people can come and learn	
	<i>Prosopis glandulosa</i> var. <i>torreyana</i>	Preserve in this canyon, but other places you can see them.	
	<i>Salix gooddingii</i>	Flow of water released from the dam should be low enough to protect the roots of the tree. Maybe move this camp to another site.	Maybe close the area around the tree. Peoples from other countries come here and they will not have same maning associated with this tree. Fencing seems to be the only way to protect it.
	<i>Salix gooddingii</i>	Keep water down where it is now.	New roots should be allowed to come up and grow.
Travertine Canyon	<i>Juncus acutus</i> var. <i>sphaerocarpus</i>	Keep river level like it is.	
Bridge Canyon	<i>Ferocactus acanthodes</i>	Leave it alone.	
	<i>Rhus trilobata</i> var. <i>trilobata</i>	Leave it alone. Don't bother it.	
	<i>Typha latifolia</i>	No need to protect - will come back naturally.	
	<i>Yucca whipplei</i>	A fence, a big, high fence. This is a rock place. Maybe just a fence where the rocks end.	

Southern Paiute Mitigation Recommendations

Currently, the Southern Paiute tribes involved with this study are Cooperating Agencies in the Programmatic Agreement (PA) regarding the operations of Glen Canyon Dam. The PA specifies that the tribes will continue to be involved in decisions made about the Dam. The tribes will be involved in assuring that cultural resources in the *Colorado River Corridor* are protected.

The representatives of these governments met on August 30, 1993 to discuss drafting the first set of formal cultural resource recommendations from the tribes to the Bureau of Reclamation and the Grand Canyon National Park. These recommendations build upon those provided by individual tribal representatives involved in the site-by-site assessments, but move beyond these to address general policies. These recommendations are the only official recommendations to emerge from this study and should be considered as being from tribal governments to federal agencies.

Ethnoarchaeology

1. Leave artifacts in place. Any information about any artifacts that have been uncovered due to erosion or activity within the *Colorado River Corridor* should be forwarded to the tribes immediately.
2. Upon location of artifacts, detailed site descriptions/reports must be properly filed and made accessible to the tribes upon request.
3. Prior to removal or replacement of any artifacts, traditional spiritual person(s) designated by the tribes will be called upon to bless the area and provide guidance. Appropriate funding will be provided to cover travel expenses and per diem costs.
4. Information about cultural resource sites should remain confidential unless authorization is expressly given by the involved tribes.
5. The river runners must be educated about the importance of the Southern Paiute sites and the recommendations of the Southern Paiutes so they help protect these sites.
6. Ethnoarchaeology studies should continue in areas where comprehensive studies have not occurred. Tribal representatives should continue to be involved and compensated accordingly.

Petroglyphs and Pictographs

1. Petroglyphs and pictographs have been found in the study area. Visits to these sites should be restricted, and care must be taken to ensure that these sites are not disturbed.

2. Comprehensive petroglyph and pictograph studies should be conducted at all known locations within the main canyon. Studies should also be conducted in the side canyons where Southern Paiute petroglyphs and pictographs are located to provide the necessary context for the studies. Tribal representatives should be involved in the studies and compensated accordingly.

Ethnobotany

1. Plant species identified as important to Southern Paiute culture and religion throughout the *Corridor* must be protected.
2. In the event that a particular type of plant identified as important to the Southern Paiutes cannot be avoided or protected in one location, then the same plant species must be preserved at another location.
3. If the same type of plants cannot be found, then the feasibility of transplanting should be investigated. If it is determined the plant(s) can be transplanted, further studies should be conducted to insure that the plant species survives in a new location.
4. All information about cultural and religious uses of native plants should be restricted unless authorization is expressly given by the involved tribes.
5. Ethnobotany studies should occur in areas where comprehensive studies have not occurred. Tribal representatives should continue to be involved and compensated accordingly.

Animals

1. All animals and animal habitats within the *Corridor* must be protected.
2. Animals should remain in their native habitats and not be relocated.
3. Comprehensive ethnofaunal studies should be conducted in the *Colorado River Corridor*. Tribal representatives should be involved and compensated accordingly.

Sacred Sites

1. Sacred sites should be completely avoided by park personnel, river runners, and tourists.
2. The Southern Paiute people have selected certain sites they feel should receive special protection. Visits to these sites should be restricted, and care must be taken to ensure that these sites are not disturbed by tourists. These sites are particularly sensitive:

Ompi (Hematite) Cave (Stop #19, near Mile 200)

Salt Cave (Stop #5, near Mile 64)

Vulcan's Anvil (near Stop #15, near Mile 178)

Bedrock Canyon Woman's Healing Site (Stop #9, near Mile 131)

Granite Park (Stop #22, near Mile 209)

3. All information provided by tribal members about sacred sites must remain confidential.

Burials

1. When a Southern Paiute burial is located, the tribes should be notified immediately so they can inspect the area. The Bureau of Reclamation or the National Park Service will provide the necessary compensation for Southern Paiutes who come onto the site for this purpose.
2. Any objects identified by Southern Paiutes as associated with a burial or funeral must be left alone with restricted access.
3. Any objects including human remains associated with a Southern Paiute burial or funeral that has been collected or removed from its original location should be returned to a suitable location designated by the tribes.
4. All costs associated with the return or reburial must be covered by the Bureau of Reclamation or the National Park Service.
5. All information provided by tribal members about burials must remain confidential.

Monitoring

1. Indian monitors must visit the sites selected by the Southern Paiute tribes on a regular basis to assess their condition and the effect of the water flow on the resources there. Indian monitors should also monitor the sites for disturbance from tourists. Monitors should be Southern Paiute people, and the cost of monitoring should be shared by the Bureau of Reclamation, the National Park Service, and perhaps the River Runners who visit the sites.
2. After each Southern Paiute monitoring trip, monitors must provide a written report of their findings to the governments of the Kaibab Paiute Tribe, the Paiute Indian Tribe of Utah, and the San Juan Southern Paiute Tribe. The organization and content of the monitoring report will be determined by the Southern Paiute tribes.

Access

1. Southern Paiute tribal representatives should be provided access to any areas to view cultural resource sites when requested.
2. Southern Paiute sacred sites must be made accessible to the tribes for religious and traditional ceremonies.
3. Southern Paiutes must have access to the *Colorado River Corridor* to collect plants for medicinal and ceremonial purposes.
4. Southern Paiutes must have access to *Ompi Cave* to collect red paint for religious and traditional purposes.
5. Southern Paiutes should have access to the identified cultural resource sites for educational purposes.

General Recommendations

1. The Southern Paiutes must be kept informed of any changes in the water flow policies from Glen Canyon Dam so the location of sites that are monitored and the timing of the monitoring can be altered as needed.
2. A Southern Paiute liaison should be established for the Glen Canyon National Recreational Area and Grand Canyon National Park to work between these agencies and the Southern Paiute tribes.
3. Communications between the Bureau of Reclamation, the National Park Service, and the Southern Paiute tribes should continue on a regular basis.
4. Copies of all future archaeological reports should be sent to the tribes.
5. No articles may be printed about any sensitive area identified by Southern Paiute representatives without the permission of the Southern Paiute leadership.
6. The National Park Service should develop tourist orientation lectures and documents that specifically discuss the cultural significance of certain Southern Paiute sites and plant resources. These should include regulations about where tourists may and may not visit. Southern Paiute representatives should help develop these orientation materials.
7. The National Park Service should develop training sessions for the river runners that specifically discuss the cultural significance of certain Southern Paiute sites and plant resources. These should include regulations about where tourists may and may not visit. Southern Paiute representatives should help develop these orientation materials.

Water Release Alternatives

There were extensive discussions about the current Glen Canyon water release alternatives at the August 30, 1993 meeting of the Southern Paiute tribes. Most of the meeting was devoted to discussing these alternatives, which were clearly presented by Grand Canyon archaeologist Jan Balsom. The tribes have now considered the various alternatives and have responded to the alternatives in the following ways.

Alternative #1: "No Action" - This is not preferred by tribes.

Alternative #2: "Maximum Power Plant Capacity" - This is not preferred by tribes.

Alternative #3: "High Fluctuating Flow" - This is not preferred by tribes.

Alternative #4: "Moderate Fluctuating Flow" - This is not preferred by tribes.

Alternative #5: "Modified Low Flow" - This is the alternative preferred by tribes.

Alternative #6: "Existing Monthly Volumes" - This alternative is acceptable to the tribes.

Alternative #7: "Year Round Steady Flow" - This alternative is acceptable to the tribes.

Alternative #8: "Seasonally Adjusted Steady Flow" - This alternative is acceptable to the tribes.

Alternative #9: "Existing Interim Flow" - This alternative is acceptable to the tribes.

The Indian government leaders expressed a desire to protect everything, but realized that none of the above nine alternatives can accomplish this holistic conservation goal. The tribal representatives who visited archaeological sites and provided interviews near Indian plants wanted the water levels to be kept as low as possible. Alternatives #5 through #9 closely match this desire. Archaeology sites in sand banks between the river's edge and the old high water mark are eroding. Alternative #4 would provide new sand to slow this erosion process. Unfortunately, alternative #4 would involve a periodic 45,000 cubic feet per second flood for up to 10 days. This flood would scour most of the traditional plants now growing in the new riparian zone. The loss of all these plants is viewed as more damaging than the potential loss of archaeology sites in the sand banks. In fact, a number of the elders expressed the belief that it is appropriate for the things of the old people to decay.

ANNOTATED BIBLIOGRAPHY

This bibliography provides annotations of selected written accounts used in the production of this report. Documents have been included here either because 1) they represent significant contributions to the understanding of Southern Paiute use of the *Colorado River Corridor*, or 2) their connection to the study is somewhat indirect and benefits from a brief explanation. Additional sources that were consulted, including congressional documents and presidential proclamations, are reference in the complete bibliography located at the end of this report.

A. G.

1885 How to Reach the Grand Canyon. *Science* 125 (26 June): 516-517.

A brief notice of the then-new wagon road from Peach Spring Station on the Atlantic and Pacific Railroad to the confluence of Diamond Creek and the Colorado River at the bottom of the western Grand Canyon.

Adams, Winona, editor

1930 An Indian Girl's Story of a Trading Expedition to the Southwest About 1841. *Sources of Northwest History No. 11*. Missoula: State University of Montana.

The story of a Nez Perce woman's journey on a trading expedition in the company of white traders and their families, as told to Angus McDonald. The trip began in Idaho a short distance west of Yellowstone Park, and continued to California and back, passing along the Colorado River.

Alter, J. Cecil

1928 Some Useful Early Utah Indian References. *Utah Historical Quarterly* 1(1): 26-32; continued in 1(2): 52-56.

A brief summary of early references to Indians in Utah, includes Baron de Lahontan's travels of 1689 and Francisco Garces' journey in 1776.

