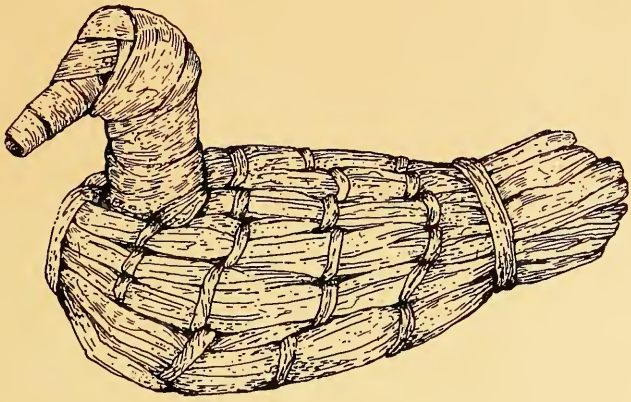
AN FOLKLIFE STUDIES • NUMBER 6

Tule Technology

Northern Paiute Uses of Marsh Resources in Western Nevada



Catherine S. Fowler

SERIES PUBLICATIONS OF THE SMITHSONIAN INSTITUTION

Emphasis upon publication as a means of "diffusing knowledge" was expressed by the first Secretary of the Smithsonian. In his formal plan for the Institution, Joseph Henry outlined a program that included the following statement: "It is proposed to publish a series of reports, giving an account of the new discoveries in science, and of the changes made from year to year in all branches of knowledge." This theme of basic research has been adhered to through the years by thousands of titles issued in series publications under the Smithsonian imprint, commencing with *Smithsonian Contributions to Knowledge* in 1848 and continuing with the following active series:

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In these series, the Institution publishes small papers and full-scale monographs that report the research and collections of its various museums and bureaux or of professional colleagues in the world of science and scholarship. The publications are distributed by mailing lists to libraries, universities, and similar institutions throughout the world.

Papers or monographs submitted for series publication are received by the Smithsonian Institution Press, subject to its own review for format and style, only through departments of the various Smithsonian museums or bureaux, where the manuscripts are given substantive review. Press requirements for manuscript and art preparation are outlined inside the back cover.

Robert McC. Adams
Secretary
Smithsonian Institution

Frontispiece. *Jimmy and Wuzzie George carrying bundles of freshly cut tules* (Scirpus acutus), *Stillwater Marsh, Nevada, ca. 1960.* Photograph by M.M. Wheat. Courtesy of Special Collections Department, Getchell Library, University of Nevada Reno.

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Northern Paiute Uses of Marsh Resources in Western Nevada

Catherine S. Fowler

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Abstract

Fowler, Catherine S. Tule Technology: Northern Paiute Uses of Marsh Resources in Western Nevada. *Smithsonian Folklife Studies*, number 6, 186 pages, frontispiece plus 78 figures, 1990.—The Northern Paiute of western Nevada, particularly the Cattail-eater subgroup, had a number of uses for locally occurring marsh plants, particularly for food and technology. Common items manufactured from cattails, tules, and rushes include bags, mats, sandals, clothing, houses, duck decoys, and boats. The rhizomes, shoots, seeds, and pollen of several species also provided nutritious foods. In the early 1950s, Margaret M. Wheat of Fallon, Nevada, began working with Cattail-eater people to document on audio tape, on film, and in print the many uses of these plants, as well as other aspects of their lifeways. In the late 1960s, she was joined in these efforts by Fowler; together they concentrated on the knowledge held by the George family of Stillwater, Nevada. Wuzzie and Jimmy George had been raised by grandparents who themselves had witnessed the settling of their region by non-Indians. They in turn were in the process of passing some of their knowledge to their children and grandchildren. The monograph focuses on the lives of Wuzzie and Jimmy George and the many uses they knew for marsh plants. It describes the making of simple bags of tules for collecting duck eggs in the marshes; tule duck decoys once covered with duck skins and used in hunting; cattail mat–covered houses, common shelters in the region; and tule balsa boats, watercraft well adapted to marshes. Comparative data from the archaeological record in western Nevada as well as from other Native American groups, principally in the Great Basin and California, are added to place the Cattail-eater data in context. The role of the Georges in transmitting their knowledge to future generations is also explored briefly. The monograph is designed to accompany a film by the same title made in 1981 by the Smithsonian Institution's Office of Folklife Programs.

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Preface to the Series

In 1978, the Smithsonian Office of Folklife Programs established *Smithsonian Folklife Studies* to document folkways still practiced (or recreated through memory) in a variety of traditional cultures. This Office has accumulated more than a decade of research accruing from fieldwork conducted for its annual production of the Festival of American Folklife. Against the background of this rich and continually replenished resource, the *Studies* were conceived in a unique format: each consists of a monograph *and* a film that complement each other. The monographs present detailed histories and descriptions of folk technologies, customs, or events, and include information about the background and character of the participants and processes through photographs (historical and contemporary), illustrations, and bibliographies. The films add a living dimension to the monographs by showing events in progress and traditions being practiced, the narrative being provided mostly by the tradition bearers themselves. Thus, while each monograph is planned to permit its use independent of the film (and vice versa), their combined study should enhance the educational and documentary value of each.

The genesis of the *Smithsonian Folklife Studies* dates back to January 1967, when the Institution began plans to convene a group of cultural geographers, architectural historians, and European and American folklore scholars in July of that year. One recommendation of the conference stressed the need for new directions in documentation to keep pace with the ever-broadening scope of the discipline, as it extends from the once limited area of pure folk*lore* research to encompass all aspects of folk*life*. It was further proposed that the Smithsonian establish model folklife studies, although no specific forms were prescribed. The Festival was one form developed to meet this challenge and the publications program was another. *Smithsonian Folklife Studies* were designed to provide new perspectives on earlier research or to investigate areas of folklife previously unexplored.

The topics proposed for the publications range widely from such traditional folklore interests as ballad singing to newer areas of con-

cern such as occupational folklore. Included are studies of "old ways" in music, crafts, and food preparation still practiced in ethnic communities of the New World, centuries-old technologies still remembered by American Indians, and "homemade" utilitarian items still preferred to their "store bought" counterparts. American folklife is the primary (but not exclusive) concentration of the *Studies*.

Nearly all of these traditions have been transmitted orally or absorbed through repeated observation, involving several generations. Learning traditions this way, of course, extends beyond childhood. The degree to which oral, even non-verbal, tradition operates among blue collar workers is one focus of occupational folklore: imitation and personal instruction are the best vehicles for transmitting the technique and knowledge necessary to do the work. Because mere words cannot always communicate, apprentices must be *shown* the technique.

Many of the activities documented in the *Studies*, however, are practiced in a world apart from that of the factory. By modern standards of mass production, the technologies shown may seem inefficient and imprecise. In some of them the proportions used, arrived at through years of trial and error, are often inexact or employ measuring tools no more precise than the dimensions of the human hand. It is also a world where the craftsman eschews technical terminology, preferring instead to employ names that derive from "what it looks like." Many of the traditions presented in the *Studies* date back to times when the pace of work and passage of time were relatively unimportant. Deliberateness is often commensurate with accomplishment, and, for the folk craftsman, quality of his products is a result of the care and time devoted to their manufacture.

The decline of many folklife traditions has paralleled the general social breakdown of communities, in many instances the result of advances in technology. Concurrent with this social dissolution has been the disappearance of many utilitarian items that the maker traditionally created for himself or his family. Many of the traditions associated with these products are near extinction or alive only in the memories of the oldest members of a community.

Because a major role of the Smithsonian is that of a conservation institution, the Office of Folklife Programs accepted the obligation to document the traditional folkways it researches, and its early commitment to filming them should be noted. During the 1967 Smithsonian conference, roughly edited film footage of Georgia folk potters was

shown to demonstrate a new approach in describing the technology behind artifacts in the Smithsonian's collection of folk material culture. After final editing was done and a soundtrack and supplementary footage were added, this film was issued as *Smithsonian Folklife Study*, No. 1a, to accompany the monograph titled "The Meaders Family: North Georgia Potters." The initial screening of this pottery film took place at a time when film documentation of folklife was a novelty. In fact, in 1967 the American *Encyclopedia Cinematographica* listed a silent film on Amish breadmaking as its single motion picture entry in the category of American folk culture. This dearth of folklife films reflected the fact that, for the most part, folklorists were continuing to document the artifact more than the craftsman.

Folklorists have not been alone, however, in being late to recognize film documentation as a necessary adjunct to verbal descriptions of culture. The late anthropologist, Margaret Mead, whose efforts helped to establish the Smithsonian's National Anthropological Film Center in 1975, took to task her own discipline's continuing refusal to appreciate the value of film documentation:

> Department after department, research project after research project fails to include filming and insists on continuing the hopelessly inadequate note-taking of an earlier age; while before the fieldworkers' eyes the behavior [disappears] which film could have caught and preserved for centuries (preserved for the joy of the descendants of those who dance a ritual for the last time and for the illumination of future generations of human scientists) . . .
>
> —Margaret Mead, [Introduction] "Visual Anthropology in a Discipline of Words," in *Principles of Visual Anthropology*, ed. Paul Hockings, The Hague and Paris: Mouton Publishers, 1975, pp. 4–5.

In expanding our study of folklife beyond mere artifacts and texts, we have come to recognize that much of what we witness is performance. And though performance can be described verbally or transcribed in print, only through sound motion picture can we hope to capture the complete flow of events, the character of their performers, their speech patterns, moods, and personalities. Hence, by incor-

porating artifact, text, and performance in the complementary monograph/film format, these publications bring to readers and viewers, respectively, the immediacy and subtlety within folk culture. The Smithsonian's aim is to document folklife in all its dimensions.

A list of the monographs and films that have been issued in the *Smithsonian Folklife Series* appears at the end of this volume. Regulations governing the submission and acceptance of manuscripts are described inside the front and back covers of this monograph.

Thomas Vennum, Jr.
General Editor
Office of Folklife Programs
July 1984

Acknowledgments

The first debt of gratitude for the contents of this monograph is owed to Margaret M. Wheat, now deceased, of Fallon, Nevada. I first met Peg Wheat in 1962 through a professor of mine and friend of hers, Gordon L. Grosscup, then at the University of Utah. Peg took a group of us into her unique home in Carson City, where we had come to attend a Great Basin Anthropological Conference. I soon learned that this was the way of this remarkable woman, always welcoming into her household people of all scientific persuasions—archaeologists, ethnologists, geologists, paleontologists, biologists, or hydrologists—anyone with a sincere interest in her native state and its peoples, land, and history. Although she had little formal training in any of these branches of knowledge, she learned by association and independent study. In addition to encouraging and assisting many to do work in the region, she went on to publish many works in these fields on her own.

Our mutual work with Wuzzie George, to whom the second but no less important debt is owed, began for me in the early 1970s. This association was particularly rewarding, and was largely facilitated by Peg. Together with her equally knowledgeable husband, Wendell, she provided us a place to work and discuss matters—their home along a quiet, shaded stretch of the Carson River near Fallon. Peg, Wuzzie, and I visited the many places Wuzzie remembered from her youth; gathered food and medicinal plants; wandered the marshes looking at waterfowl; and generally talked and laughed. Peg and Wuzzie were both exceptional women. This monograph is as much theirs as mine.

Tom Vennum, Jr., of the Smithsonian's Office of Folklife Programs, also provided me with continued encouragement and advice throughout this long project. In the mid-1970s, we viewed Peg's 1964 film footage and ultimately decided that a final film product combining some of the older footage with new sequences would be worthwhile. Film consultation was done by phone and letter, and during visits in Washington and Reno. (Without the United Parcel Service's investi-

gative division, the film probably would not have existed at all. During one of the various transits, original footage was lost. They recovered the missing footage after a complete search of *all* their destinations, accomplished in a 48-hour period!) Tom also read a draft of the present manuscript and made many helpful comments.

Sven Liljeblad, eminent scholar of the Northern Paiute language and Northern Paiute culture, also helped in many ways—by discussing aspects of the monograph and film, and by reading a draft of the chapter on the George family, whose members he knew well. He and I also spent many pleasant hours with Wuzzie, whom, along with her husband, Jimmy, Sven regarded as among his finest teachers.

People in several museums and archives across the country have also contributed to this study by facilitating work with their photograph and artifact collections. Among them are: Paula Flemming of the National Anthropological Archives, Smithsonian Institution; David Hurst Thomas and Anibal Rodriguez of the American Museum of Natural History; James G.E. Smith of the Museum of the American Indian–Heye Foundation; Lawrence E. Dawson and Eugene Prince of the Lowie Museum of Anthropology, University of California, Berkeley; and Katheryn Totten and Robert Blesse of the Special Collections Department, Getchell Library, University of Nevada, Reno. Others who helped are Phil Wilke, University of California, Riverside, who read and commented on the chapter on the tule duck decoy; Patricia DeBunch, who ably drafted the maps; and Daphne Shuttleworth, who did the line drawings. Don Fowler uncritically put up with a project too long in process.

Finally, many Northern Paiute people (in addition to the George family), all of whom have been my patient teachers through the years, are owed a major debt of gratitude. By sharing their experiences with me, whether specific or general, they have made me more aware of the values of the Old People. I hope that they and their children will benefit at least a little from the film and this study.

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Introduction

Margaret M. Wheat of Fallon, Nevada, began independent ethnographic studies among the Northern Paiute people of Stillwater, a reservation community near her home, in the late 1940s, stimulated by her own explorations of western Nevada geology, hydrology, and archaeology. Her first work was with Alice Steve, then in her seventies but very knowledgeable about the natural resources and lifeways of the people of the region. Wheat began by collecting native place names for local mountain ranges, rivers, springs, and other physical features, some of which were incorporated into maps then being drafted by United States Geological Survey personnel working in the area. Northern Paiute names also became attached to soil types and geological formations, largely as the result of Wheat's work with geologist Roger Morrison (Morrison, 1964).

Wheat's action in alerting the Department of Anthropology of the University of California, Berkeley, to the discovery of some very rich cave deposits in the Stillwater Range brought several archaeologists to her area in the mid-1950s. With Gordon L. Grosscup, a graduate student at the time, she made additional investigations of Northern Paiute knowledge of some of the tool types found in the caves and also some of the resources used as food by the Paiute people. Alice Steve, Wheat's helper on several previous inquiries, was joined at this time by her friend Wuzzie George, somewhat younger than she but also very knowledgeable about many of the ways of the "Old People." Wuzzie George's husband, Jimmy George, was a very well-known Native American doctor, or shaman, and also an outstanding craftsperson. With the incapacitation and ultimately the death of Alice Steve in the early 1960s, Wheat increasingly began to focus on the knowledge carried by Wuzzie and Jimmy George and felt a more intense urge to document the way of life they remembered, but which was passing from the scene.

From the mid-1950s through the early 1970s, Wheat (Figure 1), who had little formal training in ethnographic fieldwork, amassed more than 400 hours of tape-recorded interviews with the Georges

Figure 1. *Margaret M. Wheat (right) and Louella Thomas (left), Stillwater, Nevada, ca. 1960.* Photographer unknown. Courtesy of Special Collections Department (Wheat Collection), Getchell Library, University of Nevada, Reno.

and several other Northern Paiute elders in the region. She began with a wire recorder, later switched to a bulky Webcor tape machine, and finally obtained in the late 1960s a high-quality portable tape recorder. In the late 1950s and early 1960s, she also documented Northern Paiute lifeways on film, using both black-and-white and color stills and 16-millimeter color motion pictures. Through her focus on the material culture of the Northern Paiute people, she accumulated some 1,000 still photographs and roughly 2,500 feet of film. These invaluable records, along with Wheat's tape collection, are now housed in the Special Collections Department, Getchell Library, University of Nevada, Reno. In 1967, Wheat published several of her photo essays on Northern Paiute manufactures through the University of Nevada Press under the title *Survival Arts of the Primitive Paiutes.* Now in its seventh printing, the book remains one of the best sources on the Northern Paiute people of western Nevada.

Other photographs she took have appeared in scholarly publications and are featured in regional and national museum exhibits.

The film *Tule Technology: Northern Paiute Uses of Marsh Resources in Western Nevada*, which this monograph is designed to accompany and amplify, was made in 1981 by the Office of Folklife Programs, Smithsonian Institution, using some of Wheat's early footage, complemented by new sequences featuring additional members of the George family. The new sequences were added to show other aspects of the technology as well as to emphasize the traditional processes of transmitting these skills within a family. The focus on marsh resources and technology involving marsh plants (cattails, tules, rushes, etc.) was deliberate, as these resources were exceedingly important to the Northern Paiute people of the region and their use can be documented easily in the archaeological record for several thousand years. The film does not attempt to present a complete picture of the use of these plants, nor a full document of lifeways associated with the marsh areas of western Nevada. Rather, it attempts to portray four of the primary uses of these plants: tule egg-collecting bags, tule duck decoys, cattail houses, and tule balsa boats. With these four products, Northern Paiute people had shelter from the cold, winds, and heat that characterize this part of western North America and had part of the means to gain a living in the area. This monograph places these products in a broader technological and cultural context while adding detail on their manufacture and use, which are seen only briefly in the film.

Although Wuzzie and Jimmy George grew up in the ways of their ancestors and were craftspeople from the time they were small, their knowledge and products did not come to the attention of the non-Indian public until the 1930s. In 1936, Omer Stewart, then of the Department of Anthropology, University of California, Berkeley, and a student of A.L. Kroeber, purchased a skin-covered tule duck decoy for the Lowie Museum from Jimmy George at Stillwater. It is not known how long Mr. George had been making these decoys, but certainly the tradition was one practiced by his ancestors and those of other people in the region back into antiquity (see the chapter on "The Tule Duck Decoy"). In 1914, Robert H. Lowie of the American Museum of Natural History in New York had obtained two similar decoys in Fallon, possibly from the Georges or their relatives. (At that time, Mrs. George would have been roughly 33 and her husband about 40.) In 1933, Mark R. Harrington, collecting for the Museum of the American Indian–Heye Foundation in New York, also obtained

two duck decoys in the Stillwater area, but unfortunately he, like Lowie, did not record the names of their makers. In addition, there are the famous duck decoys from Lovelock Cave, which is some 60 miles north of Stillwater and Fallon. These decoys recently have been dated at roughly 2,000 years old (Loud and Harrington, 1929; Tuohy and Napton, 1986). Although they differ in some technical details, the decoys from Stillwater, including those made by Jimmy George, represent an unbroken line of manufacture spanning at least 2,000 years.

Other aspects of this "tule technology," such as the making of mats, bags, cordage, sandals, etc., are well represented in numerous archaeological sites in western Nevada (Loud and Harrington, 1929; Thomas, 1985; Hattori, 1982; Heizer and Krieger, 1956). Ethnographic specimens of tule sandals, models of cattail houses and tule balsa boats, tule mats and bags, etc. (some made by the George family) are now housed in the American Museum of Natural History and the Museum of the American Indian–Heye Foundation in New York; the Lowie Museum of Anthropology, University of California, Berkeley; the Peabody Museum, Harvard University, Cambridge; the Nevada State Museum, Carson City; and the Churchill County Museum, Fallon. Descendants of Wuzzie and Jimmy George are presently producing tule duck decoys, including miniatures, for sale.

In addition to Margaret Wheat's materials and the museum collections, the legacy of the George family (Figure 2) is also represented in the linguistic and ethnographic field notes of Sven Liljeblad and Catherine Fowler of the University of Nevada, Reno. Professor Liljeblad began working with Wuzzie George on Northern Paiute grammar, vocabulary, and myths in 1953 as part of a larger project of Northern Paiute and Shoshone studies. Mrs. George worked many hours painstakingly providing sentences, phrases, and words in her native language and carefully relating the stories she had heard from the Old People. Jimmy George recorded his language as well, but less intensively. Liljeblad's archive, which also includes tape recordings and photographs, is in the Special Collections Department, Getchell Library, University of Nevada, Reno. Fowler began working with Wuzzie George in the early 1970s. Her materials, partly linguistic but largely focused on subsistence and general ethnography, remain in her possession. The Georges were also well known to other local and nonlocal students of Northern Paiute culture. Although neither is still alive, they have provided a living legacy of knowledge for their family and community and for the public at large.

Figure 2. *Wuzzie and Jimmy George, Stillwater, Nevada, examining photographs of themselves demonstrating skills to Margaret Wheat. Note the twined sagebrush skirt in the foreground.* Photograph by M.M. Wheat. Courtesy of Special Collections Department, Getchell Library, University of Nevada, Reno.

The chapters that follow describe various aspects of Northern Paiute tule technology and marsh utilization while focusing on the George family and its legacy. They outline the natural and cultural settings for the Northern Paiute people, particularly the Tóidɨkadɨ 'Cattail-eaters' of western Nevada. They provide some biographical detail on the George family, its history in the region, and its involvement in the production of material culture from marsh plants. They give more detailed accounts of the history and manufacture of the specific items illustrated in the film. The conclusion summarizes these materials and provides some additional notes on tule technology in western North America and the role of this particular family as producers and carriers of traditions represented in these products. It is hoped that these additional written accounts will serve to stimulate discussion among those who view the film or who are interested in this form of native technology in Nevada and elsewhere.

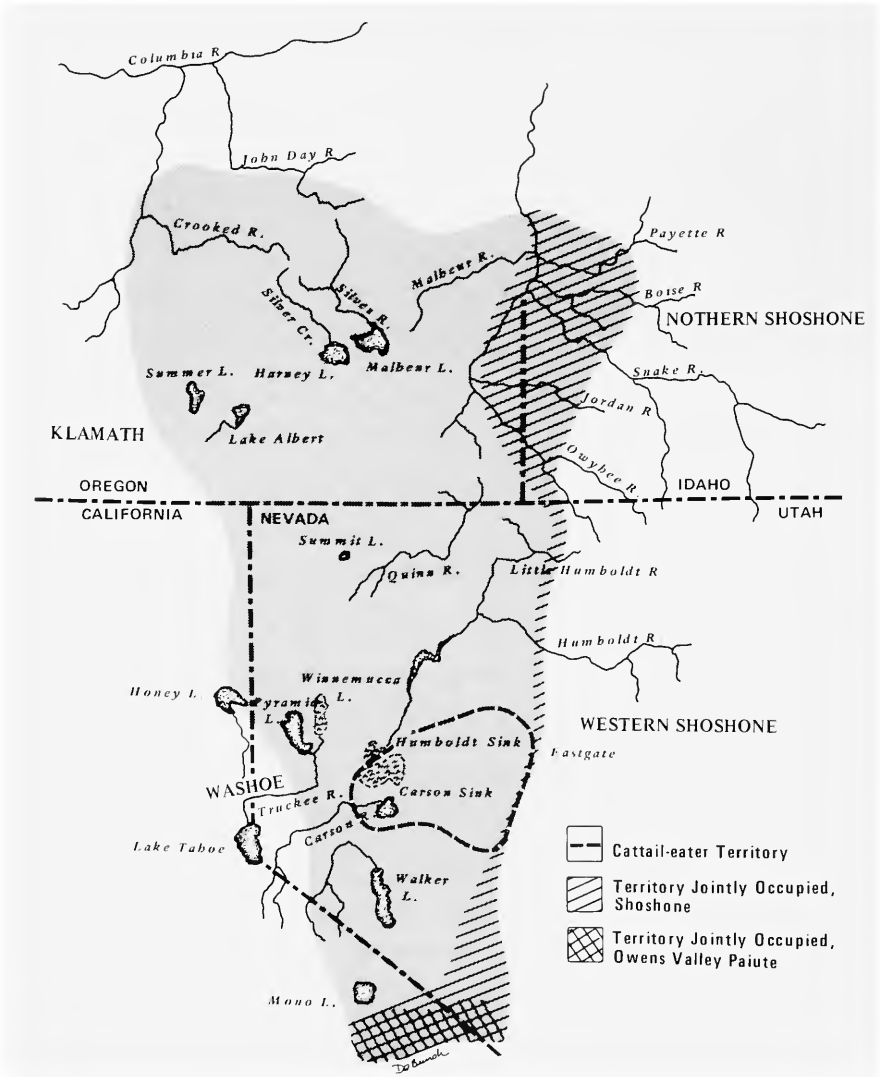

Figure 3. *Northern Paiute territory, ca. 1830–1850. Territory of the Cattail-eater subgroup also indicated.* Map by Patricia DeBunch.

Natural and Cultural Settings

The setting for the film *Tule Technology* is the Great Basin of western North America, and more particularly that part of the Great Basin occupied by various Northern Paiute groups in what is now western Nevada. Since prehistoric times the Great Basin has been home to hunters, gatherers, fisherfolk, and occasionally planters, all of whom adapted their lifeways to its seemingly harsh environments. The Great Basin was so named by Captain John C. Frémont in 1845 because none of its rivers reached the sea; rather, they flowed only internally,

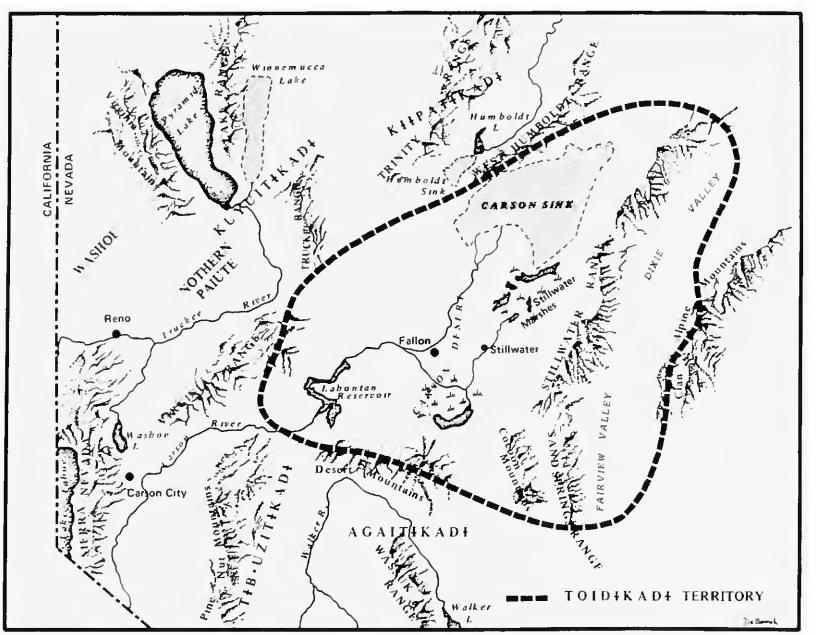

Figure 4. *General extent of Cattail-eater territory, western Nevada (after Shimkin and Reid, 1970.)* Map by Patricia DeBunch.

some ending in desert lakes, sinks, or playas and others being absorbed by a sea of sand (Frémont, 1845). Bounded on the north by the vast Snake River Plain, on the west by the major uplift of the Sierra Nevada, on the east and northeast by the Rocky Mountains, and on the south by the drainage of the Colorado River, the Great Basin is at once a unique natural area and a distinct Native American cultural province (d'Azevedo, 1986).

The Northern Paiute people of western Nevada, of whom the Cattail-eaters are a subdivision, speak a Uto-Aztecan language, one related to several others spoken in the Great Basin, southern California, the Southwest, and northern and central Mexico. The aboriginal territory of the Northern Paiute extended from near the Columbia River on the north through western Nevada to east-central California (Figure 3). Their closest linguistic kin, the Owens Valley Paiute, occupied lands immediately to the south. The Western Shoshone, more distantly related in language, but with whom the Northern Paiute shared many cultural features, were their immediate neighbors to the east. To the west were the Washoe people, speakers of a totally unrelated language, but with whom the Northern Paiute also shared certain cultural traditions. Other distinct cultural and linguistic groups adjoined the Northern Paiute on the north and northwest.

Northern Paiute territory was divided into a number of local districts, one of which was occupied by the Cattail-eaters. Several principles were used to name these districts and their peoples, but a common one was to refer to the people in a district as eaters of a prominent food resource found in that district, e.g., trout, ground squirrels, marmots, jack rabbits, wild onions, or cattails. Other district names were derived from major geographic features (mountain peaks, streams, etc.) or, occasionally, well-known persons (see Fowler and Liljeblad, 1986:461–465 for details). Districts were loosely bounded, usually by the crests of mountain ranges. Each contained several traditional camping places in proximity to water and a variety of food resources. Intermarriage and patterns of short-term and extended visiting often took individual persons and entire camps to adjacent districts.

The Environment

The Tóidɨkadɨ division of the Northern Paiute held as their home district a large area surrounding the Carson Desert, some 60 miles

east of present-day Reno, Nevada (Figure 4). The Carson Desert is a major intermontane basin and is the terminus of the Carson River, which receives the bulk of its flow from the winter snowpack in the Sierra Nevada to the west. The Carson Basin contains Carson Lake, now partly a playa, but in former times an extensive, shallow lake and marsh; Carson Sink, the ultimate terminus of the lake and river systems; and the Stillwater lakes and marshes, in many sense the link between the two. At times the water budget of the Carson Desert is augmented by the flow of ephemeral streams as well as the overflow of the Humboldt River from its sink to the north. This added water supply affects especially the Carson Sink, turning it from little more than a playa in some years to a body of water over 20 miles in diameter in others (Kelly and Hattori, 1985).

The territory of the Cattail-eaters was bounded on the north by the West Humboldt Range, an uplift that separates the Carson Sink from the basin of the Humboldt River. The latter was the center of the home district of the Kíipatikadi 'Ground squirrel–eaters.' The southern boundary generally followed the crest of the Desert Mountains and the adjacent Cocoon Mountains, although this crest is not continuous and lowland areas intervene. None of these mountain ranges exceeds 6,200 feet in elevation, or roughly 2,500 feet above the Carson Desert floor. South of this area lived the Agáidikadi 'Trout-eaters' of the lower Walker River and Walker Lake, and the Tibúzitikadi 'Grass nut–eaters' of the upper Walker River. Although the Stillwater Range marks the eastern boundary of the Carson Desert drainage basin, Tóidikadi territory actually encompassed the next drainage basin and range to the east—Dixie and Fairview valleys and the Clan Alpine Mountains. On the west both the Carson Desert and Tóidikadi territory extended to an indefinite boundary in a largely dry area east of the Virginia Range (Shimkin and Reid, 1970). Beyond that range to the northwest was the Truckee River and its terminus, Pyramid Lake, which was home to the Kuyúidikadi 'Sucker-eaters,' named for an endemic fish (Stewart, 1939).

The Carson Desert is for the most part below 4,000 feet in elevation. It is largely flat, with areas of the Carson Sink varying less than 10 feet in elevation above the base of 3,860 feet. Many areas contain irregular sand hills and dunes and alkali and clay flats. Some dunes are active; others are stabilized by scant vegetation. The larger dunes form discontinuous parallel ridges that trend southwest to northeast, following the prevailing winds. They are particularly common along the base of the Stillwater Range (Morrison, 1964:5;

Kelly and Hattori, 1985:39). The area to the south and west is a slightly elevated sandy plain, but it, too, contains dune formations and patches of alkali.

The Carson River flows generally east and south through the southern and central sections of the Carson Desert, in former times creating meadows and marshes near Carson Lake, Carson Sink, and the Stillwater lakes. The river has undoubtedly changed course several times in the prehistoric past, but the most important changes in the historic period moved part of its flow away from Carson Lake toward the Stillwater lakes and Carson Sink. As the result of a major flood in 1862 not long after Euro-American settlement of the area, the Carson River opened an old, abandoned channel about four miles west of present-day Fallon that flowed north directly into Carson Sink. This became known as Old River, as opposed to the normally southeast-flowing main stream of the river that emptied into Carson Lake. In 1867, a second flood opened an additional channel that cut almost due east and emptied into Stillwater Slough, which is the connecting link between Carson Lake and Carson Sink. This became known as New River.

With Euro-American settlement and the development of irrigation systems from all of these channels, the flow of the Carson River has been greatly modified. Due to this plus upstream diversion, Carson Lake has been drying slowly since the 1870s. Additional major changes in the water system were initiated by the Newlands Reclamation Project (also known as the Truckee-Carson Irrigation Project) in 1903. Because of this project, flows from the Truckee River Basin, to the northwest of the Carson Desert, were diverted by canal to the Carson River and dammed roughly 15 miles west of Fallon for irrigation and flood control. This increased the normal flow into the area by nearly 40 percent, allowing the development of extensive agricultural areas. Again, however, the vast amounts of upstream diversion required for desert agriculture have resulted in the steady drying of the Stillwater lakes and marshes, Carson Lake, and Carson Sink, though in the wettest years some of these losses are recouped (Kelly and Hattori, 1985; Morrison, 1964; Townley, 1977).

The heart of Tóidikadi territory, the Carson Desert, is one of the driest and warmest areas in northern Nevada, due to its low altitude and the rain-shadow effect of the Sierra Nevada. The mean annual precipitation at Fallon, recorded since roughly 1900, is 4.95 inches, with three-fourths falling between December and May. Extremes from one inch to nine inches annually are not atypical. The maximum temperature recorded since roughly 1900 is 106°F and the minimum

−25°F. The daily temperature range in summer may be as much as 50°, which can stress plants not adapted to such wide variation. With low precipitation and high temperatures, humidity is very low and annual evaporation exceeds precipitation by a ratio of about 12 to 1. Snow lingers for more than a day or two only in the highest elevations, such as on the Stillwater Range. Rain may be heavy at times but is highly localized, and years may intervene before another storm occurs in the same area (Morrison, 1964:5–6).

Cattail-eater territory is divided into two primary vegetational sections, the Lahontan Basin section and the Tonopah section (Cronquist et al., 1972). The Lahontan Basin section covers the whole of the Carson Desert and extends beyond it to the north and west. Vegetation in the Tonopah section extends into the Stillwater Range and is typical as well of Dixie and Fairview valleys and the Clan Alpine Mountains.