Arrington, Leonard J.

1966 Inland to Zion: Mormon Trade on the Colorado River 1864-1867. *Arizona and the West* 8(3): 239-250.

A description of the efforts of the Church of Jesus Christ of Latter-day Saints to promote trade through the freighting of goods up the Colorado River. The article describes the

Mormon-supported enterprises that operated on the Colorado River for two seasons, beginning in 1866.

Beadle, John Hanson

1873 *The Undeveloped West: Five Years in the Territories*. Philadelphia: National Publishing Company.

A chronicle of Beadle's adventures in the region between the Mississippi and the Pacific. Beadle spent considerable time with the Navajos and passed through Paiute territory on his way north. Though the journal is full of extremely belittling remarks, it does record sightings of Paiute people.

Beaman, E.O.

1874 The Canon of the Colorado, and the Moquis Pueblos. *Appleton's Journal* 11(265-271): 481ff, 545ff, 623ff, 641ff, 686ff.

A narrative account of Beaman's travels through the Grand Canyon and across the Colorado River in a trip to the Moquis Pueblos. Beaman began his work on the Colorado as the photographer to Powell's Second Expedition and then continued photographing Indians in the area after leaving Powell. His account is published in seven editions of *Appleton's Journal* of 1874.

Billingsley, George H.

1976 Prospector's Proving Ground: Mining in the Grand Canyon. *The Journal of Arizona History* 17(1): 69-88.

A history of mining in the Grand Canyon drawn from historical accounts, survey and mining records, journals, and magazine articles. The narrative begins with a discussion of prospecting in the 1860s and ends with the proposed Grand Canyon Enlargement Act in 1974.

Brooks, Juanita

1944 Journal of Thales H. Haskell. *Utah Historical Quarterly* 12: 70-98.

A diary kept by Thales Haskell as he accompanied Jacob Hamblin on Hamblin's second trip across the Colorado River to visit the Moquis. The editor notes that Hamblin did not keep a careful journal of that second trip, so Haskell provides us with the detailed information needed to know who they saw and where they saw them.

1949 The Arizona Strip. *The Pacific Spectator* 3(3): 290-301.

A description of the Arizona Strip, with brief mention of exploration of the portions of the Colorado River that border the Strip. Key personalities and towns in the strip are discussed with attention to events of public interest that occurred in the area. The focus

of the article shifts to the cattle industry and the effect of grazing law on the activity in the area.

Bunte, Pamela and Robert Franklin

1987 *From the Sands to the Mountains: Change and Persistence in a Southern Paiute Community*. Lincoln, Nebraska: University of Nebraska Press.

This is the best summary of San Juan Paiute ethnohistory. It is especially important for Twentieth Century events. The analysis was used in the successful effort of the San Juan Paiute to be recognized by the federal government as a tribe, so its findings have been tested in court.

Butchart, J. Harvey

1976 Summits Below the Rim: Mountain Climbing in the Grand Canyon. *The Journal of Arizona History* 17(1): 21-38.

A historical review of mountain climbing in the Grand Canyon drawn from journal entries, magazine and newspaper articles, and personal letters.

Camp, Charles L.

1923 The Chronicles of George C. Yount. *California Historical Society Quarterly* 2(1): 3-66.

A collection of reminiscences of Rev. Orange Clark of the story of George Yount's life, as told to him by Yount. The manuscript is edited and narrative added. Yount became a wandering trapper in 1825, trapping along the Gila and Colorado Rivers. Though most of Yount's travels were south of the Grand Canyon region of the Colorado, he joined William Wolfskill in a journey along the old Spanish Trail from New Mexico to California and came across Southern Paiutes in the Virgin River region.

Chittenden, Hiram Martin

1935 *The American Fur Trade of the Far West*, vol. 2. Stanford, California: Academic Reprints.

A history of the pioneer trading posts and early fur companies of the Missouri Valley and the Rocky Mountains and of the overland commerce with Santa Fe. This source is useful for what it does not contain as much as for what it does. The author describes in detail fur trading in the west and notes that the Colorado River below the junction of the Green and Grand Rivers was not frequented by trappers. Therefore, despite their influence on much of the settlement of the west and on American Indian people living there, they had little direct affect on the Grand Canyon region. Effects on the study were indirect because of Jedediah Smith's involvement in trapping in the Virgin River drainage.

Cleland, Robert Glass and Juanita Brooks

1955 *A Mormon Chronicle: The Diaries of John D. Lee, 1848-1876*, Volume II. San Marino, California: The Huntington Library.

An edited and annotated version of John Lee's diaries between 1848 and 1876. The diaries include the years of Lee's development and occupation of Lee's Ferry and Jacob's Pools. From these locations, Lee was witness to activity of Paiute and Navajo people on the north side of the Colorado River and in crossing that river. Also, Lee's detailed diaries provide evidence of the significant use of the area by white miners, explorers, and Mormon pioneers in that period.

Corbett, Pearson H.

1952 *Jacob Hamblin, the Peacemaker*. Salt Lake City: Deseret Book Co.

A quite laudatory biography of a Church of Latter Day Saints official missionary to Southern Paiute and other Native Americans. Corbett closely follows Hamblin's own briefer Church-published autobiography.

Cutter, Donald C.

1977 Prelude to a Pageant in the Wilderness. *The Western Historical Quarterly* 8(1): 5-14.

A historical report of the years beginning in 1765 and prior to the Dominguez-Escalante expedition of 1776. The information is drawn from diaries and reports of the period.

Dale, Harrison Clifford

1918 *The Ashley-Smith Explorations and the Discovery of A Central Route to the Pacific 1822-1829*. Cleveland: Arthur H. Clark.

An edited version of the original journals of William Henry Ashley and Jedediah Strong Smith, fur trappers in the west between 1822 and 1829. The trappers followed the Colorado River only as far north as the Virgin River before crossing, so there are only a few references in either journal to the Grand Canyon region.

Darrah, William Culp

1947 George Y. Bradley's Journal. *Utah Historical Quarterly* 15(1,2,3, and 4): 31-72.

An edited version of Bradley's journal for the period from May 24 to August 30, 1869. Bradley was discharged from service to the U.S. Army by special order of the Secretary of War on May 14, 1869 to become one of Major Powell's chief boatmen and to assist in the geological work of the First Colorado River Expedition. Bradley describes the events of the exploration in detail and includes many references to Paiutes and other Indians they encounter.

Darrah, William Culp

1947 Major Powell's Journal. *Utah Historical Quarterly* 15(1,2,3, and 4): 125-133.

An edited version of Major Powell's journal for the period from July 2 to August 28, 1869. The journal is very brief. Powell does not provide any detailed information of Paiute or Indian sightings in his journal.

Darrah, William Culp

1948 Journal of John F. Steward. *Utah Historical Quarterly* 16(1,2,3, and 4): 181-251.

An edited version of John Steward's journal for the period from May 22 to November 3, 1871. Steward had edited the journal and amplified its descriptions prior to its preparation for publication in the *Quarterly*, so it is not ideal as a historical document. Steward was an assistant geologist on Powell's 1871 Colorado River expeditions. His journal describes many points of geological interest in greater detail than found in other journals of the trip. His discussion of Paiutes and other Indians is very limited.

Dobyns, Henry F.

nd Unpublished Field Notes.

Field notes compiled between 1952 and 1957 by Dr. Henry Dobyns for purpose of presenting evidence concerning Hualapai Tribe of Arizona claims before the United States Indian Claims Commission.

1954 *Hualapai Trails*. Tucson: A Report Submitted to Marks & Marks, and Strasser, Spiebelberg, Fried & Frank.

A description of the Pai sections of the Native American trail between the Pacific Ocean and the Rio Grande, based on Pai oral history and Euroamerican travel accounts.

Dobyns, Henry and Robert C. Euler

1967 *The Ghost Dance of 1889 Among the Pai Indians of Northwestern Arizona*. Prescott: Prescott College Press.

An ethnohistorical description of Pai participation in the Ghost Dance movement of 1889, drawing heavily on contemporary stories published in the local Euroamerican newspaper and Pai oral history.

Euler, Robert C.

1964 Southern Paiute Archaeology. *American Antiquity* 29(3): 379-381.

A reconstruction of the culture history of the Southern Paiute tribe. The article describes evidence for a hypothesis that the Southern Paiute people entered the Southwest and the southern Great Basin about A.D. 1150 from the north and that they maintained their

maximum range until European encroachments between 1800 and 1860 significantly disrupted their life patterns.

1966 *Southern Paiute Ethnohistory*. Anthropological Paper No. 78. Salt Lake City: University of Utah Press.

This document was initially produced for the Southern Paiute docket before the U. S. Claim Commission. The monograph contains much of the known literature on Southern Paiutes during the late 1950s, causing it to largely confirm earlier research by Kelly. This is a basic document, but should be supplemented with more recent information on Southern Paiute ethnohistory.

1972 *The Southern Paiute People*. Phoenix: Indian Tribal Series.

This short book reflects the contemporary views of Kaibab Paiutes regarding their ethnohistory. The book was approved by the tribal council before being published. It is especially useful as a brief summary of Twentieth Century secular events.

Fowler, Don D. (ed.)

1972 *Photographed All the Best Scenery: Jack Hillers's Diary of the Powell Expeditions, 1871-1875*. Salt Lake City: University of Utah Press.

An edited and annotated version of Hillers' diary for the period during which he was photographer of the Powell expedition. Though the diary focuses on photographic efforts, Hillers mentions several instances of involvement with Paiutes and other Indians.

Garces, Francisco

1900 *On the Trail of a Spanish Pioneer*, translated and edited by Elliott Coues, 2 volumes. New York: Francis P. Harper.

Franciscan Missionary Garces in 1775-1776 traveled from his station at San Xavier del Bac near Tucson, Arizona, to the Pacific Coast and back. On a very long detour, Garces ascended the Colorado River north from Yuma Crossing to the Mojave people in Mojave Valley, then went east from the Mojaves with Pai guides to the westernmost Hopi village of Oraibi in an attempt to reach Spanish colonial New Mexico. When the Oraibis received him with barely concealed hostility, Garces returned westward across Pai country to Mojave Valley, downstream to the Yuma Crossing and then back to his mission. Translator Coues served as an Army surgeon at Arizona Territory military posts, and recounted several of his own travel experiences in footnotes.

Gregory, Herbert E.

1948 Journal of Stephen Vandiver Jones. *Utah Historical Quarterly* 16(1,2,3, and 4): 19-174.

An edited version of Jones' diary for the period from April 21, 1871 to December 14, 1872. He was a topographer with the Second Powell Expedition. His diary provides a complete record of the activities of the Powell Expedition that supplements the journal of A. Thompson. He accompanied the exploring party through the Grand Canyon and was also charged with completing topographic work in the vicinity of Pipe Springs, Kanab, and Lee's Ferry between August 1 and December 12, 1872. He records numerous observations and interactions with Paiutes and other Indians in the area.