Rather than the more characteristic sagebrush associations that typify much of the rest of the western Great Basin, the Lahontan Basin section is more commonly dominated by the little greasewood–shadscale (*Sarcobatus baileyi* and *Atriplex confertifolia*) association (Figure 5). These low-growing woody shrubs are widely spaced over much of the best-drained Carson Desert soils. Playa margins support big greasewood (*Sarcobatus vermiculatus*), pickleweed (*Allenrolfea occidentalis*), quail brush (*Atriplex lentiformis*), samphire (*Salicornia europaea*), iodine weed (*Suaeda depressa*), salt grass (*Distichlis spicata*), and other salt-tolerant forms (Figure 6). Rabbitbrush (*Chrysothamnus nauseosus*) and horsebrush (*Tetradymia canescens, T. spinosa*) occur on sandy areas away from the playas, while Nevada dalea (*Psorothamnus polyadenius*) dominates dunes, especially in the southern areas (Lott and McCormick, n.d.; Cronquist et al., 1972:90). Indian ricegrass (*Oryzopsis hymenoides*), a significant economic resource for the Cattail-eaters, is also common in sandy areas.

The various branches of the Carson River have gallery forests of cottonwood (*Populus fremontii;* Figure 7), although these may be more typical now that the river has become entrenched than in past centuries, when it spread more freely. Various species of willow (*Salix* spp.) also fringe the large and small stream channels. Marsh plants that occur where streams slow or spread out, as formerly near Carson Lake and at Carson Sink and the Stillwater lakes, include American bulrush (*Scirpus americanus*), hardstem bulrush (*S. acutus*), alkali bulrush (*S. maritimus*), cattails (*Typha domingensis, T. latifolia*), and a variety of rushes (*Eleocharis* spp., *Juncus* spp.; see Figure 22).

Some areas, particularly range slopes or elevated plains, support

Figure 5. *Vegetation of the Carson Desert: mixed greasewood-shadscale association.* Photograph by Bill Germino, 1989. Courtesy of Intermountain Research, Silver City, Nevada.

Figure 6. *Vegetation of dunes and playa margins, Carson Desert, Nevada.* Photograph by Bill Germino, 1989. Courtesy of Intermountain Research, Silver City, Nevada.

Figure 7. *Fremont cottonwoods, typical of stream margins in the Carson Desert.* Photograph by Bill Germino, 1989. Courtesy of Intermountain Research, Silver City, Nevada.

Figure 8. *Pinyon-juniper woodland with a meadow in the foreground, central Nevada.* Photograph by C.S. Fowler, ca. 1980.

the big sagebrush (*Artemisia tridentata*) association, especially where fresh water is close to the surface (Cronquist et al., 1972:90). Grasses such as Great Basin wild rye (*Elymus cinereus*), wheatgrass (*Agropyron* spp.), lovegrass (*Eragrostis* spp.), and Indian ricegrass also occur in this community. Most persist at higher elevations, such as in the Stillwater Range and the Clan Alpine Mountains, where Utah juniper (*Juniperus osteosperma*) forms sparse to open stands. Singleleaf pinyon (*Pinus monophylla*) is rare in the Stillwater Range today, but more common in the Clan Alpine Mountains (Figure 8).

The Tonopah vegetational section, which includes the Clan Alpine Mountains, Dixie and Fairview valleys, and points south, is in many ways similar in flora to the Lahontan Basin section, with shadscale, big sagebrush, and black sage (*Artemisia arbuscula* var. *nova*) as the principal dominants. These plants form a mosaic from about 5,000 feet to the tops of the lower ranges, with the pinyon-juniper association extending from 6,000 to 8,000 feet. The Clan Alpine Mountains were particularly favored by the Cattail-eaters for their pinyon reserves, while Dixie Valley proper had rich stands of Indian ricegrass. Many other plants that served as food resources for the people were found throughout both vegetational sections.

The animals of the Carson Desert and Tóidikadi territory generally are nowhere numerous, except for waterfowl found in the marshes and lakes at breeding and nesting time. In former times, small fish were common in the river. Waterfowl that either are resident or visit the area for breeding and nesting include the American White Pelican (*Pelecanus erythrorhynchos*), American Avocet (*Recurvirostra americana*), Mallard (*Anas platyrhynchos*), Northern Pintail (*A. acuta*), Green-winged Teal and Cinnamon Teal (*A. crecca, A. cyanoptera*), Redhead (*Aythya americana*), Canvasback (*A. valisineria*), Canada Goose (*Branta canadensis*), American Coot (*Fulica americana*), and many more. Unlike neighboring Northern Paiute districts to the south and west that contained streams and lakes supporting large game fish such as the Lahontan cutthroat trout (*Salmo clarki henshawi*), the fish of the Carson River seem to have been largely small species, such as the tui chub (*Gila bicolor obesus*). The remains of larger fish have been found in archaeological sites in the area, but they seem either to have occurred at times when the lakes were deeper (prior to 5,000 years ago) or to have been carried in from adjacent basins to the south and northwest (Smith, 1985).

Large mammals are sparsely distributed in the Lahontan Basin vegetational section but are more common in the Tonopah section,

where in some places forage is better. Deer (*Odocoileus hemionus*), pronghorn (*Antilocapra americana*), and mountain sheep (*Ovis canadensis*) were principal large game species, but all were rare. The region contained far more small game, such as ground squirrels (*Spermophilus beecheyi, S. beldingi, S. lateralis, S. townsendii*), yellow-bellied marmot (*Marmota flaviventris*), wood rats (*Neotoma cinerea, N. lepida*), jack rabbits (*Lepus californicus, L. townsendii*), cottontail (*Sylvilagus nuttallii*), badger (*Taxidea taxus*), and others. Land birds included the Sage Grouse (*Centrocercus urophasianus*), Mountain Quail (*Oreortyx pictus*), Mourning Dove (*Zenaida macroura*), and other species. Insect resources, several of which were favored as food, included the Mormon cricket (*Anabras simplex*), white-lined sphinx moth (*Hyles lineata*), cicada (*Okanogoides* spp.), and others.

Microhabitats were highly significant to the Cattail-eaters as they hunted and gathered their subsistence resources. Knowing where to find a particular species and at what time of the year conditioned collecting strategies as well as camp movements. The people followed an annual cycle governed largely by the seasonal availability of foods. Each family group had a series of places that it frequented for different plant, mammal, bird, fish, and insect resources. Although this pattern had been altered significantly by the time Wuzzie and Jimmy George were born, they were heirs to a considerable amount of knowledge of how the Old People had made a living in this region. They participated in certain aspects of that lifeway, including those that involved the use of tule technology.

The Precontact Cultures

Although the details of Cattail-eater life prior to the arrival of Euro-Americans in the mid-nineteenth century are not fully known, enough has been learned to outline the general pattern. Some of what is known comes from information provided by Wuzzie and Jimmy George and their immediate ancestors and relatives (Lowie, 1924; Stewart, 1941; Fowler, 1989; Shimkin and Reid, 1970). Following is a brief outline of the seasonal round and other cultural features of Cattail-eater society. Additional details will be found in subsequent chapters.

In the spring, the Cattail-eaters would be found living in family-based camps near permanent water sources, for example, along the lower courses of the Carson River near Carson Lake, along the Stillwater Slough and lakes, and near Carson Sink (see DeQuille, 1963, for an excellent historical account). They had passed the latter part of winter living on foods stored during the previous summer and fall, as well as by hunting waterfowl; they fared well in some years, badly in others.

Among the first foods to emerge in spring were the new shoots of tules (*sáibi*) and cattails (*tóibi*)—white and crisp, like stalks of celery. These were eaten fresh and the stringy pith discarded. In the sandy areas away from the marshes the leaves of prince's plume (*timádi; Stanleya pinnata*) and carved seed (*kam·í sigí; Glyptoplura marginata*) provided spring greens to be boiled (prince's plume) or eaten raw (carved seed). Some areas had wild onions (*tízi, síi, móa; Allium* spp.), the leaves and sometimes the corms of which were eaten. Some women went to the Stillwater Range and Dixie Valley for several of the roots and bulbs that emerge in March and were harvested through May. Included were butter ball (*yadíci; Cymopterus* sp.), spring beauty (*hiŋí; Claytonia umbellata*), bitterroot (*kaníd·a; Lewisia rediviva*), onion (*padízi; Allium* spp.), sego lily (*kogí; Calochortus nuttallii*), Nevada desert parsley (*tagí; Lomatium nevadense*), and Bolander's yampa (*yab·á; Perideridia bolanderi*). All of these were roasted in sand pits or eaten raw. Many were saved for later by being packed in skin or rush bags that were brought back to camp, where they were cached in pits lined with cattail leaves or grass.

Spring is also the time for ground squirrels to come out of hibernation and for migrant waterfowl to begin returning to the area. Men took several species of ground squirrels, the Cattail-eaters' favorite being Townsend's ground squirrel, in rock traps set in multiples so as to form trap lines. Men also shot with bow and arrow or netted Mallard (*kudáa*), Redhead (*acákudaga?yu*), Northern Pintail (*wigʷás·i*), Northern Shoveler (*igom·óbi?i*), Cinnamon Teal (*acásogobihi*), Green-winged Teal (*sogóbihi*), American Wigeon (*imúduyu*), American Coot (*sayá*), and other waterfowl in the marshes and shallow lakes. These were often pit-roasted, sometimes after having been encased in wet clay. When a family had more than it could readily consume, certain of these species were split, sun-dried, and stored for later. Women collected the eggs of most waterfowl, which were boiled in baskets using hot stones (stone boiling), roasted under the fire, or buried in cool mud for later use.

As the days became warmer in June, early seeds began to ripen. These included mustard (*acá; Descurania pinnata*) and white stick-leaf (*kuhá; Mentzelia albicaulis*). Both were found in sandy areas away from the marsh. Patches were within an easy day's walk from camps, so women rarely had to spend the night away from camp, as they might on root-gathering trips. On collecting trips they took with them the implements of seed harvesting, including willow seed-beaters, close-twined cone-shaped gathering baskets, and larger, close-twined winnowing trays. All of these willow products had been made or repaired over the winter in preparation for the spring and summer harvests. Once the seeds were back in camp they were winnowed, ground into flour on large, flat metates with smaller hand stones (manos), and made into mush by stone boiling. The surplus seed was carefully stored for later.

In June and July other seeds ripened, such as Indian ricegrass (*wái*), Great Basin wild rye (*wahábɨ*), and silver sage (*sunú; Artemisia argentea*). Cattail pollen was also ready to harvest. August was the time for collecting seed from varieties of sunflowers (*páaki, akɨ́, káiba akɨ́, kusí akɨ́,* etc.; *Helianthus, Wyethia, Balsamhoriza* spp.) along the fringes of the hills and in the mountains. It was also the period when most of the waterfowl molted, and drives of flightless birds could be held. Particularly favored was the American Coot, or mud hen. Large numbers were herded together and driven toward shore by men in tule balsa boats. There they could be dispatched with sticks or shot with arrows and gathered into burden baskets for transport to camp. Those not immediately consumed were split and dried for later use.

During the summer and fall, forays were made into the Stillwater Range and the Clan Alpine Mountains for deer and mountain sheep. Men hunted with partners or in small groups and returned the dismembered carcasses to the valley camps. In some years there might be an antelope drive in the flats west of Carson Lake or in Dixie or Fairview valleys. These communal hunts attracted several camps, all of whose members were directed by the antelope shaman, a person with special powers. He organized the hunt, enticed a small herd into a corral trap through his power songs, and oversaw the killing of the animals by those present. Deer, mountain sheep, and antelope were not common in the region; more time was spent by Cattail-eater men taking waterfowl and small game and fishing than searching for large game.

Fishing was a year-round activity, but unlike neighboring areas, such as the Walker River–Walker Lake Basin and the Truckee River–

Pyramid Lake Basin, the Carson Basin seems not to have had an abundant supply of large fish, at least in its lower reaches. More common were the tui chub (*tuí pagʷ·í*) and the Tahoe sucker (*aʔwáago; Catostomus tahoensis*), large enough to be satisfactory food fish. They were taken with hook and line, or during runs with large dip nets and gill nets set in the river, slough, or lake.

Fall was the time for harvesting the nuts of singleleaf pinyon in the Stillwater and Clan Alpine ranges. In good years, families and whole camps moved to these areas for a month or perhaps even the winter and built substantial conical earth-covered houses to withstand the cold and snow. While men hunted and trapped what they could, women prepared soups of these meats plus shelled, ground pine nuts. When meat ran short, men returned to the marshes for a supply of ducks to sustain the mountain camps.

In the lowlands, men prepared fiber nets for the November communal rabbit drives. Several areas west of Carson Lake and west and southeast of Carson Sink were worked by hunters and their families. Nets were set out in great arcs of as much as 300 feet, and people forced the hares (*kam·í; Lepus californicus*) to move toward them by walking systematically and noisily through the brush. Each person took his/her catch from the nets, and the hares were skinned and the surplus dried for later use. The pelts were in prime condition at this time and after being cut into strips would be woven into blankets for winter. A rabbit captain directed the five days of the hunt. The first night, and optionally thereafter, a dance was held to celebrate the catch and introduce any visitors from surrounding areas. This was a time for courtship and marriage, as was the fall pine-nut harvest festival (Lowie, 1924).

During winter, men set out decoys for Canvasback (*tohácakʷaadi*) and other winter visitors. They hunted the Canada Goose (*nagíta*), White-fronted Goose (*pibúgʷ·azaʔa*), Tundra Swan (*wohíd·a*), Snow Goose (*sáigos·a*), and the always abundant Redhead (*acákudagaʔyu*). They also shot and snared cottontail (*tabúʔu*) and other small mammals. Women went to the alkali areas for seeds of pickleweed (*kuhána*), iodine weed (*wadá*), kochia (*yanóka*), and alkali bulrush (*abí*). The latter could be taken in abundance from fall through winter in nearly all moist places. A unique feature of the Carson Desert was that it provided access to supplies of fresh winter seeds. This undoubtedly made it attractive year round—in spite of its seeming harshness.

During much of the year the people lived in dome-shaped cattail houses. These were constructed of cattail mats over willow frames,

and their dimensions varied according to the sizes of the families they needed to accommodate. From three to 15 or so houses made up a semipermanent camp. In addition to these houses Cattail-eaters constructed summer windbreaks—semicircular brush-walled structures without roofs that served as cooking and storage areas, summer sleeping quarters, and primary shelters at temporary camps. Camps were located near potable water and fuel supplies, big greasewood being the favorite.

The Cattail-eaters wore clothing suited to the seasons. The material depended on the availability of game animals, especially deer, antelope, and mountain sheep. If a hunter was successful in obtaining large game, the adults in his family were clothed for the winter in skins—a shirt for men and a thigh-length dress for women. If he was not successful, his family wore clothing of twined sagebrush bark, tules, or rushes—again, a shirt for adult men and a dress for women. In the summer, men removed their shirts and wore only a breechclout or loincloth of skin, sagebrush bark, or rushes. Women wore in summer a front and back apron or only a front covering, often of rushes or mud-hen skins. Both sexes wore beads made from local mollusk shells and duck and pelican bones. They traded with neighboring groups for coastal *Olivella, Oliva,* and abalone shell beads. Duck-feather headbands and belts were worn as well. When engaged in hunting or collecting, men and women wore caps as head protection. Men's caps were of mammal skins, often with the fur remaining; women's hats were made from twined willows. A hat of woven sagebrush bark or tules was an alternative for men in winter (Stewart, 1941). Prepubescent children were naked except for beads and belts. They and adults had rabbit-skin capes for winter wear, especially when in camp. These doubled as blankets for some individuals in winter, although others made blankets especially for sleeping. Coot- and pelican-feather capes and blankets were alternatives to those of rabbit fur. Footgear included tule, rush, or sagebrush sandals, or, if available, skin moccasins.

From birth to death an individual was surrounded by a network of kin, including members of his/her nuclear family, a larger group of close relatives, the camp group, and various friends and relatives at greater distances. Of these units, the most important was the immediate family, usually consisting of parents and siblings, but also often including a widowed grandparent and married siblings along with their spouses and children. Related families might share adjacent houses, although a camp, if large, usually contained some persons

not related by birth or marriage. It was from this larger camp group that hunting and gathering partners were usually chosen, but when it came to marriage for the young people, nonrelatives were selected. For all practical purposes, each family was responsible for its own subsistence needs, as well as clothing and shelter. Sharing was a positive value, and if large game animals or several rabbits, ducks, or fish were taken, they were distributed to others in the camp. Given that all other members did the same, one could count on reciprocity; thus individuals rarely went hungry. Only persons too lazy to contribute fell outside this pattern, and they might well be told to move on after a short time.

Food resources not only were shared when obtained, but also were considered to be the property of all before they were harvested. Only pine nut–collecting areas were thought to be the private property of individual families, and rights to harvest in certain localities were passed down through the family. Seed-collecting areas, waterfowl areas, and fishing places were open to all camped in the vicinity. Relatives and visitors from other areas usually asked permission before gathering or hunting in others' areas, but permission was nearly always granted. Likewise, when Cattail-eaters went to Pyramid Lake at the time of trout and cui-ui runs or to Walker Lake for trout, they asked their local hosts' permission to fish. They often returned to their camps in the Carson Desert with as much as they could carry from these adjacent areas (Fowler, 1989).

Leadership of camp groups and of persons in subareas within Cattail-eater territory occurred mostly in the context of communal tasks, although a respected senior person often acted as advisor and as a focal point for discussions of internal or external difficulties. There seems to be little reason to suggest that leadership of all people called Cattail-eaters was vested in one person in the distant past. Rather, local camps had their headmen, and specific tasks such as rabbit, coot, and antelope drives had their own organizers and leaders. The latter had skill in conducting such drives and perhaps had special powers as well. In the postcontact period, men with a good command of English were sometimes put forward as spokesmen to Euro-Americans. Although often called "chief" or "captain," their authority over others appears to have been slight.

Most Cattail-eaters felt that the potential for supernatural power resided in any natural object, including animals, plants, stones, water, and geographic features. Power habitually resided in natural phenomena, such as the sun, moon, thunder, clouds, and wind. Any

individual could seek power to help with hunting or other everyday tasks, but only doctors were considered to possess sufficient power to cure people or conduct a hunt for antelope.

Both men and women could be doctors. Having received an initial power through dreams, they subsequently sought additional helpers or received them unsought. They called upon their powers to help cure specific illnesses, in which they often specialized. Unless they followed the directions of their powers to the letter, especially in terms of food taboos or other restrictions placed upon them by the powers, they could lose them. Once lost, the powers could rarely be retrieved, and the person could no longer cure.

Related to the concept of power as potentially resident in many natural things were concepts about the value of all life forms and the need to pay proper respect to animals and plants seen or killed and places visited. All game was addressed with a prayer when killed; plants such as pinyon were offered words or a tangible token of esteem when gathered. Persons entering an area for the first time asked any spirits residing there for permission to pass or camp. Although this body of doctrine usually did not generate group ritual or ceremony, the actions it prescribed were commonly practiced by individuals and were illustrated in sacred oral traditions. There was an extensive repertoire of myths and legends about the time when animals had the power of human speech, set about creating the various features of the world, and ordained customs for humans to follow; the telling of these myths was a common way of passing long winter nights. Around campfires, gifted narrators told these stories and sang accompanying songs with practical lessons for all to follow. Children and adults learned much of what was or should have been proper behavior through the animal adventures related.

Group ceremonies and dances were held at the time of pine-nut harvests, during rabbit, antelope, and coot drives, at the time of a girl's first menses, and at times during the year when people wanted to socialize with individuals other than their immediate neighbors. The round dance, with persons moving clockwise in a big circle with hands joined, was the most common dance at such times. On occasion, clowns enlivened the activity between dances, and games of several types were played. Guessing games such as the hand game and various forms of basket dice, footraces, a game like field hockey, and many other games lightened up more serious occasions and were standard features of social and ceremonial gatherings.

Apart from these occasions, when people celebrated with a

number of others, individual families handled by themselves other activities such as those connected with the birth of a child, the coming of age of a young boy or girl, or the burial of a camp or family member. Although others in the immediate vicinity might lend help or supplies, the family was directly responsible. Individuals also were responsible for their own relationships with the spirit world, and apart from those people who were known to have power for curing or obtaining game, these relationships were private. In all, however, knowledge of the environment and its many features, physical and spiritual, was the mark of a successful person. Each Cattail-eater could be counted on to contribute his/her knowledge when it was needed for the well-being of others.

Euro-American Settlement

The culture of the Cattail-eaters as it is described here is reconstructed from ethnographic and historical accounts, and represents Cattail-eater practice during, roughly, the period from 1800 to 1830. After that time, a series of events that began elsewhere in western North America set in motion changes that affected aboriginal cultures in various ways. Primary among these events was the "opening of the West" by non-Indians—Spaniards, French, British, and Euro-Americans—as they searched for furs and other riches. Then came the discovery of gold and silver in California and Nevada, which at first attracted numerous travelers to the region and finally brought settlers.

The Carson Desert—or Lahontan Valley, as the settled area would come to be called—seems to have been first visited by non-Indians in about 1830, although others who did not leave records may have been there previously. In 1830, Peter Skene Ogden, a trapper for the Hudson's Bay Company on his third trip down the Humboldt River in search of beaver, passed from the Humboldt Sink into the Carson Sink and on to the Carson River. He and his group were followed three years later by the party of Joseph Reddeford Walker, trappers and explorers on their way to Mexican California. Both Walker and Ogden had trouble with Northern Paiute people in the Humboldt Sink, but say little in their diaries about encounters with

the Cattail-eaters. Nonetheless, the Cattail-eaters undoubtedly were aware of the presence of these and other strangers in their districts long before actual communication took place. Ogden's and Walker's exploring activities pioneered a trail across the Carson Desert that would be used later by emigrants from the East (Townley, 1977:2–3).

In 1841 the first wagon train bound for California on the Overland Trail left the Humboldt River at the sink and went on to the Carson River route established by Ogden and Walker. The Bartletson-Bidwell party, some 33 strong, made its passage across what would come to be called the Forty Mile Desert, not finding it easy. The party was rewarded at Carson Lake by "Indians who supplied them plentifully with fish and pinenuts" (Bidwell, 1890:127). But the party disdained the fish, suspicious of the alkaline lake waters. Other small parties were guided along this trail, some by Walker himself, until 1848.

In 1848, gold was discovered in California, and what had been a trickle of emigrant trains passing over the Overland Trail's most southerly branch (through the Forty Mile Desert and along the Carson River) soon became a flood. By the early 1860s, some 80,000 to 100,000 people had gone west to California, most of them through the Carson Desert. The hardships of this particular stretch were enormous, especially in years when many people and wagons and thousands of head of stock had exhausted the resources of the Humboldt River and the Humboldt Sink, thus leaving little for others crossing the desert. In 1850, when an estimated 45,000 people crossed, most by the Carson River route, the Forty Mile Desert contained by count 9,771 dead animals, 3,000 abandoned wagons, and 963 graves (Stewart, 1962:301). Given that the trail passed somewhat west of Carson Sink, Carson Lake, and the lower reaches of the Carson River, the environmental devastation of those areas may not have been as drastic as it was for the Humboldt River and the Humboldt Sink. Northern Paiute populations had been largely displaced from the once-lush margins of the Humboldt River, and by then had begun to prey on emigrant stock for food (Fowler and Liljeblad, 1986). Cholera and other diseases brought to the area by the emigrants may well have affected the population of Cattail-eaters, too. Certainly a chain of events had been set in motion that would have more drastic consequences.

The first permanent settlers along the lower Carson River were the family of Asa Kenyon, who took up residence at the site of

Ragtown in 1854 (Figure 9). Ragtown, seven miles west of present-day Fallon, was the first point where emigrant parties struck the Carson River after crossing the Forty Mile Desert. The Kenyons, an enterprising lot, sold fresh stock and supplies to people for the last push up the Carson and over the Sierra Nevada to California. Kenyon also reportedly enlisted local Indians to pilfer stock from the emigrants, which he then "recovered" for a fee (Townley, 1977:3). Although most of his business was confined to summer and fall—the seasons of heaviest emigration—he apparently made enough from his various activities to build a hotel (Angel, 1881).

The late 1850s saw continued activity along the Overland Trail, including the Carson River route. The early Mormon settlement in Carson Valley required some regular contact between its inhabitants and Salt Lake City. A mail and stage line developed, using Ragtown as its Carson Desert base. But in 1859, Captain James H. Simpson, of the Corps of Topographic Engineers, began developing a new route from Salt Lake City through the central part of the Utah and Nevada territories, away from the Humboldt River and the dreaded Carson Desert. This route entered Cattail-eater territory through a pass called Middle Gate, passing through Dixie Valley and around the south end of Carson Lake. In June of 1859, after coming this far, Simpson (1876:85) encamped at Carson Lake and made the following observation:

> Cerlew, pelican, and ducks, and other aquatic birds frequent the locality, and the lake is filled with fish. A number of Pi-utes, some two dozen, live near our camp, and I notice they have piles of fish lying about drying, principally chubs and mullet. They catch them with a seine. Their habitation consists of flimsy sheds, made of rushes, which screen them from the sun and wind. They present a better appearance than the Diggers we have seen, both in respect to clothing and features. Indeed, they act as if they had been in contact with civilization, and had to some degree been improved by it. The duck-decoys they use on the lake to attract the live ducks are perfect in form and fabric, and I obtained a couple for the Smithsonian Institution.

Simpson's new route was improved by army detachments, who augmented springs and put in signs. Given that it was shorter and a little less rigorous than the Overland Trail, Simpson's route was followed by the pony express, Union Telegraph, and the Overland

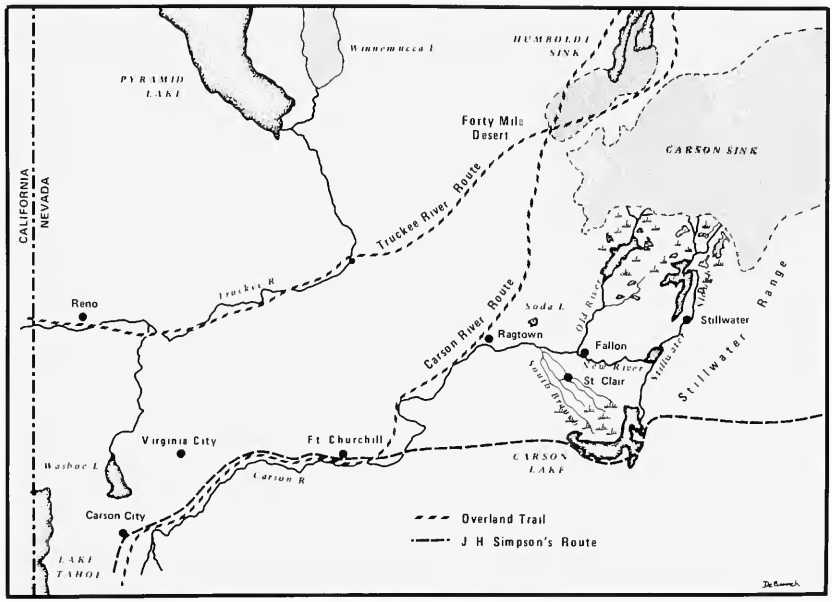

Figure 9. *Postcontact historic trails and settlements, western Nevada.* Map by Patricia DeBunch.

Stage Company in the early 1860s (Townley, 1977:4). The discovery of silver and gold in central Nevada also increased traffic over this route.

In 1859, silver was discovered near Virginia City, west of the Carson Desert, and a surge of emigration into the region took place. The Carson River began to be developed along the whole of its length for its ranching potential. There was a great need to feed the resident miners and the families of Virginia City, and large quantities of pasturage were required for cattle and horses. The lush meadows of the lower Carson River, especially from Ragtown to Carson Lake and along Stillwater Slough, became prime areas for settlement.

The first settlers in these areas combined raising livestock with transporting freight over the new east-west road. They also marketed hay and stock to the Overland Stage Company, the pony express, and various passers-by, and sold beef in Virginia City and in the camps to the east of the Carson Desert. For the most part, they depended on naturally occurring meadows and grasses for fodder, rather than augmenting them with irrigation. They soon displaced Indian camps and villages from these same sites, probably causing them to move at first into less desirable areas. But the Indian people

would eventually return to the settlements to become ranch hands and general laborers.

In 1858, federal Indian agent F. Dodge visited Carson Lake, and Carson Sink and Walker River as part of a general survey of western Utah Territory to ascertain the condition of the Indians (Dodge, 1860). He reported that, at the time, native groups in that area were the largest in the district, totalling 1,675 people. They were organized under three headmen: O-duk-e-o 'Tall Man,' Pe-tod-se-ka 'White Spot,' and To-sarke 'Gray Head.' The high ratio of men to women and children counted by Dodge (848 men, 372 women, and 405 children) might indicate either that men from other areas were seeking refuge in the Carson-Walker area as the difficulties of contact in other areas increased, or that women were in hiding—a common occurrence of the day. If the latter was the case, the actual population of the Carson-Walker area would have been considerably higher. The people were reported to be in good condition, but feeling some of the effects of the alien presence such as disease, displacement, and environmental deterioration.

In 1860, J.J. Cushman and Dave Wightman established ranches on the South Branch of the Carson River, below Ragtown. They operated in addition a freight station at Mountain Wells, a lush area in the Stillwater Range with access to the new road and the mines in the area. They seem to have been the first to record hostile encounters with the local Indians. While cutting and transporting hay, they were fired upon and chased by Indians. Elsewhere during that year, major disturbances occurred at Pyramid Lake and there were other minor incidents. To quell anticipated uprisings, the army established Fort Churchill on the central Carson River, some 25 miles west of present-day Fallon. Hostilities in the Carson Desert seemed to be minor in the years following.

In 1861, the family of James St. Clair took up a ranch in another location on the South Branch. Others settled at Ragtown in the same year. In connection with the new road, a toll bridge was erected on the Stillwater Slough and operated by Ellen Redman. A second was operated by W. Grimes farther to the south, and yet another toll bridge was set up by St. Clair and J.J. McClellan at Old River (Angel, 1881:361). In that same year, Virginia City journalist William Wright (whose pen name was Dan DeQuille) and two companions made a grand swing through the whole of the Carson Desert, including the Stillwater Mountains. Wright's account, titled *Washoe Rambles*, is the best description of the location and culture of the Cattail-eaters of

that time. Like Simpson, he comments on the Cattail-eaters' extensive use of marsh products. Also like Simpson, he notes in some detail the effects of contact: several men spoke English and Spanish; they knew of tobacco, flour, and other non-native foods; they had some familiarity with horses; and they were in contact with the few settlements in the district. Wright feared on a few occasions that hostilities might occur, but his fears proved to be unfounded.

In 1862, James W. Richards, who would later operate stores at Stillwater and Fallon and become an important individual to the Cattail-eaters, established a ranch along Old River, opened that year by the flood. By 1862 there were also several ranches scattered along Stillwater Slough, which still connected Carson Lake and Carson Sink. Additional families, including those of Lemual Allen, William Harmon, and Charles Kaiser, continued to locate near Old River, New River, and Stillwater Slough throughout the 1860s and 1870s. The prime ranch area on the South Branch became known as St. Clair. The town of Stillwater, on the slough, was founded in 1862; in 1868 it became the seat of Churchill County, which had been formed by an act of the Nevada territorial legislature in 1864. In 1868, Stillwater had a non-Indian population of 150 (Angel, 1881:364). In 1865 it was reported that 30,000 acres of native hay had been cut in Lahontan Valley. In 1866 the ranchers began cutting stands of tules and cattails to enlarge the meadows and improve grazing (Townley, 1977:8). These activities directly affected the Indian people's subsistence resources and set in motion additional processes of culture change.

Completion of the Central Pacific Railroad in 1869 caused some decline in growth in the area, as the line bypassed the valley and made transportation of its many resources by other means too costly. Activities shifted away from the area, and in 1870 the official census showed a population of 196 residents, an apparent decline.

During the 1870s, however, the cattle industry in the area showed some growth. Much of this was due to the beginning of summer grazing on the Stillwater Range and winter grazing in the Carson Sink. Ira Kent and Warren Williams, with ranches near Stillwater, were prominent in developing this practice. Williams and Charles Kaiser began importing sheep into the area in 1871, and soon had herds and herdsmen in the Clan Alpine Mountains and the Stillwater Range. All of these grazing activities must have had a devastating impact on the seed- and root-collection grounds of the Cattail-eater families in the vicinity, fostering their dependence on the ranches for a livelihood. In the 1870s, an Indian colony grew up on land

near the Kent ranch, north of Stillwater, and many families moved there looking for jobs on nearby ranches. Some, including local headman Captain Breckenridge, worked in the town of Stillwater. Breckenridge worked in John and Nancy Sanford's hotel for 14 years before he retired (Townley, 1977:10).

By the late 1870s, many more acres in the region were under irrigation and were fenced to control access. Cultivation of fields of alfalfa and other crops required labor, and displaced Cattail-eaters, who already served as stock tenders, became involved. Home ranches grew in size and complexity, and Indian women became employed as cooks, domestics, and wood gleaners. The people were paid in meals, as well as in raw foodstuffs and cloth. The three major settlement areas remained focal points for these activities, but there was considerable traffic among them. Water diversion, including new controls on what reached Carson Sink via Old River, was drying all the remaining marshes. Cyclical droughts caused further depletions of fish, native plants, and waterfowl, making the new way of life the only viable option. But some people continued to take basic subsistence items in the old way throughout the period and well into the new century.

In 1893 the federal government, acting through the Bureau of Indian Affairs, acquired and distributed to Churchill County Indians some 30,000 acres of land, principally between Old River and Stillwater Slough, but excluding those prime areas already taken up by Euro-American ranchers (Figure 10). Under provisions of the Dawes Act of 1887, 160 acres of this land, intended for farming and stock grazing, was issued to each head of household. Thus was established the first Fallon Reservation. But much of the land proved too alkali to cultivate, and water was not readily available to put the remainder into production. Few tools and animal teams were supplied to the people for cultivation. Thus, well into the next century, many families continued to work on the ranches and in other businesses in the district (Townley, 1977; Rusco and Rusco, 1986).

In 1894 Jim Richards moved his store from Stillwater to a small crossroads at New River, on Mike Fallon's ranch. Several Indian families moved with him, as they had been working for him and depended on the goods he provided. The crossroads was in fact first called Jimtown in his honor, because the Indians so designated it (Townley, 1977:15), but later it was renamed Fallon. Eventually a townsite was laid out, and others arrived. Fallon became the official county seat in 1903, taking that honor from Stillwater. In 1903 also,

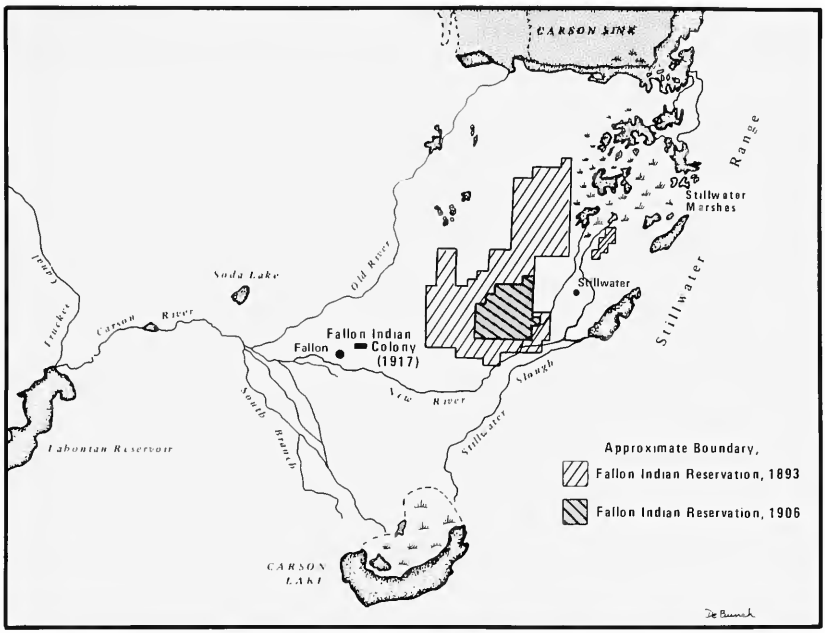

Figure 10. *Location and general extent of the Indian reservations near Fallon, Nevada.* Map by Patricia DeBunch.

work was begun on the Newlands Reclamation Project, which would ultimately involve the joining of flows from the Truckee River and the Carson River and the building of Lahontan Dam on the Carson. It would usher in a new era for the county and its Indian residents. Many of these events would be part of the lives of Wuzzie and Jimmy George.

The George Family

The families of Wuzzie and Jimmy George can trace their histories back to the period of non-Indian exploration and settlement of the Carson Desert. Their parents, grandparents, and great-grandparents—about as far back as the Georges could recall hearing of specific relatives—worked for many of the non-Indian families that were the first and/or prominent settlers of the area. But at the same time, they also continued to practice the lifeways of the Old People—all those countless generations of Paiute people who had learned to make a living from the desert, the lakes, and the marshes. It is from the oral testimony of Wuzzie and Jimmy George as well as from a few documentary sources that we learn of their families and something of the nature of the changes that their relatives experienced.

The Early Years

According to family tradition, Wuzzie George's great-grandfather, whose name no one could recall,[1] was from Agáidɨkadɨ territory, near Walker River and Walker Lake. One fall, perhaps in about the 1820s, he came north to the Stillwater region to attend a rabbit drive and dance. There he met a young woman who was a Cattail-eater. The young man stayed in Stillwater and married the young woman. From the marriage two children were born, a boy and a girl. The boy was called Pawígiadɨ 'Meets at the Water' by his parents and relatives, but the girl's name was not recalled. After a few years, their father left their mother and took the two children with him to Walker River. He married a woman there and began to raise another family. After the first baby was born, the father returned his first two children to their mother in Cattail-eater country, but kinship ties remained to remind both families of their distant relationships.

The young boy, Pawígiadɨ, grew up during the time of early

exploration of the Carson Desert and the traverses of the trails west of its heartland at Carson Lake, Stillwater, and Carson Sink. He learned to hunt large and small game and waterfowl and to fish in the river. It is said that to make himself a better hunter, he ate ground chips of obsidian, from which arrow points were fashioned (Wheat, 1967:21). This gave him a special ability to hunt large game, and he was always a good provider.

Pawígiadɨ married a local woman named Yabᵓátoniga?a 'Yampa Flower,' who would later be called Mattie by the ranchers. Pawígiadɨ's name also would be changed to Stovepipe, allegedly by Jim Richards, who built his ranch on Old River in 1862 and later moved to Stillwater. Mattie was already grown before she saw her first Euro-American man, probably in the late 1840s. She told of seeing wagons coming "like a river"; there were so many that she wondered if they would ever stop. They were passing through the Carson Desert west of where she was, and she did not actually get close to them.

As settlers began to move into the area, Stovepipe and Mattie were beginning to raise their family of five children. During this time they apparently were able to make a living much as their ancestors had. They lived at a place in the marshes called Tonómɨpɨda, named for the abundance of greasewood (*tonóbɨ*) that grew in the area. According to Mattie, there were lots of people there at that time, occupying more than 20 cattail houses. There were so many that in the morning the smoke from their fires was "all over, thick-like."

Wuzzie George was told by her grandmother, Mattie, that one fall, at about the time of the Pyramid Lake War (1860), Stovepipe and she were camped in the Stillwater Range, gathering pine nuts. Word reached them that many of the Indian people along the Carson River and Stillwater Slough had been "poisoned," and most had died. Some said that it was because of troubles such as the Pyramid Lake War, and that the poisoners were the soldiers at nearby Fort Churchill, who had dumped something into the river. Others were less clear, but whatever happened, many were said to have died, in particular near the Stillwater lakes at a place still called Nɨmɨ ?ohó 'People's Bones.' After that time, there were many fewer Cattail-eaters in the area.[2] Stovepipe and Mattie escaped this fate because they were away gathering pine nuts. Fearful upon hearing of the deaths, they decided to remain in the high country for a year. When they came back down to their Stillwater home area, settlers were taking up ranches along the newly opened Old River channel, along Stillwater Slough, and on the South Branch near Carson Lake. In time, although it is not

known how quickly, Stovepipe and Mattie took up residence in an area north of the town of Stillwater that began to be settled in the mid-1860s. Unlike their home in the marshes, this new place had no name.

Stovepipe and Mattie had five children, among them two girls named Mattie and Suzie. One of their elder brothers had married a woman with a boy by a previous marriage who was known as Billy Springer,[3] and Billy Springer, Mattie, and Suzie were raised together in the area that later was known as the "Indian Village," near Charles Kaiser's ranch. Kaiser began his ranch at Stillwater in 1870 (Angel, 1881:368). Mattie and Suzie would have been born in the mid- to late 1850s, and Billy Springer perhaps in the 1840s.[4]

When Mattie grew up, she married a man named Tohakus·a, 'White Pants.' Tohakus·a's father, like Stovepipe's, came from the Walker River country, or perhaps a little farther south, around Mono Lake, where people were called Kucábitɨkadɨ 'Brine-fly larvae–eaters.'[5] His name was Cigɨda?a. Tohakus·a's mother was from Stillwater but also stayed at Humboldt Sink, where she had relatives. Her name was Poyúhabunu?u 'Runs Fast,' because she was the swiftest runner in the shinny game.[6] Tohakus·a had begun working at Charles Kaiser's ranch in the early 1870s and had met Mattie there. Charles Kaiser gave Tohakus·a the name Sam Dick.

Ranch Life

Sam Dick herded sheep for Kaiser in Dixie Valley. Kaiser always sent him out with a non-Indian, and thus Sam Dick soon learned English. Kaiser also gave him a wagon and team, with which he hauled pinewood fuel and juniper fence posts to the ranch. He cut these in the Stillwater and Clan Alpine mountains, which he already knew well. Through his mother's side of the family, he had inherited the right to gather pine nuts in the central Stillwater Range, at a place south of Jobs Peak called Páumahaba 'Rain Shade.' He went there many times with his family. Sam Dick and other Indian workers helped fence the Kaiser acreage and generally worked around the place at haying and with the cattle (Figure 11).

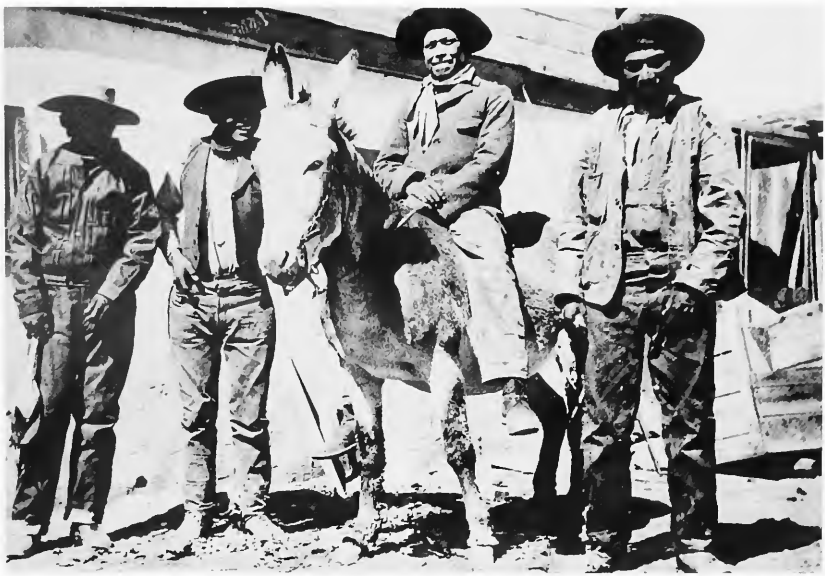

Figure 11. *Indian cowboys on the Freeman ranch, Stillwater, Nevada, ca. 1890–1900.* Photograph by Mary Freeman. Couresty of Special Collections Department, Getchell Library, University of Nevada, Reno.

Sam Dick and Mattie's marriage produced a daughter, Mammie, in about 1879. At about the same time, Sam Dick took as his second wife Suzie, Mattie's sister. About a year later, while the family was gathering pine nuts at a place called Jersey Valley on the east side of the Stillwater range north of Dixie Valley, Suzie gave birth to a girl who would in a year or so be named Wɨzi?i 'Small Animal' by her father. Her name would be spelled Woozie by the census takers some years later (U.S. Bureau of Indian Affairs, 1967), finally becoming Wuzzie.

Wuzzie Dick knew she was born late in the year because she was told that her father had had to break the ice to take the traditional bath of a father at the time of the birth of his child. He also observed the other customs, such as going without sleep and not hunting for much of the 10 days subsequent to her birth. When he did hunt after that time, he left his first kill where it fell as an offering and went on to find another. Meanwhile, Suzie Dick sat for 25 days in the winter house her husband had built, fasting and caring for her newborn. Suzie's sister, Mattie, made her niece's first cradle, a boat-shaped basket of willow to protect her from injury. Mattie also made her

Figure 12. *Cattail house with wooden door, Freeman ranch, Stillwater, Nevada, ca. 1890.* Photograph by Mary Freeman. Courtesy of Special Collections Department, Getchell Library, University of Nevada, Reno.

second cradle, with a flat back and a shade of willow, into which she would be laced for sleeping and transport until she was roughly one year of age.

Sam Dick and Mattie and Suzie would have more children. A girl named Maggie was born to Mattie in about 1883 and another girl, whom they named Josephine, was born to Suzie a few years later. Suzie Dick had a boy before Josephine, but he died when he was small. Mattie Dick lost a child or two as well. At some time when Wuzzie was quite small, her grandfather Stovepipe died. In later years she could barely recall how he looked, but she remembered the stories she had heard about him.

In 1887 John Freeman bought a half-interest in the Kaiser ranch; a few years later he became the sole owner (*Fallon Standard,* 18 August 1906). Around 1889 or 1890, during the time that Wuzzie Dick was a girl, the Indian camp at what had become the Kaiser-Freeman ranch had six households, with most of the households related to one another. Each household's dwelling consisted of a large cattail house augmented with boards and fabric from the nearby ranches (Figure 12). Sam Dick had also built a small wattle dugout next to his home, using a technique he had learned from the ranch hands.

He kept dried duck, hog, and horse meat in its cool interior (Figure 13). The six households Wuzzie George recalled included the following people: (1) Sam Dick, his two wives, his four children, and his wives' mother; (2) Sam Dick's sister and her family; (3) Nellie Breckenridge and her family; (4) Big Cushman and his family, who were not related to Sam Dick or his wives; (5) Billy Springer's family, including his grandfather on his father's side; and (6) an additional group of nonrelatives whose names Mrs. George could not recall.

All of the men in these families seemed to cooperate in hunting, not only for rabbits and ducks, but also by then for wild horses and wild hogs. Coot drives headed by Sam Dick took place at Dutch Bill Lake and involved the use of tule balsa boats to drive the birds to

Figure 13. *Wuzzie George inside the remains of the wattle structure built by her father, Sam Dick, near the Freeman ranch, Stillwater, Nevada.* Photograph by M.M. Wheat, ca. 1960. Courtesy of Special Collections Department, Getchell Library, University of Nevada, Reno.

shore. Sam Dick also made tule duck decoys that were covered with the skins of canvasbacks, which were hunted in winter, and the skins of redheads, which were hunted year round. Wuzzie George remembered that he stored his decoys in a large twined tule bag in his wattle dugout. Rabbit drives took place in the fall in the area between Stillwater Slough and Old River, at that time not taken up by ranches. Sam Dunbar, who worked on the James Danialson ranch, was *kam'í pohínabi* 'rabbit leader.' The men would start on the eastern edge of the area and would set their nets and take their catch twice each day. Some would hunt with newly acquired single-shot rifles. At night the families danced and played games after the rabbits had been skinned and set out to dry. When the drivers reached Old River, some families stayed to pick apples in one of the ranches' orchards. For their work they got to keep part of the crop, which the people then roasted in ashes, as they would have done with native plants of such size. Then they dried the apples and sacked them for the return trip home.

Horse and hog hunting were favorite occupations as well. By the 1890s, wild horses had increased in number in the Stillwater Range and the marshes and were competing with the ranchers' cattle for summer grazing. Indian men in the area were paid a bounty on horses, and the men sometimes kept the meat for their families. Billy Springer, Sam Dick, and others had a horse corral in Cox Canyon, on the west side of the Stillwater Range. Kaiser and Freeman also raised hogs, some of which got loose and began to breed in the Stillwater marshes. They apparently foraged for tule and cattail rhizomes and ate waterfowl eggs and young until they were fat. Sam Dick, Billy Springer, and the others hunted them, and Sam Dick stocked his wattle dugout with dried hog meat.

It was during these early years of her girlhood that Wuzzie Dick was introduced to the ways of her grandmother, Mattie (Figure 14). With her sisters and Mattie, Wuzzie went north each day into the marshes around Dutch Bill Lake and, depending on the season, learned to collect duck eggs or the seeds of several marsh plants. They went every day: "We never stay home. Just eat in the morning, don't take any food, and eat at night when we get home." They chased flightless ducks in the lake, killed them when they reached shore, and brought them home. Her mother and aunt then cooked them or dried them for later. Wuzzie Dick also went with her grandmother east into the Stillwater Range to dig yampa, biscuit roots, and spring beauty bulbs. Sometimes they stayed overnight, and she recalled that her grandmother took a small muskrat-skin bag

Figure 14. *Mattie (right) wife of Stovepipe, and maternal grandmother of Wuzzie George, with Maggie Pete (left), possibly at Stillwater, Nevada.* Photograph by Rolly Ham, ca. 1902. Courtesy of Special Collections Department, Getchell Library, University of Nevada, Reno.

with dried duck meat and seed flour for them to eat. She learned that when gathering these root plants, she should always leave an offering—a bit of cloth, a stone, or a bead—so that the plants would come back again the next year. Also from Mattie she learned how to take dried "sugar" (an insect exudate) from the leaves of cane (*Phragmites australis*), to dig beneath greasewood for larvae that lived near the roots, and many more skills. She did her first willow-basketry work at this young age and also learned to make mats and bags of tules and sagebrush bark.

Wuzzie Dick had few memories of her people wearing the traditional buckskin, rush, and bark clothing; rather, they dressed in clothes like those of the ranchers. Mrs. George recalled that Jim Richards gave them their first fabric clothing—pants, shirts, hats, and bright red bandannas for the men, and yardage for the women. She remembered that her mother also bought and traded for cloth at Jim Richards's and Johnny Kaiser's stores in Stillwater, and then made dresses, skirts, blouses, and shirts for her family (Figure 15). Jim Richards always gave Wuzzie's mother candy "for Sam Dick's girls." She also bought flour, bacon, sugar, and soap from the small store on the Freeman ranch. She made Indian bread of the flour, but

otherwise their diet consisted mostly of foods hunted and gathered. As Mrs. George recalled, no watermelons or other fruits were purchased, and no honey. She became very fond of these foods in later years, once she had had the chance to try them.

Another daily chore about the camp was gathering wood. Her mother, aunt, and grandmother each collected wood, usually greasewood, every morning. In the area where they camped, there was no sagebrush or cottonwood for fuel. Greasewood was actually preferred, though, as it burned cleanly and long. Fires could be banked at night and coals revived in the morning from a greasewood fire.

After Wuzzie's grandmother was too old to make daily trips to the marshes for food, she and two other elderly women gathered wood each morning for the hotel in Stillwater owned and operated by John M. Sanford (Figure 16). They got up very early, and each woman was given breakfast, served outside the back door of the hotel, in exchange for the load of wood gathered. Other Indian people also ate meals at the back door for 15 cents each (Figure 17).

Figure 15. *Mattie Steve (left), daughter Topsie (center), and friend Tootsie (right) during a lunch break at the Freeman ranch, ca. 1900. They are wearing handmade cotton dresses typical of the late nineteenth century.* Photograph by Mary Freeman. Courtesy of Special Collections Department, Getchell Library, University of Nevada, Reno.

Mattie was apparently not employable as a cook or domestic in the town of Stillwater or on the ranches because of her advanced age. Her daughter, Suzie Dick, worked as a domestic in Sanford's hotel.

In 1891, as a result of the General Allotment Act of 1887, the Bureau of Indian Affairs took notice of the number of Indian families living in Lahontan Valley and established a reservation for them north and west of the Stillwater marshes. One hundred sixty acres were allotted to each head of family. Sam Dick, Billy Springer, and several others qualified, and for a short time took up residence on the new lands. They fenced parts of the property and constructed a large ditch to bring water to the acreage from Old River. However, much of the land was not suited to agriculture, as the bureau originally had intended, for it was too alkali. Nor were the promised wagons and teams, plows, and other equipment and seed forthcoming, as the bureau had promised. Within a few years, most families had quit their allotments and returned to the ranches to work.

At about the same time (1891–1893), when Wuzzie Dick was

Figure 16. *Boarding and eating establishment of John M. Sanford, Stillwater, Nevada, ca. 1890.* Photograph by Mary Freeman. Courtesy of Special Collections Department, Getchell Library, University of Nevada, Reno.

Figure 17. *Sam Dick, father of Wuzzie George, and friend eating on the back porch of Freeman ranch house or Sanford's hotel, Stillwater, Nevada, ca. 1890.* Photograph by Mary Freeman. Courtesy of Special Collections Department, Getchell Library, University of Nevada, Reno.

about 10 years old, Sam and Suzie Dick separated and Suzie took her children to the Ernst ranch on Old River. Ernst had requested Indian help, and several people responded. Suzie worked as a domestic for Mrs. Ernst. Wuzzie, too, was employed on the ranch, helping her mother in the Ernst home and also watching the Ernst sheep as they grazed, for which she was paid 10 cents per day. In the Ernst home she ironed towels and other flatwork. Mrs. George recalled having to stand on a box to reach the ironing board. When she began working for the Ernsts, she had not yet learned to speak English. Paiute was the language of her household, although her father, mother, and aunt undoubtedly spoke some English by then. Wuzzie Dick learned English from Mrs. Ernst, who spoke to her while she was ironing and doing her other chores.

It was while they were working on the Ernst ranch that Wuzzie Dick's mother became ill and died at the home of her cousin, Billy Springer. Upon her mother's death, Wuzzie's father came and took her to Virginia City to stay with his mother, who was living there at

the time. Wuzzie recalled that it was while she was in Virginia City that a Mr. Ashbury[7] took her to Carson City to be enrolled at the newly opened (1890) Carson Indian school. She had been there only about half a year when her father came to take her home, fearing that she, like some of the other students at the school, would die of disease. (Measles, influenza, and other unspecified illnesses resulted in several deaths in the school's early years.) Mrs. George recalled that, because she had learned a little English from Mrs. Ernst, she was able to understand some of what was going on in her classes. She had just begun to adjust to the strict routine when her father took her out of school. Throughout her life, she regretted having "lost my schooling." She was never able to attend school thereafter.

Living in Fallon

When Wuzzie Dick returned to the Carson Desert, she stayed with Mammie, her elder sister, in an area to the south and east of the emerging town of Fallon. In 1894, Jim Richards had moved his store from Stillwater to the small crossroads at New River, on Mike Fallon's ranch, and several Indian families moved with him. Before long, an Indian settlement of some size was located there, and several of its residents were working in the town. Sam Dick had moved there with his wife Mattie, her daughter, Mammie, and Suzie's daughter Josephine. Mattie, Stovepipe's wife, moved with them as well. It was here that Sam Dick constructed his first wooden house (Figure 18). He built wooden houses for other members of his family, too, including one for Mammie and Wuzzie.

Although they were living at Fallon, some 15 miles from Stillwater and Carson Lake and farther yet from Carson Sink, people still went to these areas to take traditional foods. Sam Dick also made a living one winter hunting swans on Carson Lake and selling them for one dollar each at Walker River Reservation. He also continued to take his family to the east side of the Stillwater Range for pine nuts, to the area south of Jobs Peak that was his by right. He took the family by wagon, sometimes having to make two trips to get everyone there. They stopped on the way while he hunted ducks to take along for a meat supply. Mrs. George recalled that their pine nut–collecting camp often had dried ducks hanging from the trees. When the meat

Figure 18. *Houses of boards and canvas (with interior stoves), near present site of Fallon Colony, Fallon, Nevada. Rattlesnake Hill in the background.* Photograph by Rolly Ham, ca. 1900. Courtesy of Special Collections Department, Getchell Library, University of Nevada, Reno.

supply ran out, Sam went back to the marshes and shot more ducks for the family. Sam Dick, Billy Springer, and others also continued to work for some of the ranchers at Stillwater, including John Freeman's son Ernie and Ira Kent.

Not long after Wuzzie Dick came back from school, she went through the traditional girl's puberty ceremony. For five days she gathered wood for other camps, piling it near the houses. She also ran prescribed distances; in her case, to and from Rattlesnake Hill on the north side of town. She avoided eating meat and fat during this period and drank only warm water. At the end of the fifth day, she was bathed by her aunt and instructed to be industrious throughout her life, as she had been for the last five days. After the ceremony she was technically of marriageable age, and there is reason to think that she did marry about 1900.

Although Wuzzie George did not speak of an early marriage, the United States Bureau of Indian Affairs census for Fallon in 1909 lists a Woozie Springer, wife of Joe Springer, and two small children: Johnny, age eight, and Julia, age one. Joe Springer was the son of Billy Springer. Although Billy Springer was considered to be her mother's cousin, he was not really a blood relative. His mother had

been married to Wuzzie's uncle, but Billy was not that man's son. His father was in fact not Paiute but Western Shoshone. Thus Joe Springer, too, was not a blood relative.[8] It appears from the census data that Woozie Springer and Joe Springer divorced sometime between 1909 and 1912, and that the children remained with him. They do not appear on the rolls after 1917, and thus may have been victims of the great influenza epidemic that swept the United States in that year.

Sometime in the latter part of 1909 or early 1910, Wuzzie Dick went to work in the town of Fallon for a Chinese man named Goee, washing dishes in his eating establishment. Various people came to Goee's to eat, including Indian men working in town and in the nearby hay fields. It was here that Wuzzie met Jimmy George, whom she married a year or so later. She recalled that she was working in Goee's at the time that a great fire swept through part of the downtown area of Fallon (19 May 1910). The fire destroyed Goee's business and Goee moved away, leaving her without employment. Another victim of the fire was one of two monkeys kept by a saloon owner near the eating house. The other monkey escaped and kept the Indian people entertained for much of the summer as it played in the trees near where they gathered to gamble (Wheat, 1967:28). After the fire, Wuzzie Dick went to work for Marge Harmon in her home in Fallon, something she would continue to do off and on until about 1928. Wuzzie and Jimmy George were married while she worked for Mrs. Harmon.

Jimmy George

Much less is known of the early life and family of Jimmy George. He was apparently born between 1875 and 1879 near a place called Becksteads, below the South Branch of the Carson River and on the road to Walker River. His father was from the Austin area in central Nevada, and thus Jimmy was probably half Western Shoshone. His mother was from the Carson Lake subgroup of Cattail-eaters. The district was called Kusʻipa 'Alkali Water' after the name for Carson Lake, and the group was called Kusʻípatɨkadɨ 'Alkali water–eaters.' His mother died while Jimmy George was "in the basket," i.e., an

infant in his basketry cradle, and his mother's mother fed him pine-nut soup as a milk substitute so that he would not starve. He apparently spent most of his boyhood in the same vicinity, an area also referred to as the Island District. He learned to hunt waterfowl in Carson Lake, and he participated in rabbit drives held between the South Branch and New River. Like Wuzzie Dick, he was wise in the ways of his ancestors, having participated in many aboriginal activities.

Jimmy George was working in the hay fields for John Oats when he met Wuzzie Dick in 1909 or 1910. The Indians that were camped in the area of the Oats ranch had been asked to move about 1906 because of a smallpox scare. County authorities finally forcibly removed them in 1909, and a number of the people joined those living near Fallon. It was probably because of this move that Jimmy and Wuzzie became acquainted.

In addition to working in the hay fields, Jimmy George also worked at Soda Lake in the soda works. The soda was evaporated in large tanks, and it was his job to cut it into two-foot-square blocks with a saw, haul them by wheelbarrow, and stand them in sheds. Bill (Willie) Springer, another son of Billy Springer, worked there as well, as did several other Indian men. Jimmy George lived in a tent while there, and ate in the dining hall with the other employees. Bill's wife, Hattie, washed dishes in the dining hall, and Wuzzie helped her when she visited. Jimmy George continued to work for the ranchers after the soda works closed, and Wuzzie George went back to Mrs. Harmon. They also worked in Yerington in the hay fields and at harvesting potatoes.

The Fallon Reservation

In 1906, the Bureau of Indian Affairs proposed an agreement with the Newlands Reclamation Project that would help to settle Indian families on better lands than the then-extant Fallon Reservation. The Newlands Reclamation Project was a massive plan that joined the waters of the Truckee and Carson rivers to irrigate much of the lower Carson Basin and put it into agricultural production. The BIA proposal was to exchange roughly 31,000 acres of allotted Fallon Reservation lands for small holdings that would be better suited to

cultivation. Each allottee who so agreed would be given in exchange for his/her 160 acres 10 acres with water rights on a reservation much reduced in size but theoretically with much better potential. By a Department of Interior order of 20 April 1907, this agreement went forward and all but seven of the original allottees made the exchange. Given that 10 acres, even with water, was seen as a relatively small holding for agriculture, larger families could apply for up to 40 acres, at the rate of 10 acres per person. Sam Dick, his wife, Mattie, and his daughters Maggie and Josephine each got 10-acre plots on the east-central side of the new reservation. Billy Springer, his wife, Anna, and his sons Bill (Willie) and Joe also received allotments, as did Bill's wife and Joe's wife (Woozie) and their children (Perry, 1964). It is not known exactly when all of these individuals moved to the new reservation, but it was probably between 1907 and 1910.

Wuzzie and Jimmy George had continued to work and live in Fallon during the early years of their marriage—she largely for Mrs. Harmon and he for various ranchers. In about 1914, they began to have their children: first a girl, Naomi, who died at age three; then a boy, Freddy, who also died when small. Daughter Winona was born about 1916, while Wuzzie George was employed by the Harmons. She recalled that the night of Winona's birth she sent Jimmy for Mrs. Harmon, who had said she would help with the birth when the time came. She assisted at Winona's birth and also that of Wuzzie's next child, Leonard, who was born about 1921. Children Gladys, Ivan, Walter, and Ashley followed over the next several years. Gladys died in 1939 at age 16.

Wuzzie and Jimmy George continued to work for the Harmons and others in and around Fallon until roughly 1928, when they moved to the reservation so that Winona and Leonard could begin attending school. They had sometime earlier received allotments on the reservation, but the land was poor—too alkali to be productive. Long before then, the promise of 10 acres of land with water had been shown to be only a partial boon. Roughly one-third of the new reservation's soils would not grow crops, and the water delivery system to the lands that could be farmed was less than satisfactory. Instead of delivering water to each person's allotment, as the Newlands Reclamation Project did for its non-Indian customers in the valley, it delivered it only to the edge of the reservation. Bureau of Indian Affairs personnel and the individual allottees had to channel it from there. Although the Indian Service made many irrigation improvements, the situation remained unsatisfactory for many landholders.

Their plots lacked water, were too poor in quality to cultivate, or both. Rather than attempt to farm the alkali land, the Georges moved to Sam Dick's allotment, seemingly having inherited the right to Mrs. George's sister Josephine's 10 acres after she died about 1920. They had, of course, continued to visit Sam Dick and the rest of Wuzzie's family, and probably had lived on the allotment periodically before. But the employment opportunities in Fallon also drew them in that direction.

In 1914, anthropologist Robert Lowie, then of the American Museum of Natural History in New York, visited the Fallon Reservation while doing an ethnographic survey of the Great Basin and collecting specimens for the museum. Lowie's ethnographic notes (Lowie, 1924) make frequent reference to Sam Dick, Billy Springer, and others. According to Lowie's assessment, the people were still engaged in aboriginal subsistence pursuits to a considerable degree; Lowie refers frequently to the taking of waterfowl, duck eggs, cattail pollen, and other plant resources. Lowie collected two Canvasback duck decoys while on the reservation, possibly from Sam Dick. He also interviewed Billy Springer extensively about his role as head of rabbit drives, a post he then had held for some 15 years. Lowie observed women with traditional burden baskets gleaning wheat from nearby fields. He also saw cattail houses still in use on parts of the reservation. And he suggested that much additional work on the precontact culture of the people of this area could still be accomplished, as much was still intact.

Jimmy George, Native Doctor

Sometime between roughly 1915 and 1920, Jimmy George began to have a series of dreams that would ultimately lead him to become a *puhágam·i*, or doctor. As Mrs. George recalled many years later, it all began when one day he killed a deer. That night he became very sick and dreamed of the deer. The next morning his leg hurt so badly that he could not get out of bed. After a few days he recovered, but he knew through tradition that the deer was his "friend" or "power" and that he was now obligated to become a doctor. He would never again kill a deer nor eat deer meat.

Jimmy George went to Pyramid Lake to seek the advice of another well-known doctor, Calico George. Calico George was at that time practicing, although subsequently he became "spoiled" when his power left him because of an incident that occurred during a healing ceremony at Susanville, California.[9] Calico George "raised Jimmy up," interpreting his dream and allowing him to act as apprentice and spokesman while he doctored. He gave Jimmy George his own name, Sogía, which Mr. George retained from then on. Jimmy George returned to Fallon and began to doctor locally, treating especially illnesses related to respiration (pneumonia, shortness of breath, chest pains, etc.) and swelling (swollen limbs, stiffness of joints, sprains). Through other dreams he acquired the power of eagle, hummingbird, water baby, and mountain rattlesnake. He also acquired the power to control the weather, especially wind. Hummingbirds would alight on Jimmy's arms as evidence of his relationship to them. He had the ability to capture and hold rattlesnakes, and used this relationship to treat victims of snakebite and prevent persons from being bitten. His doctoring kit contained the skin of a hummingbird, a rattle made of the dewclaws of a deer, a stone pipe with a rosewood stem for smoking tobacco, a miniature basketry water bottle in which he captured winds, and other items that represented his powers.

Jimmy George's effectiveness as a doctor soon became widely known. Between the 1920s and about the mid-1950s, when a series of incidents caused him to lose his power, he practiced at Walker River, Bridgeport, Bishop, Reese River, Lovelock, Winnemucca, Susanville, and elsewhere. He remained locally important as well. People sent for him day and night, and he and his wife often traveled three or four days to get to a patient, first by wagon and in later years by car.

Wuzzie George acted as her husband's interpreter during doctoring sessions. Jimmy had to go into a trance state in order for his powers to determine the cause of an illness, and his activities and the words he spoke needed to be interpreted to the patient and the assembled relatives and friends by someone intimately familiar with his work. Wuzzie George became as well known as her husband for this role, although she herself never doctored nor received power. She remained a devout believer in Jimmy George's traditional medicine, as well as that of other Native American healers. It is said that up until the mid-1950s, when he ceased to practice, Jimmy George, often with his wife, treated nearly a thousand patients.

Northern Paiute doctors are paid for their services, the exchanges

being an important part of the cure. Mr. George was paid in cash, beads, and food items by the many people he served. However, given his expenses, the hours of travel, and the time missed from his jobs on ranches and working on his own place, it is doubtful that his doctoring contributed significantly to his livelihood. Rather, Jimmy George had been called upon by his powers to serve those in and around his community, and he spent a considerable amount of his time doing so.

Jimmy George ceased to practice in the mid-1950s. Although he did not recall exactly what had happened, somehow he lost the small hummingbird skin from his doctoring kit. He immediately became ill, and although he recovered, he found that he had lost his powers and was unable to doctor. Also about that time, a fire in a storehouse at their home destroyed other items from his doctoring kit, including the small basketry water jar. Although deeply saddened, Mr. George fully accepted what he knew had been a decision made by his powers.