Hafen, LeRoy R. and Ann W. Hafen

1954 *Journal of Forty-Niners: Salt Lake to Los Angeles*. Glendale, California: Arthur H. Clark.

A collection of the diaries of packers, gold seekers and wagon train leaders traveling from Salt Lake City to Los Angeles in 1849. Though none of the routes led to the Colorado River in the vicinity of the Grand Canyon, several groups passed through the territory of the Shivwits Paiutes near the Virgin and Santa Clara Rivers.

Hamilton, Patrick

1884 *The Resources of Arizona*. San Francisco: A. L. Bancroft & Co., Third edition.

Hamilton traveled widely through Arizona Territory interviewing people to collect information to revise and expand earlier editions of this economic development guide. The frontispiece map in this edition is an especially accurate compilation of geographic information concerning the Territory at the time.

Hill, Joseph J.

1930 Spanish and Mexican Exploration and Trade Northwest From New Mexico into the Great Basin. *Utah Historical Quarterly* 3(1): 2-23.

A summary of the various trips into the Great Basin of Spanish and Mexican explorers between 1765 and 1853, taken from Spanish and Mexican documents. One section, "Private trading expeditions among the Yutas, 1765-1766," indicates that contact with the Indians went unrecorded because of governmental restrictions on Indian trading that made it advantageous to private traders to cover up all trace of their activities. Hill does not distinguish between various tribes of Utah Indians, referring to any Indians north of the Colorado River as "Yutas." He argues that trading went on with the tribes along the tributaries of the Colorado and in the Great Basin through the early 1800s. He also describes American traders from Missouri that were trapping and trading with the Indians along the tributaries of the Colorado and Green Rivers alongside the Spaniards by 1824.

Indian Claims Commission of the United States

1953 Before the Indian Claims Commission of the United States, The Hualapai Tribe of the Hualapai Reservation, Arizona, Petitioner, vs The United States of America, Defendant, Docket No. 90, Court Reporter's Transcript, July 23-24.

A court reporter's transcript of testimony concerning Pai territory and boundaries perpetuated at Peach Springs, Arizona, before one of the members of the United States Indian Claims Commission. A Southern Paiute leader, Tony Tillohash, testified at this time.

Ives, Joseph C.

1861 *Report Upon the Colorado River of the West*. Senate Executive Documents, 36th Congress, 1st Session.

The official report of the army officer who commanded a puny federal steamboat which chugged up the Colorado River to attempt to determine the head of steam navigation on that stream. Leaving the river, Ives and a small escort explored the area between it and New Mexico, crossing Pai territory.

James, George Wharton

1900 *In and Around the Grand Canyon*. Boston: Little, Brown and Company.

A book for visitors to the Grand Canyon that combines descriptions of the trails and viewpoints with historical information gathered largely from the author's personal experiences. The majority of the description focuses on the southern banks and rim of the Canyon, but there is a brief discussion of the Marble Canyon Trail, which the author says "was used by Navahos and Paiutis for many years."

Kelly, Charles

1947 Captain Francis Marion Bishop's Journal. *Utah Historical Quarterly* 15(1,2,3, and 4): 159-253.

An account of the years from August 15, 1870 through June 3, 1872 when Bishop served as topographer of the second Colorado River Expedition led by John W. Powell. Bishop's discussion is largely of his personal activities and duties. He remained in camp much of the time completing drawings, sketches and written reports. His description of wolf trapping provides an indication of some of the ecological effects of the expedition beyond the members' physical requirements for food and shelter. The diary also provides a few references to Indians in the region.

Kelly, Charles

1948 Journal of W.C. Powell. *Utah Historical Quarterly* 16(1,2,3, and 4): 257-490.

An edited version of W.C. Powell's journal for the period from April 21, 1871 to December 7, 1872. Powell was first cousin to Major J. W. Powell and participated in the 1871 Powell Colorado River expedition as an assistant to E.O. Beaman and then Jack Hillers, the party's official photographers. Powell spent much time in camp preparing photographic plates, but his diaries describe contact with Indians in the area.

Kelly, Isabel

1934 Southern Paiute Bands. *American Anthropologist* (n.s.) 36: 548-560.

This is one of the first scientific articles published on the Southern Paiutes. It contains a map of Southern Paiute territory that was produced from a few months of field interviewing in the early 1930s. The map is still the only one published so it is commonly reprinted. Unfortunately, the map was drawn while Kelly was in Mexico and does not match Kelly's text. The map is significantly dated in the light of new information on Southern Paiutes. Nonetheless, this is a classic piece of Southern Paiute literature.

1964 *Southern Paiute Ethnography*. Anthropological Papers No. 69. Salt Lake City: University of Utah Press.

This monograph contains most of Kelly's field notes produced during the early 1930s when she conducted research among Southern Paiutes. As such, it is an extremely valuable source of original information. The report contains a well prepared and useful map focussed on places located north of the Colorado River, unlike the map associated with 1934 article. Photographs contain useful information.

Kelly, Isabel T. and Catherine S. Fowler

1986 Southern Paiute. *Handbook of North American Indians*, William C. Sturtevant, general editor. pp. 368 -397. Washington, D.C.: Smithsonian.

A history and ethnography of the tribe based on field studies conducted by the two authors between 1932-33 and 1967-80 and also relying in part on the literature on the tribe. The information in the article includes travel in and around the Colorado River. The chapter remains heavily dependent on Kelly's early research, so fails to being Southern Paiute ethnohistory up to date with the literature.

Kroeber, A. L., editor.

1935 *Walapai Ethnography*. Menasha: American Anthropological Association, Memoir No. 42.

University of California-Berkeley anthropology professor Kroeber conducted in the summer of 1929 an ethnographic field school funded by the new School of American Research. Kroeber edited for publication information obtained by field school students interviewing Walapais in Kingman hotel rooms. The data presented have the great merit of being published apparently as collected, so that informant statements may be interpreted in ways that Kroeber and his students did not.

Loosley, Lt. D.

1866 Loosley, Lt. D. Head Qrs Fort Mojave, A. T., April 12, 1866, to Capt. John Green, A. A. G. Dist of Arizona, Prescott. U. S. National Archives, Records of the Arizona Superintendency of Indian Affairs 1863-1873. Microcopy 734, Roll 1, Exp. 0901.

Lt. Loosley commanded the Fort Mojave garrison, and reported matters of concern to superior officers.

Lowie, Robert H.

1924 Notes on Shoshonean Ethnography. *Anthropological Papers of the American Museum of Natural History*, Vol. 20, Part 3, New York: American Museum Press.

An ethnography of the Shoshonean people, including the Shivwits Paiutes. Relevant information comes from the sections describing customs of the Shivwits that required material collected from the Colorado River.

Moon, Samuel

1992 *Tall Sheep*. Norman: University of Oklahoma Press.

A description of the Navajos in the vicinity of Monument Valley, Arizona with focus on Harry Goulding, the operator of the trading post there from the 1920s to the 1960s. The information for the book was collected from interviews with Goulding, the Navajos and Anglos in the area between September 1973 and December 1979. The first chapter discusses Goulding's entry into the region as a result of the removal of the Paiutes from the area to land allotments near Blanding, Utah in 1923.

Mooney, James

1896 The Ghost Dance Religion and the Sioux Outbreak of 1890. *Fourteenth Annual Report of the Bureau of American Ethnology*, Part 2. Washington: Government Printing Office.

This is the pioneering and fundamental study of the Ghost Dance millenarian movement of 1889, *et. seq.* Ethnographer Mooney included information about the Southern Paiute and Pai phases of the movement.

Olsen, Robert W.

1965 Pipe Spring, Arizona and Thereabouts. *Journal of Arizona History* 6(1): 11-20.

A brief discussion of the history of Pipe Springs National Monument. The article describes the settlement of Pipe Springs and activity in areas adjacent to the springs. Focus is on Mormons, Indians are peripheral where mentioned.

Palmer, William R.

1928 Indian Names in Utah Geography. *Utah Historical Quarterly* 1(1): 5-26.

A description of Utah locations with Indian names, organized into three groups: 1) Indian names unchanged by whites; 2) Indian names given by whites; and 3) Indian names not used by whites. His discussion provides evidence of the extensive use of the area including Utah and extending to the Colorado River by the Paiutes.

Palmer, William R.

1928 Utah Indians Past and Present. *Utah Historical Quarterly* 1(2): 4-52.

An "etymological and historical study of tribes and tribal names from original sources." The article provides Palmer's classification and brief description of the Utah Indians, including "Utes, Pahutes, Pahvantits, Shivwits, Kaibabits, and Shoshones" (p. 35) in the area from the Great Salt Lake south to the Colorado River. Each description gives a brief history of Anglo discovery of the group, the various names the group has been given, and Palmer's analysis of which names are appropriate.

Palmer, William R.

1933 Pahute Indian Homelands. *Utah Historical Quarterly* 6(3): 88-102.

A description of the Paiute homelands broken down by colony as identified by Palmer. The article gives detailed information of the lands and waterways claimed by the various groups described within.

Pendleton, Mark A.

1939 The Orderville United Order of Zion. *Utah Historical Quarterly* 7(4): 141-159.

A history and description of the town of Orderville, Utah. The article focuses on the organization and conduct of living at the Orderville United Order. The discussion of the establishment and acquisition of ranches for the Order provides evidence of the extent of encroachment in the region extending from 150 acres on the Paria River to property at Jacob's Pools on the North Rim of the Grand Canyon. Mention of the Indians in the area is scarce, although one relevant transaction is Chief Quarats' (tribe??) reported exchange of perpetual grazing rights on Kaibab Mountain for a rifle and some ammunition (p. 154).

Simpson, J. H.

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*, Washington, D.C.: Government Printing Office.

The official report of a U.S. Army Corps of Engineers Captain who led explorations across Utah and into Northern Arizona to visit the Colorado River. The report claims

that the two parties who traveled to the river visited all the crossings of the river known to exist between the Crossing of the Fathers and the foot of the Grand Canyon.

Sitgreaves, Lorenzo

1853 *Report of an Expedition Down the Zuni and Colorado River*. U.S. Senate Doc. 59. 32nd Congress, 2nd Session. Washington, D.C.: Robert Armstrong.

A journal account of Sitgreaves' 1862 expedition that began September 1 from the pueblo at Zuni, reached the Little Colorado by September 27, and traveled along the southern edge of the Grand Canyon for several months. The purpose of the expedition was to seek a navigable route along the Colorado River.