Documenting the Ways of the Old People

It was in the early 1950s that Wuzzie and Jimmy George met Margaret M. Wheat, who rekindled their interest in the ways of the ancestors. Peg had begun working with Alice Steve (Figure 19), Hookie Breckenridge, and others in the late 1940s on Paiute names for places, animals, plants, and birds. It was Alice Steve who brought her friend Wuzzie George on one of the several trips she and Peg took to the Stillwater marshes, Carson Lake, and Carson Sink. They began to talk about more than these topics, and eventually became good friends. Wuzzie introduced Peg to Jimmy, who contributed to the telling of tribal and personal history and the demonstration of old skills. As Peg became more enthusiastic about what she was learning, she asked Wuzzie to introduce her to other Northern Paiute people in the region—at Pyramid Lake Reservation, Walker River Reservation, Lovelock, Yerington, and beyond. Together they gathered the materials necessary to demonstrate how clothing, basketry, cordage, watercraft, houses, household utensils, animal traps, fishing gear, and other items were manufactured traditionally. They also looked at

Figure 19. *Alice Steve, Northern Paiute, winnowing pine nuts, ca. 1958.* Photograph by M.M. Wheat. Courtesy of Special Collections Department, Getchell Library, University of Nevada, Reno.

Figure 20. *Jimmy and Wuzzie George in front of motion picture camera, 1964. Jimmy George is making the body of a tule duck decoy.* Photograph by M.M. Wheat.

museum collections of birds and mammals, plants, archaeological artifacts, and photographs to stimulate recall.

In the mid-1950s, Peg began to work more seriously on documenting the Georges' vast knowledge as well as that of the people in the surrounding area. She began to take photographs and make more extensive tape recordings. With a grant from the Fleischman Foundation of Nevada, she was able to spend more time with them and obtain some of the equipment and supplies she needed. She was also able to give Wuzzie and Jimmy George a small amount of money for their services as consultants—something she had been unable to do before. In 1964 she enlisted the aid of Dave Nichols, then an employee of Audio-Visual Services of the University of Nevada, Reno, to film some of the same sequences she had documented with still photographs: hide working, house construction, decoy making, plant gathering, boat making, cooking, pine nut gathering and preparation, and much more (Figure 20). She focused more tightly on Northern Paiute material culture, carefully documenting each sequence and construction stage photographically. In 1967 she produced her book, *Survival Arts of the Primitive Paiutes*, a collection of photo essays on

Paiute work. Wuzzie and Jimmy George are prominently featured throughout.

Jimmy George died on 3 July 1969 at the reputed age of 95. More than 200 people, many of them former patients, attended his funeral, which was held at the Fallon Reservation on 8 July. People came from California, Oregon, and all throughout northern Nevada. Mike Kaiser, also about 95, and like Jimmy George a former doctor, gave a traditional funeral speech in his native language in which he exhorted Mr. George's spirit to leave the area and not to linger and cause illness among the living. Wuzzie George and her children, grandchildren, and great-grandchildren were present and in deep mourning (*Nevada State Journal,* 20 July 1969).

After her husband's death, Wuzzie George continued to contribute in many ways to the documentation and perpetuation of the skills she knew so well. Peg involved Wuzzie in demonstration programs for children's groups in the local schools and at summer camps at Foresta Institute in Washoe Valley (Figure 21). Together they traveled

Figure 21. *Wuzzie George demonstrating winnowing at Foresta Institute, Washoe Valley, Nevada. Margaret Wheat is in the background.* Photograph by C.S. Fowler, 1978.

to the Idaho State Museum in Pocatello, where Wuzzie George built a cattail house for an exhibit. Another house was made several years later for the Nevada Historical Society in Reno and is still on display. A boat manufactured by Wuzzie and Jimmy George, along with several other items relating to the material culture of the Northern Paiute, is displayed at the Nevada State Museum in Carson City. The Churchill County Museum in Fallon also has a permanent diorama of a camp scene, with a tule balsa boat, a cattail house, duck decoys, baskets, and other objects. These were made by Wuzzie, her son Leonard George, and her daughter-in-law Lida. They have been renewed by her son Ivan George and grandsons Davin and Martin. The Churchill County Museum also has a special exhibit devoted to Wuzzie and Jimmy George and the skills they possessed and shared.

Wuzzie and Jimmy George began working with linguist Sven Liljeblad of Idaho State University in the early 1950s. Liljeblad, also a world-renowned folklorist, collected several texts in the Northern Paiute language, including myths, legends, and other accounts, in addition to data on grammar and vocabulary. When Liljeblad moved to the University of Nevada, Reno, in the 1970s, his relationship with Wuzzie George continued. It was about that time that I began to work with Mrs. George as well, often along with Wheat and Liljeblad. Our work concentrated on ethnobotany, general cultural features, and language. Through the years, other students of Northern Paiute culture have visited Wuzzie George and, before his death, Jimmy George. All found them hospitable and kind people.

Wuzzie George suffered a stroke in 1976, from which she partially recovered with the help of Native American doctoring received at Schurz on the Walker River Reservation. After that time, work was difficult for her. She already had had the stroke when two of the segments in the film *Tule Technology* were made (egg bag, tule balsa boat). Despite ill health, she was, as always, enthusiastic about the filming project and more than willing to participate. Although speech was difficult for her and her hands did not work as quickly or as surely as before, she carefully showed her granddaughter Lois how to make the egg bag that Mattie had taught her to make so many years before. She also directed as best she could from her walker the construction of the tule balsa boat by her grandchildren, Lois and Lucier, and her son Leonard George, who had helped his father make these watercraft before.

Wuzzie George was cared for lovingly by her granddaughter Louella Thomas in her final years, her daughter Winona Thomas

having preceded her in death by roughly 10 years. She was visited frequently by her sons Leonard, Ivan, Walter, and Ashley, and by her grandchildren and great-grandchildren. Her many friends came to call as well, often finding her sitting at the window looking at the Stillwater Range and thinking of the early days. She loved to ride in the car to anywhere there was open water and congregating waterfowl. There she would name each and comment on their seasonal activities. Wuzzie George died in Fallon on 20 December 1984. She was approximately 104 years of age. Margaret M. Wheat died at the age of 79 on 27 August 1988.

Figure 22. *Pond in the Stillwater marshes, Nevada, with open water and emergent vegetation, including cattails and tules.* Photograph by M.M. Wheat, ca. 1965. Courtesy of Special Collections Department, Getchell Library, University of Nevada, Reno.

The Marshes and Their Products

Of the various habitats present in Cattail-eater country, by far the richest in resources were the marshes. And it was the marshes that were the sources of the raw materials for the tule technology, a hallmark of Cattail-eater material culture. Although referred to here by the cover term *tule technology*, the actual items shown in the film and discussed in the chapters that follow are manufactured from four genera: *Scirpus* (bulrushes), *Typha* (cattails), *Eleocharis* (spike rushes), and *Juncus* (rushes). Each of these species, separately or in combination, was involved in the products that made up Cattail-eater tule technology. In the western United States, English-speakers commonly refer to plants that grow in marshes as *tules*. They apply this term to bulrushes and cattails particularly, although often other rushes and sedges are included as well. Thus, following Western dialect preferences, *tule technology* here refers to the technological uses of these genera of marsh plants in this specific region as well as in adjacent regions and in South America.

Marsh Systems

According to historic accounts from the 1860s and 1870s, marshes were extensive in the lower Carson Basin. They were a particular feature of the northwest side of Carson Lake, Stillwater Slough, and the Stillwater lakes, and in the area where Old River flowed into Carson Sink (DeQuille, 1963; Moore, 1867; Townley, 1977).[1] Given that the marshes' water levels changed in accord with spring runoff down the various channels of the Carson River, and on occasion with the overflow of the Humboldt River into the Carson Basin, their histories in this region are very complex and the extent of their surfaces at various times in the prehistoric past is difficult to calculate.

However, one thing is clear: except for excellent water years, which occur in this region on 10- to 20-year cycles, the marsh systems have been in significant decline since the early 1900s. Upstream diversion for agriculture and urban use has reduced the Stillwater marsh system alone from roughly 33,000 acres at the turn of the century to approximately 3,000 acres in 1989 (Anan Raymond of the U.S. Fish and Wildlife Service, personal communication, 1989).

The Cattail-eaters were at home in the marshes, taking a major part of their subsistence in most seasons from marsh ecosystems. These systems are very complex and dynamic, given the changing water budgets. But at their best, they support a diversity of life forms, including numerous species of waterfowl, shore and wading birds, raptors, freshwater clams, fish, aquatic insects, emergent and submergent plants, small mammals, and much more. All of these occupy a complex set of overlapping econiches, which reduces competition (Weller, 1981:37). Table 1 lists some of the more common wildlife species in the lower Carson marshes.

Species diversity, as well as total numbers of organisms, is at its highest and the marsh at its richest when water is neither too deep nor too shallow (Weller, 1981:65). Deep water allows little in the way of fringing emergents, such as hardstem bulrush (*Scirpus acutus*) and cattails (*Typha latifolia, T. domingensis*). This in turn discourages the utilization of these plants for feeding and/or nesting by waterfowl that are waders, shore feeders, or dabblers. Shallow water, on the other hand, may be fringed with alkali bulrush (*Scirpus maritimus*), an important food plant for some waterfowl species, but contain few cattails and tules, which are important for nesting and feeding for other species such as the diving ducks. A number of submergents, such as sego pond weed (*Potamogeton pectinatus*) and tule potato (*Sagittaria latifolia*), which are important foods for waterfowl also, will not be found if the water is too shallow. Thus to be at its best, a marsh should have areas of open water (roughly 50 to 75 percent of the total marsh area) broken up into small ponds (Figure 22). These will then be fringed with hardstem bulrush, a plant that does well next to open and deeper water. Closer to shore will be the cattails; and next to them in drier areas will be alkali bulrush. With these conditions met, along with the existence of some upland feeding zones, species diversity can be at its highest and numbers of organisms at optimal density. Individual marshy areas will vary in terms of this ideal mix, but if the overall system approximates it, the marshes are highly productive (Weller, 1981:65).

It seems clear from historical evidence that sections of the Carson Desert marshes were in this ideal condition at various periods in the past; but in all likelihood, not all sections were optimal at the same time. In 1952, in the company of Peg Wheat and U.S. Fish and Wildlife Service biologists, Alice Steve and Wuzzie George visited various parts of the Stillwater marshes. They reported a number of changes in vegetation compared to the period around 1900, when they were young. Based on their comments, biologists were able to estimate that hardstem bulrush was roughly twice as common in 1900 as in 1952; that cattail was roughly one-third as extensive; and that alkali bulrush was about one-third more common. These conditions seem to suggest the presence in 1900 of more open water, which would have encouraged submergent vegetation and increased numbers of diving ducks such as coots, redheads, and canvasbacks, all favored Cattail-eater foods. This mix also would have favored shore feeders such as herons, bitterns, and others, and Canada and white-fronted geese, which nest in alkali bulrush (U.S. Fish and Wildlife Service, 1952). These marshes, at least, would have been healthy and productive of a variety of wildlife. Given that emergent plants also served the Cattail-eaters as food as well as for technology, the overall extent of the plant cover was quite important. As noted above, around 1900 this was still considerable, and doubtless had been so in the immediate past.

Marsh Plants as Food

The plants that formed the basis of Cattail-eater tule technology, including cattails and hardstem bulrush, but also to a lesser degree spike rushes, rushes, and others, were important for food purposes as well. Most provided seeds and/or roots, which were enjoyed not only by wildlife but also by the people. One type apparently produced an intoxicating beverage. All provided important fibers. In other places in western North America where these plants also occur, other peoples reported similar uses.

Of the various marsh plants, cattails have the most uses. The two species in the lower Carson basin were called *tóibi* (*Typha latifolia*) and *tahúnadzi* (*T. domingensis*). In addition to providing house-building

materials and fibers for the construction of duck decoys and boats, they were widely used as food sources.

Early in the spring, Paiute people went to the marshes for some of their first fresh food of the season. There they harvested the newly emerging culms, or stalks, of cattails. A long piece of rhizome was dug from the mud and the new shoots broken from it. The leaves were peeled back, revealing a crisp, white stalk beneath. This was eaten fresh and tasted much like celery. People were careful to obtain these plants where water was moving slightly, rather than from deep, stagnant mud. They claimed that the new shoots always tasted better—sweeter—when these conditions were met.

In addition to the new shoots, cattail rhizomes (*tóikʷam·u* and *tahúnadzikʷam·u*) were gathered in spring and fall, being at their best in the fall (Figure 23).[2] These were peeled and chewed when fresh, or dried for later use. If they were to be dried, the rhizomes were

Figure 23. *Wuzzie George with cattail rhizomes, ca. 1965.* Photograph by M.M. Wheat. Courtesy of Special Collections Department, Getchell Library, University of Nevada, Reno.

Figure 24. *Wuzzie George removing seed from mature cattail spike.* Photograph by M.M. Wheat. Courtesy of Special Collections Department, Getchell Library, University of Nevada, Reno.

split into strips. The strips were placed on a greasewood fire, and as the brush burned the roots were occasionally turned. Roasting helped them retain their flavor. Later they were put into baskets to finish the drying process. Dried pieces were ground into flour and made into mush by stone boiling in baskets. The mush was also formed into cakes that could be roasted in the coals. If the rhizomes were properly prepared, the mush and cakes retained the sweet flavor.

In late May and June, when the cattails were beginning to send up green spikes that would later form into brown pollen- and seed-bearing heads, the Tóidɨkadɨ people gathered them for an additional food type. The green spikes (*tsimá*), often containing both male and female elements if conditions were right, were broken from the plants and eaten fresh. Large quantities of these could be obtained, and they provided a dietary supplement during the season when waterfowl eggs were being harvested.

Another use was made of cattail spikes as the pollen-bearing elements began to mature in early July. As noted by Wheat (1967:11), considerable quantities of yellow pollen could be obtained in a short

time by bending the spikes and shaking or tapping them into a basket. The pollen was then mixed with water, kneaded, formed into cakes, and baked in the coals between layers of cattail leaves or in small leaf pouches. This produced a sweet bread or cake called *kusínohopi*, which could be sacked and stored for later or eaten fresh at the time. This was one of the few bread-like substances prepared by the Cattail-eaters.

Yet another use was made of cattails when the brown seed heads (also called *tsimá*) matured (Figure 24). These were cut from the stalks and taken to an area where the earth had been dampened and packed into a hard, crusted surface. After warming the spikes in the sun, the cattail fluff was removed from the spikes and placed on the ground in a layer about 2 inches deep. This was set on fire and the mixture stirred until all the fluff was burned. Remaining on the hard-packed earth were thousands of tiny black cattail seeds. These were gathered into a finely woven basketry tray, and the seed was winnowed by gently tossing it in the air during a slight breeze. The toasted seed that remained in the basket had a nut-like flavor (Harrington, 1933). The seed could be further processed by grinding it into meal on a flat milling stone and then stone boiling it into mush. The dry meal could also be eaten with a little water without boiling.

The food products of the cattails were nutritious (see Table 2). Morton (1975), who has made a detailed study of the uses of cattails worldwide, reports that the starch content of cattail-rhizome flour is roughly 40 to 60 percent. Simms (1984:207), working specifically with cattail (*Typha latifolia*) pollen, reports a calorie content of 1,040 cal/kg, a protein content of roughly 5 percent, and a carbohydrate content of 18 percent. Among the various Great Basin plant resources tested by Simms for calorie return rates per hour of work expended in collection and preparation, cattail pollen ranked highest. It also ranked higher than several small game species, such as ground squirrels and ducks (Simms 1984:93).

Hardstem bulrush (*sáibi, Scirpus acutus*) was also an important source of food for the Cattail-eaters. In the spring, lengths of rhizome with emerging shoots were pulled from the water and the shoots snapped off and eaten raw. The rhizome was also eaten by first peeling it and then chewing it to extract the juices. Some Northern Paiute peoples report boiling or roasting the rhizomes (Fowler, 1989). Basal lengths of the stalks were taken as well, usually in August (Figure 25). Like cattail culms, these were eaten fresh. Apparently

Figure 25. *Wuzzie George pulling tule roots at Stillwater Marsh, ca. 1965.* Photograph by M.M. Wheat. Courtesy of Special Collections Department, Getchell Library, University of Nevada, Reno.

hardstem bulrush rhizomes were not dried and stored for later use, as were those of cattails. Simms (1984:207) reports that the rhizomes of hardstem bulrush contain between 510 and 630 cal/kg and are about 1.5 percent protein and 14 percent carbohydrates. Given that the starch content is likely lower than that reported for cattail rhizomes, there may have been less reason to store this food in quantity.

Although the seeds of *sáibi* were apparently little used as food, other species of *Scirpus* were exploited for these resources. Alkali bulrush seed (*abíbibui, S. maritimus*) was gathered in considerable quantity during fall and early winter, when the seed dropped from the plant into the water. It accumulated in windrows along the shore and could be scooped up into winnowing baskets and burden baskets and taken to camp. The seeds were put in baskets, parched with coals, and stored for later use in pits dug into the ground. As needed, the seed was ground into flour and made into mush. Another tule seed, that of common three-square (*midíbui, S. pungens*), was also processed. But unlike alkali bulrush, the seeds of this plant do not fall free and float on the water. The stalks were cut and returned to camp with seed heads attached. After drying, the tops were placed on a metate and the seeds worked out with a hand stone. The seeds were then ground into flour and made into mush. Although the seeds of neither species have been analyzed for food value, those of a related species, *Scirpus paludosus* [probably *s. maritimus*], were analyzed by Simms (1984:207). His results show that they contain a significant number of calories (3,050 cal/kg), primarily carbohydrates (57 percent). If at all comparable, the seeds of the Cattail-eater species would be quite nutritious. However, given the added work required in processing common three-square, it may not have been as favored as alkali bulrush, which Wuzzie George reported was particularly important when she was a girl.

Although not reported specifically for the Cattail-eaters, Northern Paiute people at Walker River told of making an intoxicating beverage from sap in the stems of rushes (*pamáhabi*), perhaps either *Eleocharis palustris* or *Juncus balticus*. The stems were cut and soaked in water to remove the sweet sap. After several hours of soaking, the liquid was placed in pitch-covered basketry water jars and allowed to stand. It soon fermented and became slightly intoxicating. People gathered together and drank it until it was gone, the effects lasting only a short time (Fowler, 1989).

Nonmarsh Plants and Their Uses

Although not strictly marsh plants, other water-loving forms that were important for subsistence or material culture in this area were Indian hemp (*Apocynum cannabinum*), the stem fibers of which were twisted and plyed into cordage and nets; common cane or reed (*Phragmites australis*), the stalks of which were valued for arrow shafts, and which also were home to insects that exuded a "sugar" that was the primary Cattail-eater sweetener; and willow (*Salix* spp., especially *S. exigua*), the favored plant for making many kinds of baskets. Most of these plants occurred along stream banks or channels in the lower Carson Basin, or in other moist soil. Their uses were well integrated into the overall material culture of the Cattail-eaters, and sometimes they were components of the tule technology.

Elsewhere in western North America, these same genera of plants, as well as some of the same species, were also utilized by Native American peoples (see, for example, Ebeling, 1986). Other groups in the Great Basin, including Northern Paiute, Owens Valley Paiute, Western and Northern Shoshone, Southern Paiute, and Ute utilized these plants where practicable. Peoples in northeastern California, southern Oregon, and Washington, particularly the Klamath, Modoc, and Yakima (Figure 26), were much involved in marsh culture, and had a characteristic tule technology (Barrett, 1910; Spier, 1930). The Pomo peoples of west-central California, particularly those around Clear Lake (Figure 27), were also much involved, as were a number of Native American groups in the central valley of California, including the Maidu, Miwok, Yokuts, and others. Along the California coast, several peoples had major marsh zones within their territories or could find these plants along rivers, and so participated to some degree in aspects of a tule technology (e.g., the Coastanoans and the Chumash). On down into southern California, parts of Baja California, and coastal Mexico, these same plants were made into distinctive artifacts and utilized for food in similar ways. Even the very famous marsh/lake culture of Lake Titicaca in Peru evokes a number of parallels, especially in house and boat building. After first focusing in the chapters that follow on the particular products made and used by the Cattail-eaters, some of the parallels with other peoples settled around marshes or lakes will be discussed.

Figure 26. *Unidentified Yakima woman with bundle of tules for making a baby cradle.* Photograph by Click Relander, date unknown. Courtesy of National Anthropological Archives, (Neg. No. 41886-L), Smithsonian Institution.

Figure 27. *Unidentified Pomo woman gathering tules, Upper Lake, California, ca. 1920.* Photograph by Edward Curtis. Courtesy of National Anthropological Archives (Neg. No. 76-4130), Smithsonian Institution.

The Egg Bag

During the spring and early summer, when waterfowl of many types were nesting in the Stillwater marshes and among the stands of tules and cattails around Carson Sink and Carson Lake, their eggs were gathered for food by Cattail-eater women and children. Among the summer nesters were the American Coot, Canadian Goose, Redhead, several species of grebes, Snowy Egret, Mallard, Cinnamon Teal, Green-winged Teal, Northern Pintail, Gadwall, Northern Shoveler, Ruddy Duck, and others. Eggs from other marsh dwellers' nests were also collected, such as those of the Black-necked Stilt, American Avocet, California Gull, Yellow-headed Blackbird, Red-winged Blackbird, etc. The eggs of birds that nested away from the marshes, such as the Meadow Lark and Mourning Dove, were taken when encountered.

In order to collect these eggs, simple, flexible containers were needed. Undoubtedly some people collected them in twined willow baskets and bowls, perhaps even transporting significant numbers to camp in large conical burden baskets. But more common was the use of a flexible bag made of tules or rushes, especially constructed for the purpose—*nohóm·ago?o* 'egg bag' or *sayá nohóm·ago?o* 'duck [coot] egg bag.' This bag is the preeminent example of a variety of domestic items made by similar twining techniques.

As a girl, Wuzzie George learned to make egg bags from her grandmother, Mattie. On their almost daily trips to the marshes around Dutch Bill Lake from their camp near Stillwater, they often collected a clutch or two of eggs. These could be boiled for the evening meal or, if needed, buried in the damp, cool earth for later use. Eggs were a favorite food, and both during the nesting season and later the family ate them frequently.

Constructing the Egg Bag

Egg bags were made of green tules (hardstem bulrush, *Scirpus acutus*) and used only while the tules were still moist and flexible—usually

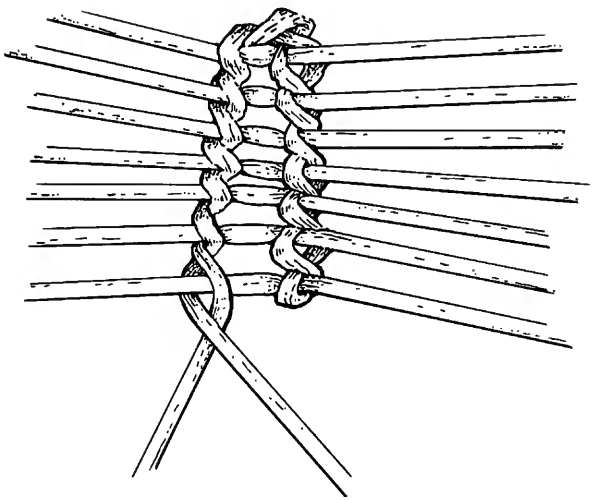

Figure 28. *Start of tule egg bag. Work direction on central weft rows is rightward.* Drawing by Daphne Shuttleworth.

for three or four days. Since they were quite easy to make, they were merely discarded when they got dry and brittle, and another bag was constructed. They were made in different sizes, but most were designed to hold three or four dozen eggs (Wheat, 1967:86). Some were undoubtedly made after eggs were found, rather than by plan ahead of time. They served the immediate need of transporting what was collected to the home camp. Men also made twined tule containers as needed to transport fish and ducks.

Wuzzie George's egg bags were constructed by first taking a long tule stalk, freshly pulled from the marsh, and flattening it somewhat between the thumb and forefinger. This stalk served as the weft, the active element, in the weaving process. Stalks from a good stand of tules are four to six feet long, and a nice long one was chosen for the first weft. The slightly flattened stalk was then folded roughly in half, but not exactly; when splices were made into it later they should not fall along a single line, else they would create a weak point.

In the bight of the folded stalk a second stalk was placed midway (Figure 28). This stalk served as the first warp, or vertical, nonactive weaving element. The weft stalk was then given a half-twist around this first warp to secure it in place. The direction of the twist was up-to-the-right, so that the half of the weft element that had been to the

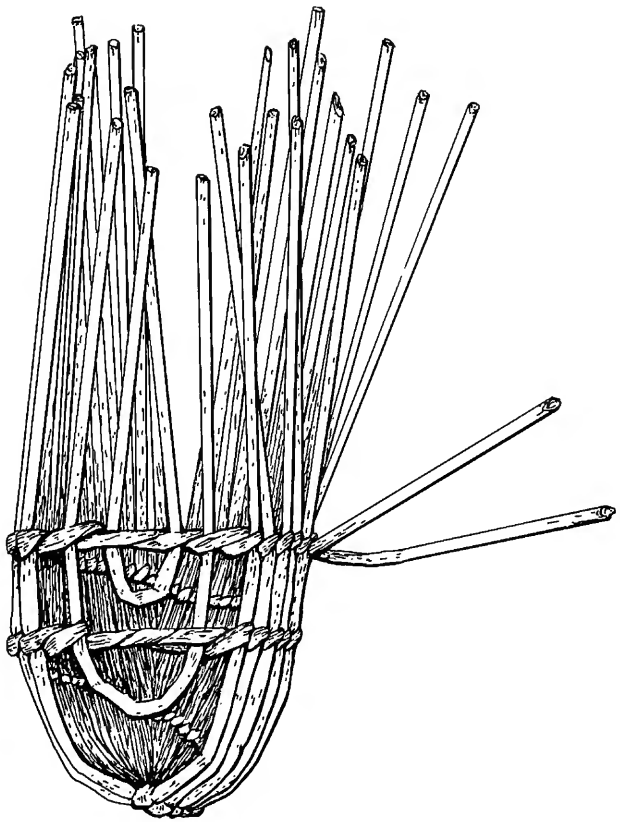

Figure 29. *Method of inserting warps in the sides of a tule egg bag. Weft row is continuous from the bottom in a rightward direction.* Drawing by Daphne Shuttleworth.

front was at the back, and vice versa. A third stalk was then placed with its midpoint in the new cross created by the weft strands, and the twisting was repeated. Depending on the width of the bag wanted, eight or more warps were added in this manner. They defined the bottom of the bag.

When this first row of twining was completed, the newly created warps were bent upward to a near-vertical position. The weft twining continued to spiral around all of the warps, one at a time, in rows at intervals of one to one and one-half inches. If the eggs to be carried were small ones, the rows might be more closely spaced. The bag could be made wider by adding folded tules to the weft rows to form new warps at the sides (Figure 29). When a weft strand came to an

end, a new, slightly flattened tule was added. Each paralleled the old end for a twist or two until it was firmly spliced. For these additions, shorter tules were used in order to facilitate manipulation. Twining continued to spiral around the warps until the bag was of the desired depth—eight inches to a foot or more. On the last row, if the bag was not to have a finished edge or braided handle, the two ends of the wefts were merely tied together.

According to Wuzzie George, bags were often used without much finishing. The loose ends of the warps were merely bunched together (sometimes the two weft strands were included) and overlapped in the center. A short piece of tule was then wrapped around them a few times and the ends tucked under. However, if there was time, and if it was thought that the bag might be used again soon, more care was taken to finish it. For a more substantial rim that would also give the bag a rounded, wider opening, several of the protruding warp ends were shortened and bent to one side. A few that would form the handle were left long. Those bent to the side were then secured to the body of the bag with an additional flattened tule that was wrapped to form an edge. The remaining long warps were braided on each side and joined in the center with wrapping (Figure 30). This completed the construction process, and the bag was ready for immediate use. Once the materials had been gathered, the entire process took less than an hour.

Other Domestic Uses for Tules

The twining of tules into simple bags and other types of containers as well as into mats, skirts, and sandals is well documented for the Northern Paiute (Lowie, 1924; Stewart, 1941; Fowler, 1989). The use of rushes (*Juncus* spp., *Eleocharis* spp.) for some of these objects is also known: see for example, Wheat (1967:86–7) on making spoons and toy cradles of rushes. On occasion some of the same items were made of cattail leaves. Rushes and cattails were often used for wefts and for binding tule items, apparently because of the greater strength of their fibers. Ties of twisted or braided cattails and rushes might secure the edges of mats or skirts or be used as ties for sandals.

In 1914, Robert Lowie collected at the Fallon Reservation examples of sandals made for men and for women (Figure 31). He also

Figure 30. *Wuzzie George using three-strand braid to make the handle of a tule egg bag. Note that the rim of the bag has not been finished.* Photograph by M.M. Wheat, ca. 1965. Courtesy of Special Collections Department, Getchell Library, University of Nevada, Reno.

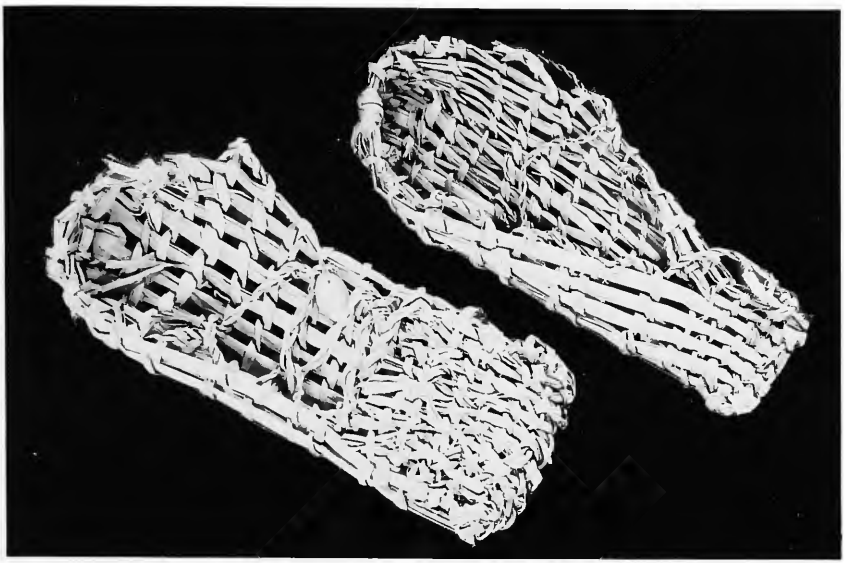

Figure 31. *Models of man's (left) and woman's (right) sandals, collected at Stillwater, Nevada, in 1914 by Robert H. Lowie.* Nos. 50.1/7965, 7966. American Museum of Natural History. Photograph by C.S. Fowler.

photographed their construction (Figure 32). Although Wuzzie George was unable to identify the maker from the photograph, she did remember having heard of such footwear from her grandmother.

The examples Lowie collected were made of tule warps with twined weft rows of cattail leaves. To form the sole of the man's sandal, three tules were folded in half over a fourth to form three doubled warps (Figure 33). Then three additional tules were added to form the heel and sides. These were twined to the sole with the first weft row, which basically shaped the heel by going back and forth across the three new warps at close intervals. When the edge of the heel was reached, twining continued across the sides and sole, catching all warps. At the edge, as each row was completed, the cattail wefts were twisted together to form a slightly raised loop. Twining then continued to form the next weft row. The toe and upper were made by folding the tule warps back on themselves and then catching them as a new warp surface in the continuous twining process (Figure 34). The remaining weft was then twisted (more was spliced into it as required) to form a tie that would lace between the side loops to secure the sandal to the foot.

Figure 32. *Unidentified Northern Paiute woman making tule sandals, Stillwater, Nevada, 1914.* Photograph by R.H. Lowie. Courtesy of Department of Photographic Services (Neg. No. 118595), American Museum of Natural History.

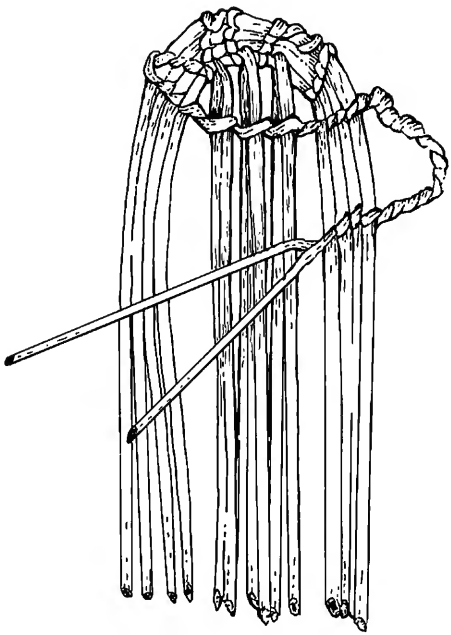

Figure 33. *Method of startng a tule sandal showing sole, heel, and first side loop.* Drawing by Daphne Shuttleworth.

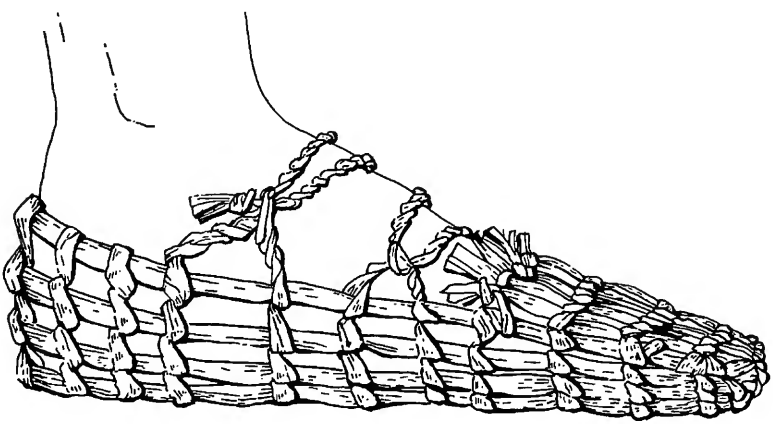

Figure 34. *Finished tule sandal, showing folded-warp toe flap and lacing.* Drawing by Daphne Shuttleworth.