Seegmiller, Emma Carroll

1939 *Personal Memories of the United Order of Orderville, Utah*. *Utah Historical Quarterly* 7(4): 141-159.

A description of life at Orderville taken from the recollections of a woman who lived there as a child and young woman and the original records of the United Order. Though most of the article discusses Mormon life in the Order, there are several mentions of interactions with the Indians in the area.

Smith, Melvin T.

1970 *Colorado River Exploration and the Mormon War*. *Utah Historical Quarterly* 38(3): 207-223.

A description of federal government expeditions to and Mormon interest in the Colorado River. The article provides a useful summary of Mormon activity with regard to the Colorado River at the western edge of the study area and describes the individual and synergistic effects of Mormon and federal government interest in the region.

1987 *Before Powell: Exploration of the Colorado River*. *Utah Historical Quarterly* 55(2): 104-119.

An examination of the pre-Powell history of exploration of the portions of the Green and Colorado rivers later navigated by John Wesley Powell and his crew in 1869. This article provides a concise summary of the early occupation and exploration of the region. It is especially useful for identifying pre-1869 intrusions into the study area and is a source for further references.

Stanton, Robert Brewster

1965 *Down the Colorado*. Norman: University of Oklahoma Press.

This version of Stanton's narrative of the 1889-1890 exploration survey of the Colorado River was edited and introduced by Dwight L. Smith. The journey's purpose was to survey a railroad route through the canyons of the Colorado River. The narrative lacks the detail to location of other journal accounts and describes especially events that occurred among the crew. The trip began May 25, 1889 and was halted prematurely. A second attempt began December 10, 1889.

Stevenson, Lt. J. D.

1867 Stevenson, Lt. J. D., Camp Mojave, Arizona Territory, 20 June 1867, to Brevt. Lieut. Col. W. R. Price, Commanding Post. U. S. National Archives, Continental Army Commands, Ft. Mojave, A. T., Letter 1859-1890, Microcopy 393, Roll 6.

Lt. Stevenson served at Camp Mojave during the Walapai War. He was seriously wounded by sharpshooters belonging to Chief Cherum's Cerbat Mountain Band when he tried to lead a small command into the band's very strong defensive position in one of the eastern canyons of the Cerbat Mountains.

Stewart, Omer C.

1942 Culture Elements Distributions: 18, Ute-Southern Paiute. *University of California Anthropological Records* 6: 231-360.

Omer Stewart conducted field work among the Southern Paiutes in the early 1930s. He continued this research throughout his long professional career. This monograph contains his findings regarding specific cultural questions he asked as part of the University of California Culture Element Distribution project. This is an important source of original information on Southern Paiutes.

Stoffle, Richard and Michael Evans

1976 Resource Competition and Population Change: A Kaibab Paiute Ethnohistorical Case. *Ethnohistory* 23(2): 173-197.

A discussion of early Southern Paiute responses to Hispanic and Euroamerican encroachment. Paiute people were able to compete until about 1873, but from 1874 until 1909 they were almost totally dominated. A key factor shifting power to Euroamerican were major disease episodes, ecological damage due to livestock, and a Mormon treaty with the Navajos. This article was purchased by the Kaibab Paiute Tribe and reprinted as *Kaibab Paiute History: The Early Years* with photographs and oral history captions.

Stoffle, Richard, Merle Jake, Pamela Bunte and Michael Evans

1982 Southern Paiute Peoples' SIA Responses to Energy Proposals. *Indian SIA: The Social Impact Assessment of Rapid Resource Development on Native Peoples*. C. Geisler et al., eds. pp. 107-134. Ann Arbor: University of Michigan, Natural Resource Sociology Research Lab. Monograph #3.

A summary of Southern Paiute natural resource concerns as represented during a series of environmental impact studies in the Grand Canyon area. Emphasis is placed on how Paiute people view their resources as opposed to how non-Indian people, including anthropologists, perceive these resources.

Sykes, Glenton G.

1976 People on the River: Life a Mile Down. *The Journal of Arizona History* 17(1): 39-55.

A personal recounting by Glenton Sykes, a civil engineer who lived in the Grand Canyon in 1923 and 1924 while employed by the United States Geological Survey.

Thompson, Almon Harris

1939 Diary of Almon Harris Thompson. *Utah Historical Quarterly* 7(1,2, and 3): 3-140.

A diary of Thompson's experiences as geographer of the second Powell expedition, "Explorations of the Colorado River of the West and its Tributaries." The diary includes the periods of travel down the Green and Colorado Rivers, overland reconnaissance of the region from Kanab to the mouth of the Dirty Devil River, and topographic work in the areas of Kanab, St. George, Pipe Springs, Paria, Gunnison, Castle Valley, and the Kaiparowits Plateau. Thompson describes use of Paiute guides and provides evidence of extensive Paiute knowledge of the routes to and around the Colorado River.

United States Army Corps of Engineers

1872 *Preliminary Report Concerning Explorations and Surveys Principally in Nevada and Arizona*. Washington, D.C.: Government Printing Office.

The report of George Wheeler's 1871 reconnaissance through Nevada and Arizona conducted at Wheeler's recommendation after the 1869 trip. The main object of the exploration was to obtain correct topographical knowledge of the country traversed and prepare accurate maps of the region. The party was also directed to ascertain information about the numbers, habits, and dispositions of the Indians living in the area. The report provides detailed description of the mining districts in the region and includes brief discussion of the Paiutes.

1874 *Progress Report Upon Geographical and Geological Explorations and Surveys West of the One Hundredth Meridian in 1872*. Washington, D.C.: Government Printing Office.

The report of George Wheeler's 1872 survey of the territory west of the one hundredth meridian. The report describes mining districts and includes recommendations for irrigation. A brief discussion of Indians and the Colorado River Canyon is included.

1875 *Preliminary Report Upon A Reconnaissance Through Southern and Southeastern Nevada*. Washington, D.C.: Government Printing Office.

The report of George Wheeler's 1869 reconnaissance through Southern Nevada for the purpose of opening a road from the head of navigation on the Colorado River to White Pine. The report describes the general features of the district and includes sections on the Paiutes and Colorado River.

United States Congress

1872 *Freight to Salt Lake City By the Colorado River*, Letter from the Secretary of War relative to the carriage and freight to Salt Like City by the Colorado River, House Executive Document 166, 42nd Congress, 2nd Session. Washington, D.C.: Government Printing Office, March 5.

J.D. Bingham's extract for the House of Representatives of General Rusling's report to the Secretary of War regarding carriage and freight to Salt Lake City by the Colorado River. This document is useful for identifying white impacts on the study area. The report documents the possibility of shipping from the mouth of the Colorado River to at least Callville, and indicates that continued travel further up the river through Black Canyon should be possible. The report therefore contradicts Lieutenant Ives' report that the point 35 miles below Callville, named "Explorer's Rock," would be impassable.

United States Senate

1936 *Walapai Papers*, Senate Document 273, 74th Congress, 2nd Session. Washington, D.C.: Government Printing Office.

A collection of historical reports, documents, and extracts from publications relating to the Walapai Indians of Arizona. The material included in this collection identifies the incidence of trading and communication between the Southern Paiutes and the Walapai Indians across the Colorado River. This U. S. Senate document is a compilation for senatorial consultation of historic documents concerning the Walapai people. Because the compiler included pertinent U. S. Army reports, the Walapai War's course is best followed by consulting this volume.

Wallace, William Swilling, editor

1961 Lieutenants Pershing and Stotsenberg Visit the Grand Canyon: 1887. *Arizona and the West* 3(3): 265-284.

The narrative of Lieutenant John Stotsenberg describing his journey to the Grand Canyon during the time he was a young U.S. Army officer stationed in the southwest. He was accompanied on his trip by another young officer, Lieutenant John Pershing.

White, James

1932 Navigation of the Big Canyon: A Terrible Voyage [Stanton 1907 Interview with White]. *Colorado River Controversies*, by Robert B. Stanton, James M. Chalfant, ed. pp. 39-54. New York: Dodd, Mead, & Co., 1932. [1982, Boulder City: Westwater Books, with commentaries by Otis R. Marston and Martin J. Anderson]

Colorado River runner and railroad surveyor Robert Stanton really did not want to admit that James White floated down the Colorado River on a hand-lashed raft before John Wesley Powell did so. Stanton nonetheless included all of the documentation about White's journey that he was able to locate. The present analysis takes the position that for White to have reached Callville by raft from the San Juan River, he necessarily did float through Grand Canyon and therefore recorded--however vaguely--native activities there before any other Euroamerican.

Woodbury, Angus M.

1944 A History of Southern Utah and Its National Parks. *Utah Historical Quarterly* 12 (3-4): 110-208.

A discussion of Southern Utah history beginning with prehistoric occupation and including Zion, Bryce and the North Rim of the Grand Canyon. The description is detailed but has few specific references to Southern Paiute activity in the Grand Canyon.

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- 1989 Analysis of the Operating Criteria and Alternatives of Glen Canyon Dam, AZ, Colorado River Storage Project. *Federal Register* 54(207): 43870-43871.

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SELECTED PHOTOGRAPHS

Photo 1. The Glen Canyon Dam

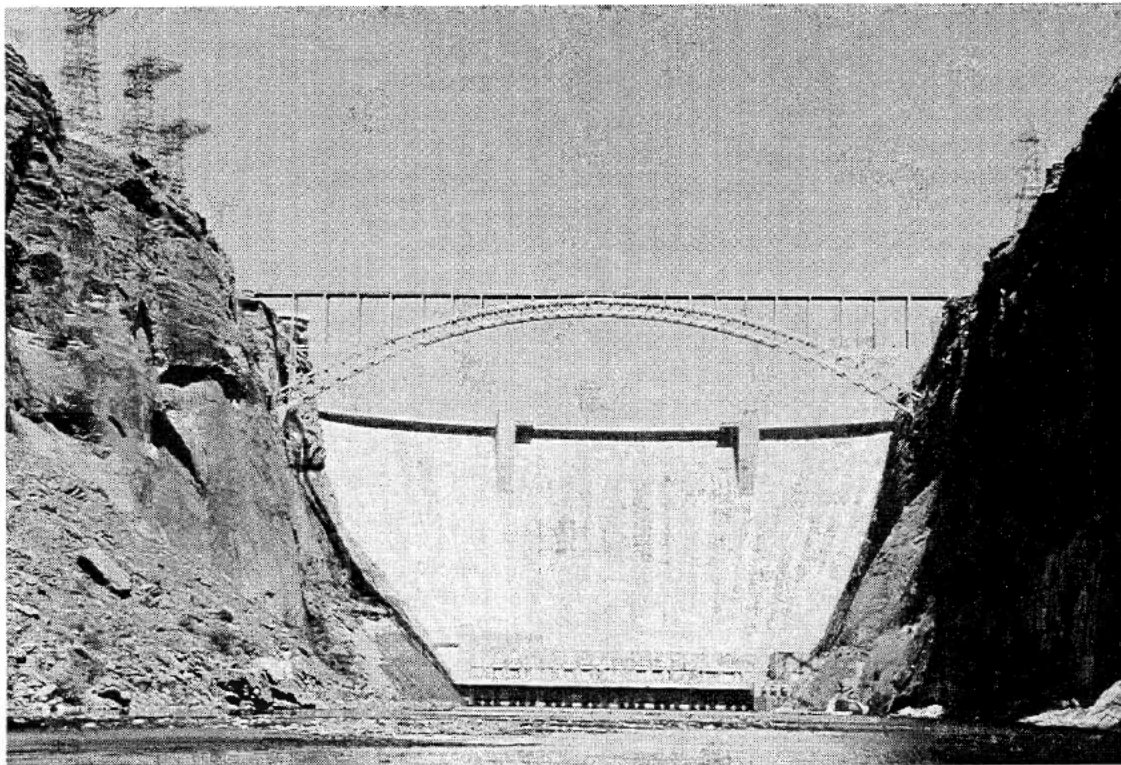


Photo 2. Kaibab Paiute representative at Ferry Swale Site

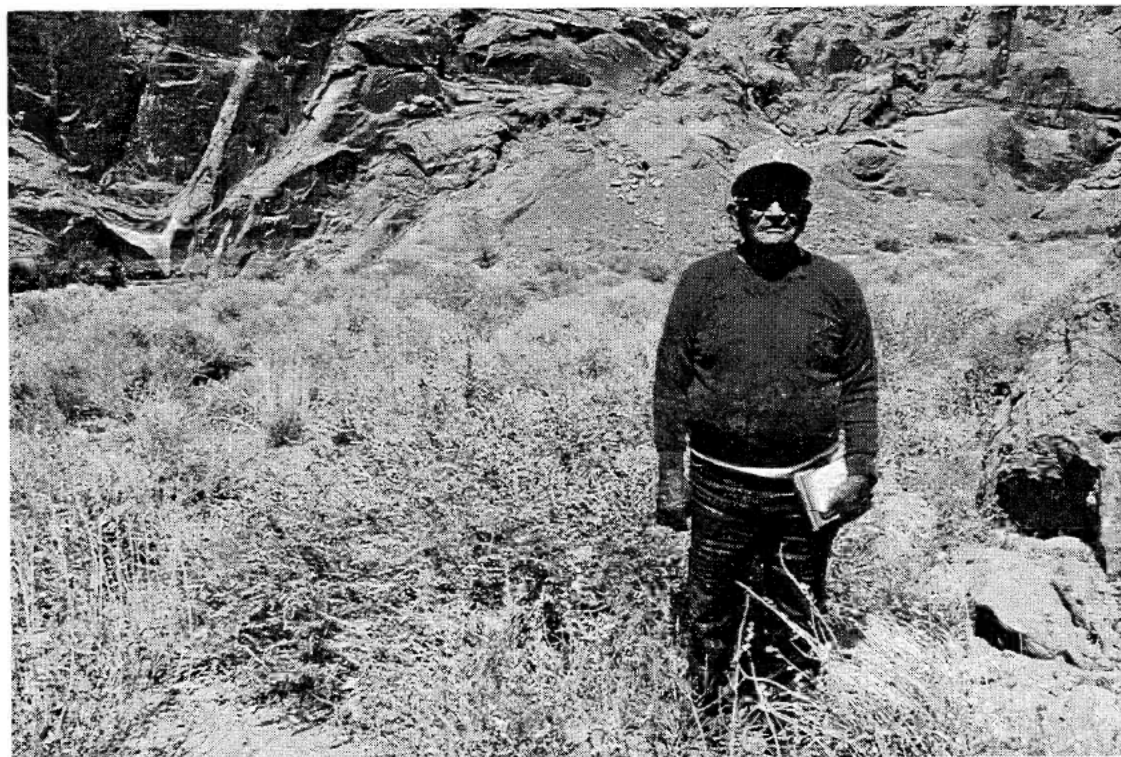


Photo 3. Overview of Petroglyph Panel Site

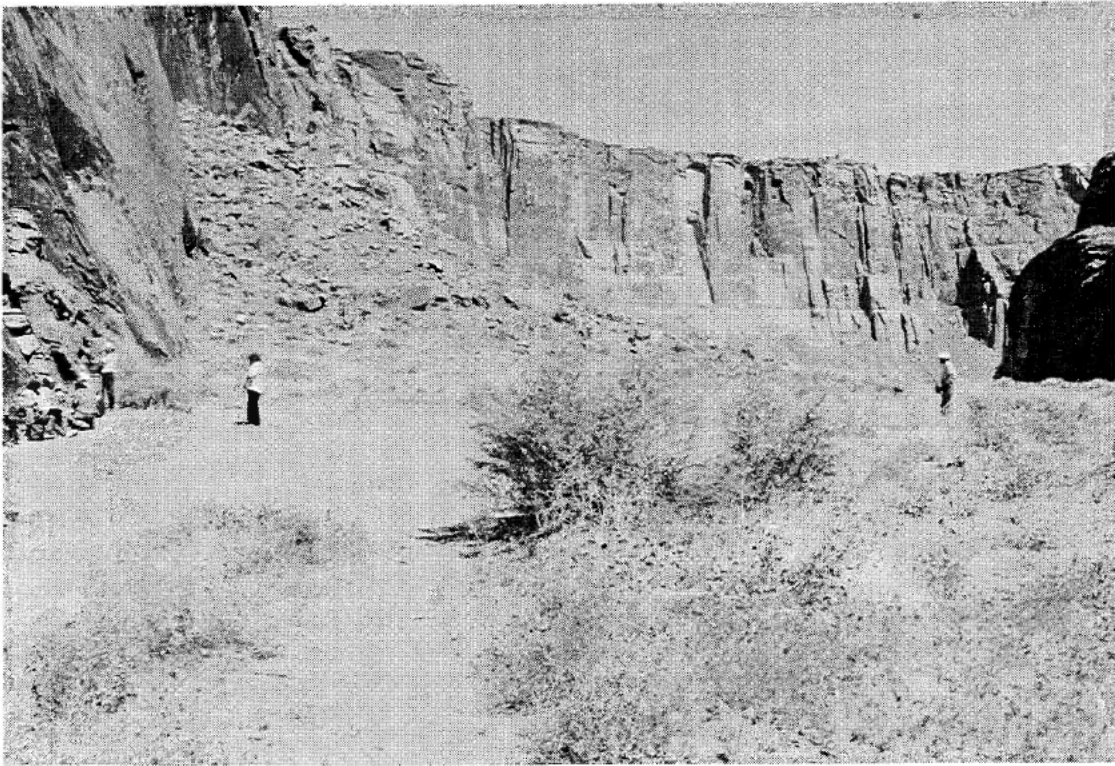


Photo 4. Shivwits Paiute representative observing a roasting pit at Ledges Site



Photo 5. Overview of Cove Canyon Site

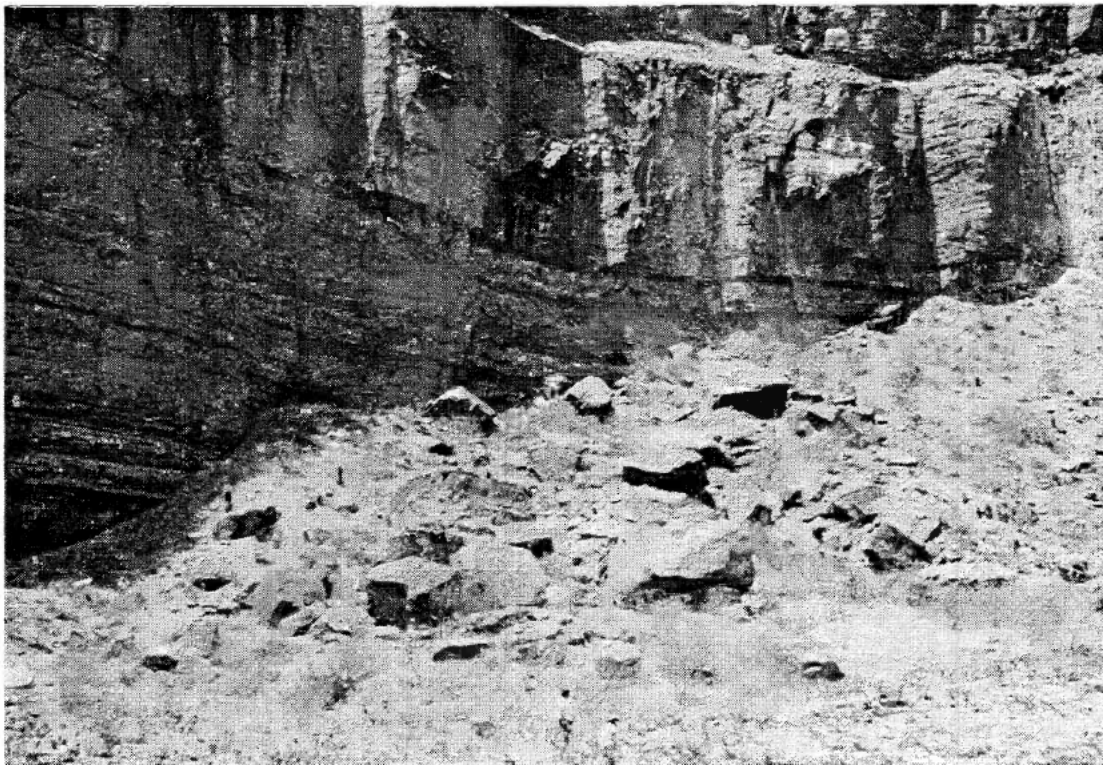


Photo 6. Research team at Whitmore Wash Site

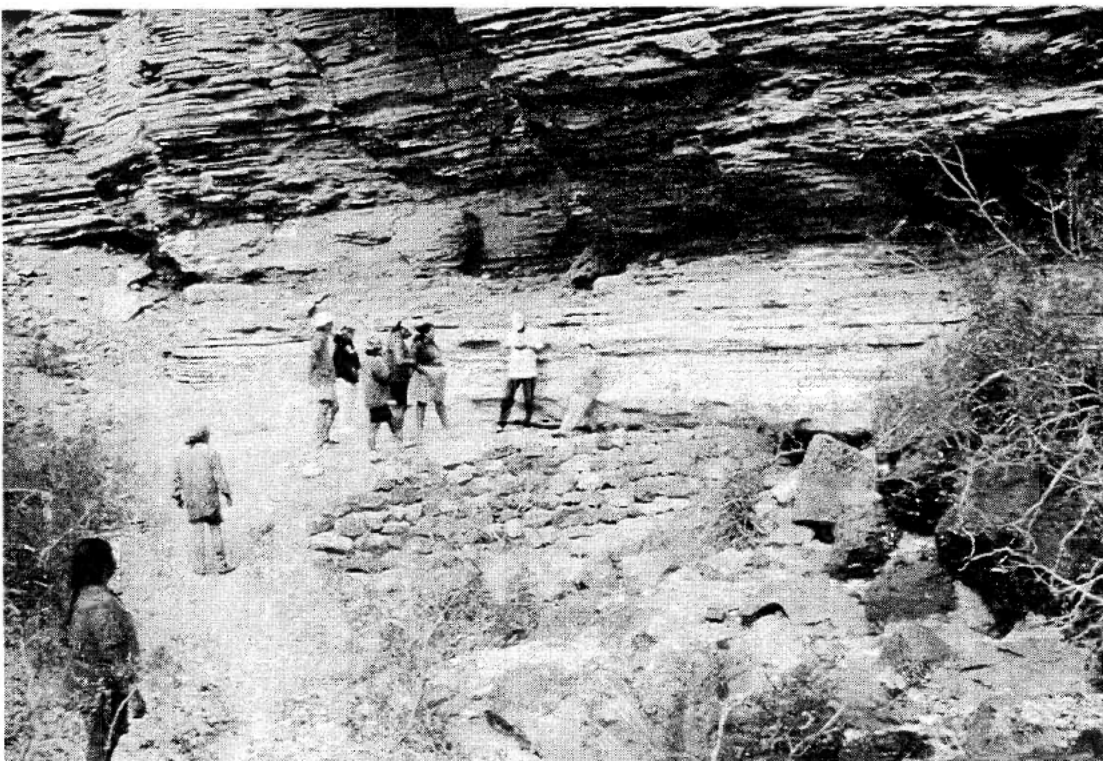


Photo 7. San Juan Paiute representative and Helen Fairley at Whitmore Wash Site



Photo 8. Overview of Parashant Wash Site

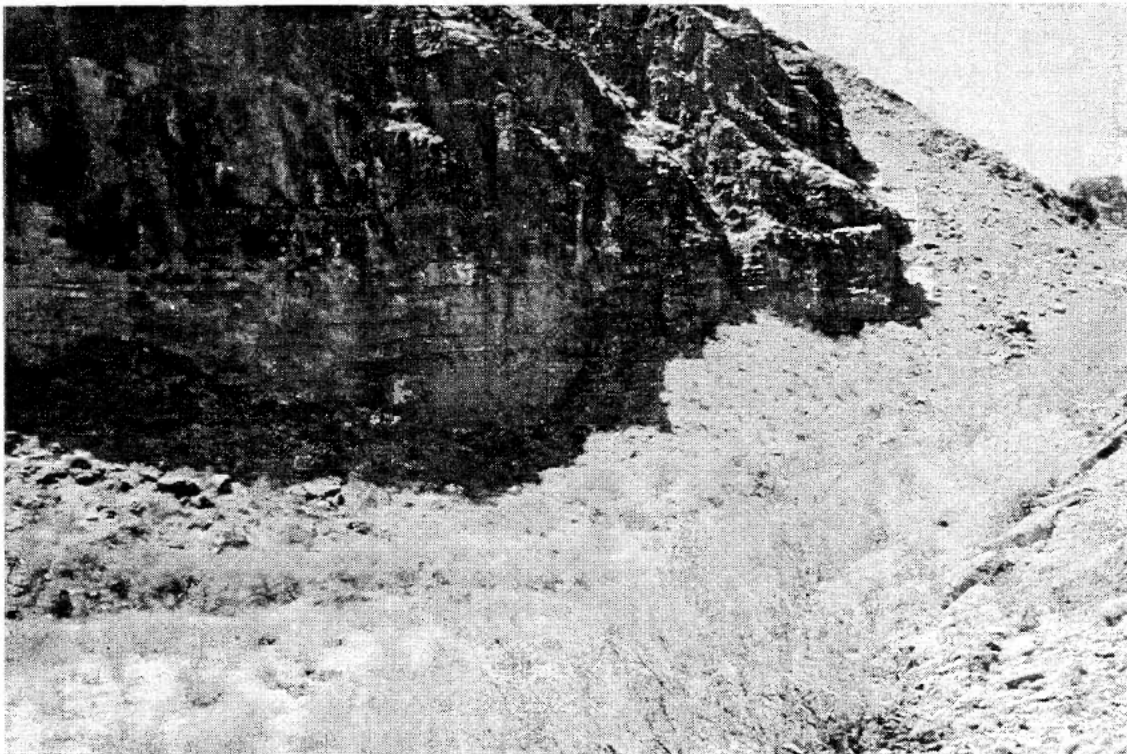


Photo 9. Overview of Granite Park Site

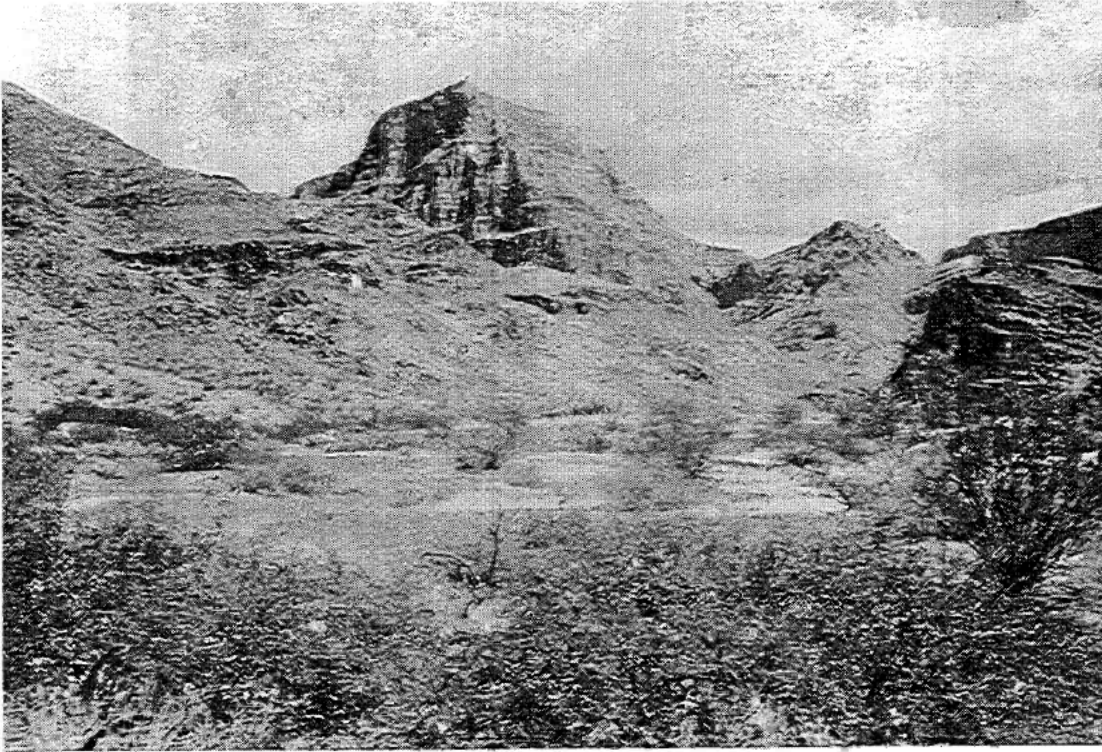


Photo 10. Kaibab Paiute representative observing bedrock mortar, Granite Park