The woman's sandal was constructed similarly, except for the toe section. Instead of making a toe pocket by folding the warps back on themselves, the two sides of the sandal were merely drawn together at the center, and the twining continued around all, forming a tube. The last rows of twining joined top and bottom sections together in the same rows. Again, the weft was twisted to form a continuous cord that served as a tie to be threaded between the edge loops. All twining was, as on the egg bag, in an up-to-the-right direction.

In the late 1950s, in order to demonstrate old patterns to Peg Wheat, Wuzzie George made clothing for herself and her grandchildren of tule warps twined with tule, cattail, and sagebrush-bark wefts (Figure 35). These patterns may have been more elaborate than

Figure 35. *Wuzzie George and grandsons in models of tule clothing, made to demonstrate old styles to M.M. Wheat, ca. 1960.* Photograph by M.M. Wheat. Courtesy of Special Collections Department, Getchell Library, University of Nevada, Reno.

garments of old, but it is known that Northern Paiute women on occasion made similar knee-length, sleeved dresses of skins and twisted coot-skin cordage. The more common early woman's garment, at least for summer, was a front and/or back apron of twined tules, rushes, and sagebrush bark (Stewart, 1941:394; Fowler, 1989).

Wuzzie George also referred to but did not make larger bags of tules and cattails, such as the ones made by men to carry home fish and ducks and the one her grandfather made to store his duck decoys. The latter bag was described as long and narrow, thus suggesting that it may have been constructed more like a mat joined at the ends and partly along the top edge. Bags of similar type occur in archaeological sites in western Nevada (see, for example, Loud and Harrington, 1929, plate 17). Wuzzie George also indicated that twined tule mats were made but, again, did not describe them in detail or construct one for documentation. Mats were used inside houses, although a simple pile of tule or cattail leaves served equally well for seating. House exteriors were covered with cattail shingles, not tule mats.

The Archaeological Record

The archaeological record of the manufacture of bags, sandals, aprons, and mats of tules and other marsh plants goes back at least 3,000 years in the region, and the use of these objects probably goes back much further (Grosscup, 1960; Thomas, 1985). Excavations in the 1910s and 1920s at Lovelock Cave, on the Humboldt side of the West Humboldt Mountains, which separate the Humboldt and Carson sinks, revealed an extensive record of utilization of tules, cattails, and rushes in manufacturing (Loud and Harrington, 1929). This record is matched, although with less numerous examples, at Hidden Cave, east of the Stillwater marshes in the Carson Basin (Thomas, 1985). Other cave deposits in the region also contain similar materials (Baumhoff, 1958; Grosscup, 1956; Hattori, 1982; Heizer and Krieger, 1956; Roust, 1966). Technological similarities and differences raise interesting questions of cultural and ethnic continuities and discontinuities.

Twined tule bags from archaeological contexts are similar in manufacture to the egg bags made by Wuzzie George. All are simple

structures of tule warps with encircling, widely-spaced rows of tule wefts. Most are conical or tubular in shape, and nearly all lack handles (Figure 36). Interestingly, they differ in some features. For example, they rarely start with one weft row catching several warps independently. Rather, warps appear to be clustered or crossed at the base,

Figure 36. *Twined tule bag from Humboldt Cave (26Ch35), Nevada.* Courtesy of Lowie Museum of Anthropology (Cat. No. 1-42285), University of California, Berkeley. [Centimeter scale.]

giving the bags a more pointed appearance. The stitch slant is also almost invariably down-to-the-right rather than up-to-the-right, and warp insertion methods differ.

Sandals, while also bearing some resemblance to the models collected by Lowie at the Fallon Reservation, differ in some features. The sandals from Lovelock Cave, perhaps the best illustrated (Loud and Harrington, 1929, plates 22, 23), have soles patterned like the man's sandal collected by Lowie. Most also have the warp ends brought up to form a pocket for the toe. Several extra warps are added to form the heel and sides, and these are twined to the sole as in the Fallon models. But, again, twining direction on the sandals is down-to-the-right, not up-to-the-right. A few sandals show both twining directions in paired rows, apparently as a decorative technique. Some sandals are finely woven while others are more loosely woven. The open-weave sandals resemble those collected by Lowie more closely than do those of the other type.

Archaeological examples of women's plant-fiber aprons are reported thus far only from Lovelock Cave and Humboldt Cave in the district. Loud and Harrington (1929:53–54, plate 19) report on three from Lovelock Cave, and an additional five are known from the same cave. One was recovered from Humboldt Cave. The materials are not well identified for any of the specimens, but none is specifically said to be of tules or rushes. In construction technique (starting rows of twining, fibers hanging loose below), they match in general those described for Northern Paiute of the region (Fowler, 1989). But without ethnographic specimens, few specifics can be deduced. Front and back aprons of plant fibers are widely distributed in western North America.

Matting made of tules, cattails, and rushes, with twined weft rows of sagebrush, hemp (*Apocynum cannabinum*), and the marsh plants themselves, is also quite common archaeologically. The function of mats, however, cannot be inferred from the data at hand. Some were used as burial shrouds (Loud and Harrington, 1929), but by no means all were found in such contexts. Some may have been for seating, wrapping burdens, making bags, and many other activities. Twining on most mats is widely spaced, and in that sense it seems to parallel those described by Wuzzie George. Some have finishes or finishing rows that are quite elaborate. Again, for the most part, matting has a down-to-the-right working direction, whereas nearly all Northern Paiute twining is in the up-to-the-right direction.

The significance of the similarities and differences between

archaeologically reported materials constructed of marsh plants and those of the Cattail-eaters is unknown, although some people, including the Cattail-eaters themselves, have suggested that another people, referred to as the Sáiduka?a 'Under the Tules,' inhabited the region at the time they arrived. These people are equated by many, including people at Fallon, Pyramid Lake, and Lovelock, with the present-day Pit River tribes (Achomawi, Atsugewi), or occasionally with peoples farther to the north (Klamath, Umatilla). Stories of the Sáiduka?a and others' battles with them are widespread in the local area (Hopkins, 1883; Loud and Harrington, 1929; Reid, n.d.; Fowler and Liljeblad, 1986). They are usually described as being marsh dwellers, with rafts of tules, houses of tules and cattails, and other such features. The stories allege that some Sáiduka?a were driven away to the west and northwest after warfare with later Native American occupants of the region and that the victors killed other Sáiduka?a by suffocating them with fire inside a cave. Many, but not all, think that cave was Lovelock Cave. Although there is no archaeological proof of such deaths at Lovelock Cave or elsewhere, the stories are occasionally used to explain why specific parallels are lacking in some elements of past and present material cultures. As with many problems of prehistory, the questions may be easier to ask than the specific answers are to give. But in general, it can certainly be demonstrated that a tule technology is well entrenched in the region, and has been for several millennia.

Domestic Tule Technologies of Other Groups

Other groups within the Great Basin were involved in manufacturing some of these items of soft fibers. Mats, sandals, and occasionally baskets of tules, cattails, or rushes are known, especially from groups with marshes in their territories: e.g., the Pyramid Lake, Walker River, and Mono Lake Northern Paiute, the Owens Valley Paiute, and some Western Shoshone and Ute groups. The Owens Valley Paiute people made a special tule basket (Figure 37) to collect "sugar" from cane. It is similar in design to ones made for this and other

Figure 37. *Owens Valley Paiute sugar and berry harvester made of twined tules. Collected by J.H. Hudson, 1904, Independence, California.* Spec. No. 59007. Field Museum of Natural History, Chicago. Photograph by C.S. Fowler.

Figure 38. *Pomo twined tule basket containing 24 baked clay balls used for taking waterfowl. Collected by S.A. Barrett, Clear Lake, California.* Courtesy of Lowie Museum of Anthropology (Cat. No. 1-10604), University of California, Berkeley.

purposes by peoples in California, such as the Pomo of Clear Lake (Figure 38). The Pomo actually had tule technology well represented in their material culture, using two species of tules (*Scirpus acutus, S. robustus*) as well as cattails (*Typha latifolia*) for food, clothing (robes, skirts, sandals, leggings), cradles, bags, mats, balsa boats, houses, toys and games, and much more (Barrett, 1952:159). Many of their construction techniques parallel those of the Cattail-eaters, although in twining direction (down-to-the-right) their work resembles archaeological materials from western Nevada.

Parallels in kinds of items and uses are likewise common between the Cattail-eaters and the Klamath and Modoc of northeastern California and adjacent Oregon. The Klamath had an extensive lake-marsh system, Klamath Lake, within their territory that was highly productive of waterfowl and water plants. The Modoc as well had large marshes from which to take food and fiber resources. The technologies reflect marsh utilization in clothing (sandals, leggings), bags, quivers, baskets (nearly all made of *Scirpus*-cordage warp and weft), housing, and other items. As with the Pomo, Klamath and Modoc tule twining is also in a down-to-the-right direction (Barrett, 1910). Additional analyses of these technologies doubtless would reveal aspects of culture-historical interest.

Peoples of California's Central Valley made use of these plants to varying degrees, sometimes having a number of other technological systems operative as well. Housing and watercraft, but also on occasion bags, baskets, and mats, are found among the Patwin, Maidu, Miwok, and other Central Valley tribes. In the southern end of the Central Valley, in the region of Tulare (tule) Lake, the influence becomes even more obvious. There a number of Yokuts subtribes utilized marsh plants more intensively, both in technology and for food, so that their material culture definitely shared this particular feature.

Although the distribution of items such as mats and bags of tules is quite common in western North America, certain other uses, such as for manufacturing duck decoys, are much more limited in extent. Decoys, and the concept of decoy hunting, are particularly significant features of Cattail-eater tule technology and subsistence.

The Tule Duck Decoy

Making tule duck decoys is an old craft in western Nevada. Tule duck decoys recovered from Lovelock Cave, immediately north of the Carson Desert on the shore of the Humboldt Sink, have been dated at 2,080 ± 330 radiocarbon years before the present (Tuohy and Napton, 1986). Complete decoys and fragments thereof, representing several species of ducks and geese, occur in other archaeological sites in the Humboldt Basin as well. Thus, the decoy Wuzzie George makes in the film had many predecessors over a long time span. Jimmy George had been making them since at least the 1930s, and other Cattail-eaters long before that.

Constructing the Duck Decoy

Tule duck decoys, at least those made by the Georges, were of two types: bird skin–covered and plain. Of the two, the skin-covered type is likely the older,[1] as it matches most ethnographic decoys presently held by museums. The plain decoy is a modern adaptation, made to demonstrate the techniques and also to sell to collectors. Feathered or plain, decoys (*pihítia* 'duck decoy' or *tía* 'decoy') were ordinarily crafted in the fall when the tules were dry but before they became brittle with age or damaged by wind and rain. Long stems of hardstem bulrush (*Scirpus acutus*) were first selected to make the body of each decoy. The tules needed to be five or six feet long and in good condition. About 15 to 25 were required to make each body. In addition, several stems of cattail were needed to make ties for the body, and more cattail stems and leaves were required to form the decoy's head. Working with dry tules made the tying easier because the tules would not shrink as much, thereby loosening the binding. If decoys needed to be made during the summer, the tules were cut and allowed to dry before construction was attempted.

The first step in making the body of the decoy was to arrange all the tules so that they were parallel, with some butt ends and some tip ends together so that the entire bundle was quite uniform in thickness. Then two to four tules were selected to bind the bundle together in the center. This was accomplished by slightly twisting the stalks and wrapping them a few times around the bundle, but taking some care to flatten the bundle at the same time so that the center was more oval than round. In Jimmy George's decoys, the remaining ends of the tule stalks used for wrapping were bound together with twisted cattail cordage to form the decoy's back (Figure 39). In Wuzzie George's decoys, the ends were allowed to lie parallel to the remaining tules in the bundles, to be incorporated into the twined rows that would form the rest of the body.

With the center bound, the next step was to make some rows of twining that joined both sides of the bundle and further shaped the body. Depending on the maker, either twisted cattails or tules were preferred for this. Jimmy George made ties for his decoys of cattails; Wuzzie George preferred to use long tules that she had first flattened

Figure 39. *Jimmy and Wuzzie George working on the tule float for a duck decoy. Note the central wrapping that forms the chest and back of the duck, and the first row of twining for one side. Cattail is being twisted to twine the opposite side.* Photograph by M.M. Wheat, ca. 1964. Courtesy of Special Collections Department, Getchell Library, University of Nevada, Reno.

between her fingers. With either alternative, the tie material was first folded in half around three or four tules at one side of the bundle, about two to three inches from the center tie. The tie was then brought together around these few and given a half-twist to hold them in place. Three or four more next to these were then taken up between the two ends of the tie, and a half twist joined them as well. This procedure continued until all the tules in the bundle had been brought together into a single fan-shaped array.[2] The two ends of the tie were then either tied in a square knot or twisted together and tucked into one of the rows of tules.

A second row of twining further joined the tules of the bundle, this time pulling them tightly together so that the body became more elongated than fan-shaped. The ends of the tie for this row were treated similarly. The maker then turned the body over and further emphasized the shape either by bending the sides to round them or using his/her fist as a template over which to shape them. The tules projecting at the rear were then gathered together and bound tightly with twisted cattail or tule cordage. The long tules that projected to the rear of the binding formed an elongated tail.

With a knife—in former times perhaps of obsidian or other sharpened stone or bone—the projecting tules were cut close to the binding, but in such a manner that the tail had a slight upsweep. The body was further shaped with the hands into its final form—hollow in the center and flat on the bottom, but rounded on top to resemble a duck's back. The decoy was now ready for a head.

Decoys that were to be covered with whole duck skins required less attention to the details of the head than those that would have feathers inserted in the body (archaeological examples only) or be left unfeathered, like the one Wuzzie George makes in the film. Heads for the plain and feather-covered decoys required realistic features. They were made separately and then attached to the bodies. Given that the head was normally left attached when a duck was skinned, for the skin-covered decoys the head was merely stuffed with grass or shredded tules and a stick then added through the decoy body to keep it upright. The edges of the skin were pulled tight over the body float and attached with greasewood pins. The wings and feet were ordinarily removed when the skin was first prepared.

Heads for the plain or feather-covered decoys were usually made of cattail leaves, as these are flat and easy to wrap. First, the leaves were stripped from a cattail stalk and set aside. A piece of the stalk,

or alternatively a length of leaves folded back two or three times to form a five- or six-inch piece, served as the core of the head.[3] A second but smaller piece was placed at right angles to it to form the beak. A cattail leaf was then carefully spiraled around the two cores to join them. Wrapping continued with additional leaves until a head of the desired size and shape was created. Five to eight leaves might be required. The end of the last leaf was carefully tucked under one of the wrapping rows to secure it. Considerable care was required to make all these wrappings as tight as possible, because even though already dry, the cattails shrank less than the tules, and so the wrappings could loosen or untwist. The completed head was then inserted into the tule body of the duck and secured with a pair of greasewood pins inserted laterally through the body or by tying the head from underneath.

Most of the duck decoys made by Wuzzie George, by her son Ivan, by Ivan's sons Davin and Martin, and by Winona Thomas's daughter, Louella, are plain and lack feather decoration (Figure 40). Because the George family has been making the decoys only in limited numbers for sale to collectors since the 1970s, and because a federal statute[4] prohibits the for-profit sale of feathers and other products of migratory waterfowl, they do not add feathers or duck skins to their works. Older "working" decoys made for use by Jimmy George (Figure 41) and by other unidentified Cattail-eaters, now preserved in museum collections, are skin- or feather-covered. Thus the decoy-making tradition has changed through the years to accommodate new circumstances and needs.

Great Basin Duck Decoys

As noted previously, the decoys made by the George family are part of a long tradition in western Nevada and the Great Basin. In nearby Lovelock Cave, in the Humboldt Basin, 11 decoys (Figure 42), modeled after canvasbacks, were recovered in a tule bag cached in a pit. Of the 11, 10 were painted and nine had white feathers attached to the sides of the body (Figure 43). One lacked paint or feathers. Construction details differ to some degree from those characterizing decoys made by the George family and others. The tule bodies, instead of

Figure 40a (above). *Twined tule duck decoys made by Davin George (left) and Wuzzie George with Louella Thomas (right), ca. 1980.* b (below), *Twined tule duck decoys made by Davin George: (left) after the form of archaeological decoys from Lovelock Cave, and (right) as a miniature, 1983.* Photographs by C.S. Fowler.

being twined in two bands to shape them, are divided into two large bundles on each side beneath where the head is attached. The second tie row spans these two, thus dividing the body into two parts on top of the back. The tail tie is a heavier two-ply tule cord; its loose ends are twisted together underneath after one has come up through the body at the midline and been looped over the tail tie to further secure it. The tails of the decoys are blunt-cut—some possibly burned—and usually turn down rather than up, as on the Georges' decoys. The heads show very careful construction and are wrapped with cattail

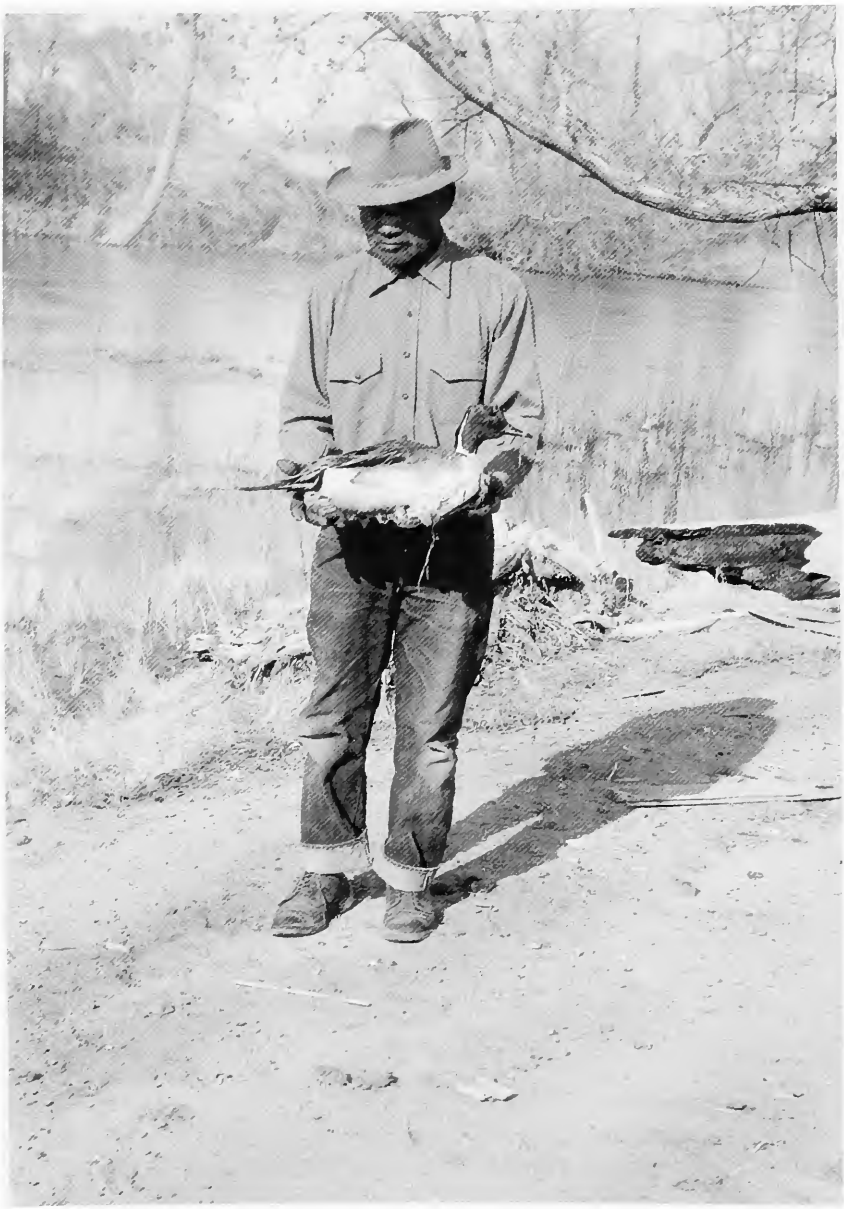

Figure 41. *Jimmy George standing on the bank of the Carson River with completed pintail duck decoy he manufactured.* Photograph by M.M. Wheat, 1964. Courtesy of Special Collections Department, Getchell Library, University of Nevada, Reno.

Figure 42. *Mark R. Harrington with the cache of tule duck decoys excavated from Lovelock Cave, Nevada, in 1924.* Courtesy of Museum of the American Indian–Heye Foundation (Neg. No. 9452), New York.

leaves. Instead of being stuck into the body on a vertical peg or stem, the heads appear to be prepared after several short lengths of tule have been doubled over the first body tie, twisted, and then wrapped to complete the form. The chests of the decoys were also very carefully wrapped and painted black with natural pigments. The necks were painted red and the bills black, the colors characteristic of the Canvasback drake.

White (in some cases brown) feathers six inches or more in length were attached to the sides of most of these decoys. First the quills were inserted under the edge of the chest wrapping. Fine native cordage was then laced between a string down the back and the tules near the bottom edge of the decoy. This held the feathers in place. The decoys found in the Lovelock Cave pit are similar enough to have been the work of a single maker, prepared for hunting forays but cached in the cave in between expeditions. Most have a string

Figure 43. *Duck decoy from Lovelock Cave, Nevada, painted and feathered to resemble a Canvasback.* Spec. No. 13/4512. Photograph by Carmelo Guadagno. Courtesy of Museum of the American Indian–Heye Foundation, New York.

attached to the front, a clue as to how they were used (see "Uses of Decoys," below).

In addition to the cache of decoys from Lovelock Cave, several stuffed heads of waterfowl, some of which may have been parts of decoys, were recovered from this cave and others in the Humboldt Basin. The species represented include the Common Merganser, White-fronted Goose, Canada Goose, Ring-necked Duck, American White Pelican, American Coot, and California Gull (Loud and Harrington, 1929;49,151; Heizer and Krieger, 1956:13). Humboldt Cave, about 12 miles southwest of Lovelock Cave and likewise in the Humboldt Range, also yielded a decoy body with a mud-hen skin stretched over its surface (Heizer and Krieger, 1956:13).[5] Its construction more closely resembles that of the Georges' decoys than those found in Lovelock Cave. Although the Lovelock Cave specimens have been radiocarbon-dated at roughly 2,000 years of age, the partial decoy from Humboldt Cave has not been dated. But these various archaeological finds definitely indicate that decoy making and decoy

hunting have been part of the region's economic system for a very long time; the people of this region in historic times were Northern Paiute referred to by other Northern Paiute people as Kíipatikadi.

In addition to the people at Stillwater and the Humboldt Sink, the Northern Paiute people at Walker River, Pyramid Lake, Honey Lake, and Surprise Valley also reportedly hunted waterfowl with decoys (Stewart, 1941:369). In fact, the earliest historic observation of the use of duck decoys by Nothern Paiute people occurred at Walker River. Edward M. Kern (1876:480), who accompanied Captain John C. Frémont on his 1845 exploring expedition through parts of the Great Basin, visited an Indian camp at the mouth of Walker River, where it flows into the lake. On that occasion, he observed that the people "had some very pretty decoy-ducks, made from the skin of those birds, neatly stretched over a bulrush float." He did not comment further on their use, although he was there in December, when hunters may have been using the decoys to attract winter visitors, such as canvasbacks, to Walker Lake. In 1890, James Mooney collected the first actual Walker River specimen—a partial decoy lacking head and feathering.[6] Mooney was in the area for the Bureau of American Ethnology of the Smithsonian Institution, interviewing Wovoka, or Jack Wilson, famous prophet of the 1890 Ghost Dance (Mooney, 1896). Mooney made a small material culture collection at the time of his visit; it includes a tule float over which a duck skin could be stretched. The float has two rows of twining and a tail wrap, similar to the decoys made by Wuzzie George. It also has a center back configuration like Jimmy George's decoys. Mooney does not furnish information on the decoy's use.

A complete decoy was collected from Walker River in 1924 by Mark R. Harrington for the Museum of the American Indian–Heye Foundation in New York (Figure 44). It shows the same construction of the float as does Mooney's, but features the skin of a Canvasback female, complete with head. The head is apparently stuffed with grass or tules.

In 1875, Stephen Powers collected a duck decoy at Pyramid Lake for the Smithsonian Institution's Centennial Exposition display in Philadelphia. He described it thusly: "Imoodoowe, duck decoy, a duck skin well preserved and neatly stretched on a frame of tules, so as to float on the water—very life-like" (Powers, 1876:n.p.). Although the decoy has since disappeared from the collection, its description matches closely the skin-covered versions made by the Walker River and Stillwater people. Unfortunately, the species of skin for the decoy

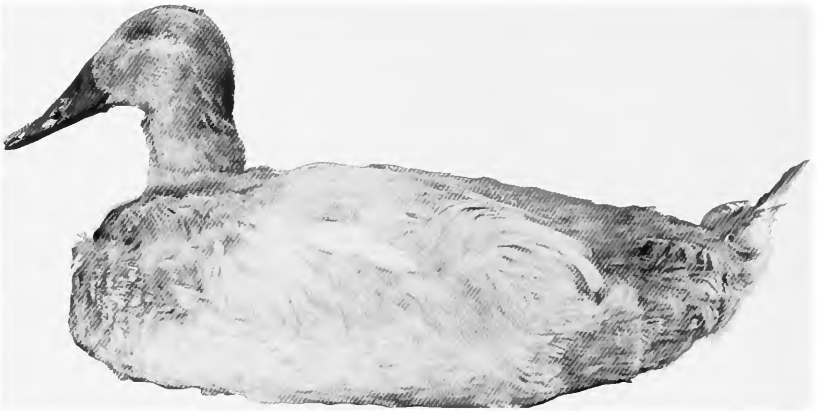

Figure 44. *Tule duck decoy covered with female Canvasback skin. Collected by M.R. Harrington, Walker River Reservation, Nevada, 1924.* Spec. No. 13/4415. Museum of the American Indian–Heye Foundation, New York. Photograph by D.D. Fowler.

is not given. However, the term Powers uses, "Imoodoowe," approximates *imúduyu,* the Northern Paiute name for the American Wigeon (*Anas americana*), perhaps suggesting that this was the species of the skin on the decoy. The term for decoy is generally *tía;* but one can well imagine that a person asked to name a complete decoy might give the name of the bird instead. In the 1930s, anthropologist Willard Park learned of decoy hunting at Pyramid Lake but was told that it "only was done for canvasbacks" (Fowler, 1989:183). No decoys from Pyramid Lake are presently known from museum collections.

Decoy hunting at Honey Lake is documented by Park (Fowler, 1989) and listed by Stewart (1941). According to Park's information, decoys were made of duck skins (species not identified) stuffed with sagebrush bark, tules, or "anything light." The legs and head were left attached and the skin stuffed to shape when wet. A string was attached to the legs. Surprise Valley decoys were also said to be made of skins stuffed with grass (Kelly, 1932:90). Museum specimens and/or photographs of decoys from these areas are lacking.

Decoys from Stillwater are well represented in museum collections; they span almost a century. In addition to the unfeathered decoys made by Wuzzie George (examples in the Nevada State Museum, the Lowie Museum of Anthropology, the Museum of the American Indian–Heye Foundation, and the Churchill County Museum), there are also feathered versions made by Jimmy George. In

1956 he made a decoy with a Northern Pintail skin for Margaret Wheat (1967:47; see also Figure 41). In 1936 he sold a decoy with a male Canvasback skin to Omer Stewart for the Lowie Museum of Anthropology (Figure 45). This decoy has the same features of the float as the Northern Pintail he made later (i.e., center wrapping and two rows of twining plus tail wrap). In 1924 two decoys—one a Canvasback female and the other a Bufflehead male—were collected from an unknown maker at Stillwater (Figure 46). These decoys are presently in the Museum of the American Indian–Heye Foundation, New York. The Bufflehead features a center wrapped section (Figure 47), which the Canvasback lacks. It has two twined rows, like Wuzzie George's decoys. And in 1914 Robert Lowie collected both a Canvasback male and a female in the Stillwater area for the American Museum of Natural History in New York (Figure 48). Neither of these decoys has a center wrap, but both have strings attached to the front. Lowie visited with several persons at Stillwater, but mentions especially Sam Dick and Billy Springer. It is possible that either of them could have been the maker.

By far the oldest decoys in museum collections also come from the Stillwater area. In 1858, Captain James H. Simpson collected three Canvasback decoys and one Redhead from the shores of Carson Lake. These were deposited in the Smithsonian Institution (Figure 49). Three are male and one female. All are made with twining rows rather than the center wrap. Greasewood pins hold the heads upright and in place. Tails are short, rounded, and blunt-cut. Robert Ridgway (1877:624), the ornithologist who examined the decoys for the Simpson report, comments on them as follows:

> In the winter this [Redhead] is an abundant species in the lakes of the Great Basin. It and the succeding species [Canvasback] are frequently used by the Paiute Indians in making very artistic and elaborate decoys which have a body of bent and twisted *tules* (*Scirpus*), with the skin stretched over it, the head prepared and positioned in a style equal to that of the most accomplished taxidermist. The floating decoy is anchored by a stone tied to a string, the other end of which is fastened to the bill.

Among other makers of decoys in the immediate vicinity are the Washoe, centered around Lake Tahoe and in the valleys immediately to its east. The only Washoe decoy presently known to exist (Figure 50) is in the Eastern California Museum in Independence in southern

Figure 45. *Jimmy George with two Canvasback decoys, one of which was sold to Omer Stewart for the Lowie Museum of Antropology, University of California, Berkeley.* Photograph by O.C. Stewart, 1936.

Figure 46. *Tule duck decoy covered with male Bufflehead skin. Collected by M.R. Harrington, Stillwater, Nevada, 1924.* Spec. No. 13/4188. Museum of the American Indian–Heye Foundation, New York. Photograph by D.D. Fowler.

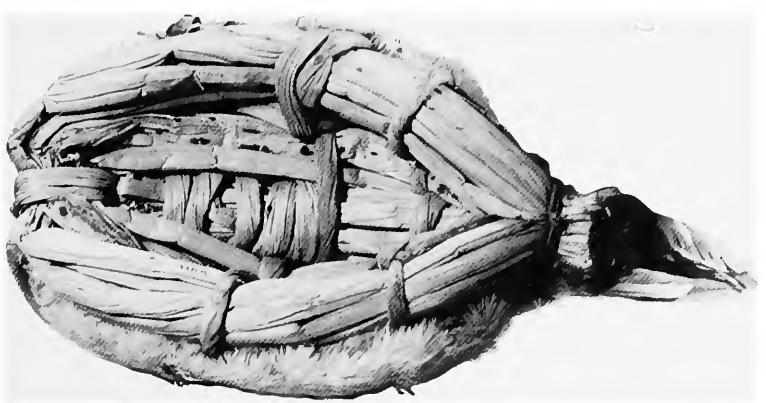

Figure 47. *Underside of tule duck decoy (Bufflehead), showing central wrapping. Collected by M.R. Harrington, Stillwater, Nevada, 1924.* Spec. No. 13/4188. Museum of the American Indian–Heye Foundation, New York. Photograph by D.D. Fowler.

Figure 48. *Tule duck decoy with male Canvasback skin. Collected by R.H. Lowie, Stillwater, Nevada, 1914.* Spec. No. 50.1/7934. American Museum of Natural History, New York. Photograph by C.S. Fowler.

Figure 49. *Tule duck decoy with male Canvasback skin. Collected by J.H. Simpson on the shores of Carson Lake, Nevada, 1858.* Cat. No. 7127. Courtesy of Department of Anthropology, Smithsonian Institution.

Owens Valley, California. It was collected in Carson Valley, Nevada, in 1935. The decoy is of tules and has a generally flattened body float and a long neck. The neck and head are of tule stalks doubled over the center section of the float and then tied together in six places. They bend and taper to give the impression of a head and beak, but neither is wrapped. Nothing else is known of this tradition among the Washoe people.

Elsewhere in the Great Basin, the use of duck decoys is reported only sporadically. Given that a number of local tribes and subtribes did not have marshes in their areas that attracted waterfowl, this may not be surprising. However, some groups that did have marshes apparently did not use the technique. Among the Western Shoshone, for example, only the Spring Valley, Battle Mountain, and Promontory groups reported making and using decoys (Steward, 1941:274; 1943:295); the people at Ruby Valley, with ample marsh resources,

Figure 50. *Washoe tule and cattail decoy, probably of a goose. Collected in Carson Valley, Nevada, 1935.* Spec. No. A335. Courtesy of Eastern California Museum, Independence, California.

apparently did not. The Battle Mountain people used decoys (what Steward called "stuffed birds")—three in a line tied to a single string—along the Humboldt River to attract waterfowl. The people in Spring Valley also used "stuffed birds," but in what manner is not described. Steward noted that the Shoshone at Promontory in northern Utah used "dead duck decoys" as follows: "Duck rests on [the] surface of the water, head held erect by a crotched stick stuck in the mud" (Steward, 1943:360). The place of use is not specified, but it is likely the marshes at the mouth of Bear River of other freshwater areas on the north end of the Great Salt Lake.

Two Ute groups reportedly used decoys with duck-skin coverings and tule bodies—the Timpanogots Ute of Utah Lake, which is an excellent waterfowl habitat, and the Pahvant Ute around Sevier Lake, another shallow-water area with good potential for waterfowl. One Ute group in western Colorado, the Uncompahgre, reportedly used decoys of "bark bodies" covered with bird skins (Stewart, 1942). Examples of neither Western Shoshone nor Ute decoys have been preserved in museums. Individuals interviewed from the Southern Paiute, Owens Valley Paiute, Panamint Shoshone, Northern Shoshone, and Bannock[7] tribes in the 1930s denied using duck decoys (Steward, 1933, 1941, 1943; Stewart, 1941).

California Decoys

In addition to the primary archaeological and ethnographic distribution of duck decoys in the western Great Basin, several historic groups in California are also reported to have made and used them. In the areas around San Francisco and Monterey bays, Coastanoan groups were reported as early as 1776 to have made and used duck and goose skins stuffed with grass to attract migrating waterfowl (Heizer and Krieger, 1956:76; Margolin, 1978:38). In 1853, John Russell Bartlett (1854:31), traveling in California as the United States–Mexico boundary commissioner, observed "decoy ducks which they use to good advantage." He saw these in a tule-covered house in River Patwin country, in the Central Valley along the Sacramento River (Figure 51). Anthropologist A.L. Kroeber (1932:390) later confirmed this observation and described the decoys as being modeled

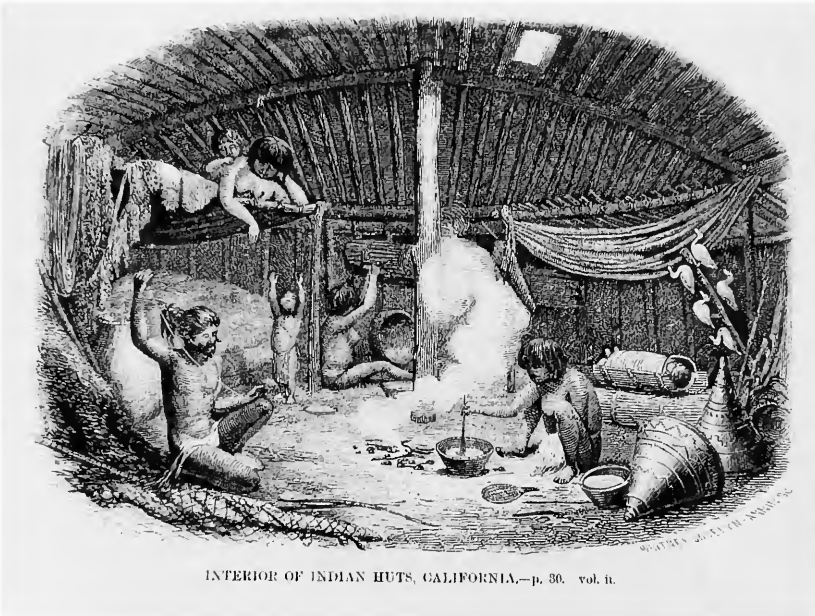

Figure 51. *Drawing of the interior of River Patwin tule house, as seen by John Russell Bartlett in central California in 1853. Duck decoys are visible on the right* (Bartlett, 1854).

on ducks and geese and stuffed with grass. Stephen Powers (1877:282), another early observer of California Indian life, noted in 1872 the use of duck decoys in conjunction with nets to take waterfowl in Maidu territory, also in the Central Valley. And during the 1930s, when numerous groups of California Indians were visited, the use of duck decoys was affirmed for subgroups of the Yokuts, Tubatulabal, and Kawaiisu of southern California, as well as the Klamath and Modoc of northern California and southern Oregon (Driver, 1937:62; Ray, 1963; Voegelin, 1942). If the data were more complete, it is likely that other Central Valley, lake, and coastal groups could be included in this list as well, as major branches of the Pacific flyway follow coastal and interior routes. Migratory and resident waterfowl would have been abundant in these areas, and decoys could have been used to advantage. Unfortunately, there are no known examples of California waterfowl decoys preserved in museum collections, so construction details cannot be compared with those of western Nevada specimens. Given that preservation of perishable materials is poor in

archaeological contexts in California, there are no data available for estimating the relative ages of California and Great Basin complexes.

Uses of Decoys

Duck decoys, wherever reported in the West, appear to have been used in conjunction with two common hunting techniques: shooting waterfowl with bow and arrow and netting them. In the 1930s, when Northern Paiute decoy hunting was described to Willard Park (Fowler, 1989) by consultants from Honey Lake, Pyramid Lake, and Walker River, all noted that decoys were set out at the edge of open water in marshes by individual hunters who then concealed themselves in blinds of tules and cattails—the natural marsh cover. They set out five to ten decoys, either linked together by means of tether strings attached to the front of each decoy and then to a common line, or individually anchored in place with a small rock attached to each tether string. Hunters sometimes used voice calls as well to attract waterfowl at the area. Once a group came within range, the hunter shot at the ducks with special arrows (*pɨhípoŋos·a* 'duck arrow'). The arrow was made with a carved foreshaft of greasewood featuring either a bulbous projection an inch below the tip or a small obsidian point. Hunters apparently aimed at the water just in front of the duck, and either type of arrow would glance up and hit the duck. The hunter then had to swim or wade into the water to retrieve his quarry.

The other technique for taking waterfowl that involved decoys was netting them. This technique was also widely reported in California. As described for the Coastanoans, the technique involved stretching a net about four to six feet high and 50 feet long across an opening between clumps of marsh plants in quiet water. The net was stretched between two poles, with one end fastened to the top of one of the poles so that the bottom of the net was at the water line. A cord ran along the top of the net and through a crotch in the second pole. The remaining length of cord went to the hunter concealed in the vegetation, who allowed the cord to slacken so that the net was submerged in the water. When the ducks were attracted to the area by decoys floating near where the net was set, they were

suddenly flushed. As they rose from the water, the cord was pulled tight and the net came up to the top of the second pole, blocking their flight path. The ducks hit the net and, as the cord was relaxed, became entangled in it. The entire net could be pulled to shore and the ducks removed (Margolin, 1978:38–39; Barrett and Gifford, 1933:186–187). An alternative netting technique reported for the Modoc of northern California and Oregon was to set the net loosely on the poles at night, with the decoys tethered near its base. The ducks became entangled during the night, and the hunters retrieved them the next morning (Ray, 1963).

Wilke and Thompson (1989) have suggested recently that netting techniques such as these, or even the use of long fixed nets set above the water, would be most effective with ducks that patter or run across the water on takeoff rather than those that rise abruptly into the air. This would include ducks of the Tribe *Aythyini*, the Pochards and their allies. These include the Canvasback, Redhead, Bufflehead, and other diving ducks. The Common Merganser, Northern Pintail, American Coot, and others (partial decoys of which were recovered archaeologically from Nevada caves) have similar habits.

On the other hand, nets for geese (Canada Goose, White-fronted Goose, etc.) might be more effectively used as these birds land. With large wing spans, they have to glide in slowly, feet forward, to reduce air speed for landing. Decoys[8] for these species might attract them to land at a certain spot on the marsh surface, where a net might then be raised quickly, blocking their landing and entangling them. They would have a great deal of difficulty reversing their path of descent or attempting to become airborne again (Fred Ryser, personal communication, 1989).

Thus, the manufacture and use of decoys among the Cattail-eaters as well as other Northern Paiute, Great Basin, and California groups is part of a larger technology for taking waterfowl that has several other aspects (net making, bow-and-arrow hunting, knowledge of avian behavior, etc.). Properly set in this more general context, the decoys made by the George family as well as those recovered archaeologically in Nevada's deep, dry caves have a broader significance than can be found in the details of manufacture. They are part of the total economic systems of Indian peoples, and are representative of a class and type of knowledge that transcends the domain of craft.

The Cattail House

The Tóidikadi built several types of structures to shelter themselves from the elements during various seasons of the year. Among them were semi-circular windbreaks of brush that served as temporary summer shelters; four-post shades with brush roofs that also served as storage platforms;[1] dome-shaped houses made of cattail mats that were frequent winter dwellings; and conical earth-covered log houses that provided winter shelter for families that decided to spend the season in the mountains. Of these types, the most common were the windbreak and the cattail-mat house.

When Wuzzie George was a girl, she lived in a cattail house near the Freeman ranch at Stillwater. The small community included four or five other cattail houses occupied by relatives and friends of Sam Dick's family. It was not until Wuzzie George moved to Fallon that she first lived in a house made of boards. Thus her earliest memories were of cattail houses, including their warmth in winter and coolness in summer.[2] By the time she and her daughter, Winona Thomas, built the house shown in the film (1964), she had already built for demonstrations several others from her long memory. In the construction of these, Jimmy George usually assisted, as did several of the Georges' friends (see Wheat, 1959, 1967).

Building the House

The construction of a cattail house (*tóinobi*) required several types of materials and was usually a cooperative effort between men and women. First, stout but tall and flexible poles had to be selected to make the framework. This was often the job of men, who would scout the banks of the various branches of the Carson River and Stillwater Slough for willows or young cottonwood saplings of the proper dimensions—10 to 15 feet long and about one and one-half to three inches in diameter at the base. Such poles were not always easy to find, and thus men kept track of their locations when they

did see them. The number of poles required depended on the size of the house to be built, which in turn was usually a function of the size of the family to be accommodated. Smaller houses might require 10 to 15 poles, while larger ones might take 20 or more. A common house size for a family of five to seven people was about 10 to 15 feet in diameter, and usually required as many poles. In former times, poles were cut with stone or wood wedges and hammer stones, or by digging out the pole and breaking off the roots. Once the poles were cut, they had to be trimmed of all side branches and then transported to the construction site, which usually was on well-drained ground near the marshes. Senior men were in charge of site selection. Ordinarily three to four families set up their houses near one another, but some people preferred to separate themselves from the others and build their houses some distance away.

Once a house site had been selected, the poles (*watá*) were arranged in a circle; a hole about 8 to 12 inches deep was dug to accommodate each of them. The two poles that would serve as doorposts were a little thicker than the others, and these were set in the ground a little farther apart and on the east side of the circle, so that the doorway would face east. This placed the door away from the prevailing winds and also allowed the people to greet the rising sun each morning and offer a prayer for a good day as they emerged from the house. Holes for each pole, including the doorposts, were dug with a fire-hardened digging stick of strong wood. In the film, Wuzzie George uses a digging stick of big greasewood (*Sarcobatus vermiculatus*), a very dense wood that will not split or break easily. She patiently digs each hole, carefully removing the loosened soil with her hand and piling it to the side. She then buries the butt end of each pole by returning handfuls of the loosened soil to the hole and tamps the soil with her digging stick to secure it.

Once the outline of the house was complete, the remainder of the framework needed to be finished. Again, depending on the size of the house, three or four horizontal rings of slender willow poles needed to be added to the uprights to secure them (Figure 52). These decreased in size, drawing in the poles to form the house's domed shape. The rings were usually tied in place with twisted lengths of sagebrush bark or slender, flexible stems of willow.[3] A tie was placed at the intersection of each pole with each of the willow rings. If the house was tall, 10 to 15 feet, men had to construct a temporary ladder of willow poles with crossbars in order to secure the top ring that served as the smoke hole. The smoke hole, an important finishing

Figure 52. *Jimmy George and unidentified woman securing horizontal willow rings to framework of a cattail house, ca. 1958.* Photograph by M.M. Wheat. Courtesy of Special Collections Department, Getchell Library, University of Nevada, Reno.

feature of the framework, was called *nobítipa* 'house's mouth.' It was required to vent smoke from the interior cooking and warming fire. Individuals interviewed in the 1930s by anthropologist Willard Park estimated that it took about a day and a half to get the materials and build the house framework (Fowler, 1989).

The next major step in house construction was to make the mats that covered the pole framework. Among the Cattail-eaters, the favorite mat construction material was cattails (*Typha latifolia; T. domingensis*); with their flat leaf surfaces, they were felt to shed rain and snow better. Other Northern Paiute peoples, however, did make tule mats for house coverings, and thus called their houses *sáinobi* 'tule house(s)' instead of *tóinobi* 'cattail house(s)' (see "Cattail and Tule Houses Elsewhere in the Region," below). Whichever alternative was chosen, a considerable amount of material needed to be gathered, especially if the house was to be large.

Fall was the usual time of house construction, and so the cattails were often dry or drying when gathered. This reduced their weight, making transport to the construction site easier. If a house needed to be built or repaired in another season, it was usually preferable to cut the cattails and let them dry before beginning construction. The

drier material was also easier to work with, and would not shrink. Once the cattails were cut[4]—both men and women participated in this activity—they were stacked into piles about three to four feet in diameter. The bundles were then bound with lengths of thick cordage, often made of shredded sagebrush bark. An additional length of thick cordage was tied to each bundle to form a tumpline so that the bundle could be carried on the back. The tumpline was made to fit across the forehead for women and across the shoulders for men. Successive trips by both brought all the cattail bundles to the construction site. Women then began the job of mat construction.

Willows to serve as the mat crosspieces first had to be located and cut. Each mat required six willow poles about five to six feet long, and it took from 15 to 20 mats—again, depending on the size of the house—to complete the house. To make each mat (*sɨ́ɨgʷa*), three poles were placed on the ground parallel to each other and roughly one foot apart. Two or more of the untied bundles of cattails were then placed across these, cut ends in the same direction, and loosely spread to about a two-inch thickness (Figure 53). The three additional poles

Figure 53. *Wuzzie and Jimmy George with a completed cattail-house mat. Note the horizontal willow poles (tied to others on the opposite side of the mat) used to secure the cattails.* Photograph by M.M. Wheat, ca. 1958. Courtesy of Special Collections Department, Getchell Library, University of Nevada, Reno.

were then placed at the same position as the three underneath, but on top of the cattails. Lengths of dampened and twisted sagebrush bark then joined the sets of poles at four or five intervals along their length so as to secure the cattails between. When the requisite number of mats had been made, it was time to add these to the house frame.

Beginning at the bottom of the house next to one of the door posts, cattail mats were secured by their crossmembers to the framework until an entire row was formed (five or more mats, depending on the house's circumference). The mats were allowed to overlap slightly so that rain or melting snow would not leak in. They were also arranged so that the butt ends of the cattails were at the bottom to further facilitate precipitation runoff. Each mat was tied to each of the house pole uprights and crossbars wherever the poles and crosspieces intersected. The second tier of mats was added above this row, again slightly overlapping the lower tier shingle-fashion. The second tier required fewer mats because the framework was narrowing. A third tier, sometimes only three or four mats wide, was tied to the smoke-hole ring to complete the surface. One of these usually spanned the doorposts, so that the entry was about five feet high. Two additional mats were set aside, one to be used occasionally to cover the smoke hole during bad weather and the other to serve as the door.

Before the door was finally secured by ties to one of the doorposts, an additional feature had to be added to the doorway. This was an elongated bundle of cattails, about five feet long and six inches thick, that was tied horizontally above the door opening (Figure 54). Sometimes two additional bundles were added, one to each of the downturned ends of this bundle, so that the doorway was fully outlined. This bundle rim around the doorway deflected precipitation that might otherwise pool at the threshold, creating mud. By deflecting rain and melting snow, the entryway could be kept relatively dry even in the worst of weather. Once the bundle rim had been added, the mat door would be attached by string ties to one of the door posts. Sometimes a skin was suspended from one of the horizontal rings of the house frame, substituting for the door mat; it was equally effective.

In order to further secure the series of mat layers to the house frame, additional lengths of willow were joined one to another to create rings that could be placed over the mats at intervals of from one to two feet. These were then also tied through the mat layers to the house frame underneath. The willow rings prevented the wind from lifting any of the mats and tearing them from the frame. The

whole structure thus became quite secure against the challenges of weather conditions. Gusting winds, snow, freezing rain, and major downpours caused little damage to or difficulty for houses built with care. Wuzzie George and other people of her generation reported that they remained warm and dry inside their cattail houses during the winter, certainly warmer and drier than in the early board houses built on the reservations or next to Euro-American settlements.

The interior of a cattail house was arranged for cooking, sleeping, and storage. Cattail leaves, sometimes interspersed with layers of grass, were spread to form the floor, especially in cooler weather. In the center, in a clear space, a pit about 6 inches deep and 2 feet in diameter was dug to contain the fire. Cooking, such as stone-boiling stews and mushes or roasting small game, might be done on this fire, but food might also be prepared outside on a separate fire, perhaps one partly encircled by a brush windbreak. The central fire in the house was often also used to warm the occupants during the night. According to Wuzzie George, wood was placed on the fire at night in such a manner that it would burn slowly and require little tending.

Figure 54. *Completed cattail house, showing placement of mats and cattail bundles to outline the door. Note cloth door covering.* Photograph by Mary Freeman, Stillwater, Nevada, ca. 1900. Courtesy of Special Collections Department, Getchell Library, Univesity of Nevada, Reno.

In the morning, partly burned embers could be revived for the morning meal.

The place of honor in the house, usually reserved for its senior male, was directly opposite the door. This spot, called the *kapípanadi*, was also the best protected, for when storms blew from the west rain might be driven through the smoke hole toward the area near the doorway. During bad weather, people crowded toward the *kapípanadi* for sitting, and also moved their rabbit-skin blankets and tanned-bobcat-skin robes as close to this area as possible for sleeping. When sleeping, people placed their feet to the fire and their heads toward the back wall. The cattail and/or grass layers also served as a mattress. Upon arising, bedding not needed for wearing during the day in cold weather was rolled against the wall.

Baskets were hung around the walls of the house from the interior crossmembers. A man's bow and quiver were stuck in back of a crossmember near the door. The large, bipointed and pinyon pitch–covered basketry water jar was also near the door to make it convenient

Figure 55. *Vestibule entrance to a cattail house, with cattail mat as roof.* Photograph by Mary Freeman, Stillwater, Nevada, ca. 1900. Courtesy of Special Collections Department, Getchell Library, University of Nevada, Reno.

Figure 56. *Cattail houses with postcontact additions of cloth, central stove.* Photograph by Rolly Ham, ca. 1902, near Fallon, Nevada. Courtesy of Special Collections Department, Getchell Library, University of Nevada, Reno.

for all to drink. A pile of firewood was kept near the entrance. Other belongings were outside the house or against its back wall.

Some cattail houses in the Stillwater area had separate entryways added to the front of the house. Two additional posts about 5 feet high were placed a few feet from the door and willow stringers went from the tops of these to the house frame. This vestibule, when covered with tule mats (Figure 55), further reduced cold inside the house and also served as an additional storage location.

Because of the scarcity of building materials for house frames, especially the upright poles, houses might be dismantled and reassembled if the family decided to move to another location in the marshes. If the cattail mats were in good condition, they might also be transported, but given the abundance of cattails, less attention was paid to salvaging them than the house framework. By the time Wuzzie George was born, people were apparently moving residences only rarely. People did move at the time of the pine-nut harvest in the Stillwater Range or the Clan Alpine Mountains, but such moves did not require that the valley house be dismantled, as the pine-nut camps were temporary and a different type of house was used. Otherwise, the families resided more or less permanently in fixed camps near the ranches at Stillwater. Mats on the houses were renewed periodi-

Figure 57. *Unidentified man standing next to a gabled canvas tent with cattail mats at sides and end, a postcontact version of the traditional cattail house.* Photograph by Mary Freeman, Stillwater, Nevada, ca. 1900. Courtesy of Special Collections Department, Getchell Library, University of Nevada, Reno.

cally, but if a death occurred, the entire house and camp were either burned or abandoned. During Wuzzie George's girlhood, cattail houses were therefore more or less permanent residences, rather than the winter houses they seem to have been in former times. Wuzzie George suggested that cattail houses lasted about five years without rebuilding.

Early photographs of cattail houses in the Stillwater and Fallon districts show changes in construction materials occurring after contact with non-Indians. Some houses have pieces of cloth added to the exterior (Figure 56) or wooden doors (see Figure 12). One appears to incorporate a canvas tent into the basic structure (Figure 57). These and other changes were doubtless going on throughout Wuzzie's childhood, and some had been implemented in her family's houses since the 1860s. But the cattail mat–covered house was still a major part of her early life and one she remembered fondly.

Other House Types

In addition to the cattail house, the people of Stillwater built other types of structures, as noted earlier. Semicircular brush windbreaks (*hunínobi*) were used as temporary summer shelters or as kitchens and extra sleeping quarters next to cattail houses. They were constructed of sagebrush, greasewood, *Atriplex*, or whatever brush was at hand. The brush was piled about waist- or shoulder-high, usually with the roots in the air, and bedding and other camp equipment was placed along the wall on the interior side. Cattail leaves and grass might be scattered to serve as sitting or sleeping mats. The overall size of these structures varied, but they were usually 15 to 25 feet across. The wide opening faced either east or north (the latter gave more shade in summer), and the fire pit was in the center or slightly closer to the opening. More roasting and cooking could be done here than inside the cattail house because of the size of the structure and its openness. However, pits large enough to roast parts of large game or to cook several medium-sized mammals or birds at once were likely to be outside this structure as well.

Camping in the mountains during the fall pine-nut harvest might mean building a windbreak if the family was to be in the area for

Figure 58. *Four-post shade roofed with cattail mats.* Photograph by Mary Freeman, Stillwater, Nevada, ca. 1900. Courtesy of Special Collections Department, Getchell Library, University of Nevada, Reno.

two weeks to a month, or it might require constructing a more substantial log house if the stay was to be longer. When crops were good, some families elected to overwinter in the mountains, and in these cases as well a more permanent structure was in order. Wuzzie George's father, Sam Dick, once built a winter house in the mountains using pinyon logs. Although she did not see him build it, other people of her generation report that this type of house was made by excavating a circular trench the size of the planned house, and then setting the house posts into it. The posts were slanted to the center and joined there. There was still the requisite smoke hole, but apparently it was on the door side of the house, between the doorposts in an open space above the door. The trench was then filled to hold the posts in position, and earth was removed from inside the house and piled against the lower walls once they had been covered with pinyon branches and dried grass. The earth covering was thickest near the base (1 to 2 feet) and thinner (3 to 4 inches) as the top and smoke hole were reached. This house had a vestibule entrance, also made of pinyon limbs covered with earth. With its interior fireplace, the house remained warm throughout the winter. Wuzzie George did not remember seeing such a structure much beyond her girlhood. She recalled that her father often went hunting from this winter

house, which he built on his pine-nut claim. The family apparently did not spend a winter in the mountains when she was a girl, as her parents were working for the ranchers by then.

The other two shelter types Wuzzie George recalled were the *habá* 'shade,' a ramada built with a flat roof of cattails or brush atop four to six posts, and the wattle storage shed her father built at their camp near the Freeman ranch. People sat under the shade structure (Figure 58) doing their daily chores—repairing baskets, sewing clothing, making fish and rabbit nets, etc.—and chatting, teasing one another, and occasionally napping. This structure also served as summer sleeping quarters. Sam Dick's mud-and-willow storage structure was for his family's surplus food. He kept dried pork, ducks, and fish there along with some of his hunting gear.

Cattail and Tule Houses Elsewhere in the Region

Several peoples of the Great Basin, California, the Columbia Plateau, other parts of North America, and regions of South America made houses not unlike the domed, mat-covered house of the Cattail-eaters (Nabokov and Easton, 1989). Some examples are described and illustrated in the pages that follow, but the discussion is by no means exhaustive (see also Morton, 1975).

Among other Northern Paiute peoples, variations of the cattail house were common. In some areas, people reportedly used cattails on willow house frames without first making them into mats. They tied small bundles individually to the crossbars of the frame and then held them in place with encircling bands of willow poles similar to those placed over the mat-covered houses (Stewart, 1941; Fowler, 1989). Although most Northern Paiute people preferred to make their houses of cattails, tules (*Scirpus acutus*) were a required alternative if sufficient cattails could not be found, and a preferred alternative for some. Tules were made into mats in the same way as cattails were among the Cattail-eaters in most of Northern Paiute country, and also among the Owens Valley Paiute of California (Figure 59). But in the north, as for example among the Paiute groups now in northern California and Oregon, tules were sewn together in single-thickness

Figure 59. *Owens Valley Paiute tule house.* Photograph by A.A. Forbes, ca. 1900. Courtesy of Seaver Center for Western History Research, Natural History Museum of Los Angeles.

rows to make house mats (Figure 60). The sewing was done using an awl or a greasewood needle and locally made twine. Five or six rows of sewing perpendicular to the length of the tules were required to make a firm but flexible mat. Sewing rather than twining helped the mats shed water, as the tules could be pulled tightly together without spaces that might allow leakage. The flexible mats could be rolled up for transport when the house was moved, or cached when the house was abandoned for the summer season (Kelly, 1932:105). The mats were also larger than those of the Cattail-eaters—four or five feet high and 10 feet or more long. Seven or eight mats were required for such a house, including a smaller one for the door. The top and bottom edges were occasionally finished with a simple twining technique. The mats were hung shingle-fashion on a conical rather than dome-shaped framework of willow poles.

In some areas of central Northern Paiute country, including Pyramid Lake, Walker River, and Honey Lake, an alternative to the mat-covered house was one constructed of grass thatch (Wheat, 1967). For this type of construction, the dome-shaped framework was the same, but the outer covering was Great Basin wild rye (*wahábi; Elymus cinereus*), sewn or twined along one edge to hold it together. These

"grass skirts" were also set shingle-fashion on the house frame, but definitely required reinforcing bands of willow over the grass to hold them in place (Figure 61). Sometimes several layers of the grass shingles were needed to cover the house adequately. People from areas where tules and cattails were not abundant often chose the grass thatch alternative.

Outside of Northern Paiute territory, in the remainder of the Great Basin, the cattail or tule mat–covered house was rarer. Tules (and probably cattails) continued to be used as building material, but making them into mats prior to placing the materials on the house was rarely reported (see, for example, Steward, 1941:283; Stewart, 1941). Most Western Shoshone people seem to have used bunches of tules along with grass, sagebrush, and other materials over a willow framework. Whether houses were more dome-shaped, like those of the Cattail-eaters, or more conical, like those of other groups to the north, also varied.

Some of the Northern Shoshone and Bannock peoples in what is now Idaho apparently used tule mats, probably the sewn variety

Figure 60. *Conical tipi-like structure covered with sewn tule mats. Northern Paiute chief Ocheo is to the right.* Photographer, date, and place unknown, but prior to 1906 and probably in southeastern Oregon. Courtesy of National Anthropological Archives (Neg. No. 1658), Smithsonian Institution.

typical of Northern Paiute groups in southern Oregon (Steward, 1943:306). Adjacent to the Northern Shoshone were several Plateau tribes that also used sewn tule mats for house coverings. Their structures were either conical or more linear but with rounded ends (Nabokov and Easton, 1989:180–184). Next to the Northern Paiute people in Oregon were the Klamath and Modoc, who made similar but smaller structures. Although Klamath house forms, with their double lean-to or elliptical shape, were different from those of the Northern Paiute, they used sewn tule mats as the primary covering. The mats often had fully finished (twined) edges that made them firm and compact. Klamath and Modoc tule houses were summer residences and featured three layers of mats. The first, or inner layer, was of "reed" (*Phragmites australis*?); the second was of triangular-stemmed tule (*Scirpus robustus*) twined with nettle string or twisted tule fiber; and the third—the important outer covering—was of round

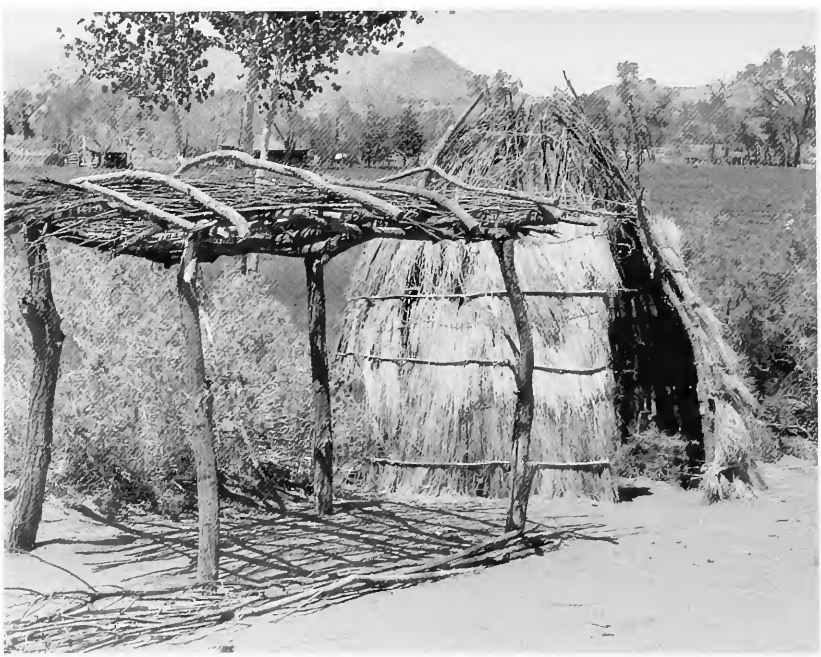

Figure 61. *Dome-shaped Northern Paiute house covered with Great Basin wild rye, Pyramid Lake, Nevada. Willow and pole-covered shade to the left. Made by Mabel Wright, ca. 1965.* Photograph by M.M. Wheat. Courtesy of Special Collections Department, Getchell Library, University of Nevada, Reno.

Figure 62. *Deserted Pomo tule house, Clear Lake, California, 1906.* Photograph by S.A. Barrett. Courtesy of Lowie Museum of Anthropology (Cat. No. 15-2769), University of California, Berkeley.

tules (*Scirpus acutus*) sewn together. The Klamath reported that sewing the tules parallel to one another rather than twining them together helped them shed water better, for when twined, water penetrates at the twining junctions. Sewn mats have no such junctions, and when placed with the tule stalks upright channel the water the length of the tule without penetration (Barrett, 1910:144–145).

Beyond the boundaries of the Great Basin, especially in California, there are various parallels to cattail and tule houses. Well described are the large structures of the Pomo of Clear Lake in north-central California (Figure 62; Barrett, 1916). These structures were usually elliptical or circular in ground plan and were made over a willow framework much like that of Great Basin houses. Willow poles were set in the ground about one to one and one-half feet apart, with a space left for a doorway in one side. A single ridge pole ran roughly the length of the house and the uprights were bent over and bound to this with grapevines. Bundles of tules, most commonly of the type that is triangular in cross section (*Scirpus robustus*), were joined at their butt ends by a loose row of twining and secured by tying them to the framework. With the exception of the bottom course, the butt ends of the tules were placed upright rather than down. Willow

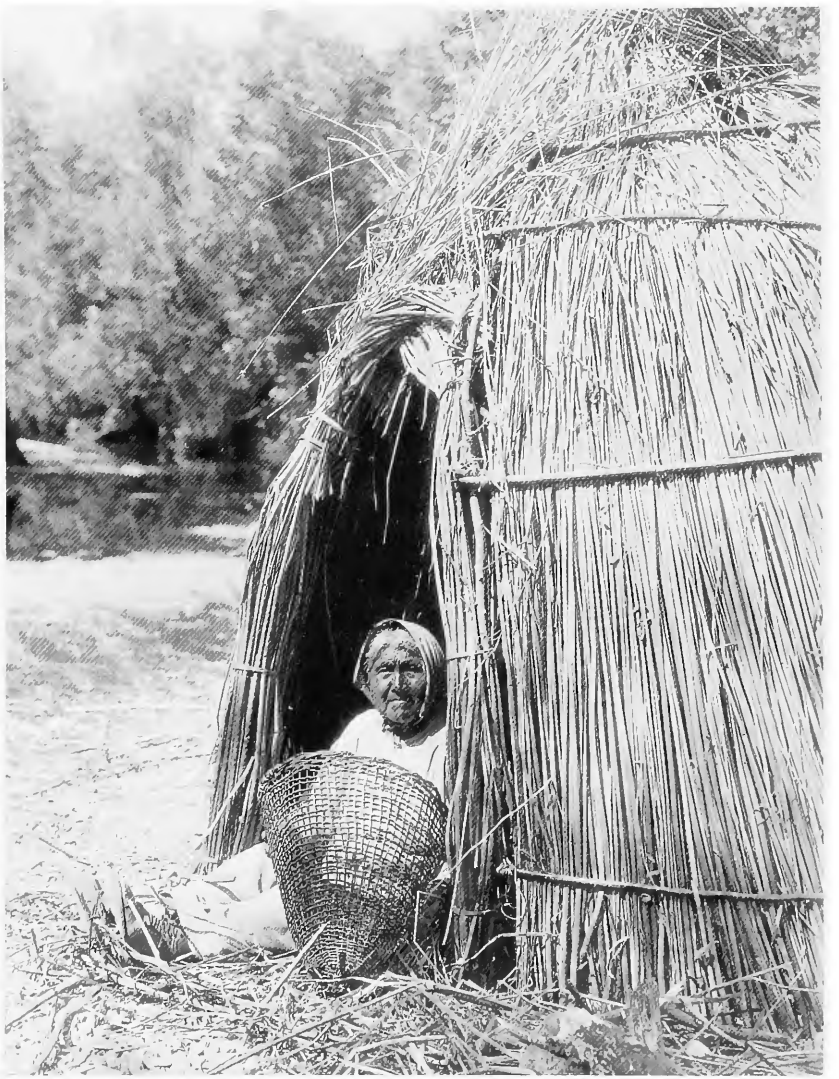

Figure 63. *Pomo woman with basket seated in the doorway of a small tule house. Note bundle around doorway.* Photograph by Edward Curtis, date unknown. Courtesy of National Anthropological Archives (Neg. No. 75-14716), Smithsonian Institution.

Figure 64. *Tule shelter at temporary Pomo fishing camp, Upper Lake, California.* Photograph by Edward Curtis, date unknown. Courtesy of National Anthropological Archives (Neg. No. 75-14714), Smithsonian Institution.

binding rods then secured each row of bundles to the house framework. The next tiers (usually three more) were added above the first in shingle fashion. The smoke hole was a slit in the top paralleling the ridge pole. The fireplace was in the center of the house, and sleeping quarters were at either end, near the walls. Twined tule mats lined the sleeping quarters inside the house (Barrett, 1916:4–6).

Pomo houses were also built of cattails (*Typha latifolia*) and round tules (*Scirpus lacustris*, possibly *S. acutus*), the latter less preferred. In 1902, anthropologist Samuel Barrett (1916) examined a Pomo tule house at Clear Lake that was 34 feet long, 14 feet wide, and 12 feet high. Eighty vertical poles were required to form its 40 arches, which rose to a ridge pole 20 feet long. Seven horizontal rows of willows completed the framework. The tule thatch was in four courses, and from 6 to 10 inches thick. The house accommodated eight people. Smaller, circular shelters served as temporary camps (Figure 63) and also sheltered fishermen camped at streamside (Figure 64). Pomo winter houses varied in different areas, but included a conical bark-slab type as well as a semisubterranean earth lodge (Barrett, 1916).

South of the Pomo, in the vast Central Valley of California and its adjacent foothills, lived a number of peoples who used tule- and cattail-covered houses during at least some seasons. The Miwok, for example, built houses in summer consisting of frameworks of poles over which they placed thatch of brush, grass, or tules. The materials were in overlapping layers and were secured with grapevine ties (Barrett and Gifford, 1933:198). The Miwok also made a portable conical house of tule mats with a tule-mat door. The mats were attached to sticks upon which they could be rolled for easy transport (Barrett and Gifford, 1933:199). The house could be set up at temporary fish and waterfowl camps or in convenient locations for plant gathering.

Farther south in the Central Valley were several Yokuts groups that also made tule houses, using the material either for mats or thatch (Gayton, 1948). An elliptical house built to hold a single family or multiple families was typical of the Tulare Lake country, an area with extensive marshes. The framework of these houses resembled that of the Pomo summer house, featuring a set of willow poles tied to a central ridge pole. Unlike Pomo structures, the ridge pole of these houses was usually supported by two or more forked posts, depending on length. Tule mats the height of the walls (eight feet) and 10 to 12 feet long were then placed over the framework. They were tied to the ridge pole and pegged to the ground (Figure 65).

Figure 65. *Tache Yokuts man next to tule mat–covered house, Tulare Lake, California.* Photograph by C.H. Merriam, date unknown. Courtesy of Bancroft Library (Neg. No. 1978.8.320:9), University of California, Berkeley.

In order to keep the side mats rectangular, butt ends of adjacent tules alternated with tip ends. The tules were joined in rows about a hand span wide by a single cord looped around each. The mats for the ends of the house, which were more fan-shaped, were made with all the butt ends of the tules pointed down. This allowed them to fit snugly around the framework without extra bulk at the top. Given the care used in mat construction, these could be removed from the framework easily and rolled up for transport to another site. The lower Central Valley was warm enough so that multiple layers of mats were not required, and houses remained cool in summer by removing the mats from each end to encourage a breeze.

Elsewhere in the Yokuts area, conical houses resembling those of the Miwok were made. These, too, might be covered with twined or sewn tule mats, layers of tule thatch, grass, or other materials. They could be set up as temporary shelters or, with extra care, be made more permanent. Most Yokuts groups also built a variety of other house types, including bark-slab structures, brush lean-tos, and substantial semisubterranean earth-covered sweat houses (Gayton, 1948:61–64).

South of the Central Valley of California, several desert, mountain, and coastal tribes also made and built tule-covered houses of various

shapes. Included were subdivisions of the Serrano, Luiseño, Cahuilla, and Diegeño tribes (Drucker, 1937). Some of these houses were square or rectangular in plan, and several were gabled. Although somewhat removed from the dome-shaped houses of the Cattail-eaters, they illustrate the common use of tules and cattails as building materials where they were available (Nabokov and Easton, 1989:310–314).

Although far distant from the Carson Desert, the people of Lake Titicaca, in the highlands of Peru, present some interesting parallels to the Cattail-eaters in the nature of their marsh plant technology. Figure 66 shows the common version of the gabled, mat-covered house that occurs in this region, where the people inhabit large floating or anchored islands of marsh vegetation. The dwellers of Lake Titicaca also make tule balsa boats (see below), using the common triangular tules that occur in abundance in the lake. The species of tule involved is *Scirpus californicus,* called locally *totora* (Heiser, 1978). As it reaches a height of 8 to 10 feet and is quite uniform in thickness, it is well suited for mat and boat making. The mats made from it are twined and occasionally sewn, often with several rows per mat. The large mats that cover the roofs of houses seem to have more sewn rows than twining, probably for the same water-repellent quality discovered by Northern Paiute and Klamath mat makers. Mat making is a common industry elsewhere in Peru, as well as in Ecuador and other parts of Latin America (e.g., Mexico). In addition to their use in house building, tule mats are used for beds, rugs, windbreaks, fences, storage bins, and other purposes (Heiser, 1978:226).

Thus, as can be seen from the foregoing brief review, cattails and tules are important building materials in many New World regions with marshes. They likewise serve similar functions in the Old World, particularly in eastern Africa (Morton, 1975). They are versatile plants, light yet strong, with some inherent water repellence. Wherever found, they are utilized by indigenous peoples for a variety of purposes.

Figure 66. *Tule houses featuring sewn mats, Lake Titicaca, Peru.* Photograph by Margaret Williams, 1980.

Figure 67. *Jimmy and Wuzzie George with finished tule balsa boat, Stillwater, Nevada, ca. 1960.* Photograph by M.M. Wheat. Courtesy of Special Collections Department, Getchell Library, University of Nevada, Reno.

The Tule Balsa Boat

The Cattail-eaters had ample need for a type of craft that would carry them through shallow water to hunt and drive waterfowl, collect the eggs of offshore-nesting birds, set fish and duck nets, and move from area to area within the marsh, lake, and sink system. This need was met by a type of lightweight watercraft constructed of cylindrical floats of tules and generally referred to as a tule balsa boat. The term *balsa,* as applied here as well as more generally worldwide, is of Spanish derivation and may have been used first to refer to lightweight watercraft of tules and other materials in South America (Heiser, 1985:54). The Cattail-eaters called their version of these watercraft *sáisaki* 'tule boat' or merely *sakí* 'boat.' They and other groups in western North America who lived near marshes and shallow lakes made and used them frequently.

Constructing a Tule Balsa Boat

Tule balsa boats could be made at any season of the year, but their construction was most common in fall through early spring when the tules were dry, hard, and most buoyant.[1] The internal structure of the fresh tule stem is soft and spongy; when this tissue becomes dry it is supportive but very lightweight. Because the external tissue allows the absorption of water only very slowly, the internal structure stays dry for several hours. Hence when the tules became saturated, people dragged their boats on shore and allowed them to drain and dry. Although a tule balsa boat rode low in the water when the tules were saturated, the boat apparently would not sink. The Cattail-eaters reported that although boats were heavy and harder to propel when

soaked, they were still very safe. Once beached, the boats were ready for reuse the following day if the weather was warm enough to evaporate the moisture from the tules.

The process of making a tule balsa boat took roughly two or three hours once the materials had been gathered (Lowie, 1924:249; Wheat, n.d., 1967). Construction required a good supply of long (8- to 10-foot) tules (hardstem bulrush, *Scirpus acutus*), unbroken and unbent by winter storms. It also required a sufficient amount of cattails (*Typha latifolia; T. domingensis*) to be used as ties and for the boat's gunwales. Once the materials had been assembled—in former times, along the edge of the marsh, where they could be gathered easily—the cattails were separated from the tules, and the tules were divided into the two or more piles that would form the body of the boat. The boat constructed by Leonard George and his children, Lois and Lucier, in the 1981 film is formed of two bundles of green tules, heavier and more cumbersome than dry tules would be. Two other

Figure 68. *Frank John and Jimmy George tying a bundle for a tule balsa boat, Pyramid Lake, Nevada, ca. 1958.* Photograph by M.M. Wheat. Courtesy of Special Collections Department, Getchell Library, University of Nevada, Reno.

Figure 69. *Twisting the cattail ties around a bundle for a tule balsa boat, Pyramid Lake, Nevada, ca. 1958. The tightly twisted end will be tucked into the bundle (see Figure 68).* Photograph by M.M. Wheat. Courtesy of Special Collections Department, Getchell Library, University of Nevada, Reno.

boats documented by Wheat (n.d., 1967) had two bundles each of dry tules. These were made by Jimmy and Wuzzie George (Figure 67) and by Jimmy George and Frank John (Figure 68). However, depending on the width and length of the boat desired, the use of from one to five bundles was reported by other Northern Paiute consultants (see below).

Considerable care was taken in sorting and grouping the bundles of tules. All tules were placed with the tip ends pointing in the same direction. The tules lay parallel to one another so that each bundle would be roughly the same length, about eight feet for a single-person craft and 10 feet or more for a two-person boat. Once the tules were in proper order, the lashings, which were ties made of cattails, could be prepared. Cattails were chosen as binding material because of their superior strength.

In order to make the cattail ties, the materials were first soaked in water for about half an hour to hydrate and toughen them. Two full stems (a central stalk with five to six leaves) were chosen for each length. The cut ends of the two stems were set opposite each other

Figure 70. *Jimmy and Wuzzie George lashing the gunwales to a tule balsa boat, Stillwater, Nevada, ca. 1960.* Photograph by M.M. Wheat. Courtesy of Special Collections Department, Getchell Library, University of Nevada, Reno.

on the ground, with the tips overlapping approximately one-third to one-half the length, so that the total length was long enough to encircle the tule bundle. With a person holding each end and at the same time also supporting the middle, the length was gently twisted. This allowed the overlapping leaves to catch and form a continuous strand of single-ply cattail rope. The rope was given a harder twist and basically became so strong that two men could not pull it apart (Wheat, 1967:42). The rope dried with a nice hard twist. (In the 1981 film, the cattails are green and tender, and so lengths of rope need to be made using three-strand braid instead of simple twisting.)

The length of rope was wrapped around one of the tule bundles to tie the tules together. It was pulled as tight as possible, and the ends either were twisted together and tucked into the bundle (Figure 69) or were tied in a knot.[2] Other cattail ties were made and added at intervals of one to two feet, further securing the bundle. As the bundle narrowed near the tips of the tules, tying ceased until the second bundle was tied in the same fashion. Then the two bundles were laid with the tips pointing in the same direction and joined with

additional ties at the back and front. The tip ends were drawn upward as they were tied, thus forming the narrow, upturned prow. The stern was blunt rather than pointed because it was formed of the thicker cut ends of the tules. Both prow and stern were trimmed with a sharp knife, so that the tules were of nearly equal length and the boat appeared finished. The underside was likewise trimmed of any tules that might have missed being caught in the tying process. The maker then stepped into the middle of each bundle and with his/her weight flattened the bundles slightly and created a hollow in the center.

Gunwales of cattails and/or tules[3] were added around the center hollow in order to keep ducks, eggs, fish, and other food or equipment from falling off the boat into the water. The gunwales were made of two smaller bundles (four to six inches thick) bent in the center and attached to the forward and aft sections of the boat (Figure 70). The ends were then brought together at each side of the boat, overlapped, and secured with cattail ties to the main tule bundles. They were likewise secured fore and aft. This narrow rim was considered the final finishing touch of the boat, although a few cattail leaves might be added in the center hollow to smooth the space between the gunwales.

Tule Balsa Boats in Use

When the boat was ready for launching, its maker was able to carry it to the water because it was so light. (A boat made of green tules was heavier but still portable by two persons.) The natural buoyancy of the tules made the boat ride fairly high in the water until it absorbed considerable moisture. The rider normally knelt near the back section of the boat, facing forward, and propelled it through the water with a *watá* 'pole,' generally from one side (Figure 71). In deeper water the pole might be used alternately on both sides, more like a paddle (Lowie, 1924:250). On larger craft that were capable of carrying more than one person, the second rider knelt in the center section of the boat with the punter standing or kneeling at the rear.

Although the craft were made for shallow water, they could be and occasionally were used in deeper water, such as along the shores

Figure 71. *Jimmy George demonstrating punting technique in completed tule balsa boat, Stillwater, Nevada, ca. 1960.* Photograph by M.M. Wheat. Courtesy of Special Collections Department, Getchell Library, University of Nevada, Reno.

of Pyramid Lake and Walker Lake in western Nevada.[4] They are not generally considered to have been deep-water craft, however, nor were they well suited for travel in the rough-flowing water of rivers. Their primary use was in the quiet water of marshes or shallow lakes, such as the many ponds in the Stillwater system and in the shallow areas of Carson Lake. Northern Paiute people at adjacent Pyramid Lake used their craft most frequently at a shallow marsh south of the lake known locally as Duck Lake, or in the marshes of adjacent Winnemucca Lake. The people of Lovelock used their craft in the shallow marshes of the Humboldt Sink, and the Walker River people used theirs along the eastern and southern shores of Walker Lake. In all of these areas, the boats were used most commonly during the late summer drives of American Coot (also called mud hens). At that time, when the mud hens were flightless because they had just molted, they were driven from the safety of the water by men in tule balsa boats acting cooperatively. When the flightless birds reached the shore, they sought cover under the brush. It was there that they were taken by the women, sometimes with the help of dogs. Their legs were broken, and they were placed in large piles to await processing.

Wuzzie George recalled such drives when she was a girl, and remarked how badly the mud hens scratched her with their claws. They could also run very fast—thus the disabling procedure.

According to Annie Lowry (Scott, 1966:24–25), a Northern Paiute whose life, like Wuzzie George's, spanned much of the early period of contact with Euro-American settlers, the people in the Humboldt Sink area also used nets for the mud-hen drive. Men set double nets—one behind the other—at the mouth of the Humboldt River, and then with their tule balsa boats drove the flightless birds toward the nets. As one net became heavy with entangled birds, it was pulled to shore and the birds went into the other. Boats formed a half-circle as they grew closer to the nets. When the boats touched, the drive was over. Mud hens that escaped the nets and sought refuge on shore were treated in the same way as Wuzzie George described.

At the end of the mud-hen drive, the birds were skinned, split lengthwise, and hung to dry in the shade of brush structures. Wuzzie George's father stored his dried birds in the wattle structure he had built near their home, but other people sometimes wrapped them in rye grass and cattail leaves and placed them in pits in the ground. The pits were capped with brush and earth and served as storage places for food for later seasons.

The people also used the *sáisaki* for gathering eggs in the spring and early summer months, especially the eggs of offshore nesters. Wuzzie George recalled that her father had used his boat to take pelican eggs at Paanósa N·obí 'pelicans' house,' an island in the lower Carson sink that was a favored nesting area for the American White Pelican. He also used his boat to set out his duck decoys and to set nets for other species of ducks. The long nets, made of native hemp (*Apocynum cannabinum*), were set on stakes in the bed of the marsh at a 45-degree angle to the water. They were particularly effective with species that first run across the surface of the water before becoming airborne (see "The Tule Duck Decoy"). The boats were also used to retrieve the ducks entangled in the nets. Boats were rarely used for fishing, however. Neither Wuzzie nor Jimmy George could recall such a use, and their statements were verified by Northern Paiute people elsewhere in the region. Hammy Kent, the son of Ira Kent and a landowner at Stillwater, remembered seeing many tule balsa boats pulled up along the shores of the lakes and ponds until roughly the 1920s. After that time, fewer people were involved in such activities, and the building of tule balsa boats became part of memory culture (Wheat, 1959).

Boats in Other Areas

As noted above, tule balsa boats constructed in the Stillwater area seem to have been made most commonly of two primary bundles of tules. But other Northern Paiute people in the region report boats of from three to seven bundles. At Pyramid Lake, for example, anthropologist Willard Park was told in 1933 of boats used at Humboldt Sink that were made of seven tule bundles, pointed at both ends. The center bundle in these craft was the shortest and served as a keel. The next two bundles were lashed above and to the sides of the center bundle by the usual method of tying. But instead of all the tips of the tules being set in the same direction, apparently they were set in both directions to achieve a bipointed shape. The next two bundles were added above these, slightly to the outside, and were also bipointed. The tips of the bundles were finally drawn together at both ends and tied. The last two bundles, seemingly smaller, were added to the inside edge, probably as gunwales. The overall shape of this boat was more like a canoe, with a definite hollow in the center. The bipointed shape apparently allowed the boater to move the craft in either direction with more facility (Fowler, 1989).

A style that featured four bundles—two for the bottom and two for the sides—and also was bipointed was described to Park by a woman from the Walker River area, who noted that women never went out in the boats. A second consultant from that area spoke of a boat of three primary bundles, the center one being shorter, the other two being drawn together for a pointed prow and stern (Fowler, 1989). Stewart (1941:380) confirms the use of a style featuring four bundles at Pyramid Lake,[5] among several groups of Northern Paiute in northern Nevada and Oregon, and among the Washoe peoples of western Nevada and California. He lists a three-bundle style among most other Northern Paiute groups, noting that boats built by Northern Paiute peoples might attain lengths of 12 feet. Boats of two bundles, like those at Stillwater but bipointed, were described to Kelly (1932:150) by Northern Paiute people in Surprise Valley, California. Although lashings of cattails were the ones most commonly reported in the region, the people of Surprise Valley often used bark (Kelly, 1932:150), and those in Mason Valley, southwest of Stillwater, preferred hemp (*Apocynum cannabinum*).

The Owens Valley Paiute, peoples closely related in speech and culture to the Northern Paiute, also reportedly made tule balsa boats

for use on Owens Lake, a shallow desert lake south of Independence, California. Although in the 1930s, when descriptions were elicited, few people remembered the boats, those who did suggested that the typical shape was bipointed, and that a single bundle was most often used as the float. This was lashed in several places with willow, the entire structure being roughly 10 feet long (Steward, 1933:250). The boats were used for duck hunting and some fishing.

Elsewhere in the Great Basin, tule balsa boats were reported principally for those peoples whose home territories included marshes and sloughs. Among the Western Shoshone peoples, that included the people of Ruby Valley, who occupied one of the most extensive marsh systems in the region, an excellent waterfowl habitat even today. Western Shoshone people around Elko and Battle Mountain also made boats, perhaps for use in the sloughs of the Humboldt River. People in Spring Valley, south of Ely, Nevada, also made boats for use in the marshes there. Elsewhere in Western Shoshone country tule balsa boats were not reported (Steward, 1941). Those that are described were from six to seven feet long, made of three bundles lashed together (or occasionally "pinned," presumably with wooden sticks), and had upturned prows. They are said to have accommodated from two to five persons, the latter seemingly quite a number for such small craft.

Northern Shoshone peoples at Lemhi, Fort Hall, and the north end of the Great Salt Lake apparently made square-sterned boats of from three to five bundles, lashed and pinned together. They accommodated from three to five persons also, but no length dimensions are given (Steward, 1943:309). Although places of use are not recorded for Lemhi and Fort Hall, one assumes that much of the Snake River would be too swift and have too many rapids for the boats. Quieter sections, or lakes or ponds, may have been the favored areas of use.

The only groups among the Ute peoples to make and use tule balsa boats were the Timpanogots around Utah Lake in western Utah and the Pahvant people, south of the Timpanogots in the region of the bend of the Sevier River and Sevier Lake (Stewart, 1942:261). Both groups had access to shallow, still waters, and both regions were excellent waterfowl habitats. None of the Southern Paiute peoples, except the Chemeheuvi along the lower Colorado River, reportedly made and used these craft (Stewart, 1942).

Beyond the Great Basin, in California, several tribes were familiar with tule balsa watercraft. In addition to using them on marshes and

shallow lakes for waterfowl hunting, and occasionally fishing from them, some groups built larger and more substantial boats for ocean and shore travel. Among the latter were the Chumash of the southern coast.

Descriptions of Chumash watercraft are based on selected historical sources (Hudson et al., 1978; Hudson and Blackburn, 1982). Unlike the situation among the Cattail-eaters, where the living link between the technology of early times and the present day has not been broken, in the case of the Chumash this has happened to a great extent. Boat making was thus part of memory culture even by the 1920s. Historical sources as well as interviews conducted just after the turn of the century provide the primary descriptions. Three types of boats were apparently known: a three-bundle boat, a five-bundle type, and a multi-bundle woven-tule craft. All three were apparently used for fishing and trading along the California coast and for trips to Santa Catalina and other offshore islands in Chumash territory. Because they were oceangoing, these boats were more substantial than those of the Great Basin peoples.

The three-bundle Chumash boat and the five-bundle boat appear to have been made in a manner similar to these forms among the Northern Paiute. They were bipointed and made by lashing bundles of tules (*Scirpus californicus?*) together. For added strength, a willow pole was inserted into the center of each bundle and the bundle lashed in several places with locally made string (usually made from *Apocynum cannabinum*). In both versions the bottom or keel bundle was thicker and heavier. After the bundles were lashed together, a coating of tar or naturally occurring asphaltum was applied to the exterior of the boat to make it watertight. Then a coating of finely powdered clay was rubbed into the surface to remove the stickiness (Hudson and Blackburn, 1982:332). Although neither of these boat types was photographed or is extant today, based on descriptions they are thought to have been 15 or more feet long.

The Chumash woven boat was of a more complicated construction and is not well documented. It is reported to have been made of numerous thin (four-inch) tule bundles set plank-like to form the sides of a canoe-shaped boat. The bound bundles were held together by ribs of flexible sticks, either worked into the bundles or plaited between them vertically. The ends of the bundles were then upturned and bound together. Each bundle was covered with asphaltum before the ribs were added, as well as afterward to further solidify and waterproof the craft. Given that the Chumash also made wood-plank

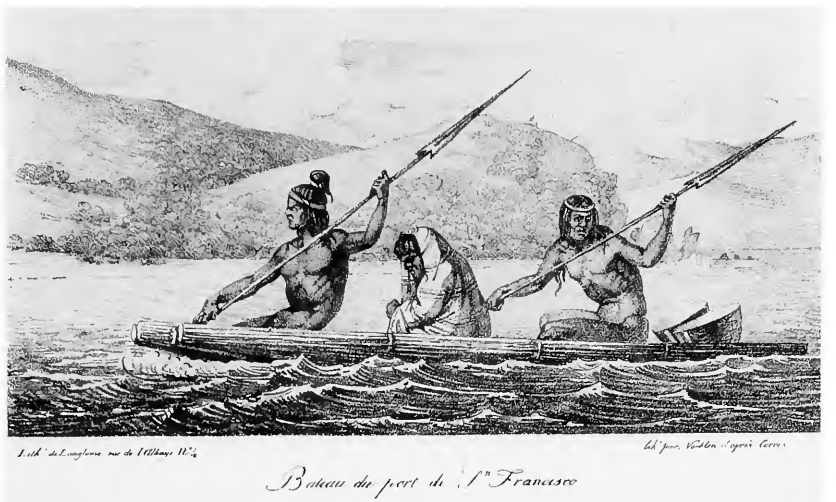

Figure 72. *Two men paddling a tule balsa boat with double-bladed paddles, San Francisco Bay.* Copy from lithograph after drawing by Louis Chorls, ca. 1818. Courtesy of National Anthropological Archives (Neg. No. 2854 G-7), Smithsonian Institution.

canoes, this boat may have been a hybrid combination of the canoe and the tule balsa boat (Hudson and Blackburn, 1982:336–337).

Tule balsa boats substantial enough for ocean travel were reported for several sections of the California coast and the coast of Baja California (Heizer and Massey, 1953:290). The northernmost coastal occurrence is thought to be near Bodega Bay, north of San Francisco, where a number of explorers in the nineteenth century reported them among the Coast Miwok. South of there, similar occurrences were reported among the Coastanoan groups of San Francisco Bay (Figure 72). Likewise, Salinan Indians and others south through Monterey Bay and beyond used the craft as well. Beyond the Chumash, they occurred fairly consistently among all groups on the Baja coast. However, whether they were always made of tules is doubtful, several groups on the Gulf of California apparently preferring the common or arrow cane (*Phragmites australis*) for construction. This light, hollow material is known in boats 20 to 30 feet long made by groups such as the Cochimi and the Seri (Heizer and Massey, 1953:296). These

boats were also deep-water craft, used in sea-turtle hunting, fishing, and transporting people and goods from the coast to islands in the Gulf of California and even from shore to shore (i.e., across the Sea of Cortez from the Mexican mainland to the Baja coast). The Seri cane balsa seen in Figure 73a,b was "collected" in the late 1890s in Mexico by W J McGee of the Smithsonian Institution.[6] He reported it as "nearing barely 4 feet a beam, 1½ feet in depth and some 30 feet in length overall" (McGee, 1898:216). The weight is given as 113 kilograms dry and 126 kilograms wet, and it is estimated that it could

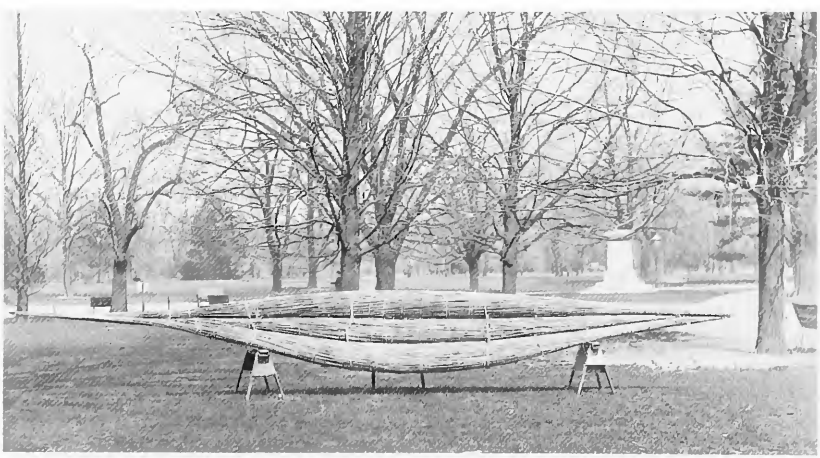

Figure 73a, b. *Two views of Seri arrow cane balsa boat collected by W J McGee in 1895, Tiberon Island, Mexico.* Courtesy of National Anthropological Archives (Neg. No. 4282-A,B), Smithsonian Institution.

be carried by as few as two strong men (McGee, 1898:217–218). This craft, like the other oceangoing balsa boats, was paddled rather than punted. The literature on Seri cane balsa boats is rather extensive; they were observed by Spanish explorers in the 1700s and apparently were still used by the Seri until about 1930 (Felger and Moser, 1985:310–311). The Seri had various ingenious ways of attaching gear and captured prey such as sea turtles to the surface of the boats with wooden pins pushed into the cane bundles. Other groups on the mainland coast of Mexico likely used similar craft, although the documentation has not been assembled reliably.

Balsa boats were also common in interior California and along the lower Colorado River, according to various sources. Well described are those of the Pomo of Clear Lake in northern California, the Miwok of the Central Valley, and the various Yokuts tribes of the southern Central Valley, but they are by no means confined to these groups.

The Pomo made three versions of tule balsa boats, according to Barrett (1952). Two were the same in shape but varied in length and width. They were used primarily for taking waterfowl and fishing on Clear Lake in north-central California and in lagoons closer to the coast. The larger of the two was about 18 to 20 feet long and could carry four or five people. The smaller waterfowling boat was a one- or two-person craft and was about 10 to 12 feet long. The third boat was for cargo purposes, with a beam as much as 6 feet wide.

Construction of all three was similar. They were made basically of four bundles—one large one serving as the keel and two smaller ones as the sides, tapering to the stern. The fourth bundle was smaller and wrapped continuously around the boat from prow to stern and back. It was narrow in the prow section and slowly enlarged toward the stern, where it made an abrupt turn and came back to the front to be joined again (Figure 74). Each bundle was carefully bound, usually with grapevines. The two side bundles and the keel were joined together without bending to form the slightly upturned prow and then lashed separately in place.

The preferred construction material for Pomo boats was *Scirpus lacustris*, another round tule (Figure 75). Although triangular-stemmed tules grew in Pomo country, they were less often used in boat making and more for houses and other products. The Pomo boat was not caulked in any way, and buoyancy depended solely on the cellular structure of the tule. The fishing boat was used commonly to maneuver large dip nets and to set gill nets and seines. All boats were propelled

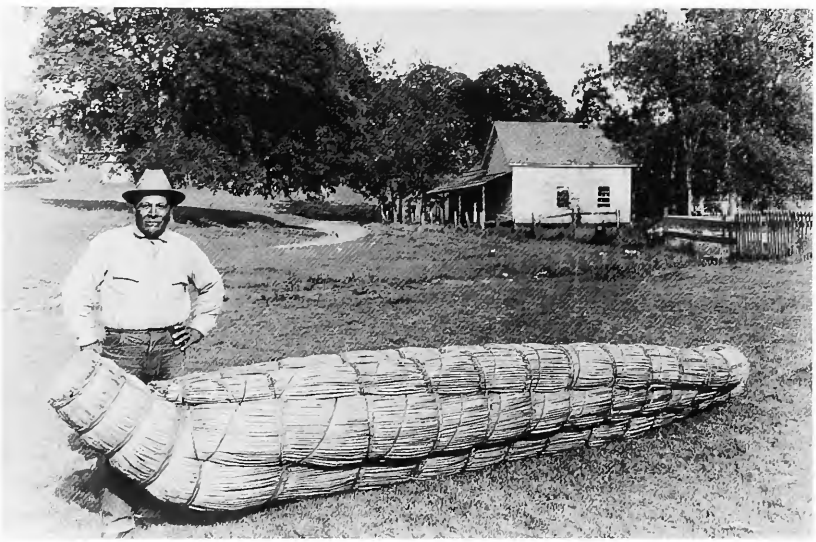

Figure 74. *Pomo man with tule balsa boat, Lower Lake, California, ca. 1915.* Photograph by S.A. Barrett. Courtesy of Milwaukee Public Museum (Neg. No. 6458).

with a wooden paddle that had a square blade of oak and a slender pine or elderberry handle. The Pomo also made log rafts for coastal travel but seem not to have used their tule balsa boats for this purpose (Barrett, 1952:164–166).

The Yokuts people around Tulare Lake in south-central California were balsa-boat builders as well, being reported by some to make craft up to 50 feet long (Latta, 1929; Gayton, 1948:147). This very large boat, with prow and stern upturned, was used to ferry families and their belongings across Tulare Lake each spring and fall as they changed campsites. It carried mortars, pestles, bushels of food, skins for bedding, and trade goods, as well as eight to ten persons. Others in the vicinity used more modest craft, also bipointed, constructed of three primary bundles (Figure 76). Some report that a hole was cut in the middle of Yokuts boats and fishlines suspended through them. A fire for cooking and warming was built on the boat in an earthen hearth a few feet from the hole. Men might stay on such craft for as much as a week, fishing and taking waterfowl (Driver, 1937:115).

Other California groups, including the Maidu, made and used tule balsa boats as well. The Maidu version apparently resembled to some degree the woven Chumash boat in that it had ribs of willow.

Eight of these were placed on the outside of the boat, which itself was made up of 20 cylindrical bundles of tules roughly 15 feet long. The boat was not pitched, and a willow pole on each side served as a gunwale. The boat was used in lagoons and in slow water on the San Joaquin River and its tributaries, principally for hunting (waterfowl?) and transport when moving camp (Barrett and Gifford, 1933:248–249). The Maidu thus join various California tribes, including, in addition to those already listed, the Klamath, Modoc, Wintun, Gabrieliño, Luiseño, Diegeño, Tubatalabal, and Mojave in their use of versions of this craft (Kroeber, 1925:815–816).

Perhaps the most famous tule balsa boats outside western North America are those of groups in coastal and highland South America, particularly in Ecuador, Bolivia, and Peru. According to Charles Heiser (1978, 1985), who has done extensive work on the history and

Figure 75. *Bundles for Pomo tule balsa boat, including keel bundle and one side bundle, on the shore of Clear Lake, California. Note the method of joining the tules before tying, suggesting that the boat definitely had a forward end.* Photograph probably by S.A. Barrett, ca. 1915. Courtesy of Lowie Museum of Anthropology (Cat. No. 15-17287), University of California, Berkeley.

uses of tules in that region, records of observations of these watercraft go back to Spanish colonial times (the 1580s and 1590s). The tule used in these areas is popularly called *totora*, an indigenous term that has spread throughout the region (Heiser, 1985:40). The plant is *Scirpus californicus*, the same species of triangular tule that occurs in coastal Mexico and California. There is some evidence that this tule may have been "cultivated" or at least "encouraged" in preconquest times, with one of its possible intended uses being for watercraft. Images of tule balsa boats appear on Peruvian pottery dated to roughly A.D. 150–800, another indication of the antiquity of its use (Hammel and Haase, 1962:219).

The boats from the coastal zones in South America vary in length from roughly five to eight feet and are pointed only at the prow. Some are made of two bundles separately tied and then lashed together, others of three, depending on the area along the coast from which they come. The bundles are tied every six inches or so, with the lashings coming at one- to two-foot intervals. In coastal areas they are often called *caballitos* 'little horses,' diminutive of the Spanish term for horse (*caballo*). The term is applied in apparent reference to their use, like the horse, as a means of transportation. It is in this region that the Spanish term *balsa* 'boat' first may have been applied to these craft, as well as to another lightweight boat made of logs from the balsa tree (*Ochroma lagopus*). These vessels are considered seaworthy,

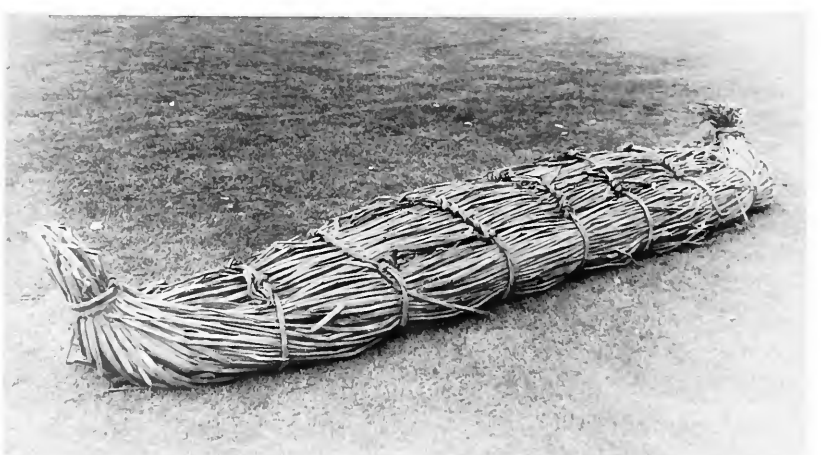

Figure 76. *Bipointed Yokuts tule balsa boat.* Photograph probably by S.A. Barrett, 1955–1960. Courtesy of Lowie Museum of Anthropology (Cat. No. 15-18596), University of California, Berkeley.

Figure 77. *Boy punting a tule balsa boat on Lake Titicaca, Peru.* Photograph by Margaret Williams, ca. 1980.

Figure 78. *Large tule balsa boat in the marshes of Lake Titicaca, Peru.* Photograph by Margaret Williams, ca. 1980.

as are versions made of *totora*. They are often equipped with sails and are used extensively in coastal fishing. Although once more widely distributed, seagoing balsas of both types are now confined to sections of the Peruvian coast (Hammel and Haase, 1962).

Most famous of the tule balsa boats of interior South America are those of Lake Titicaca in the high Peruvian Andes (Figure 77). These beautifully made boats are part of the more extensive tule technology of the region, which includes the use of tules in mats and housing construction and the actual habitation of floating islands that are mixtures of dried and decomposed tules and some soil. Two- and three-bundle bipointed tule balsa boats are used on the lake for fishing and the transport of people from island to island as well as to the mainland (Figure 78). The boats were once equipped with flat, trapezoidal sails made of tule mats. These were made by sewing tules together in horizontal rows and then cutting the mats to shape. In recent years, tule-mat sails have been replaced by canvas, but the style may still be seen on the toy boats sold to tourists.

* * *

As can be seen from the foregoing brief survey of the distribution of tule balsa boats in western North America and in parts of South America, traditions of utilization of lightweight members of the genus *Scirpus* for watercraft are widespread. Thus, the Cattail-eaters of Stillwater share in a long and geographically extensive cultural feature that joins the peoples of many marsh and shallow-lake areas (and a few coastal zones). Although the antiquity of the use of these craft in western Nevada, and specifically among the Cattail-eaters, is not known, based on the extensive distribution of the boats it can be reasonably assumed to go back a thousand years or more. These boats are but part of the equally widespread tule technology that is the focus of the major portion of this study. Boats, houses, duck decoys, and egg bags, along with mats, sandals, clothing, cradles, baskets, and much more, are the material products of the techniques, skills, and extensive knowledge of marsh and lakeshore habitats that were a major part of Cattail-eater life. Wuzzie and Jimmy George knew these traditions well, and it was their hope that—at least—knowledge and appreciation of them would be retained for many generations to come.

Conclusions

Aspects of the tule technology of the Cattail-eaters of western Nevada presented in the film as well as above are but examples of the many technological skills held by this group and others of the world's peoples today and in times past. The study of technology, and especially the technologies of groups with a close attachment to the land, is an important area within the study of human cultures. Loosely defined, *technology* refers to the material means with which people seek to modify and control their natural surroundings (Spier, 1970:2). The term may be used broadly to include all such means used by human beings at all times and in all places (human technology); or it can be used more narrowly to refer to the ideas and works of a particular group at a particular time and place (Cattail-eater technology in the late nineteenth and early twentieth centuries). It can also be used, as it is here, in a comparative framework to focus on a particular set of ideas and uses involving a common group of resources (tule technology in western North America). As we have seen, in this latter sense, the Cattail-eaters shared a number of features of their tule technology with groups in similar environmental circumstances, both adjacent and at farther distances.

But the tule technology of the Cattail-eaters also included other technological subsets linked to their culture as a whole. It incorporates aspects of the technologies of cordage and textile manufacturing, as seen in the making of ties for houses, boats, and duck decoys, and in the twining techniques common to the construction of the egg bag, sandals, mats, and more. Twining was and is a common textile technique used in Cattail-eater basketry. Tule technology was also incorporated into aspects of the broader subsistence cycle, as seen in the hunting complex associated with the use of tule duck decoys and tule balsa boats. And it was involved with the technology of shelter in the making of the cattail house, certainly a direct example of the principle that technology serves to alter one's immediate surroundings. Thus the tule technology of the Cattail-eaters, as well as that of other surrounding groups, was but part of a much more complex

and coordinated system of human adaptation to a particular environment.

Technological systems are often analyzed as involving a set of inputs and outputs. Inputs into any particular system, as well as technological systems in general, include *knowledge, labor,* and *resources.* The technological outputs are *material culture* and *environmental modification* (Spier, 1970:3–5). It should be clear from the previous chapters that knowledge was a major component of Cattail-eater tule technology. Sometime in the prehistoric past, persons had to discover the properties of the marsh plants used to produce the various products, e.g., the buoyancy of tules, the strength of cattails, the ability of both plants to shed and/or absorb water. People also had to discover that the plants had different properties at different seasons, e.g., strength vs. brittleness in fall and winter; lightness vs. heaviness when the materials are dry or green; and different properties of workability suitable to different tasks, when the plants are fresh or seasoned. Given the long archaeological record of the use of these plants in the western Great Basin (Andrews et al., 1986; Cressman, 1942; Loud and Harrington, 1929), such knowledge is clearly a legacy of the past. But it may also have been discovered several times by peoples in close association with marsh environments, where these plants are numerous. Although some of the Great Basin and California tule technologies may be historically related, one need not suppose that they all are, or that they necessarily must be;[1] people living in close and intimate contact with their environments can and probably do make similar observations.

Beyond knowledge gained from observation, each group and person within the group needs to develop the skills necessary to actually put this knowledge into practice; i.e., seeing practical relationships between technology that may have already been part of the group's knowledge, such as textile manufacturing, hunting, and shelter construction, and new applications. An individual's skill at manufacturing an object comes from experience. It requires patient observation of those well versed in particular techniques, as well as personal attempts at trying and later perfecting the techniques. Certainly the George family, as well as previous generations of Cattail-eaters, held this trust.

In addition to knowledge, another of the major inputs into a technological system is labor. Persons need to do the work of manufacturing the resulting objects. The making of some items, such as the cattail house or the tule balsa boat, is best accomplished as a

cooperative effort. Such effort might include help in gathering materials as well as in actual construction. Others, such as the making of the egg bag or the tule duck decoy, can be handled by individuals, and are undoubtedly situations in which individual skill is allowed to develop more fully. Certainly the painted and feathered decoys recovered from Lovelock Cave, although far removed from their time and use, can be appreciated today as the products of considerable skill. They have an aesthetic quality (Tuohy, 1986:228–229).

For the Cattail-eaters, as well as most human societies, there is some division of labor along gender lines; i.e., men do certain tasks and women others. For the items illustrated, egg bags were probably most often made by women and duck decoys and tule boats by men. Cattail houses were constructed cooperatively by both sexes. Yet the case of the George family shows that men have some familiarity with the tasks and material products made by women, and women with those of men: Wuzzie George could and did make duck decoys, and Jimmy George and Wuzzie George's father made twined tule bags, if not for duck eggs, then certainly for returning game to camp or preparing it for storage. Both Wuzzie and Jimmy George knew how to build a cattail house and how to make a tule balsa boat. Knowledge of the manufacture of these items perhaps persisted in this family at least in part because neither Wuzzie nor Jimmy George felt that the products were strictly the province of one person or one gender. In many hunting and gathering cultures around the world there is undoubtedly a similar crossover of knowledge between the sexes. All persons in these societies, possess a degree of knowledge about all aspects of the culture, and although not always skilled in every task, they can be called upon for information and illustration.

The last component of input, in addition to knowledge and labor, is resources. The resources in the case of the items described and illustrated are specific marsh plants that occur in abundance in western Nevada and elsewhere in western North America where waters run slow or terminate. The most important of these are tules and cattails. The availability of resources often influences the direction of a technological system, and this may indeed have been the case in the Stillwater environment. Tules and cattails occur in far more abundance there than do other plants that might have been put to similar uses, such as tall grasses, willow, or cottonwood. In the case of house building, these latter products were available and used in other Northern Paiute areas, but they appear to have been less popular than tules and cattails. Boats or rafts could have been made

from logs, had these been more readily available. There also would have had to have been the knowledge and tools necessary for shaping and constructing dugouts or planked boats. As noted in "The Cattail House," house-frame wood of long, straight willow or cottonwood poles was seemingly in short supply. Thus these resources were conserved to a greater degree than were the cattail mats.

Yet the mere presence of a resource does not guarantee its successful utilization. Again, people need to develop knowledge of the properties of the plants and perhaps to transfer knowledge from other spheres of culture to utilize the resources successfully. A shortage of other house-building or boat-making materials may have given people the impetus to experiment with new resources. But this assumes that we have sufficient chronological information on the history of resource utilization and technology in the region to think that tule technology developed later in time than certain other technologies. This information is presently lacking, although what there is seems to indicate that at least some aspects of tule technology (particularly mat, bag, and sandal making) are indeed old. Production of tule balsa boats for oceangoing purposes, as among the Chumash of California, is probably more recent than production of the more basic craft. Planked canoes may be younger still. Baskets, which have considerable antiquity in the Desert West, could have served to collect duck eggs and other products; waterfowl could be taken without decoys. Thus it is not always clear what the specific history of a technology is, let alone what forces may have been at work in its development and change.

The major outputs of a technological system are material culture and environmental modification. In the case of the Cattail-eaters, the tangible material items, or artifacts, of tule technology are egg bags, duck decoys, cattail houses, tule balsa boats, etc. Although each is a product that can be readily described in terms of its stages of manufacture and final form, each also represents, in terms of knowledge and use, far more than these obvious qualities. Each is enmeshed in a much larger context as a working item in the culture. Each example represents, in many ways, knowledge of and experience with Cattail-eater lifeways. It is this knowledge and experience that should be kept in mind as the evidence provided by film and photographs is viewed.

The technological aspect of environmental modification is clearer for some of these items than it is for others. Certainly environmental

modification is pertinent in house building, as houses protect persons from the elements. Tule balsa boats allowed the Cattail-eaters access to marsh environments and associated products that would otherwise be unavailable or available only with some difficulty. As part of a unique hunting strategy, tule duck decoys modified the conditions under which waterfowl could be taken by luring them to certain desired locations where they could be shot or netted. And egg bags provided ready transport devices that allowed people to accumulate and process food products at places other than their immediate points of origin. Thus viewed, these additional aspects of the complex system of which tule technology is a part helped to give the technology purpose and direction.

Analyses of technological systems, or even aspects of them, such as tule technology, must also consider the role of individuals as representatives and carriers of traditions. It is individuals who synthesize and maintain the knowledge requisite to make material culture and pass on technological skills. Clearly the George family—Wuzzie and Jimmy George, their parents and grandparents, and their children and grandchildren—possessed and still possess this knowledge. For the generations before Wuzzie and Jimmy George, these material products played a vital and important role. In their parents' and grandparents' generations, these lifeways began to change, but certain features persisted long enough to give Wuzzie and Jimmy George the direct experience that eventually would allow them to discuss this technology in great detail. Having been taught by their grandparents, their knowledge reached back more than a generation. By the early 1950s, when they were called upon by Margaret Wheat to think back to those earlier days and older ways of living, they were able to call upon memory and renew their skills. They were able to demonstrate the material products and place them at least partially in the contexts in which they once functioned. Their own children shared in the renewal of interest in the past, although they probably had heard of many of these things much earlier, during long winter nights. Through Jimmy George's hunting and doctoring and Wuzzie George's interest in collecting native foods and medicines, their children, too, participated in many aspects of the ways of the Old People. They in turn passed on some of these interests to their own children. But as each new generation becomes further removed from full participation in the ways of the Old People, less knowledge is transferred and the effort required to do so is greater. Life does not demand of each

generation exactly what it did of the previous one. With the deaths of Wuzzie and Jimmy George, much was lost that can never be regained or replaced.

Wuzzie and Jimmy George and their family are not unique among Northern Paiute people or Indian people in general. A number of families carry with them and continue to participate in at least some ways and traditions of the past. Margaret Wheat and others have documented in written form and in photographs the knowledge retained by other individuals and families. Other aspects of documentation and validation between generations have been carried orally from one generation to the next. What is remarkable about this body of knowledge and its representation in specific individuals is its time depth. With persons who live to be as old as Wuzzie and Jimmy George, it is possible to reach back more than a hundred years. Wuzzie and Jimmy George also experienced little of non-Indian society's formal education, having remained at home with their parents and grandparents during their early years. Their own children, and certainly their grandchildren, did not have the same opportunity to experience Native American forms of education, but the Georges would not have denied their children or grandchildren access to new forms of education. They hoped that their offspring would retain something from the Old People *and* develop the ability to lead successful lives under contemporary conditions. Parts of the Old People's legacy are being maintained by the George family in the making and selling of tule duck decoys as well as in a pride in all aspects of their heritage. Some individuals reach back to the past and actively participate in cultural-studies programs within their tribe. Others seek new paths and look more to the future. However, at least some Native American young people are learning about former lifeways and developing a new respect for how their parents, grandparents, and generations of Old People once lived. They are the hope for the future, and can ensure that aspects of tule technology will not soon be forgotten.

Appendixes

A: Transcript of Film Narrative

The film *Tule Technology: Northern Paiute Uses of Marsh Resources in Western Nevada* incorporates still photographs and live footage shot in 1964 and 1979 on the Stillwater Reservation near Fallon, Nevada. Narration is provided by Wuzzie and Jimmy George's granddaughter, Louella Thomas (LT), and their son, Leonard George (LG). Titles on the film are represented by bold type in this transcription of the soundtrack.

PICTURE	SOUND/TITLES
Scenes of the Stillwater, Nevada, marshlands, including small bodies of water and the many stands of tules and cattails	Wuzzie George's voice is heard singing a Northern Paiute Badger Song
	Northern Paiute Indian people have lived near the Stillwater marshes of western Nevada for untold generations
	The marshes provided them with many kinds of food, including fish, waterfowl, eggs, and water plants, such as tules and cattails
	For this reason the people were called in Paiute *tóidikadi*—cattail-eaters
Wuzzie George collects and washes tule roots	LT: On the tules they eat the bottom part of it—the white part, because I remember Grandma telling us to do that, too. I mean, you know, that's part of their food; they eat the bottom part of it. Doesn't taste too good when you eat a little further up.
Stills of Wuzzie George fashioning bags for collecting duck eggs	**Tules and cattails were also used to make many objects**
	She sits on her canvas and works on that, you know, works on that, out-

side where, you know, because everything gets all messy—a bunch of those tules all over the place.

Each spring women made simple twined tule bags for collecting the many waterfowl eggs of the marshes

Wuzzie George collects eggs from a nest in the marshes

But, that was way before my time, though, too, collecting duck eggs—just boil all the eggs and eat it.

Stills of the Georges making a house from cattails

Houses of cattail mats provided winter shelter for the Stillwater people

When we were doing that was around in November? They were fixing that house . . . and they [cattails] dry out real good. Then we went over there and cut them down.

Still of tule balsa boat being poled across open water

Boats made of tule bundles were poled through the marshes for duck collecting, fishing, and waterfowl hunting

LG: I remember seeing them going across deep water, chasing these ducks and stuff out of a deep pond, chase them out toward a place like this. They'd both go out there and cut the tules, tie it up, put it on their back and haul it out.

Scenes of the marshlands

Wuzzie and Jimmy George of Stillwater preserved the ways of their ancestors and have passed them on to their children and grandchildren

Tule Technology: Northern Paiute Uses of Marsh Resources in Western Nevada

Filmed in 1964 and 1979 near Fallon, Nevada

Narrated by Louella Thomas, the Georges' granddaughter, and Leonard George, their son

Still of Jimmy George

Jimmy George in his doctoring costume

LT: Grandma and Grandpa lived in that mud hut with the willows, when he was alive. Every weekend or whenever somebody was sick they'd call him—go over to his house—Indian doctor. Well, he spoke Shoshone and Paiute; she talked Paiute and English.

Still of Jimmy George

Jimmy George preparing warp for rabbit skin blanket

And I used to watch him make those rabbit blankets, too. Well, he just skins it, and makes it, you know, stretch it out, and then he'd twist it real tight and dry it out and tack them all together.

Jimmy George with Frank John

Jimmy George and Frank John making tule boat at Pyramid Lake

They'd go over there to Nixon [Pyramid Lake Reservation], too, and work with that Frank John.

Wuzzie George teaching her granddaughter, Lois George, how to construct a duck egg bag

Wuzzie George and her granddaughter, Lois George, making duck egg bags

I don't even know how old she is. She can't be ninety-something years old because there is one lady in town, she's a hundred and two. Grandma said that that lady is younger than her, so Grandma must be about a hundred and four?

She only had one daughter, though, that was my mom. She had about, maybe nine, I guess, most of them died. Alive now? There's only four, just four boys . . . Ivan, Walter, Leonard, Ashley.

My mom spoke English. Grandma, she was, you know, she spoke Paiute.

She wasn't really good in speaking English, and she learned from us. We taught her how to write her name, but she likes her Xs better.

I understand Paiute, [but] talk mostly English.

Wuzzie George weaves tules together; bends, shapes, and completes bag

I think Grandma was the only one that knew how. We'd just watch her, that's all. I wasn't too young, about in my teens. I'd just help her get the things for it. She just sat down and worked on them. All her little great-grandchildren were out there sorting them out, giving us little pieces of it. And that went to the [Fallon] museum, that house sitting in there now. She cut the ribbon, two years ago. They took her over there, and they cut her ribbon on her own [exhibit], you know that picture that they put in there for her? That great big one? I think she was pleased about it, because there's no big picture of her anywhere. She tells everybody about it when they visit her, to go and look at her picture in the museum [Churchill County Museum]. So everybody says they're going to stop over and look at it, see what they have in there. Because they've got that house and those, you know, I think some ducks [decoys].

Still of duck decoy

Making duck decoys is an old craft in western Nevada

Decoys found in nearby Lovelock Cave are tentatively dated at 2,000 years old

Wuzzie George begins duck decoy by gathering and straightening tules

Wuzzie George, 1964

Grandma learned from Grandpa, because he was the main one that was making it, and then she seen

how he did it, so she copied. And then when she couldn't make it no more, then my mom made it, and then Ivan. And then I learned it from Grandma, learned how to make ducks.

Tules—that's got to be dry. You use the dry ones, she says, because these [fresh tules] will shrink, won't come out right. It's got to be dry. Everything was dry. When they're old, she said, they get all spotty, those tules. That's probably from rain. They're spotted, you can't use them. They're old, and they break off real easy. You know, they're old.

Wuzzie twists and intertwines tules to form body of decoy

She gets duck once in a while. She's got some friends in town that, you know, they come out here and hunt ducks, and they give it to her. She don't really care for anything else, she likes ducks and rabbits. But, she's gotta eat what, you know, they cook now. And fish, she likes fish. Berries, ducks, and fishes, they eat those, too. That's part of their food.

You know, when everybody else goes out and hunt, hunt ducks, everybody goes out, too. Now you've got to have a license to kill ducks. But they give it to them, but you've got to have your enrollment card, your membership card on the reservation.

They won't give it to you unless you have one. They check your car before they go home and see how many ducks they got. What'd they say? Not over ten ducks? No more free ducks.

Wuzzie completes body of decoy; trims excess tules with a pocket knife

It took me about three hours to help Grandma, because you gotta tighten them real tight. And you've gotta cut it—takes about three hours. Beginners would take three hours, because

if you don't tighten them tight enough, you know, we have to take it, take it undone again, and do it over.

She made one not too long ago, what, three years ago? Those ducks, and that one was, I think that one went to the museum, Fallon Museum.

Wuzzie wraps cattail to form the head of decoy

And you've got to make their heads separate from the body. And she was making the head to get them to go on real tight. She was making the heads, but then they popped off and got real loose [unwrapped], so we had to do them all over again. Well, that's if you don't tighten it real tight, you know, you've got to tighten it, because it slips out somehow, and it just, you know, unwinds. It gets real loose, because Grandma said to tighten it real tight.

Fastens the head to the body with greasewood pins

You could push the head in real tight, too, in the body. That's what I was doing to mine, and, you know, it just tightens real tight. I thought that's how they make it. Just tie it underneath it. You've got to tighten it real tight, push it down. Well, she just bends it [greasewood pin] real good . . . and it stays.

Still of Jimmy George making duck decoy

Jimmy George covers a decoy with a duck skin prior to floating it

Well, I just took her word for it, it floats. Kills the ducks, and he'd just skin them with the feather[s] and all and just put it over the tule duck. And I guess they do float in the water.

Wuzzie and her daughter Winona Thomas gathering cattails

Wuzzie and her daughter, Winona Thomas, build a cattail house

They'd come out here to the marshes, put a house up near water, where

the material is. That's where they get them, instead of hauling them a long ways.

And they take them out there and have them cut those things down. A couple of hours, you know, if they have everything there because they've got to put the frame first, and then they put the cattails on the outside, tighten it down. They're strong because I went out there with Grandma that time I got a whole bunch of those; we just tore them off—they're hard. We stretch around out there. You've got to cut them off because they, you know, when it goes down to the root it's real hard to pull out—we have to cut them off.

I think it's easier to carry, on your back. You do the same thing with baskets, too. You know, the head, put it [the tumpline] on your forehead and let it, let everything, you know, to carry it from the back, on their pine-nut baskets, too. Because I used to carry those pine nuts up with them when we used to go pine-nut hunting. You can carry a whole bunch of pine nuts.

Wuzzie and Winona make cattail mats using willow rods and dampened, twisted sagebrush-bark cordage

Everything's got to be out in the open, I mean, you know, they didn't have ropes and stuff then. Then, you know, some of those things that they used [for ties], I think, was sagebrush, you know, tighten it up—just sagebrush and tules.

Wuzzie digs holes for the upright poles of the house frame

I think we went over there, where is it, on Rabbit Road? Just cutting down a whole bunch of willows, and that was for part of it—for the frame—because it bends. I think Peggy [Wheat] was down there, too. Everybody was cutting around.

Wuzzie and Winona tie house frame together

They worked together all the time—my mom and Grandma—just those two, they're always busy.

You've got to tie it to tie part of the house up—[with] sagebrush bark—the outside of it, I guess. Just string it out and, you know, twist it. She makes her dresses with that, too, you know, our Indian dresses and shoes.

I used to go out with them when they did that pine-nutting, go up there. I remember that from when I was small—I was about 12 or 11 years old when I went with them. I got to carry those baskets, you know, put those cones in the back and take them to the camp. We went up that one time, but we didn't get that much because people got them all before we, you know, got there, and there was a lot of people up there.

Wuzzie and Winona tie cattail mats onto house frame

I always see her doing, you know, like fixing pine nuts and stuff, where she was telling how they make pine-nut soup and what they do before they grind it up in that rock. I remember that—hitting the pine nuts around. She's got to roast them first and then knock them out [of the cones]. Then she's just got to crack them up and all that—cracking them [shelling] with those rocks, you know, not too hard though, you squish them all up. I used to do that with her, and she grinds it up into like flour, and then she fixes it, just boil it up, boil it. Seems like they wait until it's cooled off, and then they eat it.

Wuzzie and Winona construct the door, and complete the house

She must know a lot of things, huh? What roots to eat and what not to eat for medicine. We took her over, what, about three years ago, she was

in her walker. We took her up there [Dixie Hot Springs], and she put her legs down in there, because she said it was like medicine, because that water is pure, coming out of the earth. You know, it's got all those things in there. She put mud on her knees—she's got arthritis, and that, you know, that hot mud, that's what she used. And she brought some of that back, and she used it, you know, just used it when the mud dried out. She just wet it and put it over her knees, and she prayed. That kept her walking for, you know, walking for a long time.

She did that [cure] through that sweat in Schurz [Walker River Reservation], because I was working, and those guys told me that she had a stroke. And I went over there, and I took her to Schurz real fast, you know, without even going to the doctor or hospital. But she walked out of there, because she knew where she was going—to that sweat lodge. They got her in there right away, and she couldn't even talk Paiute or nothing because, you know, that stroke got her mouth, too. Week, she stayed there a week, and she came back, and she was walking.

Leonard, Lois, and Lucier George gather tules in the water

The tule boat built by Leonard George and his children, Lois and Lucier, 1979

LG: Do you have any tules back there [Washington, D.C.]? Go back there and cut some and you can make one. Yeah, you try that sometime.

The Georges tie two large bundles of tules together to form the boat

Well, it depends on how big you want it, you can tie two or three of them or cut enough [to] where you

can tie the main parts of the tule and bring them together and tie the ends—one on the back end and up in the front. And these here [bundles] are already tied, tie them together and just bring it on up—front end. Then you can push up on there to tie it. You can let it [cattail ties] soak.

Well, I seen them, seen them bigger, you know, a little bigger. You can, you can just get some together, cut a lot of it and tie it—two strands [bundles]. Then you just put the whole thing together and then tie it [again], point the front end and the back, hold it together.

The Georges bend one end upward to form the front of the boat, then trim excess tules to finish the rear

You don't have to have anything on top, and you just make a round [gunwale]. Tie it together and to make it round, you know, just around, only just to hold whatever you got—ducks or eggs or your guns. Just lay it on there, and it ain't going to fall off. It won't roll over.

Sakí, we call it in my language, *sakí*. Boat, *sakí*. This here is *sáisaki*—tule boat.

The Georges carry the boat to the water; Lucier poles the boat through the marshes

I seen one bigger than these, just like a log. Tie it together, and you can crawl on top of it, you know. You don't sink, just throw it in the water and jump on it.

You can push it, or you push it with a stick, push it, you know. Depends on how deep the water is, you know. You don't go very fast, but you move right along.

B: Northern Paiute Pronunciation Key

Words in the Northern Paiute language given in italics in this study are written phonemically according to the pattern established for the language in Fowler and Liljeblad (1986). Although some of the letters and symbols used may appear familiar to English speakers, they are not the exact equivalents of sounds heard in English. Nonetheless, in order that the nonspecialist may be able to pronounce these words in a manner that is an approximation to the sound system of the Northern Paiute language, the following rough guide is offered based on nonregional United States English:

VOWELS

a as in f<u>a</u>ther
i as in s<u>ee</u>
ɨ as in some pronunciations of j<u>u</u>st
o as in t<u>o</u>ne
u as in t<u>u</u>ne
aa, ii, ɨɨ, oo, uu are long vowels; that is, they are held longer, not pronounced twice.

CONSONANTS

c as in ca<u>ts</u>
ʔ as in oh-oh
g^w as in <u>Gu</u>am
k^w as in <u>qu</u>ick
ŋ as in sing
all consonants followed by · are said with more force and length, not pronounced twice.

C: Tables

Table 1. *Common birds and mammals, lower Carson River*

MARSH AND SHORE BIRDS (Adults of all species taken as food)	Taken as food	
	Eggs	Young
Common Loon (*Gavia immer*)	+	
Pied-billed Grebe (*Podilymbus podiceps*)	+	
Eared Grebe (*Podiceps nigricollis*)	+	
Western Grebe (*Aechmophorus occidentalis*)	+	
American White Pelican (*Pelecanus erythrorhynchos*)	+	+
Great Blue Heron (*Ardea herodias*)	+	+
Snowy Egret (*Egretta thula*)	+	
Black-crowned Night-Heron (*Nycticorax nycticorax*)	+	+
White-faced Ibis (*Plegadis chihi*)	+	
American Coot (*Fulica americana*)	+	+
Tundra Swan (*Cygnus columbianus*)		
Canada Goose (*Branta canadensis*)	+	+
White-fronted Goose (*Anser albifrons*)		
Snow Goose (*Chen caerulescens*)		
Green-winged Teal (*Anas crecca*)	+	
Mallard (*Anas platyrhynchos*)	+	
Northern Pintail (*Anas acuta*)	+	
Cinnamon Teal (*Anas cyanoptera*)	+	
Northern Shoveler (*Anas clypeata*)	+	
Gadwall (*Anas strepera*)	+	
American Wigeon (*Anas americana*)	+	
Canvasback (*Aythya valisineria*)		
Redhead (*Aythya americana*)	+	
Common Merganser (*Mergus merganser*)		
Common Goldeneye (*Bucephala clangula*)		
Bufflehead (*Bucephala albeola*)		
Ruddy Duck (*Oxyura jamaicensis*)	+	
Killdeer (*Charadrius vociferus*)	+	
Black-necked Stilt (*Himantopus mexicanus*)	+	
American Avocet (*Recurvirostra americana*)	+	
Long-billed Curlew (*Numenius americanus*)	+	
Common Snipe (*Gallinago gallinago*)	+	
Wilson's Phalarope (*Phalaropus tricolor*)	+	
California Gull (*Larus californicus*)	+	+
Caspian Tern (*Sterna caspia*)	+	
Foster's Tern (*Sterna fosteri*)	+	

Table 1. *Continued*

MAMMALS	Taken as food
Coyote (*Canis latrans*)	
Red fox (*Vulpes vulpes*)	
Kit fox (*Vulpes macrotis*)	
Desert wood rat (*Neotoma lepida*)	+
Muskrat (*Ondatra zibethicus*)	+
Meadow vole (*Microtus* spp.)	+
Grasshopper mouse (*Onychomys* spp.)	+
Bobcat (*Lynx rufus*)	+
Pocket gopher (*Thomomys* spp.)	+
Kangaroo rat (*Dipodomys* spp.)	+
Black-tailed jack rabbit (*Lepus californicus*)	+
White-tailed jack rabbit (*L. townsendii*)	+
Nuttall's cottontail (*Sylvilagus nuttallii*)	+
Striped skunk (*Mephitis mephitis*)	+
Mink (*Mustela vison*)	+
Badger (*Taxidea taxus*)	+
White-tailed antelope squirrel (*Ammospermophilus* spp.)	+
Yellow-bellied marmot (*Marmota flaviventris*)	+
California ground squirrel (*Spermophilus beecheyi*)	+
Belding's ground squirrel (*S. beldingi*)	+
Townsend's ground squirrel (*S. townsendii*)	+

Table 2. *Nutritional components of some common marsh plants*

Plant Source	Composition (%)					
	cals/kg	carbohydrates	protein	fat	ash	moisture
Typha latifolia pollen	1,040	18.2	4.9	1.5	6.4	69.0
Scirpus acutus rhizomes	510–630	14.0	1.5	0.3	1.0	84.0
Scirpus paludosus seeds	3,050	56.9	6.5	6.3	23.7	6.6

Source: Simms, 1984

Notes

The George Family

(Pages 42–65)

1. By tradition, the names of the dead are to be forgotten and not mentioned by the living. If need be, one could refer to that relative by talking about something they did, or some physical feature of that person—but not by name.

2. The first census figures taken in 1858 estimate a population for the Carson Desert region of 1,600 people. By 1863, the population was at 900, a considerable reduction. Whether this incident is responsible for the reduction or whether there were other causes is not known. Many people died from introduced diseases in this period.

3. Billy Springer's mother had been married first to a Shoshone man—Billy's father. Thus Billy was half Shoshone.

4. Billy Springer's age is an estimate based on census records that describe him as elderly in 1913. Robert Lowie, who interviewed him in 1914, also stated that he was "old."

5. The brine-fly larvae that are eaten in this area are from the species *Ephydra hyens*. They occur in great windrows on Mono Lake in late June. In former times, they were harvested in winnowing baskets and set aside to dry in the sun.

6. Shinny is a form of women's field hockey, played with sticks and a ball or rag. Two teams of women attempt to move the ball with the sticks around their own goalposts to score.

7. Mr. Ashbury was an employee of the Carson Indian School, later the Stewart School, which opened in 1890.

8. The form of marriage reported here is called "pseudo-cross-cousin" marriage by anthropologists. The person involved is either mother's brother's stepchild or mother's stepbrother's child. This marriage form has been reported in the Great Basin, whereas true cross-cousin marriage is very rare.

9. Calico George lost his power when a dog entered a place where he was doctoring and vomited. This was considered a very bad thing to happen.

The Marshes and Their Products

(Pages 66–77)

1. There has been considerable manipulation of the present Stillwater Marsh system by the U.S. Fish and Wildlife Service in order to increase the amount of waterfowl habitat. The area was always a marsh, but pond boundaries have been altered.

2. Simms (1984), based on experimental collecting, found cattail rhizomes to be mainly fibrous rather than starchy in the spring season. It is possible that quality varies by collecting area, but seasonal variation may be responsible for claims that most of the rhizomes used for flour were taken in the fall.

The Tule Duck Decoy

(Pages 93–111)

1. There was one plain decoy in the Lovelock Cave cache. It is possible that it was intended to be a female Canvasback, thus suggesting that plain decoys are equally old. It simply may also have been unfinished.

2. On Jimmy George's decoys, each side was twined independently and then the two were joined.

3. The stalk may also have been a single piece, bent to form the junction of neck and bill.

4. 50CFR1 (10-1-88), 20.91 Commercial Use of Feathers.

5. Heizer and Krieger (1956:13) report that these feathers are stuck to the body, but reexamination by the author suggests that a whole skin covers the tule float. White feathers are stuck into the tules at the tail.

6. It is possible that this decoy may have been more complete when collected. At present, even the float is partially deteriorated.

7. Steward (1943) was told that their use was recent among the Bannock, and copied from those of Euro-Americans.

8. Goose decoys, but only heads and necks, were recovered from Lovelock Cave. Wilke and Thompson (1989) suggest that the necks may have been stuck into the mud to simulate birds, rather than used on full decoys.

The Cattail House

(Pages 112–133)

1. There is some difference of opinion among Northern Paiute consultants as to whether the four-post shade is aboriginal or of more recent introduction. Storage platforms are likely old.

2. Mats on the houses could be adjusted, especially at the top, to allow for cooling breezes to enter.

3. In the film, Mrs. George uses strips of denim as ties. Cloth strips replaced a number of native materials for ties and other joinings in the historic period.

4. Cutting in former times may have been done with bone or stone tools. Serrated stone tools, locally called "tule knives" by archaeologists, are common in the Carson and Humboldt sinks.

The Tule Balsa Boat

(Pages 134–152)

1. In the 1981 film, the boat is constructed of green rather than dry tules, and the resulting craft is heavier and more difficult to carry and maneuver.

2. In the 1981 film, knots are used, but on most models (as well as on earlier craft constructed for Wheat) the twisting method is used to finish.

3. Most makers prefer tules, but cattails are seen on occasion.

4. They were used to set fish and duck nets on the lakes, but apparently not for general lake travel.

5. Notes accompanying a model collected by Stephen Powers in 1875 speak of inserting a willow rod in each bundle for added strength, a practice of some California groups.

6. McGee indicates that upon their entering the Seri camp, all the people fled. His party then "appropriated" their boat without asking!

Conclusions

(Pages 153–158)

1. There has been considerable speculation through the years about the relationship of the Northern Paiute culture to the archaeological Lovelock Culture. Few definite conclusions have been reached. The traditions contain many similar features involving the utilization of the marshes; but they also contain a number of differences in detail that cannot be easily explained.

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