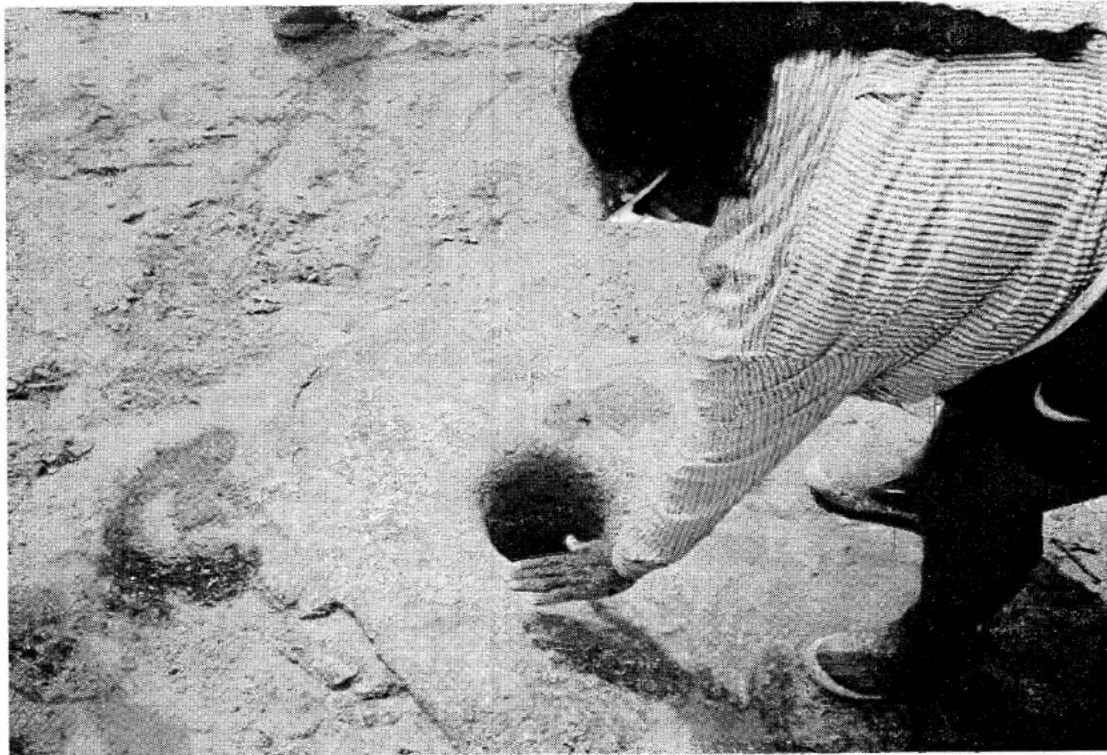


Photo 11. Overview of Ethnobotany Site above Little Colorado River

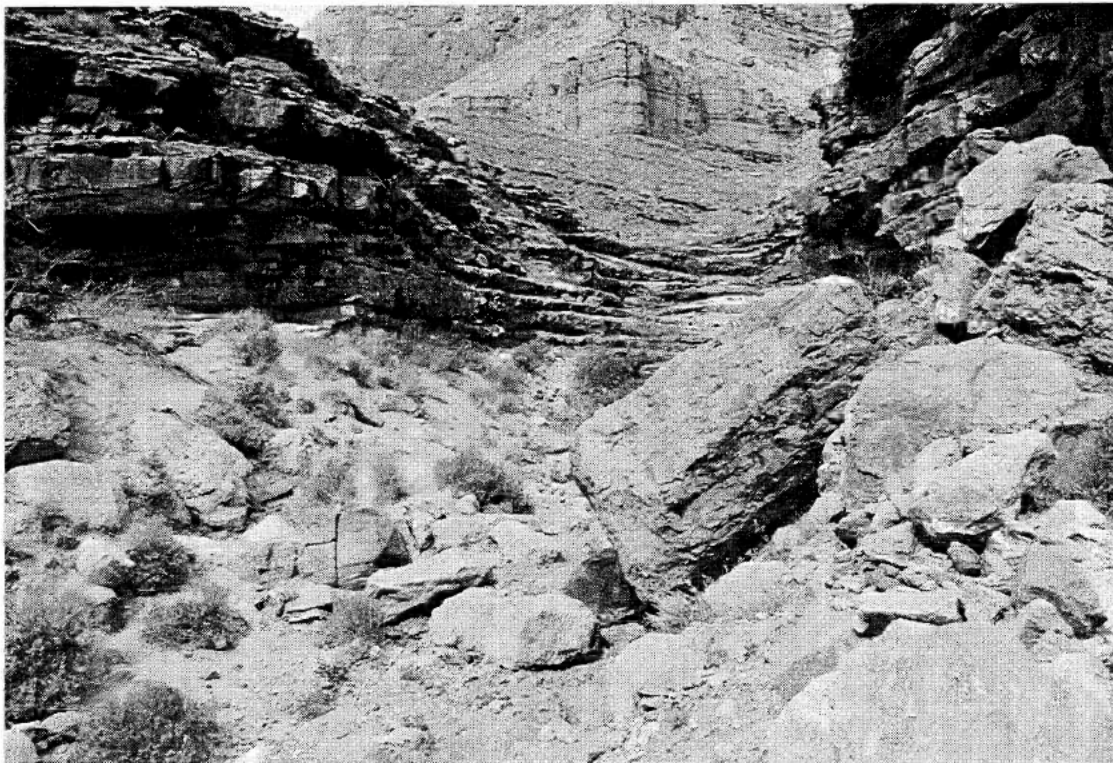


Photo 12. Overview of Stone Creek Ethnobotany Site



Photo 13. Kaibab Paiute representative and squawbush, *Rhus trilobata*



Photo 14. Shivwits Paiute representative and wolfberry, *Lycium fremontii*



Photo 15. San Juan Paiute representatives and banana yucca, *Yucca baccata*



Photo 16. San Juan Paiute representatives demonstrate use of yucca stalk fire-drill

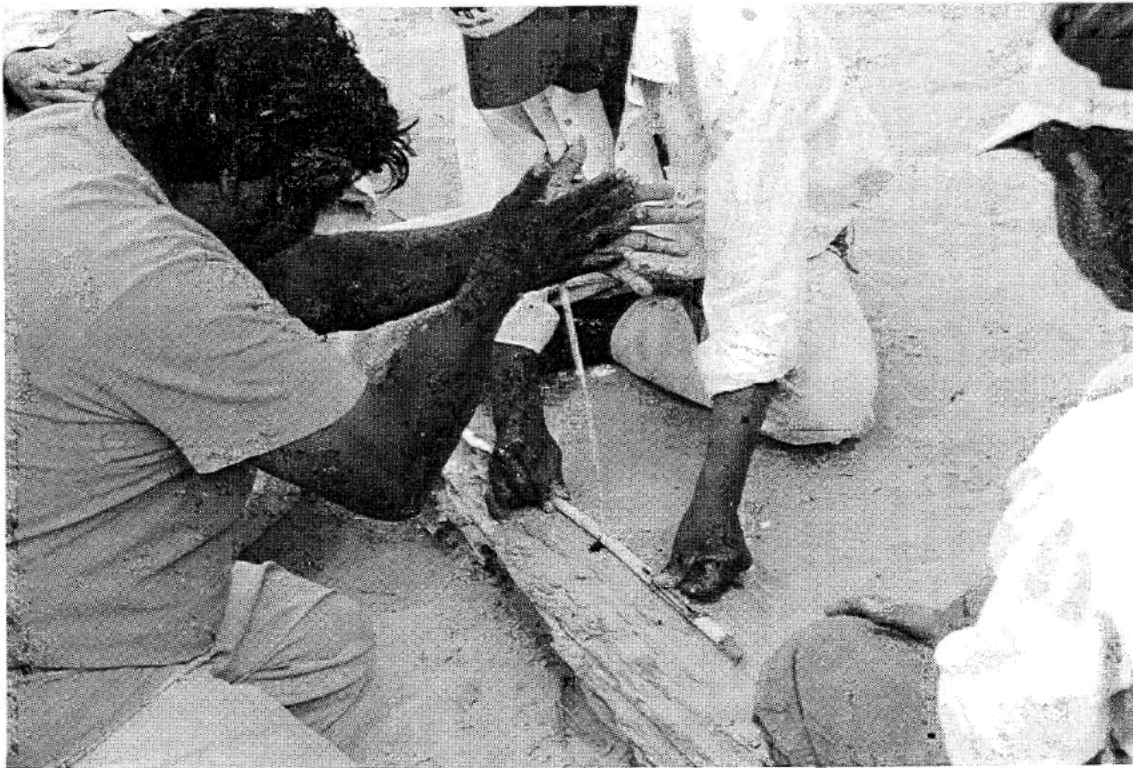


Photo 17. Native American Project Assistant and willow, *Salix gooddingii*



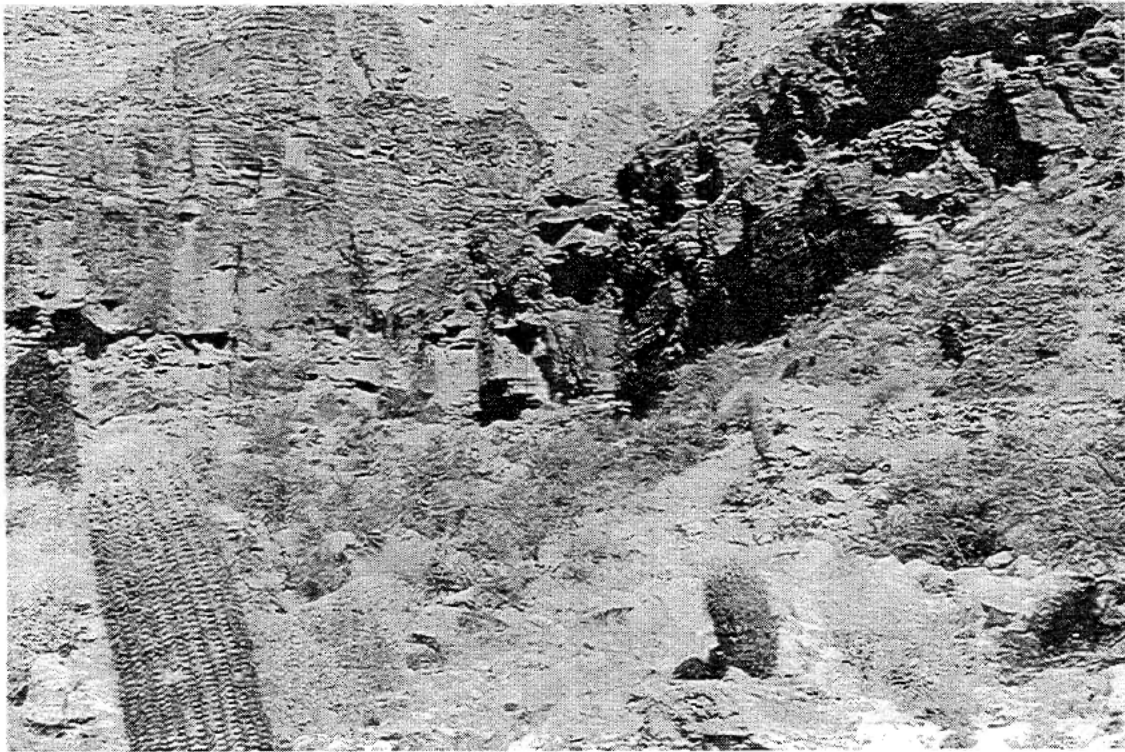
Photo 18. Shivwits Paiute representative and cattail, *Typha latifolia*



Photo 19. Shivwits Paiute representative discussing traditional plants at Granite Park



Photo 20. Overview of Hematite Cave Site



APPENDICES

APPENDIX A
ETHNOARCHAEOLOGY INTERVIEW FORM

ETHNOARCHAEOLOGICAL INFORMATION
COLORADO RIVER CORRIDOR CULTURAL RESOURCE ASSESSMENT STUDY
UNIVERSITY OF ARIZONA

Date: _____

Interviewer: _____

2. Respondent's Name: _____

3a. Tribe: _____ 3b. Ethnic Group: _____

4. Gender: (Circle) *1 = M* *2 = F*

5. Site: A) English Name/Description _____ B) Site No.: _____

C) Reach: _____ D) Mile: _____ E) UTM Coordinates _____

6a. Study Area Site, Name and Number: _____ 6b. Ecozone Location: _____

**ETHNIC GROUP USE HISTORY: PAST AND PRESENT
(INTERVIEWER: CIRCLE OR CHECK APPROPRIATE CATEGORY BEFORE MARKING RESPONSE)**

7. Did you know that this site was here? 1 = Yes 2 = No 8 = DK 9 = NR

8. Did (respondent's ethnic group) traditionally visit or use (this site / sites like this [where?])? 1 = Yes 2 = No 8 = DK 9 = NR

9a. What kind of site is this?

9b. What was/were (this site / sites like this) visited or used for?

- 1 = Permanent Residence 2 = Camping 3 = Farming 4 = Ritual / Ceremony
- 5 = Gathering Foods 6 = Hunting 7 = Trade 8 = Other (SPECIFY)

10. Who visited or used (this site / sites like this) most often? 1 = Men 2 = Women 3 = Both

11. Do (respondent's ethnic group) currently visit or use (this site / sites like this [where?])? 1 = Yes 2 = No 8 = DK 9 = NR

12. (If yes) What is/are (this site / sites like this) visited or used for? CIRCLE BELOW

- 1 = Permanent Residence 2 = Camping 3 = Farming 4 = Ritual / Ceremony
- 5 = Gathering Foods 6 = Hunting 7 = Trade 8 = Other (SPECIFY)

13. Who visits or uses (this site / sites like this) most often? 1 = Men 2 = Women 3 = Both 8 = DK 9 = NR

PERSONAL USE HISTORY

14. Did you (or your family) traditionally visit or use (this site / sites like this [where?])? 1 = Yes 2 = No 8 = DK 9 = NR

15. (If yes) What was/were (this site / sites like this) visited or used for? CIRCLE BELOW

- 1 = Permanent Residence 2 = Camping 3 = Farming 4 = Ritual / Ceremony
- 5 = Gathering Foods 6 = Hunting 7 = Trade 8 = Other (SPECIFY)

16. Do you (or your family) currently visit or use (this site / sites like this [where?])? 1 = Yes 2 = No 8 = DK 9 = NR

17. (If yes) What is/are (this site / sites like this) visited or used for? CIRCLE BELOW

- 1 = Permanent Residence 2 = Camping 3 = Farming 4 = Ritual / Ceremony
- 5 = Gathering Foods 6 = Hunting 7 = Trade 8 = Other (SPECIFY)

CULTURAL TRANSMISSION

18. From whom did you learn about (this site / sites like this)? CIRCLE BELOW

1 = Mother 2 = Father 3 = Grandmother 4 = Grandfather 5 = Other Relative (Specify) 4 = Friend, Neighbor, Other Person 8 = DK 9 = NR

19. Have you ever taught anyone about (this site / sites like this)?

1 = Yes 2 = No 9 = NR

20. (IF YES) Who have you taught? (CIRCLE BELOW)

1 = Children 2 = Grandchildren 3 = Other Relative 4 = Friend, Neighbor 9 = NR

21. What about (this site / sites like this) were you teaching to that person? (CIRCLE BELOW)

1 = Permanent Residence 2 = Camping 3 = Farming 4 = Ritual / Ceremony
 5 = Gathering Foods 6 = Hunting 7 = Trade 8 = Other (SPECIFY)

22. Are you currently teaching anyone about (this site / sites like this)?

1 = Yes 2 = No 9 = NR

23. (IF YES TO #22) Whom are you teaching? (CIRCLE BELOW)

1 = Children 2 = Grandchildren 3 = Other Relative 4 = Friend, Neighbor 9 = NR

24. What about (this site / sites like this) are you teaching to that person? (CIRCLE BELOW)

1 = Permanent Residence 2 = Camping 3 = Farming 4 = Ritual / Ceremony
 5 = Gathering Foods 6 = Hunting 7 = Trade 8 = Other (SPECIFY)

25. Are there Indian stories and legends associated with (this site / sites like this)? 1 = Yes 2 = No 8 = DK 9 = NR
26. Would (this site / sites like this) be connected with other sites in the area? 1 = Yes 2 = No 8 = DK 9 = NR

27a. (IF YES TO #26) What kinds of sites?

27b. How are they connected?

(ETHNOGRAPHER: READ THE FOLLOWING LINE BEFORE ASKING QUESTION #28)
Archaeologists use the term feature to describe parts of a site that have different uses. Given this use of the term...

28. What kinds of (above ground) features do you see at this site? (LIST ITEMS ELICITED)

29. Were all of these features used at the same time by the same Indian people, or at different times by other Indian people? (CIRCLE BELOW)

1 = Same time/people 2 = Different times/people 8 = DK 9 = NR

30. (IF DIFFERENT TO #29) What other Indian people used these features and when did they use them (before, after, same time as) respondent's ethnic group)?

1 = Before 2 = After 3 = Same time as What people? (Write Below) 8 = DK 9 = NR

31. What features below the ground do you think might be present at this site? (LIST ITEMS ELICITED)

SITE FEATURES

32. How would you evaluate the importance of the features of this site to (respondent's ethnic group/tribe) people?
 (INTERVIEWER: WHEN ASKING QUESTION, SPECIFY FEATURES FIRST, CHECK IF PRESENT AND ELICIT SCORE FOR EACH ONE)

	PRESENCE			SIGNIFICANCE		
	1 = NO	2 = YES	3 = MAYBE	1 = LOW	2 = MEDIUM	3 = HIGH
a. LOCATION						
b. VIEW/AESTHETICS						
c. WATER/SPRING						
d. TINAJAS/TANKS						
e. PLANTS (SPECIFY)						
f. ANIMALS (SPECIFY)						
g. NATURAL RAW MATERIALS (Toolstone, clay, etc.)						
h. MINERALS						
i. BURIAL(S)						
j. STONE STRUCTURES						
k. WOOD/BRUSH STRUCTURES (Wickiup, windbreak)						
l. HEARTH/FIREPIT						

32. CONT'D

	PRESENCE			SIGNIFICANCE		
	1 = NO	2 = YES	3 = MAYBE	1 = LOW	2 = MEDIUM	3 = HIGH
m. ROASTING PITS						
m. ROCK SHELTER						
n. ROCK RINGS/ ALIGNMENTS						
o. STONE ARTIFACTS (Points, scrapers, flakes, chipped stone, etc.)						
p. FIBER ARTIFACTS (basketry, etc.)						
q. WOODEN ARTIFACTS (Arrows, digging stick, etc.)						
r. TRAIL						
s. PETROGLYPHS (PICTOGRAPHS)						
t. MILLING STONE/GROUNDSTONE (manos, metates, etc.)						
u. BEDROCK MORTAR						
v. CERAMICS (SPECIFY)						
w. LITHIC SCATTER, DEBITAGE (Flakes)						
x. OTHER (SPECIFY)						

34. Would (this site / sites like this) and the features have been used every year during the same season? 1 = Yes 2 = No 8 = DK 9 = NR

35. Can you tell me anything else about the importance of (this site / sites like this) to the (respondent's ethnic group/tribe) people?

36. How would you evaluate the overall importance of (this site / sites like this) to Indian people? 1 = Low 2 = Medium 3 = High 9 = NR

37. When you think about this site as a whole, what feature or element stands out in your mind (that makes the site especially significant)?

38. What would be your first recommendation for protecting this site?

39. If this site and its features cannot be preserved in place, what would you recommend in order to best protect these things?

ADDITIONAL NOTES:

APPENDIX B:
ETHNOBOTANY INTERVIEW FORM

Ethnobotanical Information
Colorado River Corridor Cultural Resource Assessment Study
University Of Arizona

Date: _____ I. Interview #: _____

Interviewer: _____

2. Respondent's Name: _____

3a. Tribe: _____ 3b. Ethnic Group: _____

4. Gender: (Circle) *1 = M* *2 = F*

5. PLANT SPECIMEN: a. Common Name _____ b. Indian Name _____ c. Botanical Name _____ d. Botanist Plant ID #: _____

6. (Check) a. Indian ID: _____ b. Other Indian ID: _____ c. Ethnographer ID _____ d. Botanist ID: _____

7a. Study Area Site: _____
7b. Ecozone Location: _____
7c. Topography: _____
7d. Main Water Source: _____
7e. River Mile _____
i. canyon wall i delta i. River edge
ii. UDSZ - desert ii. side canyon ii. River flood
iii. OHWS - old riparian iii. wash or drain iii. Side stream
iv. REPS - new riparian iv. Spring
v. Rainfall

Ethnic Group Use History: Past And Present

8. Did (respondent's ethnic group) traditionally use [name of plant] ? (Circle) 1 = Yes 2 = No 8 = DK 9 = NR

9. What was [name of plant] used for? (CIRCLE BELOW)

1 = Food 2 = Medicine 3 = Ceremony 4 = Construction 5 = Fuel 6 = teaching 7 = Other (SPECIFY)

10. Who used [name of plant] most often? 1 = Men 2 = Women 3 = Both

11. Do (respondent's ethnic group) currently use [name of plant] ? 1 = Yes 2 = No 8 = DK 9 = NR

12. (If yes) What is [name of plant] used for? CIRCLE BELOW

1 = Food 2 = Medicine 3 = Ceremony 4 = Construction 5 = Fuel 6 = teaching 7 = Other (SPECIFY)

13. Who uses [name of plant] most often? 1 = Men 2 = Women 3 = Both 8 = DK 9 = NR

Cultural Transmission

18. From whom did you learn about [name of plant]? CIRCLE BELOW

1 = Mother 2 = Father 3 = Grandmother 4 = Grandfather 5 = Other Relative (Specify) 6 = Friend, Neighbor, Other Person 8 = DK 9 = NR

19. Have you ever taught anyone about the use(s) of [name of plant]?

1 = Yes 2 = No 9 = NR

20. (IF YES) Who have you taught? 1 = My Children 2 = My Grandchildren 3 = S.P. Youth (non-relatives) 4 = Other Relatives 5 = Friend, Neighbor, Other 9 = NR

21. What uses of [name of plant] were you teaching to that person? (CIRCLE BELOW)

1 = Food 2 = Medicine 3 = Ceremony 4 = Construction 5 = Fuel 6 = teaching 7 = Other 9 = NR

22a. Are you currently teaching anyone about the use(s) of [name of plant]?

1 = Yes 2 = No 9 = NR

22b. (IF NO to #22a) Do you intend to teach anyone about the use(s) of [name of plant]?

1 = Yes 2 = No 9 = NR

23. (IF YES TO #22a or 22b) Whom are you teaching? 1 = Children 2 = My Grandchildren 3 = S.P. Youth (non-relatives) 4 = Other Relatives 5 = Friend, Neighbor, Other 9 = NR

24. What uses of [name of plant] are you teaching to that person? (CIRCLE BELOW)

1 = Food 2 = Medicine 3 = Ceremony 4 = Construction 5 = Fuel 6 = teaching 7 = Other 9 = NR

Management Techniques

1 = Yes 2 = No 8 = DK 9 = NR

32. Do you (or does anyone) try to get more of these plants to grow?

33. (IF YES) Do Southern Paiute people try to grow or harvest [name of plant] so it grows next year?

Technique	Yes	No	Comments
A. Select, Store Seeds			
B. Plant Seeds Elsewhere			
C. Broadcast Seeds			
D. Transplant Cutting(S)			
E. Cultivate			
F. Hand Water / Pot Irrigate			
G. Weed Around Plant			
H. Pruning			
I. Burning With Fire To Stimulate Regrowth			

34. (If transplanted) From where to where? NA DK NR

35. (If collected) Where do you find [name of plant] most frequently? NA DK NR

36. When you collect [name of plant], do you take all the plants in the area or do you leave some for later use? (ETHNOGRAPHER: Try to elicit some sense of quantity)

NA DK NR

37a. Can you tell me anything else about [*name of plant*] and its importance for the (respondent's ethnic group/tribe) people?

37b. Why is [*name of plant*] important to Southern Paiute people today?

38. Do you believe [*name of plant*] here is being affected by Glen Canyon water release? [IF YES] How?

39. What would be your first recommendation for protecting [*name of plant*] in the study area?

40. What would be your second recommendation for protecting [*name of plant*]?

ADDITIONAL NOTES: