Wickiups

of the greater yellowstone ecosystem

Conical Timber Lodges within
Bridger-Teton National Forest,
Grand Teton National Park,
Shoshone National Forest,
and Yellowstone National Park

REPORT CERTIFICATION

I certify that archeological report *Wickiups of the Greater Yellowstone Ecosystem: Conical Timber Lodges within Bridger-Teton National Forest, Grand Teton National Park, Shoshone National Forest, and Yellowstone National Park* by David R.M. White and Katherine L. White, 2012, has been reviewed against the criteria contained in 43 CFR Part 7 (a) (1) and upon recommendation of the park Archeologist has been classified as **AVAILABLE (deletions).**

Superintendent
Yellowstone National Park

Date 12/5/12

Classification Key Words:

Available – Making the report available to the public meets the criteria of 43 CFR 7.18 (a) (1).

Available (deletions) – Making the report available with selected information on site locations and/or site characteristics deleted meets the criteria of 43 CFR 7.18 (a) (1). A list of pages, maps, paragraphs, etc., that must be deleted for each report in this category is attached.

Not Available – Making the report available does not meet the criteria for 43 CFR (a) (1).

Deletions:

Chapter 4
Pages 39-57: various paragraphs, figures, and tables containing archeological resource locational information.

Chapter 5
Pages 59-81: various paragraphs containing information recorded during interviews of tribal members.

Appendix B
Tribal coordination information.

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Photographs on cover:

From left to right: 48TE939. White Canyon War Lodge, Bridger-Teton National Forest; 48YE2, one of the Lava Creek Wickiups, Yellowstone National Park; 48PA868. Sheep Point Lodge I, Shoshone National Forest.

All photographs in this report were taken by staff in the corresponding jurisdiction.

table of Contents

List of Figures

List of Tables

Acknowledgements

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Specialists with the other participating jurisdictions provided copies of archaeological site forms and copies of unpublished studies. They also contributed to research design modifications, and provided useful comments on the draft report. These include Ann Johnson and Elaine Hale (Yellowstone National Park), Merry Haydon and Jamie Schoen (Bridger Teton National Forest), and Jacquelin St. Clair (Grand Teton National Park). Allen Madril facilitated the addition of the Shoshone National Forest to the study team. They are specifically mentioned in footnotes throughout the study, but special thanks must go to Larry Loendorf for lending David White a number of manuscripts from his library. Rich Adams and Dan Eakin of the Office of the Wyoming State Archeologist provided information about sites in the Shoshone National Forest, and provided useful comments on the draft report. Yellowstone interns Hannah Larkin (anthropology major, Stanford University) and Kathryn Byerly (anthropology graduate, Ohio University) were our eyes in the field, visiting and photo-documenting as many "wickiup" sites as possible. Amy Johnson, Yellowstone volunteer (anthropology major, Columbia University) provided a review of this report. Useful information was received from a number of researchers unaffiliated with the participating jurisdictions. Special thanks are also extended to Patty Oestrich, Contracting Specialist with Yellowstone National Park; Robin Park, Archaeologist with Yellowstone National Park; and Bridgette Guild, Registrar for Yellowstone National Park.

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Executive Summary

"Wickiups" are a poorly understood, fragile, non-renewable protohistoric/prehistoric resource. Numerous tribes constructed these shelters, but there is no clear understanding of whether specific structures can be attributed to certain tribes. This study undertakes to clarify these and other questions, based on existing published and unpublished literature, on opinions of regional experts in archaeology and ethnography, and on interviews with Greater Yellowstone Ecosystem (GYE) traditionally associated tribal and band representatives. The study focuses specifically on lands administered by Bridger- Teton National Forest (BRTE), Grand Teton National Park (GRTE), Shoshone National Forest (SHOS), and Yellowstone National Park (YELL), but it takes a broader view, with attention to similar structures both nearby and throughout the western United States.

The term "wickiup" is shown to be imprecisely used in reference to a variety of structures. Attention is given to "wigwams" and "tipis" as well as "wickiups." These terms were originally used for tribally- or regionally-specific shelter types. Due to overlapping use of the terms it is suggested that the term "wickiup" is misleading; for the structures that are the concern of this study, the architecturally descriptive term "conical timber lodge" (CTL) is used instead.

Numerous CTLs are known to occur in BRTE, SHOS, and YELL; those for which sufficient information has been recorded are discussed in detail, and illustrations are provided when available. Then, historical and ethnographic information is reviewed for each of the 29 tribes and bands currently consulted with by BRTE, GRTE, SHOS, and YELL. The report includes cultural information and management recommendations gathered from interviews with eighteen individuals representing eleven traditionally associated tribes and bands. Interviewees provided contextual information about CTLs in the GYE such as how, why, when, where, and by whom CTLs were known to be used (completed information provided in Chapter 5, page 47). Although not considered sacred, these structures remain culturally important to tribes and bands as they represent a continued native presence on the landscape.

Many tribes built CTLs, and there are a few characteristics that could potentially distinguish CTLs built by certain tribes. These characteristics are often indistinguishable on extant CTLs, and indeed it is often difficult to tell whether a given timber structure site is a CTL or another similar sort of shelter. Some timber structures have been attributed to natural forest thinning rather than human activity, but this hypothesis is poorly developed and, along with the process of natural deterioration of timber structures, needs closer attention.

One of the initial goals of this study was the development of a predictive model that would suggest where additional CTL sites might be found. This proved to be impossible, as a result of a rather small sample of sites and because data relevant to a predictive model are often missing from site forms.

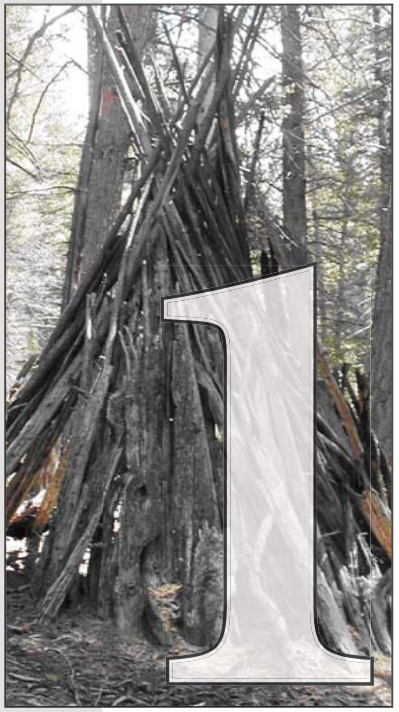
Various management recommendations are provided. Key among these is the continued documentation and monitoring of known CTL sites. A new documentation site form for CTLs in the GYE is included in the report (Appendix C) to facilitate these efforts. An additional important recommendation is that CTL site locations be kept confidential from the public at large to ensure their protection from non-natural deterioration and vandalism. Detailed information about CTL site locations is contained within this report. Finally, off-site interpretation of the structures to the general public is suggested to convey the cultural context of these unique and ephemeral structures on the GYE landscape.

Abstract

A variety of wooden shelters exist in the northern Plains; among these are conical timber structures popularly referred to as "wickiups". A study focusing on lands administered by Bridger-Teton National Forest (BRTE), Grand Teton National Park (GRTE), Shoshone National Forest (SHOS), and Yellowstone National Park (YELL), shows the term "wickiup" to be imprecisely used in reference to a variety of structures, so the study uses the architecturally descriptive term "conical timber lodge" (CTL) instead. Known CTLs in BRTE, SHOS, and YELL are discussed in detail, and illustrations are provided when available. Historical and ethnographic information is reviewed for each of the 29 tribes currently consulted by BRTE, GRTE, SHOS, and YELL, as well as for nine other tribes that used similar structures. The report includes cultural information and management recommendations for CTLs in the Greater Yelowstone Ecosystem (GYE) gathered from eighteen interviews representing eleven traditionally associated tribes and bands.

Characteristics that could potentially distinguish CTLs built by certain tribes are often indistinguishable on extant CTLs, and indeed it is often difficult to tell whether a given timber structure site is a CTL or another similar sort of shelter. Development of a predictive model that would suggest where additional CTL sites might be found in the subject jurisdictions proved to be impossible, as a result of a small sample of sites and because data relevant to a predictive model are often missing from site forms.

A variety of management recommendations are provided, including continued documentation and monitoring; confidentiality of CTL site locations; and off-site interpretation of the structures to the public. A new documentation site form for CTLs in the GYE is included.



Chapter One

Introduction: Study Purpose and Methodology

Background

A National Park Service (NPS) Solicitation dated July 12, 2004 (RFQ-Q1580040592) reflected a goal to produce a study on wickiups (conical timber lodges or CTLs), both known and potentially occurring, within Bridger-Teton National Forest (BRTE), Grand Teton National Park (GRTE) and Yellowstone National Park (YELL). The Shoshone National Forest (SHOS) joined in the study project later, early in 2005. The intended report would facilitate park and forest planning, environmental assessments, and other resource-related management decisions, and would contribute substantially toward agency obligations to consult with American Indian tribes having known affiliation with lands administered by these agencies.

The proposal upon which this Scope of Work is based addressed the subject Request for Quote (RFQ), with subsequent modifications as suggested by an NPS letter (Patty Oestreich to David White, August 11, 2004). The modified proposal/Scope of Work, presented three alternatives: (A) a scope and budget to conduct a literature search only, and prepare a report thereon; (B) a scope and budget to conduct a literature search and consult with three Tribes only, and prepare a report thereon; and (C) a scope and budget to conduct a literature search and consult with five Tribes only, and prepare a report thereon. The final Proposal/ Scope of Work (see Appendix A) was based on Alternative A, the literature search only, and this report is accordingly so

limited. The literature search will include attention to the full range of Tribes currently being consulted by parks/forests in order to more reliably identify those tribes with the greatest potential connection to wickiups. The report will guide future consultations to determine their significance to tribes, and management actions.

The second phase of the report seeks to incorporate information gathered from knowledgeable traditionaly associated tribal and band members and representatives. The third and final phase of the report constitutes a report review process as well as professional layout and printing.

Deliverables

This report includes the following stipulated deliverables:

1. Write a report on wickiups within the study area (lands of BRTE, GRTE, SHOS and YELL), to include results of investigations further detailed below;

2. Consult with agency cultural resource management personnel, as identified in the Request for Proposal (RFP) and as further suggested through contact with those indi- viduals;

3. Consult with a number of knowledgeable Euroamerican individuals, as identified in the RFP and as further suggested through contact with those individuals;

4. Review various existing published and un- published information, as identified in the RFP and as further identified by searching appropriate data repositories;

5. Provide an inventory of known wickiups within and near BRTE, GRTE, SHOS and YELL, with maps, photographs discovered during research, site forms and other writ- ten descriptions, environmental contextual information, names for wickiups in English and native languages, Tribal affiliation with wickiups and criteria for evaluating tribal affiliation, assessment of traditional uses of wickiups and evaluation of their significance both in terms of the National Register of Historic Places (i.e., through provision of a historic context) and broader general criteria as may be culturally meaningful to the associated tribes.

6. Interview all able and willing tribal and band representatives and members regarding their knowledge about and relationships with wickiups in the GYE. Include preferred management options for CTLs in the GYE.

7. Discuss findings as well as management options from both federal agency and Tribal perspectives.

The study achieved broad results through cost-effective research methodology. Consultation with agency personnel and knowledgeable EuroAmerican individuals was by means of telephone conversations, email, surface mail, and several trips to reservations. Pertinent information was sought for all areas within the GYE, although in-depth study was limited to the study area as identified in the RFP (with the addition of the Shoshone National Forest).

Published and unpublished information was sought through locally-available resources (Zimmerman Library, the Southwest Research Center and the Clark Field Archive of the University of New Mexico, Albuquerque, and the nationally-known library of the Laboratory of Anthropology in Santa Fe), through interlibrary loan (the Laboratory of Anthropology has exceptional success in securing obscure materials in this manner), from the knowledgeable Euroamerican individuals consulted by telephone, and from agency personnel who provided copies of 'gray literature' documents. Later during the study process, the libraries of the University of Washington (Seattle) were also utilized.

The literature search included attention to the full range of Native American tribes currently being consulted by GRTE, YELL, SHOS, and BRTE on archaeological and ethnographic concerns, in order to reliably identify those tribes with the greatest potential connection to the CTLs. Jurisdictions within the GYE consult with a

Table 1-1.

Native American Tribes and Bands Consulted with in the Greater Yellowstone Ecosystem

Yellowstone National Park and Grand Teton National Park currently consult with the following bands and tribes:

- Assiniboine & Sioux Tribes
- Blackfeet Tribe
- Cheyenne River Sioux Tribe
- Coeur d'Alene Tribe
- Comanche Tribe of Oklahoma
- Confederated Tribes of the Colville Reservation
- Confederated Tribes of the Umatilla Reservation
- Confederated Salish & Kootenai Tribes
- Crow Tribe
- Crow Creek Sioux Tribe
- Eastern Shoshone Tribe
- Flandreau Santee Sioux Tribe
- Gros Ventre and Assiniboine Tribes
- Kiowa Tribe of Oklahoma
- Lower Brule Sioux Tribe
- Nez Perce Tribe
- Northern Arapaho Tribe
- Northern Cheyenne Tribe
- Oglala Sioux Tribe
- Rosebud Sioux Tribe
- Shoshone-Bannock Tribes
- Sisseton-Wahpeton Sioux Tribe
- Spirit Lake Sioux Tribe
- Standing Rock Sioux Tribe
- Turtle Mountain Band of the Chippewa Indians
- Yankton Sioux Tribe

Shoshone National Forest currently consults with the following tribes (eleven of which overlap with the consulting tribes of YELL and GRTE):

- Assiniboine and Sioux Tribes
- Cheyenne River Sioux Tribe
- Crow Tribe
- Eastern Shoshone Tribe
- Nez Perce Tribe
- Northern Arapaho Tribe
- Northern Cheyenne Tribe
- Northern Ute Tribe
- Northwestern Band of Shoshoni Tribe
- Oglala Sioux Tribe
- Rosebud Sioux Tribe
- Shoshone-Bannock Tribes
- Sisseton-Wahpeton Sioux Tribe
- Upper Sioux Tribe

Bridger-Teton National Forest currently consults with the following tribes (both of which overlap with YELL, GRTE, and SHOS):

- Eastern Shoshone Tribe
- Shoshone-Bannock Tribes

Figure 1-1.

Katharine White and Bell Boyer in front of wickiup project display at the annual Bannock Gathering in 2009.

total of twenty-nine Native American tribes. Broken down by jurisdiction, they are as follows in Table 1-1.

Methodology

Work was organized on the basis of what Finan and van Willigen (1991) call "stepwise research." Simply stated, related components of work were carried out in discrete increments in order to avoid duplication of effort. Work was begun in September, 2004; due to changes in scope as well as various unavoidable delays, the first phase was completed in September 2006.

Research began upon authorization. A telephone consultation (conference call) was held involving key personnel at BRTE, GRTE and YELL, including the Contracting Officer's Technical Representative (COTR) and as many of the cultural resource management personnel as were available. This consultation was conducted to resolve details on the scope of work and to secure appropriate documentation from the parks and national forests. Phase 1 of data collection consisted of literature and archival work. The Principle Investigator (PI) secured pertinent data from park and forest files, beginning at the time of the first meeting. Much of the initial literature review was conducted at the Laboratory of Anthropology library in Santa Fe, and the Zimmerman Library and associated libraries in Albuquerque NM. Interlibrary loans through the Laboratory of Anthropology were used to eliminate the need for travel to distant repositories. Subsequent research was also performed at the University of Washington libraries (primarily the Suzzalo and Allen libraries) in Seattle, Washington. Interviews with non-Indian researchers and other individuals knowledgeable about "wickiup" sites in and around the study area were conducted by various means—in person, by telephone and email, and through written correspondence.

No visits were made to BRTE, GRTE, or SHOS for examination of their files on sites; federal personnel provided pertinent information directly to the contractor. Particular attention was devoted to historical literature pertaining to exploration of the Upper Missouri River Valley, including journals from early exploration, beginning with the Lewis and Clark expedition and continuing with journals of trappers, mountain men, and later government exploration parties (e.g., for railroad development).

After the first phase, Katharine White took on the role of lead researcher to complete the remaining phases for the project. Phase 2 of the study was completed by 2010. The second phase focused on consulting with the associated tribes of the GYE and incorporating their perspectives, comments, and information into the report, management recommendations, and a CTL site form. Ultimately, consultation sought to determine the actual and potential locations of CTLs within the study area; their significance to tribal people, their functions, meaning, and likely affiliation; as well as recommendations for management. From this report, the four jurisdictions can make conscious and culturally-informed decisions based on input from the tribes about CTL management, including determining their National Register eligibility.

During the second phase, consultation with tribes included contacting tribal governments and tribal cultural resource staff as well as elder contacts by letter, phone calls, and interviews. All appropriate tribal contacts (as determined by Rosemary Sucec, NPS) were sent a draft copy of David White's preliminary research report as well as several DVDs of professionally edited footage of all CTLs in the GYE. Because many of the GYE CTLs are situated in isolated and often difficult terrain, DVDs were produced in order to convey a sense of each structure within their respective landscape contexts for those tribal members who are unable to see them in person. And while it was intended and expected that representatives from several tribes would make site visits to GYE CTLs, due to continuing tribal scheduling conflicts, no field visits were actually made. During this phase over 326 letters, draft reports, and DVDs were mailed to associated tribal contacts for review, comment, and critique. In addition, over 534 phone calls were made to tribal representatives to ascertain information, comments, and interviews. Several strategic trips were also made to tribal reservations to inform tribal members of the study (Figure 1-1) In total, eighteen individual interviews were conducted representing eleven tribes (Blackfeet, Comanche, Cheyenne River Sioux, Confederated Salish and Kootenai, Crow, Eastern Shoshone, Kiowa Tribe of Oklahoma, Nez Perce, Shoshone-Bannock, Sisseton-Wahpeton Sioux, and Standing Rock Sioux). In these endeavors, Yellowstone National Park provided logistical as well as material support to ensure that all appropriate and pertinent information was gathered.

Katharine White completed the final and third phase of the study in 2011. Phase 3 consisted of the report's finalization, circulation for review, and dissemination to the GYE jurisdictional partners as well as associated tribes.

Research Design Refinement

Research Design Refinement incorporated new data developed during Phase 1 of Data Collection. A refined Research Design was provided to the COTR following the initial conference call, and further refinement continued as appropriate. In February, 2005, the Shoshone National Forest (SHOS) was added to the study area upon learning they have the highest number of wickiup sites recorded in the Greater Yellowstone Area.

Data Analysis

David White conducted data analysis for the project. This involved organizing information (e.g., references, library notes and interview notes) from data collection. Information was compiled and assessed for validity. Data pertaining to wickiups and related resources in BRTE, GRTE, SHOS, and YELL was assessed in terms of regulatory criteria for potential eligibility to the National Register of Historic Places (NRHP), as "Traditional Cultural Properties" or another appropriate qualifying status. The absence of consultation with knowledgeable Tribal members hindered this goal, however, leaving NRHP assessment addressed largely in terms of archaeological considerations only. The only photographs acquired came from the sponsoring agencies; representative examples of these have been incorporated into the report. Maps of wickiup sites are not provided.

The known number of recorded BRTE, GRTE, SHOS, and YELL wickiups is quite small. The parameters of

environmental contexts within which these occur has been carefully studied, but too few sites are recorded in sufficient detail to allow development of a predictive model for occurrence presently unknown wickiups. Also factoring into this is the vast area included within BRTE, GRTE, SHOS, and YELL; extensive sampling of the area, using a standardized method of wickiup recordation, would be required for reliable predictive modeling to be attempted.

The fully edited draft report was written, printed, and submitted to the NPS and USFS by the PI at the end of August, 2011. Upon receipt of comments on the draft report, appropriate revisions were made and the final phase one report was submitted at the end of 2011. The complete report representing phases one through three was completed in August 2011.

Personnel and Organizational Qualifications

Applied Cultural Dynamics is a sole proprietorship formed in 1991 to provide cultural resource management administration, social impact assessments, and ethnographic studies. Applied Cultural Dynamics has a well-equipped research library and office with FAX, copying machine, flatbed scanner, modem connections, B/ W laser and HP Deskjet color printers, digital still and video cameras, and IBM-clone computers. Clients have included private consulting firms, gas and electric utility companies, Indian tribes, and state and federal agencies including several units of the National Park Service.

The owner/principal of Applied Cultural Dynamics, David R. M. White, Ph.D., was Principal Investigator (PI). He conducted the literature/archival studies, the interviews, and the analysis and report preparation.

Dr. White spent 14 years with the Southern California Edison Company, where he was Senior Anthropologist with the Environmental Affairs Division. He was Far West Regional Representative to the Edison Electric Institute Task Force on CRM from 1982-1992, and was Task Force Chair in 1987-88. Prior to joining Edison, he was a consultant with Cultural Systems Research, Inc. (CSRI), of Menlo Park, California. Several of CSRI's studies are classics in development of the Traditional Cultural Property concept, and are quoted in National Register Bulletin 38.

He has taught anthropology at the State University of New York in Brockport (1973), Virginia Polytechnic Institute and State University (1974), the University of La Verne (1985), and California State University at Dominguez Hills (1989, 1990, 1991). His interests include cultural diversity in complex societies, corporate culture, cultural ecology and ethnobiology, sociocultural strategies of energy resource use, religious aspects of natural resource use, Native American prehistory and ethnology, and maritime anthropology. He has done research with more than two dozen Native American tribal groups in California, Arizona, Indiana, Louisiana, New Mexico, New York State, Oklahoma, South Dakota, Utah, Washington state, Wyoming, Alaska and Quebec Province, Canada, and with ethnic minorities and marginal occupational groups (Polish and Jamaican immigrants, agricultural harvest workers, U.S. Atlantic and Gulf Coast fishermen, and Mormons). He holds three degrees in anthropology, a B.A. from Florida State University and an M.A. and Ph.D. from Southern Methodist University.

Dr. White has prepared a number of ethnographic overviews and assessment studies for federal agencies throughout the country. In 1993-1994, he conducted research on ethnographic importance and use of orchard resources at Capitol Reef National Park; this work involved extensive interviewing with residents of communities around the park. In 1996, White co-authored an ethnographic overview of the Sequoia National Forest, in California. In 1998 he co-authored a cultural affiliation study for Death Valley National Park and completed a report on traditional place names for Devils Tower National Monument. He also completed ethnographic overviews of southern Louisiana for Jean Lafitte National Park (1998), of Indiana Dunes National Lakeshore (2000), and of Badlands National Park (2002). Most recently, he completed an ethnographic overview of Great Sand Dunes National Park and Preserve.

Dr. White's experience in preparation of studies for Badlands National Park and Devils Tower National Monument put him in contact with many of the Tribes pertinent to the present study. Specifically, he has worked with Eastern Shoshone and Arapaho people from the Wind River Reservation; Chippewa-Cree people of Rocky Boy's; Assiniboine/Gros Ventre people of Fort Belknap; and the Assiniboine/Sioux people of Fort Peck; as well as the eponymous peoples of the Crow, Northern Cheyenne, and Kiowa reservations. He has also worked with Lakota people at Standing Rock, Cheyenne River, Pine Ridge and Rosebud reservations, and with Ute people from Fort Duchesne in Utah and from both Ute reservations in Colorado.

Katharine L White worked as an Anthropology Technician in Yellowstone National Park's Ethnography Office for over six years. She holds two degrees in anthropology, a B.A. from McGill University and a M.A. from University of Montana, Missoula. She is also currently in pursuit of a third degree, a Master of Fine Arts in Science and Natural History Filmmaking at Montana State University.

Chapter Two

Natural Setting

Definition of Study Area

Narrowly defined, the Study Area is comprised of lands administered by Bridger-Teton National Forest, Grand Teton National Park, Shoshone National Forest, and Yellowstone National Park (see Figure 2-1). This is, however, a highly artificial unit. Accordingly, the Study Area has been defined on an operational basis, herein, as roughly coterminous with the Greater Yellowstone Ecosystem (GYE) (Knight 1994). Depending on boundaries accepted, the GYE includes some 18 to 20 million acres of land, centered on the Yellowstone Caldera and encompassing various portions of Idaho, Montana, and Wyoming. Located on the continental divide, it includes more than 20 coterminous mountain ranges. Drainage from the GYE flows into the Columbia River via the Snake, into the Mississippi via the Yellowstone, Missouri and the Platte, and into the Colorado via the Green. Elevations within Yellowstone National Park range from 5,265' along the Yellowstone River north of Gardiner to 11,358' at Eagle Peak; Grand Teton National Park elevations range from 13,770' at Grand Teton to 6,350' at the south end of Jackson Hole.

The present study extends attention well beyond the "Study Area" per se, as it is concerned not merely with "wickiups" found in the Study Area, but also with broader historical and cultural contexts within which those structures exist. Hence close attention

is given to Tribal cultures (and especially their architecture) throughout the Great Plains, the upper Rocky Mountains, and the Columbia Plateau, as well as more distant areas such as California and the desert Southwest. Subsequent discussion of the natural setting is, however, limited to the GYE.

Geology

Four geological provinces are represented within the GYE: the Middle Rocky Mountain Province, the Columbia Plateau Province, the Great Plains, and the Wyoming Basin. Rock units within the central GYE (Middle Rocky Mountain Province) extend back to Precambrian metamorphics (gneiss and schist), and present substantial marine deposits of the Paleozoic and Mesozoic Eras as well. The Tetons are geologically quite recent, having uplifted during the Cenozoic Era (Love and Reed 1968:9, 86ff). Volcanism began in the latter part of the Late Cretaceous Period, and it has dominated subsequent geologic history.

GYE volcanism has classically been attributed to the "Yellowstone Hotspot", a stationary plume of hot rock originating in the earth's mantle (Morgan 1971; Hadley, Stewart and Ebel 1976); block faulting that resulted in raising the Tetons and subsidence of Jackson Hole has speculatively been attributed to massive extrusion of volcanic materials north of Grand Teton National Park (Love and Reed 1968). Evidence of the hotspot consists of a series of old calderas (explosive craters) that indicate the continental plate drifting in a southwestern direction. Eruptions over the hot spot began around ten million years ago; the oldest and most massive explosion within the present-day GYE took place about two million years ago and there have been subsequent (albeit much smaller) caldera-forming explosions as recently as 630,000 years ago. Other hot spot evidence includes patterns of Quaternary Period faulting, regional distribution of earthquakes, and gravitational anomalies (Smith 2002). The Yellowstone Hotspot remains controversial; some geologists believe upper-mantle processes may explain the geology equally well (Dueker and Sheehan 1997; Humphreys et al. 2000; Christiansen, Foulger and Evans 2002).

Regardless of the mechanism or mechanisms involved in Yellowstone's volcanism, it is Cretaceous Period and subsequent activity that largely defines the GYE landscape. Block faulting within the past five million years created the Teton Range. The great eruption two million years ago produced Yellowstone's Huckleberry Ridge tuff, but most of that caldera has been obscured by younger flows. The most recent caldera (known as the Yellowstone Caldera) was formed 630,000 years ago, but there have been more than two dozen volcanic eruptions on the Yellowstone Plateau since that time. The active nature of Yellowstone volcanism is readily observable in the remarkable fields of geysers, fumaroles, hot springs and mudpots or mud volcanoes.

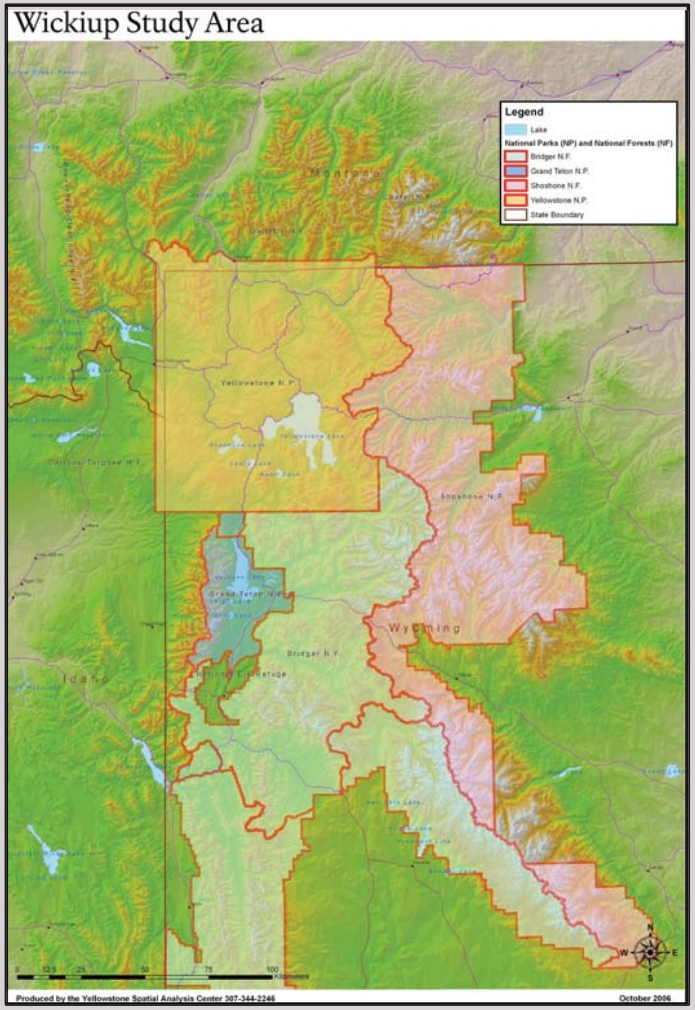
The older volcanic flows are very different in nature from more recent flows. The northward- sloping material on the Washburn Range consists of dark breccia (a consolidated mass of fractured stones and volcanic ash). Later flows to the south are predominantly of siliceous rhyolitic lava, including obsidian flows.

Recent geological activity within the GYE involves ice as well as fire—multiple glaciations created much of the present-day landscape, and glaciers are still visible in both Yellowstone and Grand Teton National Parks. In Grand Teton National Park several phases of glaciation took place, beginning about 140,000 years before present and ending only about 15,000 years before present. Glacial kame (gravel) deposits, moraines, and kettle lakes are some of the landscape features resulting from glaciation within the park (Pierce and Good 1992, Elias 1996). Enormous amounts of sediment were removed from the Jackson Hole area by ice and glacial melt-water (Love and Reed 1968:102ff).

Flora and Fauna

As the largest "intact" temperate zone ecosystem in the world (Reese 1984, Keiter and Boyce 1991), the GYE encompasses a wide range of life zones with diverse species of plants and animals. The major life zones are the Foothill (elev. 5165–6000'), Montane (6000–7600', also known as the Canadian Zone), Subalpine (7600–10,000') and Alpine (10,000–11,385'), each

Figure 2-1.
Map of Study Area



with characteristic plant communities. To the north, the Yellowstone River Valley supports Great Plains prairie grasslands and big sagebrush, and various riparian species occur along the streams. Vegetation in the other life zones is highly diverse, but prominent species include sagebrush, juniper, limber pine and Douglas fir in the Foothill zone; Douglas fir and limber pine with sagebrush and grasslands in the Montane Zone; lodgepole pine, Englemann spruce, subalpine fir, and whitebark pine in the Subalpine; and stunted alpine vegetation in the Alpine Zone.

The GYE is perhaps best known for its "charismatic megafauna", including elk, moose, and bison (bison found a refuge in the area from near-extinction in the late nineteenth century). The National Elk Refuge (a unit of the National Wildlife Refuge system, and a jurisdiction not directly included in this study) was established in 1912 to protect the Jackson Hole elk herd. Pronghorn antelope, mule deer and bighorn sheep are also prominent species that were of substantial economic importance to Native Americans in the region. Besides these larger animals, a wide variety of small game animals live within the GYE. Larger predators include grizzly and black bears, gray wolves, and coyotes. Two hundred and seventy-nine species of birds have been recorded within Yellowstone National Park alone since 1872 (McEneaney 1988).

Despite the size of the GYE, and the fact that much of the area is afforded federal protection, there are many concerns over well-being of area species. Grizzly bear population management and reintroduction of gray wolves have been especially controversial. Some species, such as pronghorn, have made good recoveries following considerable declines. Yellowstone cutthroat trout appear to be rebounding after a serious decline, but populations remain below historic levels.[1] Various plant species are also of concern, including whitebark pine and quaking aspen (Schullery n.d.).

1. Pat Bigelow, Yellowstone National Park Fisheries Biologist, personal communication with Rosemary Sučec and David White.

Archaeology

Interestingly, archaeology at Yellowstone National Park garnered official attention many decades before it did at other, later, National Parks. This was largely due to the personal interests of Superintendent Philetus Norris, who began collecting artifacts and archaeological site information as early as 1875. Norris required that artifacts found during construction of roads and other park facilities be turned over to the Smithsonian Institution, and antiquarian interests persisted among Yellowstone employees throughout the first half of the twentieth century (Nabokov and Loendorf 2002:13-15, 2004:15-16). A variety of scholars conducted research within the park beginning around the mid- twentieth century, but the first formal report was that of Taylor, Wood and Hoffman (1964). Other relatively early but important reports were produced by Condon (1948), Replogle (1956), Hoffman (1961), Taylor (1964), and McCracken (1978). Even so, in the early 1980s Yellowstone National Park was referred to as one of the least known archaeological areas in North America (see Janetski 2002:19).

Janetski (2002:20-35) has provided a relatively succinct summary of prehistory in the Yellowstone region. A brief review of his information will suffice for purposes of the present study. PaleoIndian remains (10,000–6000 B.C.) are sparse but present in the area; Clovis points, and a burial, are known from nearby areas, and a Folsom point made of obsidian from Obsidian Cliff was found in Bridger-Teton National Forest. Late PaleoIndian materials (Agate Basin, Hell Gap, Eden and Cody Complex) are more common within Yellowstone, and at considerable altitude. With the Archaic period (6000 B.C.– A.D. 1), Pleistocene megafauna went extinct, and people turned to gathering of plant foods and hunting smaller animals. A number of Archaic sites are known from the Yellowstone region, which may have been particularly attractive due to drought in the lower-altitude Plains. The Lawrence Site, on Jackson Lake in Grand Teton National Park, is a particularly important Archaic site. The Late Prehistoric Period (A.D. 1–1500) saw development of far-reaching trade networks, in which lithic material from Obsidian Cliff was traded as far east as Ontario, Michigan and Indiana; west to Alberta and Washington; and south to central Utah. Locally, cooperative buffalo hunting developed at this time, and pottery appeared for the first time. Elk and bighorn sheep hunting is also documented.[2] There are numerous sites around Yellowstone from this time period.

History

Detailed written information about the Study Area began with the Lewis and Clark expedition of 1805–1806. However, Lewis and Clark did not actually venture into the area but rather passed by it, to the north. Detailed histories of Yellowstone National Park, and earlier Euroamerican explorations of the region, have been provided by Chittenden (1895) and Haines (1977). Available historic material for the other jurisdictions is less substantial. For present purposes, a detailed discussion of explorations is not necessary; instead, a timeline of key events and developments in the region is presented, leading up to the establishment of Yellowstone National Park in 1872 and subsequently to establishment of the other jurisdictions.

- 1742–43: de la Verendrye expedition opened a route from Canada to the Mandan villages on the Missouri River
- 1796: Old Menard gave information pertain- ing to the R. des Roches Jaunes to Jean Baptiste Truteau
- 1798: Roches Jaunes was first translated as "YellowStone"
- 1805: A map dispatched to President Jefferson by Lewis and Clark showed the "River Yellow Rock"
- Canadian Northwest Company trappers went into Yellowstone Plateau country during the War of 1812
- 1818: Due to American concerns about Brit- ish activities on the upper Missouri during the War of 1812, plans were made for establishment of a fort at the mouth of the Yellowstone River
- 1819–1820: the Yellowstone Expedition, intended to establish the fort, failed
- 1819: First description of a geyser in the Yel- lowstone country, by Alexander Ross of the Hudson's Bay Company
- 1820: Major Stephen H. Long explored Head- waters of the Platte, Arkansas and Red Rivers, producing a report stating that the "Great American Desert" was uninhabitable by civi- lized people; this inhibited settlement of Loui- siana Purchase territory
- 1825: Colonel Atkinson and Indian Agent Benjamin O'Fallon signed treaties with 15 tribes at the mouth of the Yellowstone
- 1826: American trappers were within present- day Yellowstone National Park; they may have been there earlier
- 1829: Fort Union, a fur-trading post, was es- tablished on the Missouri opposite the mouth of the Yellowstone
- 1829: Jackson's Hole was named after David Jackson of the Rocky Mountain Fur Company (Diem and Diem 1978:1)

2. See Frison (1991:246-258) for an extensive discussion of mountain sheep and prehistoric/protohistoric methods of hunting them.

- 1831-32: George Catlin traveled by steamboat to Fort Union and proposed "a nation's park, containing man and beast", in the region
- 1833: Manuel Alvarez, leading a group of men from the American Fur Company, discovered the Firehole River Basin geysers
- 1835: Osborne Russell entered the present-day park, visiting the Lamar Valley; he traveled to the area in several subsequent years, as well
- 1851: Father Pierre Jean DeSmet drew a geo- graphically-accurate map of features in present-day Yellowstone National Park, based on details provided to him by Jim Bridger
- 1863: An unsuccessful mining expedition went into the lower Yellowstone Valley under leadership of James Stuart
- 1863: Walter Washington deLacy led an expedition into present-day Yellowstone National Park; in 1876 he published an account of the trip, describing hot springs and the absence of valuable minerals
- Additional mining expeditions into the Yellowstone country took place in 1864, 1866, 1867, 1869 and 1874
- 1866–1873: several prospecting trips by A. Bart Henderson resulted in discovery of the Falls of the Yellowstone
- 1867: George Huston became the first white resident of present-day Yellowstone National Park
- 1868: Captain W. F. Raynolds published his report on exploration of the Yellowstone River
- 1872–73: A winter expedition by Al Jessup took place
- 1869: an expedition from Helena, Montana, to present-day Yellowstone National Park, was led by David E. Folsom, Charles W. Cook and William Peterson
- 1870: General H. D. Washburn took an expe- dition into Yellowstone country; many geo- graphic details were recorded, and Old Faith- ful was given its name
- 1871: Nathaniel P. Langford, a member of the Washburn expedition, gave lectures about Yel- lowstone in Washington D.C. and New York City; he later claimed to have proposed the idea of a national park at Yellowstone
- 1871: Ferdinand V. Hayden, inspired by Langford's information, secured funding for geological investigations in the Yellowstone area; military escort was provided by General Sheridan; accurate topographic data and pho- tographs were obtained
- 1871: Judge William D. Kelley proposed creation of a national park at Yellowstone, and Hayden enthusiastically endorsed the idea
- 1872: the U.S. Congress passed authorizing legislation for Yellowstone National Park, and it was signed into law by President Ulysses S. Grant
- 1891: President Benjamin Harrison created the Yellowstone Park Timber-land Reserve (precursor of Shoshone National Forest)
- 1897: President Grover Cleveland created the Teton Forest Reserve (precursor of Bridger-Teton National Forest; the Bridger and Teton National Forests were combined into Bridger-Teton in 1973)
- 1902: Despite objections from sheep men, President Roosevelt enlarged the Yellowstone Park Timber-land Reserve, establishing the Yellowstone Forest Reserve (Anderson 1927)
- 1912: Establishment of the National Elk Ref- uge (a unit of the National Wildlife Refuge system) in the southern part of Jackson Hole
- 1929: Congress established Grand Teton National Park
- 1943: President Roosevelt established Jackson Hole National Monument
- 1950: Jackson Hole National Monument was combined into an enlarged Grand Teton National Park

Chapter Three

Previous Research on "Wickiups" (Conical Timber Lodges)

What is a Wickiup?

The term "wickiup" (with a wide variety of spellings) has seen widespread usage in the western United States, both by archaeologists and by explorers and military men. Within the study area and adjacent parts of the Rockies and Northern Plains, the term "wickiup" was often used with great imprecision, to indicate any sort of rude or makeshift shelter.[1] For instance, George Shields (1883:36-42) entitled a chapter of his book "Meditations in a Wiciup", but he described the structure only as a shelter made of "boughs" and canvas. More recently, the word has been used specifically in reference to rather substantial conical structures made of pine or aspen poles. As Kidwell (1969:3) remarked, this usage is unfortunate because it made the term so overly broad that it is nearly meaningless.[2] This is especially

1. Riggs (1982), in a crafts article on building wickiups, defined the term as being a "general" one "for many of the variously similar dwellings of aboriginal peoples throughout the western plateaus, basins and deserts."

2. Kidwell (1969) wrote a paper with a similar scope as the author: to acknowledge and establish the wealth of research potential wickiups' possess. His paper differs from the author's, however, in promoting the functional aspects of these structures as war lodges or eagle trapping lodges. The author, instead, focuses on the 26 American Indian tribes associated with the Greater Yellowstone area and whether they were known to build and/or use conical timered structures. A discussion is provided of tribal architecture where known and an argument is made for consultation with tribes to assist in determining the function of wickiups.

true in regard to the southwestern United States, where the term "wickiup" is applied to quite different structures—usually insubstantial, made of flexible boughs or saplings (frequently willow), dome-shaped rather than conical, and often covered with grass or brush.

The present study is contractually directed toward "wickiups" within and adjacent to Bridger-Teton National Forest, Grand Teton National Park, Shoshone National Forest, and Yellowstone National Park. But what is meant by "wickiup"? A precise definition seems warranted, and in order to develop a clear definition, it is necessary to examine historical usage not only of the term "wickiup" but also of the sometimes contrasting and sometimes overlapping terms "wigwam" and "tipi." This topic has previously been explored in some detail by White (2005).

Wigwams. First, let us consider the term "wigwam." The most obvious difference in use of this term, as contrasted with "wickiup", is that the term wigwam is overwhelmingly applied to American Indian habitations of eastern North America. Diverse structures are so named, however. The term "wigwam" was used in English as early as the seventeenth century; Bushnell quoted a description of New England Indian habitations by Daniel Gookin, writing in 1674, as follows:

> Their houses, or wigwams, are built with small poles fixed in the ground, bent and fastened together with barks of trees oval or arbour-wise on top. The best sort of their houses are covered very neatly, tight, and warm, with barks of trees, slipped from their bodies, at such seasons when the sap is up; and made into great flakes with pressures of weighty timbers, when they are green; and so becoming dry, they will retain a form suitable for the use they prepare them for. The meaner sort of wig-wams are covered with mats, they make of a kind of bulrush, which are also indif- ferent tight and warm, but not so good as the former (Gookin 1806, Bushnell 1919b:24).

Schoolcraft (1852) used the term "wigwam" for both domed and rectangular gabled structures; he provided tribal vocabularies of terms for "house" and "lodge" without defining either term, and (insofar as obvious cognate terms for "wigwam" are assigned to both) the native terms elicited suggest that his distinction was by no means made clear to the people interviewed (Table 3-1). Similarly, Bushnell (1919a, 1919b) noted that there were circular domed wigwams, long oval wigwams, and small conical wigwams, and he provided different Ojibwa names for each of these. Densmore (1929:22) also used the term "wigwam" for any sort of Chippewa habitation, whether peaked lodge, bark house, or tipi.

Bushnell (1919b:23) indicated differential geographical distribution of variant wigwams; conical wigwams covered with sheets of birch bark were more northerly, while dome-shaped wigwams with coverings of mats were found to the south (also see Douglas 1932). Bushnell also suggested an ethnic connection: wigwams were Algonquian structures, he said, and he contrasted them with Siouan skin tipis and Muskhogean rectilinear wattle-and-daub structures (1919b:47, 1922:7-8). Furthermore, Bushnell (1922:32-34) suggested that Plains Algonquians, including the Arapaho and Blackfeet, had used bark-covered conical dwellings before moving out of the eastern woodlands.

Table 3-1.
Schoolcraft's Vocabulary of House Terms

Tribe/Band	"house"	"lodge"
Blackfeet (Siksika)	Napi ou yis	Mou yé si
Comanche	Ka nu ke	Ka nu ke
Delaware	Weèk wam	Len nee kàh on
Menominee	O way ah quo nay waick	Way ke wum
Miami	We ke aw me	----------
Ojibwa, Grand Traverse Bay	Wah kah ye gun	We ge wom
Ojibwa, Michilimackinac	Wau cau e gun	We ge waum
Ojibwa,, St. Mary's	Wa kĭ' e gun	Wëg' e wam
Ojibwa, Saginaw	Wee go woym	Maw ka ke o kah mic

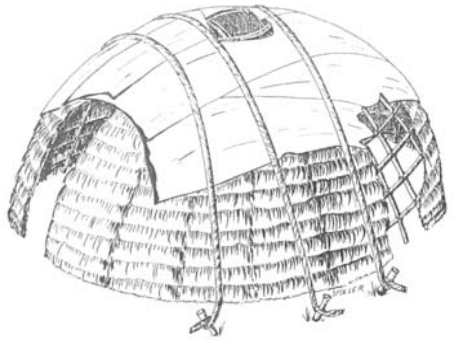


Figure 3-1 (top). Wigwam from Underhill (1971:58).
Figure 3-2 (above). Conical wigwam from Nabokov and Easton (1989:63).
Figure 3-3 (left). Ojibwa Tipi from Driver (1969:119).

Anthropologists continue to apply the term "wigwam" to very different sorts of structures,and to apply other terms to the same sorts of structures. Early on, Stephen Powers (1877) and Lewis Henry Morgan (1965; orig. 1881) used the term in reference to unsubstantial houses of almost any description. Dellenbaugh (1906:200) likewise used the term broadly, in reference to "any Amerind house of the skin or earth or wood type." Similarly, Hoxie (1999:680) stated that the term is "often used to refer to the dwelling of virtually any Native American." More often, though, a distinction is made on the basis of geography. Thus Huscher and Huscher (1943:7) stated, without venturing an explanation, that "For some reason the term 'wigwam' ... applies particularly to the eastern dome-shaped lodge and has never been extended to include the very similar western dome-shaped lodge." Underhill (1971:58), writing in 1948, followed the same distinction noted by the Huschers; she illustrated a generic "wigwam" as a dome-shaped, mat-covered structure and used the term in reference to structures built by Algonquian tribes, but said the dome-shaped structures built by Apaches and Paiutes were "wickiups" (ibid.:243, 246, 251, 262, 267) (see Figure 3-1). Bushnell (1919a, 1919b), among others (e.g., Douglas 1932), included both dome-shaped and conical structures within the rubric of "wigwams." Nabokov and Easton (1989:63) showed a tipi-shaped structure with interior pole framework and exterior poles weighting down a covering of mats, calling this a "conical wigwam" (see Figure 3-2).

Tipis. The term "tipi" (variously spelled, e.g., teepe, teepee, tepee) is almost universally applied to conical tents with interior poles and a hide covering, but the term is also more broadly used. Driver (1969:119) showed a structure nearly identical to Nabokov and Easton's "conical wigwam", calling it an "Ojibwa tipi" (see Figure 3-3); Underhill (1971:59) showed a similar "Penobscot tipi." In this regard, Driver and Underhill were following the leads of Wissler (1948[1912]:36), who described conical birchbark-covered "tipis" in the Great Lakes, eastern Canada and New England, and Densmore (1929:27-28), who considered any relatively permanent conical structure, whether covered with bark or cloth, to be a "tipi" (she did not, however, include in that category conical temporary shelters that were covered with evergreen boughs).

Some authors, though, would dispute such applications of the term. For instance, Dellenbaugh (1906:200) wrote that tipis are portable, whereas wigwams are "always fixed." Vestal (1957:3-4) went further in limitation of the term, insisting that not all conical skin-covered dwellings—which are circumpolar in distribution—are tipis; the "true tipi," he said, must be "a tilted cone, steeper at the back, with the smoke hole extending some distance down the more gently sloping side, or front of the tent" and with two flaps that are used "to regulate the draft, ventilate the tent, and carry off the smoke."

Hide-covered tipis have been well described. Laubin and Laubin (1957) provided one of the more detailed treatments, replete with historical and ethnographic details, despite their intention being 'practical' in orientation, to "show you how to make, use, and enjoy" a tipi.[3] Vestal (1957:7-8) suggested that the first detailed description of a smoke-flap tipi was from a military expedition against the Kiowa-Apache in 1819–1820, but Meriwether Lewis (with his inimitable spelling) clearly had described a tipi (calling it an "Indian tent") in April 1805:

> Capt. Clark myself the two Interpretters and the woman and child sleep in a tent of dressed skins. this tent is in the Indian stile, formed of a number of dressed Buf- faloe skins sewed together with sinues. it is cut in such manner that when foalded double it forms the quarter of a circle, and is left open at one side where it may be at- tached or loosened at pleasure by strings which are sewed to its sides to the purpose. to erect this tent, a parsel of ten or twelve poles are provided, fore or five of which are attached together at one end, they are then elevated and their lower extremities are spread in a circular manner to a width proportionate to the demention of the lodge, in the same position orther poles are leant against those, and the leather is then thrown over them forming a conic figure (Moulton and Dunlay 1987:10).

3. Nabokov and Easton (1989:415) appropriately refer to this book as a "popular handbook on tipi making and use".

Figure 3-4 (left). From Topping's Chronicles of the Yellowstone; Murray (1968).

Figure 3-5 (above). Traditional Apache dwelling (Curtis 1903).

Similarly, in the same month and year, William Clark wrote that

> The Ossinniboins make use of the Same kind of Lodges which the Sioux and other Indians on this river make use of — Those lodges or tents are made of a number of dressed buffalow Skins Sowed together with Sinues & deckerated with the tales, & Porcupine quils, when open it forms a half circle with a part about 4 Inches wide projecting about 8 or 9 Inches from the center of the Streight Side for the purpose of at- taching it to a pole to it the hight they wish to raise the tent, when the[y] erect this tent four poles of equal length are tied near one end, those poles are elevated and 8, 10, or 12 other poles are annexed forming a Circle at the ground and lodging in the forks of the four attached poles, then tents are then raised, by attach the projecting part to a pole and incumpassing the poles with the tent by bringing the two ends together and attached with a Cord, or laied as high as is necessary, leaveing the lower part open for about 4 feet for to pass in & out, and the top is generally left open to admit the Smoke to pass (Moulton and Dunlay 1987:38-39).

Similarly, it seems clear that Coronado (1540-42) and Oñate (1599) had described tipis (see Nabokov and Easton 1989:123), even though their descriptions lack the details that Vestal (1957:4-5) considered necessary to identify a tent as a smoke-flap tipi. Structurally important details are often lacking in early descriptions. A key characteristic of tipis, to be discussed in more detail below, is whether construction begins with a three-pole or four-pole foundation.

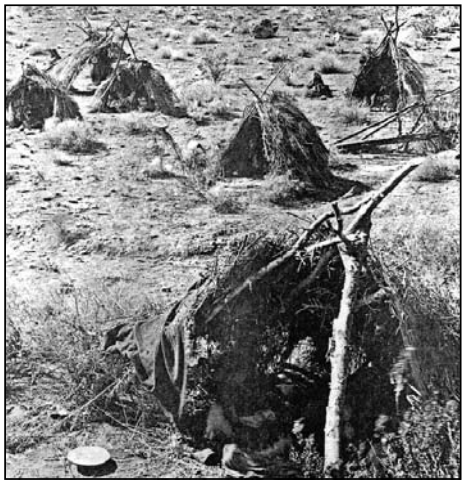
Conical structures built entirely of poles have been called "lodge pole tepees" or "wooden tepees" by several authors (e.g., Sullivan 1960, Cristenson 1963a, Tilton 1965, Ditmer 1989). But the latter sort of structure has also been referred to as a "war lodge", "wood lodge", "conical timber lodge", "log wickiup", and "wickiup". When confronted with an

unclassified conical pole-and-brush structure such as that shown in Topping's The Chronicles of Yellowstone (Murray 1968; see Figure 3-4),[4] what should we call it? Is it a wigwam, a tipi, a wickiup, or something else?

Wickiups. The term "wickiup", even more than the terms "wigwam" and "tipi", is used in diverse ways. There are three distinct academic usages of the term, regarding: (1) Southwestern U.S. Apache dwellings; (2) Great Basin Numic dwellings; and (3) High Plains/Intermountain conical timber lodges. As noted in more detail further on, Apache people have adopted the term "wickiup" as an English term for their traditional dome-shaped dwellings (see Figure 3-5). Many anthropologists use the term in this context, and one (Arkush 1987:174) incorrectly concluded that the word is Apachean in origin. The term is also separately used in reference to Great Basin structures. This is sometimes in ethnographic contexts (see Figures 3-6 and 3-7), but archaeologists use the term quite broadly in reference to any circular structure that is assumed to be dome-shaped or roughly conical in shape (see, for example, O'Connell and Ericson 1974, O'Connell 1975 and Collette 2002).

There are also much more inclusive academic usages of the term. Douglas (1930) referred to "wickiups" of both domed and pitched-roof types as typical of "Apaches, Paiutes, Cocopas, Yumas, Havasupais and Walapais"; also see Grant (1994), who extends the term to certain dwellings of the Apache, Paiute, Cheyenne, Dakota and Crow. But this approaches the still more widespread colloquial and popular usages, in which almost any sort of rather flimsy construction may be called a "wickiup." Among anthropologists, this often reflected evolutionary assumptions, e.g., in Dellenbaugh's (1906:196) statement that wickiups are "the lowest type of house used by man" or Waterman's (1925:475) characterization of wickiups as "the crudest habitation in North America". Popular use of the term likewise suggests pathetic, if not outright inadequate, shelters. Shields (1883:36-42) has already been mentioned in this regard. Others whose usage reflects negative value judgments include Lavine (1975:42-43) and even Ruth Underhill, whose comments on Apache and Paiute "wickiups" indicate a degree of disdain; Underhill (1953:267) referred to the Paiute as "Those Who Had Little to Lose." The evolutionary bias against "wickiups" has undoubtedly contributed to assumptions among archaeologists that the sites are unlikely to have significant research value (for expansion on this point, see Baker 1995).

4. Haines (1977:23) explained how this engraving was derived from a photograph taken on the Qu'Appelle River in Canada; it was also used to depict other Indians, including a "hostile tepee" of Sitting Bull. The picture clearly does not depict a Yellowstone Sheepeater.



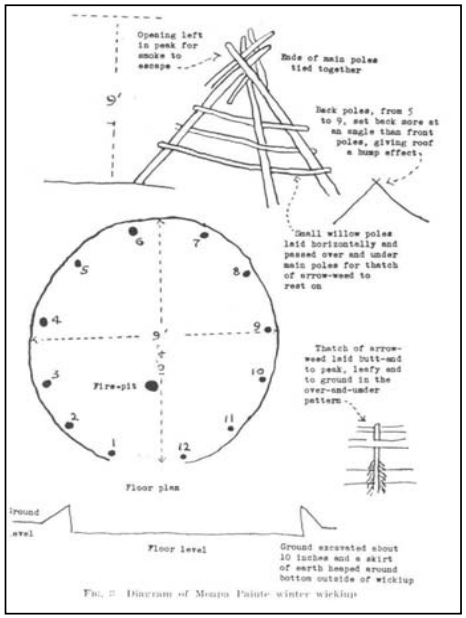


Figure 3-6 (below). Paiute dwellings (Nabokov and Easton 1989:303).
Figure 3-7 (right). Paiute wickiup (Watkins 1945).

Another approach. There are several potential approaches to the dilemma. We could start by looking at formal architectural/structural characteristics. For the various sorts of so-called "wickiups" we might ask the following questions:

- *Framework:* Is the foundational framework made with rigid poles, or flexible saplings? How are the poles arranged? Are the poles interior only, or are there both interior and external poles with some sort of material in between?

- *Foundation:* With a rigid pole framework, is the foundation discernable? Is the structure freestanding, or is it a lean-to build on or around a tree? If freestanding, is it a three-pole or four-pole foundation?

- *Fastenings:* How are the poles fastened togeth- er? Are there natural forks that intersect? Or are the poles lashed together in some manner?

- *Coverings:* How are the poles covered? Is there one sort of covering only, or are two or more sorts of material combined? Is the covering made of brush, branches, more poles, bark sheets or slabs, woven mats, bundles of grass, earth, or hides/skins?

Parenthetically, it should be noted that many anthropologists have avoided or rejected use of the term "architecture" in reference to the dwellings built by Native Americans. This often reflected evolutionary assumptions. For instance, Waterman (1925:476) commented that it was only in Mexico and Central and South America that "the Indian became a real architect." More recently, Driver (1969:133) pointedly criticized those who "would like to dignify the building skill of the Pueblo Indians with the label 'architecture'"; like Waterman, he reserved the term for the monumental buildings of MesoAmerica. Clark Wissler was the apparent but unacknowledged target of Driver's criticism, as Wissler (1966:53-56) had written about Puebloan "architecture." Other anthropologists have been willing to recognize vernacular architecture; see, for example, Mindeleff (1898b), Dellenbaugh (1906), Bushnell (1922), Waterman (1927), Bowers (1965), Morgan (1965[1881]), Rapoport (1969), Brook (1975), Morgan (1980), Gilman (1987), Green (1993), Eiselt (1997), and Nabokov (1999).

Here, the term "architecture" is used in reference to any human structure; the term simply refers to the fact that all structures are built with cultural designs and plans in mind.[5] Even for conical timber lodges or CTLs—our focus from here on in this study—most of the above architectural/structural questions pertain. The foundation will be rigid, but foundations, fastenings, and coverings may vary. Of course, this may not be evident in the case of old structures.[6] The foundation may not be intact if the structure is partially collapsed; lashings are likely to have rotted away; and coverings are likely to have disintegrated. Nonetheless, it is important to keep in mind that these factors were involved in the construction of conical timber lodges, and that they may be markers of tribal affiliation.

5. Mindeleff (1898:414) explained that a preeminent archi- tectural historian, Fergusson, had defined architecture as "ornamented and ornamental construction" (James Fergusson, 1809-1886). Nabokov and Easton (1989:11) provided a more appropriate definition; for them, architecture "embraces what happens whenever human thought or action makes order and meaning of random space"—thus including not only buildings but also the socially constructed spaces that surround them
6. Stuart W. Conner (2006) has pointed out that determining the nature of conical timber lodge foundations might well require disassembly of the structure—not something to be lightly recommended.

Table 3-2.
Tribes Utilizing Three- and Four-pole Foundations

Three-pole (Tripedal) Foundation	Four-pole (Quadripedal) Foundation
Apache	Bannock[3]
Arapaho	Beaver
Arikara	Blackfoot
Assiniboine	Coeur d'Alene
Atsena	Comanche
Bannock	Crow
Cheyenne	Flathead
Gros Ventre	Hidatsa
Kiowa	Kutenai
Mandan	Nez Perce
Nez Perce[1]	Omaha[4]
Otoe	Pend d'Oreille
Omaha[2]	Sarsi
Pawnee	Shoshone
Plains Cree	Ute
Ponca	
Santee Sioux	
Teton Sioux	
Umatilla	
Wichita	
Yakima	
Yankton Sioux	

References:
Lowie (1922), Campbell (1927), Douglas (1931a), Ray (1940), Turney-High (1941), Wissler (1948), Laubin and Laubin (1957), Kidwell (1969).

1. Laubin and Laubin (1957:120) state that Nez Perce have both 3- and 4-pole tipis.
2. Per Laubin and Laubin (1957).
3. Per Steward (1943).
4. Per Lowie (1922), Campbell (1927), and Douglas (1931a).

Foundations are likely to be a particularly important consideration, especially because this will be identifiable in most fairly well-preserved structures. Conical timber lodges are not tipis, yet they share the same basic form with those structures, and tipis have been accorded little attention insofar as what they might tell us in regard to the timber structures.

A key difference in tipi construction, which varies by tribe, is whether the poles are erected on a three- or four-pole foundation (see Table 3-2). This has only rarely been noted as a potentially significant property of conical timber lodges. Wenker (1992:15) commented that the use of "tripedal" or "quadrupedal" foundations "may be a function of tribal affiliation and tradition", but he also noted that it could also be a function of expedience or personal choice. In his examination of ethnographic and archaeological literature, Wenker found "contradictory and occasionally ambiguous" evidence on the question; Voget (1977:7) had suggested that "no regularity is to be expected" but earlier, in an unpublished manuscript, he had speculated that three- and four-pole tipi foundations would carry over into construction of conical timber lodges (Kidwell 1969:19). Similarly, Conner (1989:5) suggested that the number of poles in a conical lodge foundation is more likely "a matter of opportunity, not ritual or cultural conditioning." This aspect of construction has seldom been noted in extant conical timber lodges. Archaeological site forms tailored to the structures generally do not include foundation as a variable, and even intensive examinations of "wickiups" often fail to provide details on the foundation (see, for example, Joyes 1968). Hence we simply do not know whether foundations are standard or variable in specific areas, or among structures built by particular tribes.

Variations noted in regard to conical timber lodges include pole diameter (ranging from one inch to one foot), pole length (up to twenty-five feet), and number of poles (from 30 to as many as 166). Footprint diameters range up to fourteen feet (Taylor 1964:89, Arthur 1966:57, Conner 1965, Kidwell 1969:3, 21).

Back to the term "wickiup": it is potentially instructive to look at the origin of the term, which may lend some insight on subsequent misapplication to various other structures. The term is actually Sauk, Fox, Menominee and/or Kickapoo in origin (wikïyapi or wiikiaapi)—a Midwestern, rather than Western, term (Hodge 1910:2:950, Huscher and Huscher 1943:7). The Menominee term was wikiop or wa·panow (Huscher and Huscher 1943:7, Spindler 1978:711). These were very different from all structures in the western U.S. to which the term "wickiup" has been applied; they were rectangular in plan, with vertical walls and pitched gabled roofs—generally quite similar in design to the wattle and daub summer houses of tribes in the Southeastern United States (Driver 1969:124-125). A pole framework was covered with slabs of elm bark constituting the walls and roof (Callender 1978:649, Callender, Pope and Pope 1978:658).

The Kickapoo and Sauk used these rectangular structures—which would most accurately be called, in English, "cabins"—in their summer villages; winter villages were comprised of round or oval domed structures covered with rush mats (Callender 1978:651, Callender, Pope and Pope 1978:658). Nabokov and Easton (1989:10-11, 21, 75) illustrate rectangular and domed Kickapoo structures, generally referring to both as "wickiups" but in one instance distinguishing the domed summer house as an odanikani. Interestingly, Waterman (1925:62) called the Sac and Fox dwellings "wigwams", and this usage was echoed by Harrington (1944). Contemporary Kickapoo people living in Coahuila, Mexico, are said to be living still in "traditional wickiups" (La Prensa 1997).[7]

Just how the term "wickiup" was transferred from Sauk and Kickapoo cabins to western structures is undocumented. A logical supposition would be that the term came to mean any sort of American Indian hut or shack, but this seems partially contradicted by certain references. For instance, Jonathan Carver (1778:46-47) described a Sauk village of some ninety bark-covered longhouses as "the largest and best built Indian town" he had seen, with "regular and spacious" streets. It does seem clear, however, that the word was spread during the nineteenth century by military leaders and expeditionaries; see, for example, Beckwith (1855:26), Dodge (1876:70), and Terry (1970:20). Dodge had commented that "The 'teepe,' or lodge, may be regarded as the Indian's house, the wickiup as his tent. One is his permanent residence, the other the make-shift shelter for a night" (Bushnell 1922:70).

Conical timber lodges are widespread in the Plains and Rocky Mountains, but a definitive distributional study is lacking; Kidwell (1969) provides the closest approximation (see especially pp., 5-7 and Figure 1). Voget (1943:75) cites James (1905:125) as having identified such structures as far south as the Canadian River in Oklahoma, but he appropriately notes that this does not rule out their occurrence even farther south. Loendorf and Klinner (1995:37) suggest that CTLs and horizontal cribbed log structures may have different distributions based on ecological factors, with cribbed log structures being found among junipers and gnarled pine, and CTLs among "stands of straight pine or fir trees."

Encompassing structures typically called "wigwams" Voget (1977:9) noted that conical timber structures were probably Asiatic in ultimate origin, and that they were widespread in Canadian woodlands east of the Great Lakes, as well as on the Plains. Kidwell (1969:1) notes their presence also in the Subarctic and California, and Driver, agreeing with an Asiatic origin, (1969:130) commented that conical dwellings were distributed across Eurasia west to Lapland and south to Tibet. Conical structures in the Subarctic were built by the Athapaskan- speaking Slave (Honigmann 1946). One reason tha there is no distribution study surely relates to misapplication of the term "wickiup" to structures bearing little or no architectural resemblance to the conical timber structures. Narrowly construed, conical timber lodges are at least present in the Yellowstone region (and some distance east, in Wyoming), in central Idaho, and in southwestern Montana—perhaps as far north as Butte.[8]

Somewhat more problematic than distribution is the consistent description of conical timber structures as "war lodges." Lewis and Clark began this tradition; Maximilian also described the structures as having been built by "war- parties" but also mentioned the possibility of hunting parties (Maximilian 1906:42-43, 351). The designation as war lodges was perpetuated by Osborne Russell and George Bird Grinnell (1927). Ewers (1958:46, 130-132) continued the tradition, and although he also noted that these lodges served as a base for hunting expeditions, he seems

7. See Wallace (1969) for a succinct history of Kickapoo movements that left a significant segment of the tribe living in Mexico.

8. Keyser (2006) indicated that a conical timber lodge in the Butte, MT vicinity was reported to him by Jim LaMarche, but this site apparently remains unrecorded.

to have assumed that this occurred only in context of warfare. Mulloy (1952:133) had been more cautious, suggesting that log structures "were used both as winter camps and as war lodges." Malouf (1963), although referring to conical timber lodges as "war lodges" (and relying largely on Ewers as his source of information), admits that they were also used by hunters and as habitations. Voget (1977:1, 5) also noted potential domestic usages of the structures; Kidwell (1969:7, 14-16) had dismissed the possibility of domestic usage, instead supporting the "war lodge" hypothesis despite noting the lack of proof regarding that function.[9] Earlier, Mulloy (1945:521) had suggested that conical log lodges in Crow territory were "used primarily in war, but also as supplementary shelters to their usual tipis and for other temporary needs." In this regard, Mulloy more closely followed Lowie, who had indicated that such structures were constructed by visionaries and elopers as well as by warriors (Lowie 1922:225).

The "war lodge" label is symptomatic of a broader problem—i.e., the assumption of function, based solely on architectural form. For example, the size of a structure can be misleading; it has been alleged, in several historical accounts, that conical dwelling structures were very small, and at the same time, it is documented that numbers of Great Basin and Plains people used small conical or dome-shaped shelters as menstrual seclusion huts or as sweatlodges. Focusing on architectural characteristics while avoiding undocumented ethnographic or functional terminology preserves the option of learning from structures rather than imposing potentially incorrect interpretations on them.

9. One reason that archaeologists have dismissed CTLs as possible habitations is the frequent lack of artifacts, but this impression may have resulted from duff on the sites combined with superficial examination of the sites. The Burnt Wickiup site (48FR5018) and the Boulder Ridge site (48PA2642), dis- cussed below, provides striking examples of sites that lacked artifacts until fire revealed them in abundance.

Possible Historical Relations between Conical Timber Lodges and Similar Structures

A variety of historical relations have been suggested in regard to "wickiups" of various sorts. Connections are, however, difficult to establish with confidence. For example, the Walpi (Hopi) built a conical hut almost identical to Navajo conical forked-pole hogans (see Mindeleff 1898a, Brugge 1956; also see the discussion of Navajo architecture, below). Called an umuki, the Hopi structure had a specialized function of providing shelter from rain when working in fields. Hopi tradition holds that this is an "old Hopi type" of architecture, and explicitly explains that it was not recently adopted from the Navaho (Gifford 1941:108). Here we find an excellent example of historical complications; Gifford apparently expected that the Hopi would have borrowed the concept from the Navajo, but he found linguistic and oral historical evidence to the contrary. It is entirely possible that the historical connection runs in the opposite direction of what would have been expected—in other words, the structure could represent an old Great Basin/ Desert Culture architectural tradition, reflecting the Uto-Aztecan affiliation of Hopi; Athapaskans may have adopted the architecture during their southward migration through the Great Basin. Voget (1977:9) suggested ultimate Asiatic origins, with antecedents of Plains structures to be found in the Canadian woodlands. Voget also believed that conical timber lodges were largely replaced by tipis coincidental to acquisition of horses, and that similar structures among Great Basin and Plateau tribes resulted from Plains influence (ibid.:9, 13-14).

In consideration of the potential antiquity of Navajo forked-pole hogans, a comparison was made of architectural terminology between their structures and similar ones built by a California Athapaskan-speaking tribe, the Kato or Cahto (Myers 1978). Table 3-3 shows that despite structural similarities, there are no apparent correspondences in linguistic terminology. This does not, of course, disprove connections; terminological linguistic changes can be rapid.

Other sorts of timber lodges in the Plains area should be mentioned, even though they are not the focus of the present study. A widespread type consisted of horizontally laid "cribbed" logs or poles. Although Frison (1991:257) attributed these to Sheepeater Shoshoneans, they were constructed by many of the Plains tribes, as further detailed below. The structures were polygonal in outline (sometimes hexagonal, as mentioned by Morgan [1959:197] and sometimes, as noted by Christensen [1963b], pentagonal). Christensen (ibid.) referred to these as "hogans" and described them as "war lodges". Conner (1966a) also referred to them as "Yellowstone hogans." Good (1974:73, 82) believed the structures were hunting lodges, while Conner and Halverson (1969:8) think usage as winter camps was more likely. Conner (1966b) offered the opinion that, due to the frequent presence of pottery and hard-packed floors, these were domestic structures; later he changed his mind, believing they could also have been "war lodges."[10]

10. Conner (2006) has stated that the Evans wickiup (Joyes 1968) in central Montana is the only conical timber lodge that has been found with a bark floor.

Nabokov and Loendorf (1994:73) suggest that these are the most common sort of timber structure in southwestern Montana. Structures of this sort have been described by Mulloy (1941, 1965), Cramer (1961), Moe (1967), Carbone (1972), and Loendorf (1969); also see Conner (1974:27-28). They were noted in the Black Hills in the 1830s by William Marshall Anderson (Partoll 1962:70), and Lewis Henry Morgan noted them along the upper Missouri (Morgan 1959:197). The structures "invariably" were surrounded by sandstone slabs leaning against the walls (Conner and Halverson 1969:8). Late prehistoric log structures constructed on natural sandstone outcroppings were documented near Pompey's Pillar Creek, in southwestern Montana, by Mulloy (1969).

There were also roofless truncated cone structures, such as those found at Thirty Mile Mesa (Mulloy 1958a:165, 1965; Conner 1966c). Marcy (1859:141-142) described structures that seem very similar, stating that they were built by the "Wichita, Waco, Tonkawa and Tawakoni". Conner (1974) described one such structure in detail; this site (24ML1026) was located in the southern Bull Mountains of Musselshell County, Montana, not far from the Thirty Mile Mesa site. This was an irregularly circular structure built of logs standing on end and leaning toward the center of the circle; standing trees formed supports for sections of the walls. The structure had an interior diameter of ten feet and wall poles ranged from 3.5 to 9 feet in length, and the doorway was on the east side. Good (1974) and Loendorf (1969) described truncated cone structures located in the Pryor Moutains south of the Middle Yellowstone. Conner (1974:28-29) cited sources indicating that truncated cone structures may have been built by the Crow.

Archaeologically-known structures somewhat similar, or possibly similar, to conical timber lodges include: (1) Paleo-Indian structures from the Hell Gap Valley in southeastern Wyoming (Haynes et al. 1965, Irwin-Williams et al. 1973); structures 2–4m in diameter, defined by circles of post molds, were assigned to the Midland Complex (8740–8440 BC) and the Agate Basin Complex (8500–8000 BC); the Midland Complex structures were described as "the earliest known definite remains of Plains Indian dwellings" (Irwin-Williams et al. 1973:47); (2) Bear River Phase structures

Table 3-3.
Architectural terminology among widely-separated Athapaskan Speakers

Architectural element	Kata/Cahto term (California Athapaskan) (Essene 1940:56-57)	Navajo term (Jett and Spencer 1981:22-23)
Forked door posts	Tcułgĭc	chʼéʼétiindęę nááʼáí
Long poles set in door post crotches, extending to rear of house	Bĕlgal	shádiʼááhdéé nááʼáí ʻéèʼaahdéé' nááʼáí náhookosdéé' nááʼáí
Lintel	Nanunai	(term unavailable)

in northwestern Utah (late Salt Lake Fremont, dating between 1600–1100 B.P.); these were 3-4 meter diameter shelters made of poles that were pulled together to form a cone or dome, and covered with mud (Fry and Dalley 1979, Lohse 1980); (3) pole-and-thatch structures from the Snake River plain in southern Idaho; these date from 2600-350 B.P. and were 3-4 meters in diameter with interior and exterior hearths (Green 1993:63); and (4) 3 protohistoric Shoshonean dwellings from the upper Green River Basin of Wyoming (Frison 1971).

It should be pointed out that we simply do not know whether conical timber lodges would leave posthole impressions; the bottom ends of CTL poles are typically obscured by duff and it is unknown whether some may have been buried deeply enough to leave archaeological traces after the structure has entirely rotted away. Perhaps the most suggestive evidence that post molds sometimes would be left is provided by Frison (1971). Frison found 3 round-to-oval structures at the protohistoric Shoshonean Eden-Farson site. With, "shallow post holes quite closely spaced in the larger lodges" and "only a basic 3- pole structure with addition of smaller poles to fill the intervals in one of the smallest".

Chapter Four

Conical Timber Lodges in the Study Area

A brief discussion of sites within and adjacent to the study area follows. Included are some timber structures that are not conical timber lodges. At the end of this discussion, Table (4-1) summarizes key characteristics of the sites including jurisdiction, condition, features, number of wickiup poles, type of poles, freestanding or lean to, foundation, elevation, and entrance direction.

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Yellowstone National Park

Thirteen known sites with timber poles occur within Yellowstone National Park and are addressed here, but only four are conical lodges believed to be of Native American construction (see Table 4-1):

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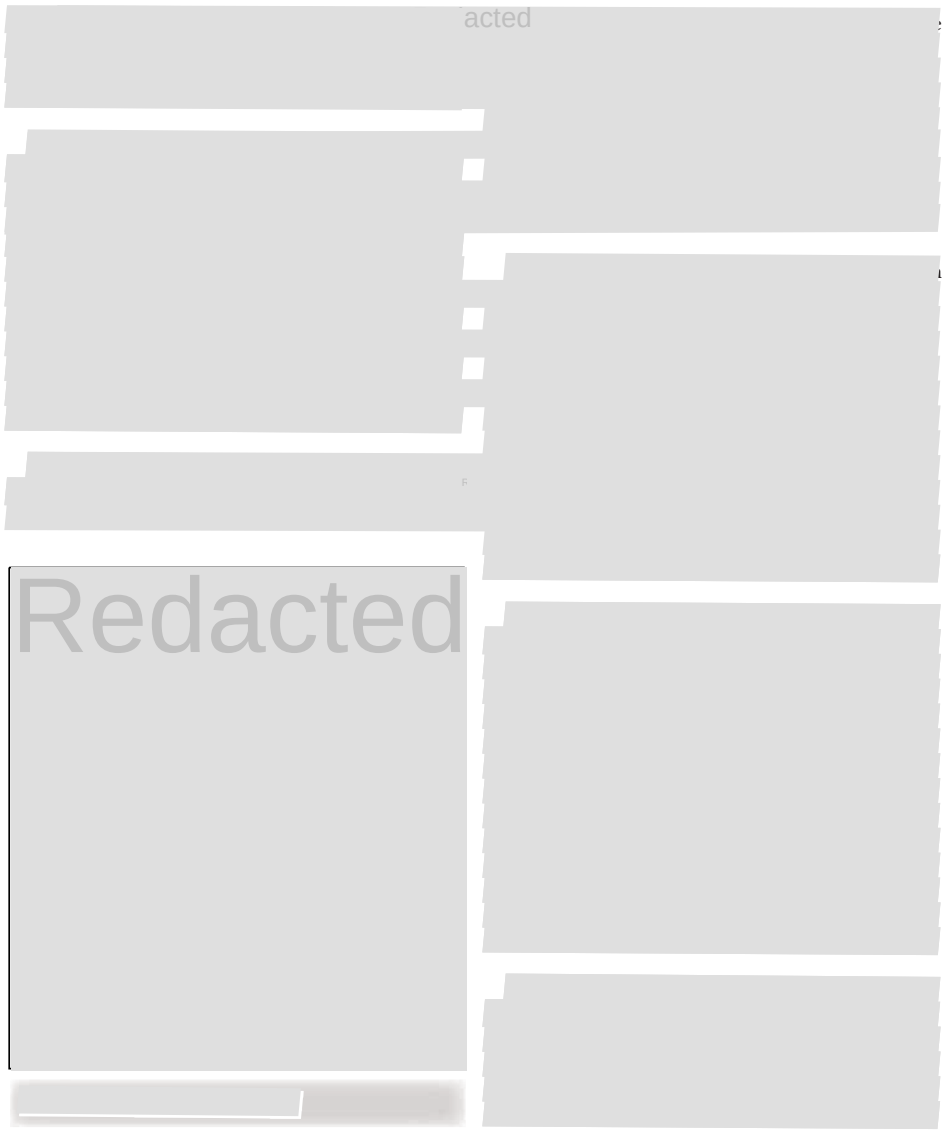
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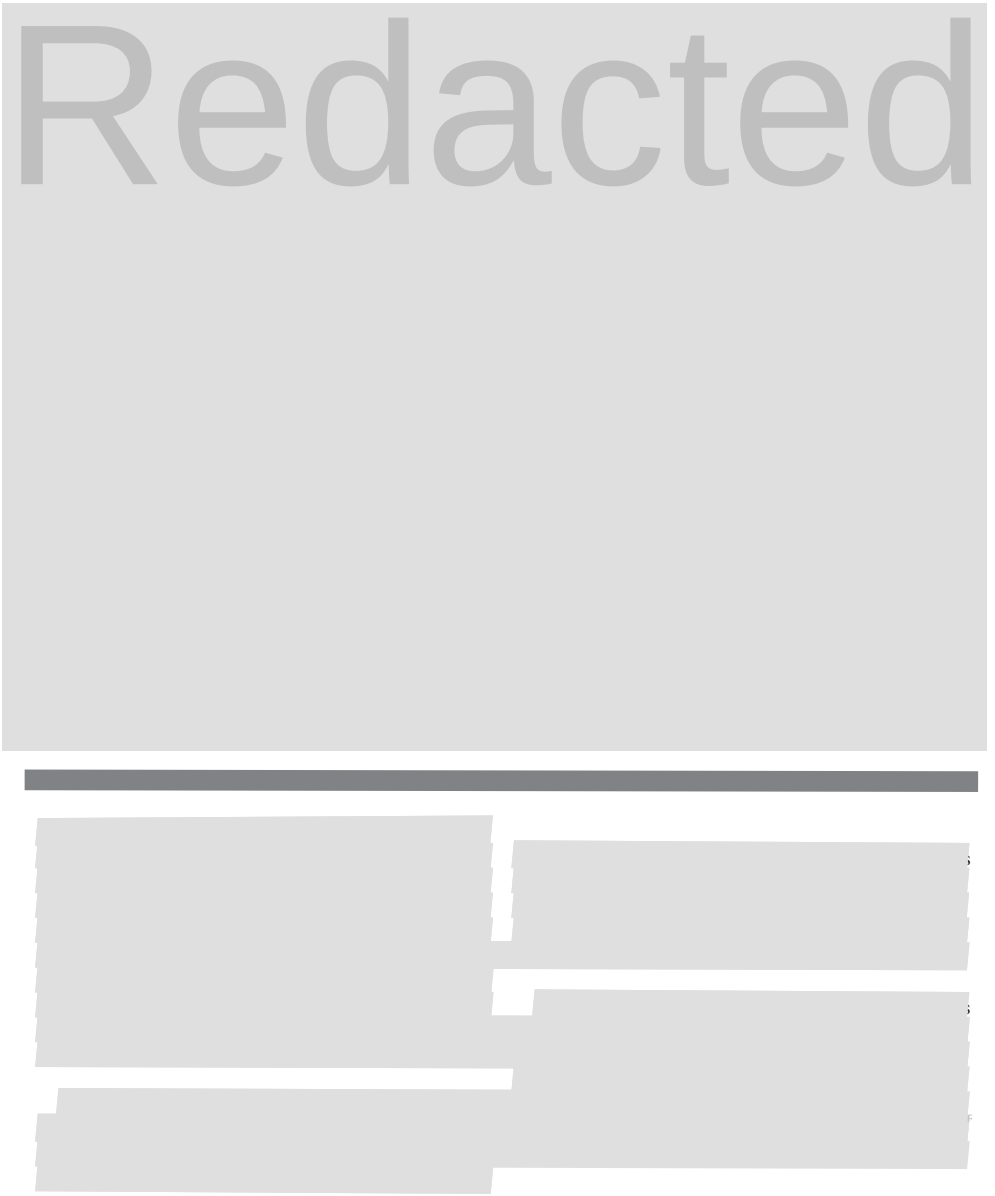
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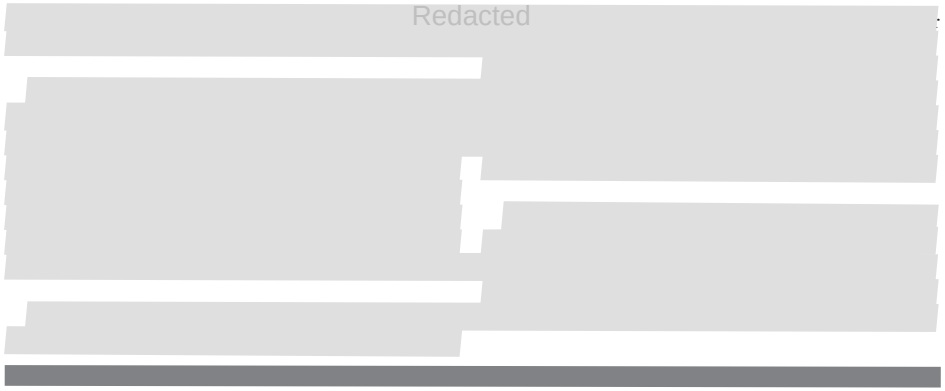
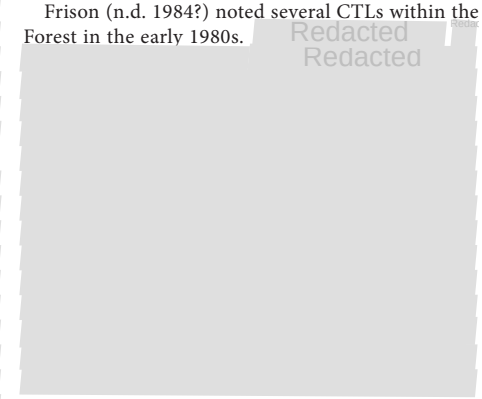


Grand Teton National Park

Oddly, there are no known conical timber lodge sites within Grand Teton National Park (St. Clair 2006). Despite geographical proximity to known wickiups and occupation by cultural groups utilizing this architectural type, natural conditions, such as heavy snow and forest fires, may have destroyed Grand Teton's CTLs. There also exists the possibility that CTLs simply have yet to be discovered in Grand Teton National Park. The one report of a potential wickiup documented within Grand Teton National Park at Flagg Ranch appears to be unfounded.

Bridger-Teton National Forest

Frison (n.d. 1984?) noted several CTLs within the Forest in the early 1980s.



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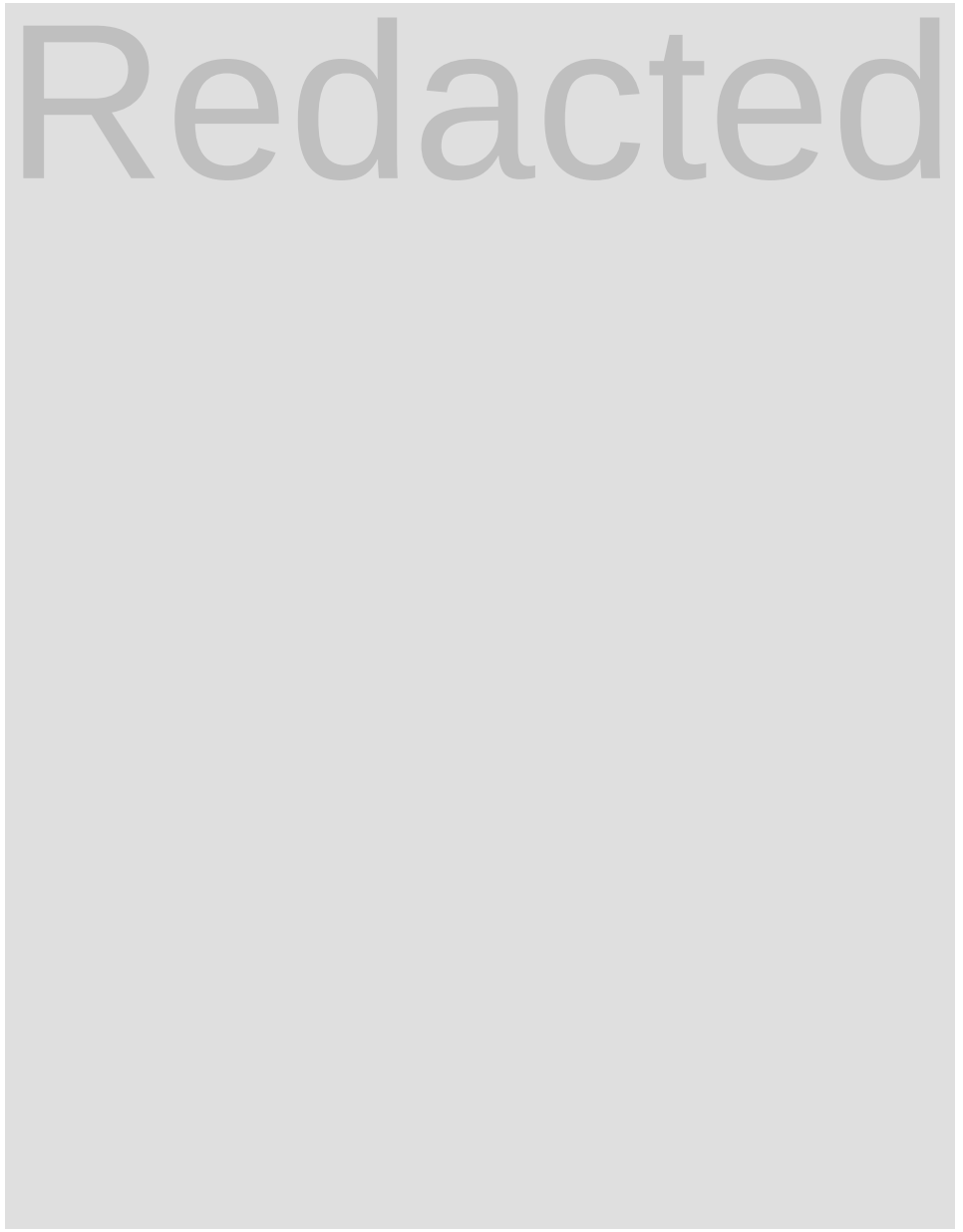
Shoshone National Forest



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Custer National Forest

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Other Jurisdictions Outside the Study Area

Although not part of the study area, certain sites within Custer National Forest, and Lewis and Clark National Forest, are mentioned here for comparative purposes. This listing is not complete, and no images are available for the sites discussed.

Lewis and Clark National Forest

Redacted

Table 4-1. Characteristics of Timber Structure Sites in the GYE (Authentic & Questionable).

Site name	Trinomial	Jurisdiction	Authentic?	Feature(s) (incl. no.)	Condition	No. wickiup poles	Type of poles	Freestanding or Lean-to	Foundation	Elevation (ft)	Entrance direction	Max. height	Max. diameter	Landform(s)	Vegetation	Vista (Open/ Sheltered)	Nearest water	Hearth (+/-, Int./ Ext.)	Lithic artifacts (+/-)

Site name	Trinomial	Jurisdiction	Authentic?	Feature(s) (incl. no.)	Condition	No. wickiup poles	Type of poles	Freestanding or Lean-to	Foundation

Elevation (ft)	Entrance direction	Max. height	Max. diameter	Landform(s)	Vegetation	Vista (Open/Sheltered)	Nearest water	Hearth (+/-, Int./ Ext.)	Lithic artifacts (+/-)

Site name	Trinomial	Jurisdiction	Authentic? (Yes, No, Maybe)	Feature(s) (incl. no.)	Condition	No. wickiup poles	Type of poles	Freestanding or Lean-to	Foundation

Elevation (ft)	Entrance direction	Max. height	Max. diameter	Landform(s)	Vegetation	Vista (Open/ Sheltered)	Nearest water	Hearth (+/-, Int./ Ext.)	Lithic artifacts (+/-)

Chapter Five

Ethnographic Information on Conical Timber Lodges

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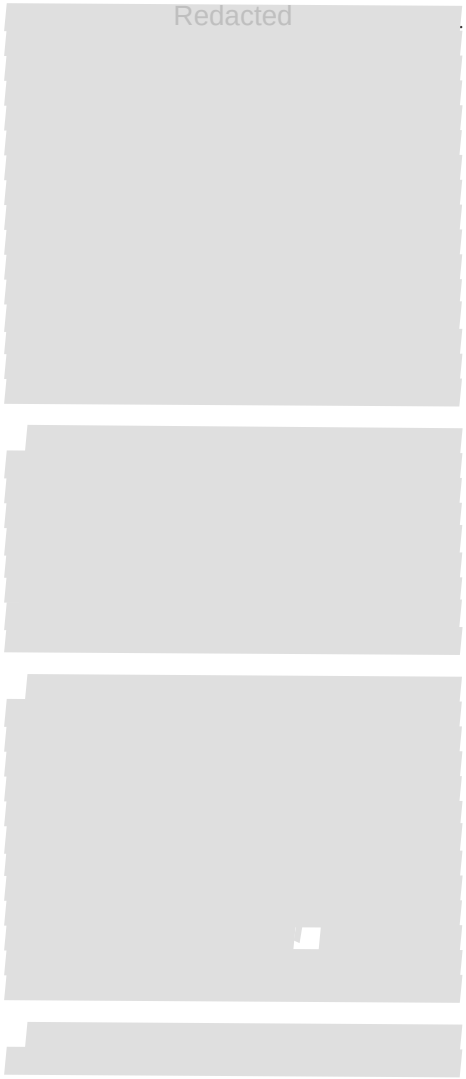

recorded (with site forms, photographs, reports,

Historical and Ethnographic References to Conical Timber Lodges and Related Tribal Architecture

The antiquity of conical timber lodges is not clearly established. A Folsom site approximately 12,000 years old[6] was found near Gunnison, Colorado, and it includes a possible dwelling structure described as "a rudimentary house that had been built of stone and plaster, and maybe tree poles and brush" (Dodd 2004, Stiger 2005). Experimental archaeology has been employed to test whether the remains are likely to have been of a "wickiup"-like structure (Burroughs et al. 2005); the answer appears to be affirmative. Late Archaic Period sites with apparent conical structures also have been documented on the Plains (Frison 1983:81-85). Ute "wickiups" in archaeological contexts have been considered indicative of the Late Precontact Canalla Phase, terminating in A.D., 1540 (Reed 1988, Reed and Metcalf 1999:149, Baker 2005), but some Ute "wickiup" sites clearly date as recently as the 1880s (O'Neil 2005). Numerous conical timber lodges were recorded in the high Plains by nineteenth century observers including Lewis and Clark, and Prince Maximilian of Weid-Neuweid. Indications are that CTLs or very similar structures have existed over a very broad time range.

Ethnographic references to conical timber lodges are presented in two sections below. First, the tribes considered to be associated with the Greater Yellowstone Ecosystem, and presently consulted by the sponsoring jurisdictions, are discussed in alphabetic order. Second, other tribes utilizing conical timber lodges, and/or domiciles popularly referred to as "wickiups", are discussed.

Arapaho. Ethnographic treatments of the Arapaho (e.g., Hilger 1952, Trenholm 1986) typically mention only tipis and dome-shaped sweat lodges, but—contrary to Kroeber (1902-1907:3) and Hilger (1952), who stated that they lived exclusively in tipis—they did build conical timber structures. Algonquian speakers, the Arapaho incorporated five divisions with separate dialects; these merged to some extent but then split into the Northern and Southern Arapaho. The former are now at the Wind River Reservation, while the latter live in Oklahoma (Fowler 2001:840). One of the divisions was known as Besawunena, variously translated as "Big Lodge People", "Wood Lodge People", and "Brush-lodge Men" (Fowler ibid.:861). Whether the name referred to conical timber lodges is unclear. At the beginning of the nineteenth century, Arapaho territory began just east of present-day Yellowstone National Park in the Bridger-Teton and Shoshone National Forests. Later, in alliance with the Cheyenne and with aggressive hostilities against the Kiowa and Comanche, the Arapaho moved south into the Plains of southeastern Wyoming and eastern Colorado. It was not until the mid-nineteenth century that the Northern Arapaho began moving back to the north. According to Crow people, the Arapaho preferred the "vertical pole, tipi- like structure" to horizontal log lodges, although they constructed both (Mulloy 1952:133; also see Voget 1977:8).

Assiniboine/Gros Ventre. The Assiniboine and Gros Ventre currently share the Fort Belknap Reservation, located on the Milk River in northern Montana. The Assiniboine are Siouan (Nakota) speakers, who were in the seventeenth century located in Manitoba and Saskatchewan. They shifted westward and southward until, by 1840, some were living along the Missouri River in present-day North Dakota and Montana (DeMallie and Miller 2001:572). Early location of the Gros Ventre is uncertain; in the mid- eighteenth century they were in Canada (Alberta and Saskatchewan), but they had moved south a century later. Linguistically, the Gros Ventre are Algonquian speakers, closely related to the Arapaho (Fowler and Flannery 2001:677).

Both the Assiniboine and Gros Ventre used three-pole foundation tipis (Lowie 1909:14-15, Dusenberry 1960:60). Both also had conical timber lodges (see Bushnell 1922:77 regarding Assiniboine structures). According to Crow people, the Assiniboine and Gros Ventre preferred the "vertical pole, tipi-like structure" to horizontal log lodges, although they constructed both (Mulloy 1952:133; also see Voget 1977:8). Voget (1943:74) quotes Lewis and Clark as having identified some lodges built with elm boughs as Assiniboine (see Moulton and Dunlay 1987:34, 38), but Voget considered the identification to be questionable.

Blackfeet. The Blackfeet (Natsitapii) are an Algonquian-speaking group comprised of three tribes, Kainaa (Kainawa, or Blood), Piikani (Pikanii, Piegan), and Siksika. Their extensive territory included lands in both present- day Canada and the United States,

5. Two out of the eighteen interviewees stated that they advocated the excavation of hearths if archaeologists indicated that such an examination could yield substantial information.

6. Thus older than the Agate Basin structures previously mentioned.

generally much farther north than Yellowstone National Park—although they traded and raided much farther south. Murphy and Murphy (1960:327-238) stated that "Historical records … mention Blackfoot raids in Yellowstone Park and Jackson Hole and as far south as the valleys of the Green and Bear rivers and Great Salt Lake." Siksika territory was the most northerly, extending to the Saskatchewan River; the Kainaa or Blood occupied an intermediate area; and the Piikani lived in northern Montana around Glacier National Park, although their hunting territory extended on down toward the Yellowstone River. Having acquired both guns and horses by 1800, the Blackfeet were expanding southward and eastward early in the nineteenth century, putting them into conflict with the Crow and Shoshone (McClintock 1910, Brown 1961, Dempsey 2001, Nabokov and Loendorf 2002:74-80). Although Blackfoot economy focused on buffalo hunting, they also were traders who had welcomed fur trade with the British. American contact with Blackfeet people got off on a bad footing, however, resulting in a reputation as warlike savages. Blackfeet hostility toward the Americans may have had a purely economic basis; American mountain men directly competed with Indians for furs, and the Lewis and Clark expedition had announced their intention of trading directly with tribes farther to the west, thus bypassing the middleman position of the Blackfeet (Lewis 1942:27, Judy 1987).

The Blackfeet were renowned for their buffalo-hide tipis (Grinnell 1901; Barrett 1921b; McClintock 1910:207-224, 1936; Ewers 1976), however, the Crow and Cheyenne had the reputation of making the finest skin lodges. Blackfeet tipis (nitoyis) was constructed on a four-pole foundation, with the foundation poles being lashed together 4 to 6 feet from the top. The foundation poles were placed in a rectangular manner with sides longer than the front or back, and the rear poles were placed closer to the vertical so that the tipi has the appearance of leaning away from its entrance. According to one account (Andrews 2002:84), the back of the lodge was always placed toward the prevailing wind. Wissler (1910:99, 104), however, claimed that the entrance always faced to the east. This is not necessarily contradictory, however, since winds generally came from the west. Women were responsible for cutting the tipi poles, tanning the buffalo skins, manufacturing the tipi covering, and putting up and taking down the tipis when the group moved from one location to another. Regardless of the size of a lodge, an even number of hides was used; small lodges might be made with as few as 14 skins, while very large ones might require 30 or more. Poles averaged 25 feet in length, but for an exceptionally large lodge they might be as much as 40 feet long. Due to the wear and tear caused by frequent moves, the Blackfeet cut new tipi poles each year.

A rather substantial body of literature describes conical timber lodges built by the Blackfeet. The earliest description is from present-day McCone County, Montana, in the journal of Meriwether Lewis (May 4, 1805):

> the usual construction of the lodges we have lately passed is as follows. three or more strong sticks the thickness of a man's leg or arm and about 12 feet long are at- tached together at one end by a with of small willows, these are then set on end and spread at the base, forming a circle of ten twelve or 14 feet in diameter; sticks of driftwood and fallen timber of conve- nient size are now placed with one end on the ground and the other resting against those which are secured together at top by the width and which support and give the form to the whole, thus the sticks are laid on until they make it as thick as theydesign, usually about three ranges, each piece breaking or filling up the interstice of the two beneath it, the whole forming a connic figure about 10 feet high with a small apperture in one side which an- swers as a door. Leaves bark and straw are sometimes thrown over the work to make it more complete, but at best it affords a very imperfect shelter particularly without straw which is the state in which we have most usually found them (Moulton and Dunlay 1987:108-109).

Moulton and Dunlay credit the Blackfeet with construction of these lodges. They call them "Blackfeet war lodge(s)" and note that in reference to the structures Clark recorded, the name "Indian Fort Creek", which was later changed to Antelope, and then Nickwall, Creek was established (1987:110-111). Early on, Ewers (1958:46) implied agreement that these conical timber lodges were Blackfeet; later (1974:83), he stated that it "isn't possible to determine which tribe or tribes built the [lodges] seen by Lewis and Clark."

Although they seldom provided such detailed descriptions, Lewis and Clark noted timber lodges from the vicinity of present-day Fort Peck Indian Reservation in North Dakota (on April 30, 1805) all the way to Chouteau County, Montana (on June 7, 1805). These were variously referred to as "stick lodges", "lodges of sticks", and lodges "made of stiks and bark" (Moulton and Dunlay 1987:159-263 passim).

In February 1837, Osborne Russell described similar structures which apparently were built by Blackfeet warriors. He described them as "old rotten Indian forts formed of small poles in a conical shape" and went on to state, "We found that the old forts were not bullet proof in any place our rifle balls had whistled thro. them nearly every shot" (Haines 1965:52). Two years later, Russell was attacked by Blackfeet warriors near Yellowstone Lake, and wrote that "At the encampment I found a sack of salt—everything else the Indians had carried away or cut to pieces They had built 7 large Conical forts near the spot from which we supposed their number to have been 70 or 80 part of whom had returned to their Village with the horses and plunder" (ibid.:104-105).

James Willard Schultz, who married into the Blackfeet and lived among them during the final quarter of the nineteenth century, described a war lodge (ap-im-an or "sit inside place") as being built in thick timber near a spring. "First they put up the poles—many of them and close together— and over these they placed balsam and spruce boughs in thick layers so a fire could be built inside and yet no light be seen from the outside" (Hanna 1988:110; also see Schultz 1997:36 and Andrews 2002:181).

George Bird Grinnell, working with the Blackfeet early in the twentieth century, similarly described conical timber structures as "war lodges." He wrote, in regard to war parties, that

> They always endeavor to make camp in the thick timber, where they cannot be seen; and here, when it is necessary, on account of bad weather or for other reasons, they build a war lodge. Taking four young cot- ton-woods or aspens, on which the leaves are left, and lashing them together like lodge poles, but with the butts up, about these they place other similar trees, also butts up and untrimmed. The leaves keep the rain off, and prevent the light of the fire which is built in the lodge from showing through. Sometimes, when on the prairie, where there is no wood, in stormy weather they will build a shelter of rocks (Brown 1961:116; Grinnell 1962:252).

Grinnell's description of the Blackfoot conical timber lodge as having a foundation of four poles is more precise than the Lewis and Clark expedition description of lodge foundations consisting of "three or more" poles; Grinnell's account is more to be trusted, and in addition, as noted above, it may be that the structures seen by Lewis and Clark were erected by more than one group.[7]

It is noteworthy, too, that Grinnell describes the lodges as being built with pole butts up; if this was consistently done, it might constitute an ethnic marker for conical lodges built by Blackfeet. Another possible marker of Blackfeet timber lodges might be heavy logs around the base and an "angled, covered entrance way composed of rather heavy forked tree trunks" as described by John Ewers (1944:184, also see below; Wissler 1910:155; and Mulloy 1953:136).[8] Oddly, given the extensive descriptions cited above, Voget (1943:76) stated that "no specific description is available" for Piegan or Blackfeet lodges.

As previously explained, the consistent description of conical timber lodges as "war lodges" is problematic. James Willard Schultz often described pole lodges as such, but he also noted their use during hunting trips (Andrews 2002:181). Contemporary Blackfeet people refer to CTLs as "storm huts" (Zedeno 2007). Despite

7. Grinnell was an experienced ethnographer, and he worked directly with Blackfeet people who provided him with detailed information; Lewis and Clark were generalist observers who rarely spoke with Indian people, but rather reported tribal affiliations of what they saw on the basis of poorly understood versions of tribal territories.

8. Covered entrance ways are also found in Navajo hogans, and in domed, brush-covered Havasupai dwellings (Spier 1928: 180-181).

his assumption that the pole lodges served only a single function, Ewers provided interesting details:

> Upon approaching enemy territory, the raiders stopped to kill enough game to provide food for the remainder of their journey. Usually they built a war lodge in a heavily timbered bottom or on a thickly wooded height, or repaired an old one built by some earlier party. If a new lodge was needed, all set to work gather- ing fallen timbers or cutting new ones to erect a conical framework of poles. This they covered with bark or brush. They then laid heavy logs around the base and built an angled, covered entrance way. Working industriously, a war party could complete the lodge, large enough to sleep a dozen men, in two hours. It was built well inside the edge of timber, where it could not be seen from the open plains. But it was dangerous ground. All hands were needed to speed the work. …. The war lodge not only provided shelter from rain, snow, and cold, but concealed the fire ofrelatively smokeless willow branches built inside and served as a fortress in case of enemy attack. It was a base of supplies, where some food could be left to be picked up on the return journey, and a base for scouting operations. … Meanwhile, the other members of the raiding party left at the war lodge hunted buffalo, deer, elk, or any other game that might provide dried meat for the remainder of their journey. They butchered the animals, dried the meat, and filled the men's provision bags. Sometimes they prepared an additional meat packet—a small rawhide container that could be fastened to the belt, hold- ing enough concentrated dried meat to provide an occasional mouthful for the raider hastening homeward with captured horses. One of these packets was made for each man. It was called "war lunch" (Ewers 1958:130-132).

Other Blackfeet structures should be briefly mentioned. Grinnell recorded traditions of early Blackfeet houses built of "mud, sticks, and stones", but people did not know their shape or how big they were (Brown 1961:100). Sweat lodges were hemispheric, six to seven feet in diameter, constructed with a willow framework and a covering of buffalo skins (Barrett 1921a, Hanna 1988:65). Dempsey (2001:614) illustrates a Blackfoot (Blood) menstrual shelter made of poles, hides and brush. Mulloy (1952:133) stated that the Blackfeet constructed shelters made of horizontally-placed logs, and he suggested that (according to information from Crow people) they preferred these to timber shelters of vertically- placed logs (also see Voget 1977:8). Horizontally- placed log structures are fairly common in the study area; they are often referred to as "cribbed log structures" (see Cramer 1961, Cristenson 1963b). These bear an intriguing resemblance to the wolf traps described by James Willard Schultz:

> …an oblong, pyramidal log pen about eight by sixteen feet at the base, and eightfeet in height, the last layer of logs being placed about eighteen inches apart. Eas- ily climbing the slope of this, the wolves would jump down through the narrow ap- erture at the top to feed upon the quanti- ties of meat that had been placed inside to decoy them, but they could not jump out (Schultz 1916:148). [9]

Cheyenne (Northern). The Algonquian- speaking Cheyenne traditionally lived in present- day Minnesota but moved westward from there under pressure from the Chippewa and Assiniboine during the eighteenth century. Some but not all bands adopted a horticultural lifestyle along the Missouri River before continuing on into the Plains and the Black Hills (Grinnell 1923, 1926; Moore 1987:53-87; Moore, Liberty and Straus 2001:863). Division of the tribe into Northern and Southern Cheyenne took place after the early nineteenth century. The Northern Cheyenne currently live on the Northern Cheyenne Reservation in southeastern Montana.

Along the Missouri, the Cheyenne lived in earth lodges similar to those of the Arikara (Grinnell 1923–24:I:24, Brown 1961:160), but upon moving onto the Plains they adopted the tipi. Campbell (1915) and Grinnell (1923-24:I:50-51, 224-25) provided detailed descriptions of the Cheyenne tipi, built on a three-pole foundation, lashed together; the butt ends of the poles were tapered and (as with Blackfeet tipis) the tipi was steeper behind than in front, where the entrance typically faced east. Grinnell (1923-24:I:49-50; also see Hoebel 1978:6) described the ancient (Great Lakes era) Cheyenne houses as having been built of woven willow shoots, variously plastered with mud or covered with rush mats. The shape of these structures is not clearly indicated. The Cheyenne used dome-shaped sweat lodges into the twentieth century (Grinnell 1919) and later. They also built conical timber lodges, though little information is available regarding these. According to Crow people, the Cheyenne preferred the "vertical pole, tipi-like structure" to horizontal log lodges, although they constructed both (Mulloy 1952:133; also see Voget 1977:8). Grinnell (1926:224) indicated that a covered passageway into the lodge was built of logs.

Chippewa-Ojibwa. These Algonquian speakers lived in the upper Great Lakes area, where they were in hostile relations with the Dakota (Hickerson 1962:27-28) until the late seventeenth century. Then a truce with the Dakota allowed them to begin a western expansion. The majority of Chippewa-Ojibwa people live in Ontario province, Canada (Ritzenthaler 1978:743), but others live in Minnesota, North Dakota, and the Canadian provinces of Manitoba and Saskatchewan (Rogers and Taylor 1981, Steinbring 1981, Albers 2001, Payment 2001). The Plains Ojibwa initially moved westward in connection with the fur trade, but early in the nineteenth century they shifted to hunting buffalo, and they developed a Plains lifestyle, through interaction and intermarriage with the Cree and Assiniboine. Long considered "landless" and unaffiliated with either Canada or the U.S., Plains Ojibwa people were eventually put on Turtle Mountain Reservation (North Dakota) and Rocky Boy's Reservation (Montana). Others settled with allied people on other Montana reservations (Albers ibid.:654, 656-657).

Plains Ojibwa people used both hide tipis, and bark or reed lodges harking back to their Eastern Woodlands origins (Skinner 1914:316). Plains Cree tipis were painted with symbolic designs (Cadzow 1926:25). The Plains Cree built conical timber shelters on a three-pole foundation or leaning against a tree; these were used by women for domestic tasks as late as 1935 (Mandelbaum 1940:212, Ewers 1944:190, Voget 1977:5). In Minnesota, Chippewa/Ojibwa people used a variety of dwellings. Densmore (1929:22) commented that "The principal types of dwellings were the wigwam, the peaked lodge, the bark house and the tipi. To these may be added a conical lodge of evergreen boughs for temporary use." Densmore stated that the wigwam among the Chippewa was any sort of dwelling, regardless of shape; she called conical, bark-covered lodges "wigwams." Peaked lodges had long ridgepoles with sloping sides.

Densmore (1929:27-28) provided details on Chippewa bark houses. They were built on a tripod foundation, with the poles held together by crotches left on them; the other poles—spruce wood, when available—were stacked against the foundation poles to form a conical structure upon which sheets of birch, elm or cedar bark were placed. These structures were often used at sugar camps. Similar conical lodges, covered with balsam or other evergreen boughs, were another form of temporary shelter. On these, the boughs were placed points downward.

In July, 2005, a visit to the Mille Lacs Indian Museum (Mille Lacs Indian Reservation, Minnesota)[10] coincidentally provided useful insight into the function of different shapes of Ojibwa wigwams. A tribal guide explained that domed wigwams were used during the summer, while peaked wigwams were fall, winter and spring structures. The peaked wigwam displayed at the museum had a short gable post in the peak of the structure, and the base was oblong rather than round. Traditionally, frameworks were left in place and re-utilized the next year; birchbark, elm or basswood bark coverings were rolled up and transported from one camp to the next. Peaked structures were preferred in cool weather because they maximized the heat from the fire; heat traveled up the walls of the structure and then was channeled back down at the peak. In a dome-shaped wigwam, though, heat would rise and stay at the top of the dome.[11] This difference in thermal dynamics may be pertinent to the prevalent distribution of different sorts of "wickiups"—i.e.,

9. These structures have also been identified as bobcat traps (Zedeno 2007).

10. Funded independently from this project.

11. This difference in thermal dynamics may be pertinent to the prevalent distribution of different sorts of "wickiups," i.e., conical peaked structures being more northerly whereas domed "wickiups" are more common farther south.

conical peaked structures being more northerly whereas domed "wickiups" are more common farther south.

Coeur d'Alene. With their traditional territory located in eastern Washington State, the Coeur d'Alene oral traditions, however, express their visitations to land now located inside Yellowstone National Park (Nabokov and Loendorf 2002).

It is worthwhile to note that they share some traditional architectural expressions with the Salish and Kootenai. Included were conical family houses covered with tule mats, and small conical lodges used by women during their menstrual isolation (Walker 1982:70, Palmer 1998:318). As with the Salish and Kootenai, the Coeur d'Alene adopted tipis after they acquired horses (Chalfant 1974:163).

Colville. The Colville used both tipis and conical mat lodges. Pithouses may have preceded these. The skin-covered tipis were adopted late in their history, after the tribe began wandering into the Plains to hunt buffalo (Kennedy and Bouchard 1998:242-244). Other Plateau people, including the Klamath and Modoc, also utilized small mat- covered conical lodges (Stern 1998b:450).

Confederated Salish and Kootenai. With core territories located well to the north of the Yellowstone region, the Salish ("Flathead"), Kootenai and Pend d'Oreille nonetheless ventured south into the present-day Yellowstone National Park rather often during the nineteenth century. Nabokov and Loendorf (2001:70) identified two primary routes of travel onto the Yellowstone Plateau: via Bridger or Flathead passes from the present-day Bozeman vicinity, or along the Shields River from the Crazy Mountains. Plateau tribes utilized a wide variety of architectural styles, including circular and square semisubterranean plank houses (see Crosby 1907:79-80 for a detailed description of these more substantial structures); single, double and long lean-tos; and domed sweat lodges (Ray 1940:173-182). Conical structures were also used, as more informal shelters (Schaeffer 1936:98-99). According to Malouf (1998:229), these Salish and Pend d'Oreille shelters

> … were usually conical-shaped tepees, or conical lodges with a similar framework, but covered with branches and more poles, or grass mats. The pole and branch structures were more common in the field and were useful to hunters or war parties.

Brunton (1998:232), apparently following Schaeffer (1936), described differences in winter and summer conical lodges. Summer structures were covered with boughs or bark from spruce or fir trees, while winter lodges used several layers of closely-set poles with half-round poles set into the gaps. Brunton suggested that the conical timber lodges were largely replaced by tipis after acquisition of horses. Turney-High (1937:99) had questioned whether mat-covered tipis were originally Salish; he believed they may have been borrowed from the Nez Perce, but noted that whereas the Nez Perce used a three-pole foundation, the Salish used a four-pole foundation. Contrary to Brunton's simple transition, Johnson (1969:134) documented that conical lodges with vegetable mat coverings persisted well into the nineteenth century. One illustrated Kootenai conical lodge was wigwam-like in structure, with mats over an internal pole framework, held in place by external poles (ibid.:351).

Turney-High (1941:56) emphasized differences between upper (northern) and lower (southern) Kootenai shelters; the plains-style tipi was the standard dwelling among the upper Kootenai, whereas grass- and mat-covered conical lodges were typical among the lower Kootenai (also see Walker 1982:54). Fuller (1974:38) described upper Kootenai longhouses as being built with tripod foundations at the ends; bipod poles extended down the length of the structure with no ridge-pole, and these were connected with light- weight horizontal poles. Lower Kootenai lodges were covered not with rushes or tule, but rather with dogbane, Apocynum cannabinum. Turney- High believed that Kootenai mat-covered lodges came later than hide-covered tipis, and were an adaptation to the western territory that was lacking in bison (ibid.:62). According to Crow people, the Flathead preferred the "vertical pole, tipi-like structure" over horizontal log lodges, although they constructed both (Mulloy 1952:133; also see Voget 1977:8). Conical timber lodges located at St. Marys Lake, east of Glacier National Park in Montana, were identified by a Blackfoot consultant as Kootenai

"war lodges" used by horse raiders (Des Rosier 1965). Des Rosier gave fewdetails about the structures, other than to note that there was an interior hearth inside one. Pacific coast Salish people, on Vancouver Island, built earth-covered lodges that are reminiscent of Missouri River structures, but lacking the four-post center foundation. These were described as follows:

> A deep pit was dug in the ground and stout poles were placed leaning together like a tepee, with a hole at the centre. The earth was heaped up around and upon the top, very much as eastern farmers cover their potato pits. The hole in the top was the only doorway, the only passageway for light, and the only opening for the smoke to escape. A notched pole was placed up the side of the roof and another protruded from the interior through the opening in the top. By these two poles the occupants passed in and out of this dwelling (Crosby 1907:80).

Comanche. The Shoshonean-speaking Comanche were said by the Cheyenne to have been living in the Black Hills and farther north, in the drainages of the Little Missouri, Powder and Tongue Rivers, when the Cheyenne arrived there circa 1795 (Grinnell 1956:33). By the early nineteenth century, though, many of them had moved south into present-day Colorado and western Kansas (Gussow 1974:88). The Lewis and Clark map showed tribes in the vicinity of the Black Hills, which Grinnell (1923-24:I:30-31) identified later as Comanche. Kavanagh (1996:181) questioned whether any of the northern bands variously identified as Comanche actually were, but even if some Comanche bands were north of the Black Hills at the end of the eighteenth century, others were making incursions into Colorado by the beginning of the same century. By the nineteenth century, some Comanches were in southeastern Colorado and southwestern Kansas, but most were in eastern New Mexico and western Texas (Kavanagh 2002:887).

The close relation between Comanche and Ute (see White 2001:42-43) may be reflected in the fact that the Comanche are unique among Plains tribes in using tipis with a four- rather than three-pole foundation (Fehrenbach 1974:109). The Comanche also used brush shades during the summer; Wissler (1948:40) indicated that in 1853 they were using both conical brush lodges and tipis.

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Crow. Traditional territory of the Siouan- speaking Crow was east of the Rocky Mountains on the headwaters of the Yellowstone, Powder, Wind and Bighorn Rivers; they had originally lived much farther to the east in Great Lakes country (Medicine Crow 1979). They ranged south and east to the headwaters of the Platte; there, and around the headwaters of the Cheyenne River, they came into serious conflict with various Lakota bands. Crow territory in the eastern portion of Yellowstone National Park was specifically that of the Mountain Crow, a division of the tribe that left the Missouri River during the sixteenth century. The River Crow followed them roughly two centuries later, establishing a territory from the Yellowstone north to the Milk River. On the Missouri, the Crow shared ancestry with the Hidatsa; linguistic separation of those two groups apparently was not completed until the mid-eighteenth century (Wood and Downer 1977, Hoxie 1995:36-42, Nabokov and Loendorf 2001:41, Voget 2001:695).

Crow tipis were described by the Blackfeet as having a "cut-off " appearance, because their lodge poles allegedly were only slightly longer than the portion covered by skins (Grinnell 1901:655). Campbell (1927:90-92) denied this, stating that Crow lodge poles are actually extraordinarily long. He pointed out that George Catlin (1796-1872), based on his travels in the 1830s, had flatly stated that the Crow had "the most beautiful lodge" on the continent (in this regard, see also McGinnis and Sharrock 1972:22). Lowie (1983:87) wrote that the "almost fantastic projection [of the tipi poles] beyond the point of intersection" gives the Crow tipi the form of an hourglass; this was what Catlin found so aesthetically pleasing. Crow tipis were built with four-pole foundations; the floor plan was elliptical, nearly

circular, and the tops of the poles were massed toward the front (entrance side) of the tipi (Campbell ibid.).

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Conical timber lodges have been described among the Crow; Charles Le Raye observed them in 1801, and Catlin described some in 1841 (Le Raye 1908:172, Catlin 1941:43, Voget 1977:2). Curtis (1909:21) stated that these were found in "the old times" at permanent camps, and he said the women used them for cooking. His description was scanty; he referred to them simply as "tipi-shaped structures of logs and brush." The suggestion that the structures were used for domestic purposes is interesting.[12] Multiple uses of such structures is likely; Linderman (1962:261-265) described a brush lodge covered with leaves, and used by a medicine man in treating a wounded warrior. Similarly, Lowie (1983:89) suggested that such structures were used not only by warriors but also by "eloping couples, and visionaries". A probable Crow pole "tepee" built circa 1885 near Livingston, Montana, was described by Christensen (1963a). Loendorf and Klinner (1995:36) indicate that the Crow built both CTLs and horizontal cribbed log structures, and state that they did not differentiate between the two types, but considered them as varieties of temporary dwellings.

Mulloy (1952:133) also stated that the Crow built "vertical log" lodges, but in this later publication he provided no elaboration and suggested that, at least on the basis of existing descriptions, it is impossible to distinguish tribal variations among such structures. Earlier, Mulloy had described two types of conical log lodges in the Little Cayuse Mountains and in the Clark's Fork region, within Crow territory; one type was hemiconical, built against a cliff, while the other was completely conical and built in the open but sometimes supported by a standing tree; stone slabs were leaned against the exterior periphery of these lodges and central fireplaces were characteristic (1943:63-64, 1945:519). Voget (1943:69, 1977:3) stated that free-standing conical timber lodges constructed by the Crow used a four-pole foundation, although they were most often built around a standing tree. Entryways faced east for protection against prevailing winds (Voget 1977:4). According to Lowie (1918:261-262), the Crow would build conical timber lodges with cottonwood poles if necessary, although they greatly preferred pine.

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Other Crow structures include sweat lodges, which typically were dome-shaped, made with willow branches (Curtis 1909:54, Marquis 1928:214, Frey 1987:14, McGinnis and Sharrock 1972:69). Brown (1963) described a barrel- shaped structure that may have been a hunting lodge or sweat lodge. Thomas LeForge discussed the use of menstrual huts among the Crow, but he described them only as a "special wickiup willow lodge shelter" with no more specific information about their form (Marquis ibid.:201-202). Curtis (ibid.:28-29) also mentioned that young girls had small tipis, in which they played house. Lowie (1918:177, 261, 272-275; 1922:225) noted temporary shelters (acta'tse') made of sticks, bark, and foliage; these were used by warriors, hunters, eloping couples, and people seeking visions. Voget (1977:3-4) indicated that conical war lodges were constructed with heavier timbers, and were reinforced with additional timbers and stone slabs, whereas "simple pole-bark-brush" shelters were less substantial.

12. Frison (1976) suggested that Wyoming pottery is either Shoshonean or Mandan-Crow. This topic is controversial, however (see Johnson 1979 and Keyser 1980). The "Intermountain ceramic tradition" (Wedel 1954, Mulloy 1958a) has its own complications: although Loendorf and Ston (2005: 87-88) suggested that it appears to be older than the steatite pots associated with the Sheepeater Shoshones, Frison (1971) recovered quantities of the pottery from the protohistoric Eden-Farson site (explicitly identified as Shoshonean) in the upper Green River Basin of Wyoming.

Crow summer shade structures differed from those of other tribes by having a circular rather than rectangular floor plan, and a conical rather than flat roof (Lowie 1922:225, 1983:89); Lowie noted a resemblance to Sun Dance lodges among other Plains tribes. Along with a number of other Plains tribes, the Crow also constructed horizontal log structures (Mulloy 1945:519-520, 1952:133). Conner (1974:33) indicated that such structures were used as winter homes by the Crow. However, Voget (1977:8) suggested that they preferred conical structures. Curtis (ibid.:105) described one horizontal structure: "…with dead logs we built a sort of stockage in a circle, and filled the crackswith dry grass; overhead we piled brush, leaving a smoke-hole. Within was a good warm shelter." An archaeological description of a cribbed log structure in Crow territory is provided by Davis, Keyser and Craven (1994), who suggest that the structures might be either hunting or war lodges.

Eastern Shoshone. During the mid- nineteenth century, a number of Shoshone bands joined together to form Washakie's band—a shift in sociopolitical organization made possible by acquisition of horses early in the eighteenth century and perhaps necessitated by conflicts with Crow warriors over hunting rights in what is now central Wyoming. With territories both east and south of present-day Yellowstone National Park, these Shoshone people also inhabited between one- and two-thirds of YNP park itself, in its southern portions (Steward 1937, Stewart 1966, Madsen 1980), as well as all of Bridger- Teton National Forest and most of Grand Teton National Park. Descendants of the Washakie band live with the Arapaho people on Wind River Reservation, southeast of the Study Area.

Lowie (1909) described architecture for Shoshone people at Fort Hall and the Wind River Reservation, as well as for Nevada Shoshones, with the implication that no differences were to be observed. Later, he was more explicit regarding Wind River, where he stated that the

> grass lodge [was] similar in shape to the tipi but lower and smaller, with tall dry grass tied between the willow poles. … These huts readily caught fire and burnt up. They were from seven to eight feet high, the size depending on that of the family; they al- ways faced east. … Such lodges were for winter use and were never moved. In the summer sagebrush was piled up for walls and this was also substituted when grass was not available (Lowie 1924:221).

Wind River tipis (and presumably their grass lodges as well) were built on a four-pole foundation (Lowie 1924:221-222, Stewart 1942:339, Shimkin 1986:322). According to Crow people, the Shoshone (Wind River) preferred the "vertical pole, tipi-like structure" to horizontal loglodges, although they constructed both (Mulloy 1952:133).

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Kiowa. The Kiowa-Tanoan speaking Kiowa have occupied portions of the Great Plains ranging from the Black Hills and Missouri River headwaters on the north, to Durango, Mexico, on the south. Although they probably had a southern origin, ultimately (along with the linguistically closely related Tanoan Pueblo people), Kiowa oral tradition places them originally on the headwaters of the Yellowstone River. Harrington [1939:62] concluded, without basis, that the oral tradition rendered it "absolutely certain" that both the Kiowa and the Tanoan Pueblo people had an origin in the northern Rocky Mountains.) The Kiowa were first recorded by the Spanish in Montana, in 1732. The Kiowa creation story tells of their Emergence into this world through a hollow cottonwood log (Mooney 1896:1078, 1898:153). By the late eighteenth century they apparently were living in the Black Hills area, allied with the Crow against the Cheyenne and Arapaho, and by the early nineteenth century they were on the

North Platte, having been driven south by the Lakota. Later in the century they ranged much farther south.

The Kiowa relied on tipis as their basic shelter, and used brush arbors. Kiowa tipis were painted with pictographic representations of warriors and their exploits (Szabo 1994). They had switched to canvas tipis by the later nineteenth century, with the decline of the buffalo (Marriott 1963:100, Levy 2001:909-910). Marriott (1945:ix) described the traditional shelters:

> The Kiowas lived in tipis made of buffalo hides. The tipi was built on a four-pole foundation, to which twenty poles were added to fill out the circle. It faced east ex- cept when it was pitched in the Sun Dance circle, when it faced the center of the en- closure. The tipi front was fastened with a mall, painted sticks, and there was a raw- hide door hung over the opening. In warm weather the sides were rolled up for two or three feet above the ground. Tipis are still set up in summer camps and are the ritual shelters for peyote meetings. Domed brush arbors were, and still are, built as summer shelters.

Marriott also provided a fictionalized account of the importance of a couple's first tipi, circa 1865-1866. No information has been found suggesting that the Kiowa built conical timber lodges. Mayhall (1962:7) commented on having a print of a Kiowa grass lodge, "but whether it is something of their ancestral traits, or something copied after the Wichita houses of later date, is not known."

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Lakota/Dakota. Core Lakota territory did not extend further west than the Black Hills of eastern Wyoming; Lakota/Dakota people had lived in present-day Minnesota as recently as the mid-eighteenth century (DeMallie 2001:719-722). By the mid-nineteenth century, though, they had pushed the Crow out of the Black Hills. Conflicts between Crow and Lakota people took place primarily in the headwaters area of the Cheyenne and Platte Rivers, but fights took place on the upper Missouri River and deeper into Crow territory (see, for example, Blish and Bad Heart Bull 1967:146). In the eastern woodlands, ancestral Lakota/Dakota people presumably lived in typical wigwam dwellings (Bushnell 1922:44). A 1662 description portrayed a palisaded town with large skin- and mat-covered lodges, but by the mid-eighteenth century it is clear that buffalo-hide tipis were in frequent use (DeMallie 2001:722-725). Upon moving to the Missouri River, Lakota/ Dakota people adopted earth lodge construction similar to that of the Arikara and Mandan (Hurt and Howard 1950). Even so, dome-shaped structures, covered with mats or skins until later replaced by canvas, were used into the twentieth century in South Dakota (Hurt 1954).

In 1863, a Santee settlement north of Yankton was known as "Dirt Lodges". It consisted of fifteen structures contemporarily described as being "constructed by placing sticks of wood five feet long upright in the ground, binding their tops together with long poles, then placing other poles on this structure, and leaning their tops to the center, forming the roof. The entire structure was then covered with sod from the base to the summit, leaving a small smoke-hole at the apex of the roof." Kingsbury (1953:2), after reproducing this description, commented that "From the above description it is difficult to ascertain whether an earth lodge of the Arikara type is described or some other structure."

With acquisition of horses and expansion into the Plains, large Sioux tipis became the typical domicile. Even so, other sorts of structures (including conical timber lodges) continued to be used under certain circumstances. Linderman (1962:287) recounted discovery of "an empty camp" of many "brush lodges" along the Rosebud, by which the Crow chief Plenty-coups knew that his party was outnumbered by the "Sioux." Crow people said the "Sioux" preferred the "vertical pole, tipi-like structure" over horizontal log lodges, although they constructed both (Mulloy 1952:133; Voget 1977:8). Voget (1943:70) said Crow people would assume that unfamiliar "log tipis" in their territory were built by Sioux war parties. One Crow person stated that Siouan timber lodges had one unique feature—a jutting branch for cooking—and an elderly Oglala man said the Sioux preferred freshly cut young growth for their timber lodges, and that they built a fence surrounding the lodge (ibid.:71). Voget (1977:5-6) indicated that Lakota (Oglala) people built shelters of saplings, but the construction details he provided are vague.

Nez Perce. Core territory of the Sahaptin- speaking Nez Perce, or Nee-Me-Poo, was in western Idaho, rather distant from the Study Area. The tribe is famous, though, for having traversed Yellowstone National Park under leadership of Chief Joseph during the Nez Perce War of 1877 (see Nabokov and Loendorf 2004:219-230; also see Walker 1985, Yates 1992, Sanford 1994, and Haines 1996:219). After Chief Joseph surrendered, the Nez Perce were taken to the Colville Indian Reservation, in Washington State. The Nez Perce traditionally constructed double lean-to longhouses, some well over 100 feet in length (Spinden 190:195; Ray 1971:6; Walker 1982:79,1998:427), although these may have been primarily ceremonial in usage. They also used sweat lodges and menstrual huts, and tipis have considerable antiquity. Early ones were covered with cattail or tule mats (Spinden ibid.:197, Farrand 1921:245), but buffalo hide covers became the standard during the late eighteenth and early nineteenth centuries as the Nez Perce became more involved in Plains culture (Walker 1998:ibid.). Even so, during hunting trips, they continued to use brush shelters of sorts that Spinden dismissed as "hardly worth mention." According to Crow people, the Nez Perce preferred the "vertical pole, tipi-like structure" to horizontal log lodges, although they constructed both (Mulloy 1952:133; also see Voget 1977:8).

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Shoshone-Bannock. West of Yellowstone National Park, the Shoshone-Bannock people now live on Fort Hall Reservation, Idaho, established in 1867. This is a consolidated group consisting of descendants of numerous small groups of Northern Shoshones who originally lived in present-day Idaho, along with Shoshonean-speaking Bannocks and Sheep Eaters (not to be confused with the Sheepeaters who lived within present-day Yellowstone National Park) from the Snake River area. Nabokov and Loendorf (2002:161-177) provide detailed ethnographic and historical information on these peoples. Although the Northern Shoshone were denigrated by the Chippewa and Yankton Dakota as "Snakes" (a term widely adopted by white expeditionaries and settlers), the Crow and Arapaho referred to them as "Grass Lodges" or "People that use grass or bark for their houses or huts" (Swanton 1952:403, Trenholm and Carly 1964:3, Nabokov and Loendorf ibid.:174). The Kiowa also named the Shoshone after their grass lodges (Lowie 1909:183). The adoption of horses by many of the Northern Shoshone people resulted in a prevalent shift to the use of skin tipis, but other groups continued to use a variety of brush shelters; e.g., winter dwellings of the Boise/Weiser River Valley Shoshones of Idaho were "a sort of tipi made of rye grass" (Murphy and Murphy 1960:319). Lowie (ibid.) described small conical lodges that in summer were

> …simply walled with brush; but in the winter there was a thatching of sage- brush, or more commonly of dry pĭ'a cō'nip (spear-grass) whence the name cō'ni-gani, grass-lodges.

Structures of this sort have been described among the Northern and Western Shoshone. These were not always dwellings, although dwellings were quite similar. Lowie (1909:183) described the Hŭ'na-gani as

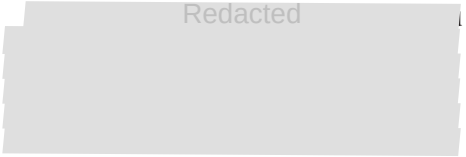
> …a rude conical structure of unexcoriated branches or trunks, much lower than a tipi and walled with brush or canvas. This serves as the menstrual hut (hŭ'na-gani). Sometimes the menstrual hut is dome- shaped, after the fashion of the sweat- lodges (nă'bacoko-gani), but still lower and smaller, just large enough for a single per- son to crawl in.

The mounted, buffalo-eating Bannock hunted throughout the Yellowstone Plateau, ranging through southeastern Utah, southern Montana and western Wyoming, during the late 18th and early 19th centuries. They used skin tipis (Madsen 1983:27), but they had built grass lodges earlier on (Murphy and Murphy 1940:319-320, Walker 1982:91), and built tipi-shaped brush lodges on into the early 20th century (see Figure 4.5, in Nabokov and Loendorf 2002:171). In

1832 a group of Bannock were described as living in "little huts of sage roots, which were yet so open and ill calculated to shield them from the extreme cold, that I could not conceive how they were able to endure such severe exposure" (Ferris 1940:189-190; Murphy and Murphy ibid.:325). As Lowie (1909:183) noted, Lewis and Clark had similarly described Bannock people as living in crude "small conical lodges of willow branches and brush"; the paucity of leather tipis was explained by the explorers as being due to a recent fight with the Atsina (Arapaho). However, similar structures were also described in the 1840s, and their continued use over so long a time period renders the Lewis and Clark opinion doubtful. Instead, it appears that such shelters were culturally typical, regardless of how inadequate they appeared to Euroamerican sensibilities. Indeed, the Bannock were known to some tribes, including the Crow, as "Bad Lodges" or "Worthless Lodges" (Marquis 1928:155).

Foundations of conical structures among the Northern Paiute and Shoshone seem to have been quite variable. Generalizing for the Northern Paiute of Oregon, northeastern California, and Nevada, Stewart (1941:377-378) distinguished between domed and conical structures, noting that the latter were used by some groups in winter and by others in summer; the foundation was always a tripod, but the three poles sometimes interlocked and sometimes were lashed together. On the other hand, Steward (1943:305) recorded conical winter houses with four foundation poles lashed together, for Lemhi, Fort Hall, Bannock, Grouse Creek and Promontory Point Shoshoni, and Skull Valley Gosiute. Simms (1989:10) documented a conical structure of piñon and juniper logs built on a four-pole foundation, in Shoshone territory in eastern Nevada.

Davis and Scott (1987) described two conical timber lodges in extreme southwestern Montana, incorporating boughs and bark slabs and constructed on tripod foundations with interlocking poles. The poles were lodgepole pine and Douglas fir. A local rancher indicated that the structures were occupied during the early 1900s by Northern (Lemhi) Shoshone people who hunted seasonally in the area. Off-reservation hunting was necessary at that time due to the government's failure to provide promised annuities and supplies to the Indians (Madsen 1979). Structures with more timber and less leaves or brush may also have been found among the Northern Shoshone, although early descriptions are often lacking in specificity. For instance, the Astoria party in 1812 met "Snakes" living in "wigwams" said to have been "made of pine branches" (Irving 1890:306, Murphy and Murphy 1960:301). Another "wickiup" site in Northern Shoshone territory was described by Polk (1979); these two structures were in Central Oregon, and consisted of juniper poles leaning against living juniper trees.



Umatilla (including Cayuse and Walla Walla). The Umatilla and their allies were, like the Nez Perce, Sahaptin- or related language speakers of the Plateau region. Cayuse people had joined with Chief Joseph during his traverse of Washington, Idaho, Yellowstone National Park and Montana (Ruby and Brown 1972:282-283). Architecture among these groups was similar to that of other Plateau tribes. "Mat lodges" were common (Suphan 1974:135); the Cayuse are said to have used these as summer dwellings, while semisubterranean houses covered with mud were used in winter. In 1812, Cayuse people were noted as having "hide-and-mat tipis" (Ruby and Brown ibid.:4, 27-28). Mat lodges were sometimes as much as 60 feet in length (Stern 1998a:396).

Yellowstone Sheepeaters (Tukudika). Related to both the Shoshone-Bannock and the Eastern Shoshone, the Tukudika are of particular interest to this study as a people who lived directly within present-day Yellowstone National Park. According to Shimkin (1947:247) Sheepeater territory included "Yellowstone Park, the Absaroka Range, and the upper slopes of the Wind River Mountains." Contrary to many published accounts claiming that they were exterminated by hostile tribes or by a smallpox epidemic, their descendants went to live at both Fort Hall and the Wind River Reservation after being relocated from Yellowstone National Park between 1871 and 1879 (Nabokov and Loendorf 2002:228-229). Åke Hultkrantz interviewed numbers of Sheepeater people at the Wind River Reservation during the 1940s and 1950s, and as recently as 1996 some Shoshone and Bannock people have identified themselves as having Sheepeater ancestry (ibid.:234-236). Not only have Sheepeaters been erroneously claimed to be extinct; they also have been wrongly stereotyped as being "pygmies", as timid and fearful, as paupers, and as renegades (ibid.:106-112).

Encounters with Sheepeaters date back to 1832 and 1834, and both genealogical and cultural data pertaining to them was recorded—but not published—by Hultkrantz and by Demitri Shimkin (Nabokov and Loendorf 2004:149-151). Knowledge of Sheepeater dwellings is based on the supposition—instigated by Superintendent Norris (1880, 1881) and accepted by Nabokov and Loendorf—that structural remains found within Yellowstone National Park were in fact made by Sheepeaters. William Baille-Grohman, a European who hunted in the Gros Ventre Mountains in the 1880s, reported having seen many Sheepeater lodges at or above timberline; he characterized them as consisting of stone piles with lean-to roofs of pine logs (Scott 1982:38).

A recent paper (Davis, Davis, Johnson and Dean n.d.) reviewing putative Sheepeater archaeological remains concluded that the northwestern Wyoming Sheepeaters are not clearly distinguishable—culturally or historically—from other pedestrian Northern Shoshoneans in central Idaho and southeastern Montana. Nonetheless, pertinent data strongly suggest that Sheepeater remains are characterized by "Intermountain Tradition" ceramics; steatite vessels; a preference for obsidian lithic tools; mountain sheep traps and ceremonial gear; and conical timber lodges (see Loendorf and Stone 76-89, 131-136, 137-145).

Three types of Sheepeater dwellings were noted by Nabokov and Loendorf (2004:181): conical timber lodges, pole lean-tos inside of caves, and cribbed log structures. Whereas Hughes (2000) dismissed the possibility that these structures may have been erected by Sheepeaters, on the basis that other Plains tribes also made similar dwellings, Nabokov and Loendorf took a closer look. They agreed with Hoffman (1961) and Dominick (1964) that, in terms of the size and the more tightly spaced poles, the conical timber lodges in Yellowstone National Park were most likely erected by Sheepeaters. Nabokov and Loendorf (2004:187) also note both historical and archaeological data (Ross 1855:240, Davis 1975) suggesting that Sheepeaters built lean-tos in caves, as winter residences. A game trap consisting of a cribbed-log corral and V-shaped wings, located in the Beaverhead National Forest south of Butte, Montana, is believed to have been constructed by Shoshone people, possibly Wyoming Tukudikas, during the first half of the nineteenth century (Keyser 1976).

Other Tribes

According to Voget (1943:70), conical timber lodges were built by "the Crow, Sioux, Cheyenne, Assiniboine Gros Ventre, Hidatsa, Mandan, Arikara, Arapaho, Shoshone, Flathead, and Nez Perce…" In the following section, references to conical timber lodges are noted among additional tribes not discussed above. Tribes said to have used "wickiups" are also identified along with notation of the specific type of structure involved. The use of conical timber structures is extensive and, as previously noted, historically complex. As before, these tribes are discussed in alphabetic order.

Apache. The term "wickiup" is often used in reference to Apache dwellings, even by Apache people themselves (see, for example, Gullette 1971, Cosay 1993, White Mountain Apache Tribe 1997, Baeza 1998). At least one

author (Arkush 1987:174) has erroneously assumed that the word originated with the **Apache.** The Apache-language word for the structures is kowa (Nabokov and Easton 1989:338). As previously explained, the term is instead Kickapoo in origin. Apache structures to which the term has been applied are predominantly dome-shaped (Reagan 1931a, Goodwin 1935, Schaeffer 1958, Tuohy 1960, Longacre and Ayres 1968). Conical timber structures are known, however, especially from the Fort Apache (White River) and San Carlos Reservations (Gifford 1941, Santee 1947, Gerald 1958). Gifford (1941:108) stated that White River people said conical wickiups were used in winter, but during the summer of 1935 most of the structures he observed were conical. Santee (1947:10) described the Fort Apachewickiup as being built of pine, juniper or mesquite poles with the tops lashed together, covered with grass or brush and covered with canvas or items of clothing.

Arikara. Ancestors of the Caddoan-speaking Arikara were located on tributaries of the Missouri River, in present-day Nebraska, during the late eighteenth century; as a result of smallpox epidemics, they moved progressively northward, eventually settling on North Dakota's Fort Berthold Reservation (Parks 2001:365, Schneider 2001). Traditional Arikara architecture featured earth lodges ranging from 40 to 60 feet in diameter, and housing about 20 people. These were pit houses similar to those built by other Missouri River tribes (Douglas 1931b, Daifuku 1952). When hunting buffalo away from the riverine villages, the Arikara lived in tipis (Wissler 1948:39), and they also built conical timber lodges. These were used in winter villages built along the riverine bottomlands (Parks 2001:368). According to Crow people, the Arikara preferred the "vertical pole, tipi-like structure" to horizontal log lodges, although they constructed both (Mulloy 1952:133; also see Voget 1977:8).

Hidatsa. The Siouan-speaking Hidatsa share ancestry with the Crow (Lowie 1918:272-275, Hoxie 1995:39-42). Their traditional territory centered on the upper Missouri River. Although ethnographic accounts indicate that the split between Crow and Hidatsa took place during the eighteenth century, linguistic analysis suggests that the process began in the fifteenth century and was gradual (Wood and Downer 1977). The Hidatsa were allied with the Mandan, and were in hostile relations with the Lakota and Assiniboine (Stewart 2001:329). In their riverine villages, the Hidatsa lived in earth lodges, which Lowie (1912:60) believed were derived from those of the Arikara. During the late summer buffalo hunts, people generally lived in tipis (Bowers 1965:53). In 1833, though, Maximilian had described "some old Indian hunting lodges, built, in a conical form, of dry timber. They had, doubtless, been left by the Manitaries [Hidatsa], who had come thus far on their hunting excursions. The lower part of the huts, or lodges, was covered with the bark of trees; the entrance was square, and bones were scattered in all directions" (Bushnell 1922:147).

Smaller, less well-built earth lodges were built at winter camps located in wooded bottomlands (Wilson 1934). The Hidatsa also built tipi-shaped shelters of poles, brush and earth (ibid.:411); these apparently were used in context of fall hunting and eagle-trapping camps (see Wilson 1928, Bowers 1950:206, Metcalf 1963:22, 52). Kidwell (1969:7-13) summarized the literature on eagle-trapping lodges, not only for the Hidatsa and Mandan, but for various other tribes in the Plains and elsewhere. These were called midi- atihe (Wilson 1934:411). Hidatsa timber lodges were first described by Maxmilian of Weid- Nuweid in 1833 and Washington Matthews in the 1870s (Matthews 1877:7-9, Allen 1983:5). Allen (ibid.:6-7) noted that the same sorts of structures were used in both hunting and eagle-trapping, but domed grass lodges were used as well as conical timber lodges. Timber lodges, too, had variations; if reuse was planned it was built on a four-pole standard similar to that of the earth lodges, but if not it was built by lashing four poles together in the manner of the tipis. Both types of timber lodge were covered with bark and earth, for warmth (Bowers ibid.:232-233, Allen ibid.:7). Possible Hidatsa (or Mandan) conical timber lodges have been recorded archaeologically (Will 1909, Stuart and Halverson 1969, Loendorf 1978), and a summary of both previous and new examination of lodge sites and eagle-trapping pits by Allen (ibid.) not only verifies ethnographic accounts but also identifies new variants. Notably, though, most timber lodges were of the temporary sort. According to Crow people, the Hidatsa preferred the "vertical pole, tipi-like structure" over horizontal log lodges, although they constructed both (Mulloy 1952:133; also see Voget 1977:8).

Mandan. Like the Hidatsa, the Mandan were Siouan speakers who lived in earth lodge villages along the Missouri River. Under pressure from hostile nomadic tribes, they consolidated around the confluence of the Missouri and Heart Rivers during the late eighteenth century. In the late nineteenth century, they joined with the Arikara and Hidatsa as the "Three Affiliated Tribes" of Fort Berthold Reservation in North Dakota (Wood and Irwin 2001:349-351). Their earth lodges were practically indistinguishable from those of the Hidatsa, and the two tribes shared hunting territories west of the Missouri. Fall hunting camps and eagle-trapping camps featured conical timber lodges, as more fully described under Hidatsa, above (also see Wood 1967). Bowers (1950:243) illustrates a Mandan conical timber lodge. According to Crow people, the Mandan preferred the "vertical pole, tipi-like structure" over horizontal log lodges, although they constructed both (Mulloy 1952:133; also see Voget 1977:8).

Navajo. Despite the close cultural and linguistic relationship between Apache and Navajo people, traditional Navajo architecture is distinctive and strikingly different. The sheer variety of Navajo hogans renders even a summary discussion excessive for present purposes; Corbett (1940:104) defined seven distinct types. Two types deserve mention here, although only one is of primary concern: these are the forked pole hogans and round or polygonal hogans with horizontal poles. The latter are reminiscent of the cribbed log structures in the GYE, while the former share many characteristics with conical timber lodges (see Sanfilippo 1998). Letherman (1855) may have been the first to describe the conical dwellings, which are believed to have been the earliest type of hogan (Jett and Spencer 1952:52). Wissler (1922:113) had suggested that these hogans were derived from conical brush shelters built on a foundation of forked poles; the comparison had been previously noted by Mindeleff (1898a:497-498), and a number of scholars would later comment on this—including Corbett (1940:97,101), Underhill (1956:7), and Brugge (1967:397-399). Tripod conical structures are found among both Canadian and Alaskan Athapaskan speakers (Goddard 1916:210, McKennan 1965:43).

Paiute/Shoshone.[13] Conical dwellings and other structures were widespread among Paiutes and the more southerly Western Shoshone, showing many similarities (and frequent differences) to structures among the Shoshone- Bannock. Lowie (ibid.) noted that conical dwellings resembling menstrual huts were used prior to adoption of the tipi:

> Summer houses consisted of branch struc- tures tied together and covered with leaves and grass to ward off the hot summer sun. Over the winter, the Newe [Western Sho- shone] settled down for several months. Winter houses, much more elaborate than summer camps, were built of wil- low shaped in a conical frame and covered with grass and skins to keep out the snow and wind (Crum 1994:8).

Conical structures were found among the Moapa Paiute of southeastern Nevada, and related people:

> …the Tö'+intesà+u had cedar houses (moŸáqani),—conical structures with a framework of cedar trees tied together at the top and a covering of cedarbark thick enough to keep out the rain; pieces of bark were tied together with cord. … There was a fireplace in the center and a smoke hole above it. The Moapa lacked cedars; ac- cordingly they substituted a framework of the same conical shape but consisting of any long poles, e.g. willows, and used dry sawápö brush for a covering. The height of these lodges was greater than a man's stature. The entrance faced away from the wind and was so low that one would stoop in entering (Lowie 1924:218-219; also see Watkins 1945).

In eastern Nevada—Western Shoshone territory according to Steward (1938:125)—a conical structure made of juniper logs was built with butt ends of the pole up (Simms 1989:10). This structural characteristic has been ethnographically documented among the Blackfeet (Grinnell 1962:252, see above). This

13. The Shoshone National Forest consults with the Northwestern Band of Shoshoni Tribes in Idaho and Utah.

Table 5-1.
Shoshone Linguistic Terms for Coinical and Comed Structures (Steward 1941)

Location	Conical structures	Domed structures
Egan Canyon	*Dookahni*	*navasukogadingunt (sweatlodge)*
Elko		*Paitoni*
Fish Lake Valley		*Musa*
Fish Springs		*Musa*
Hamilton	*Tohokahni*	
Ione Valley	*Tohni*	*nava düwa kahni (sweatlodge)*
Morey	*Tohni*	
Reese River	*Tohni*	*nava düwa kahni (sweatlodge)*
Ruby Valley	*kahni/to^{h}okahni*	*navasukogadingunt (sweatlodge)*
Smith Creek Valley	*Tohni*	
Snake River		*Paitohni*
Spring Valley	*Tohni*	

observation serves not to suggest Blackfeet expeditions into eastern Nevada, but rather to remind that variability of conical timber lodge construction techniques may have no bearing on tribal ethnicity of the builders.

Among the Pyramid Lake Paviotso and the Walker River Paiutes of Nevada, "wickiups" made of poles with tule coverings were rounded in floor plan but irregular in shape; Lowie (1924:220-221) characterized them as "neither distinctly conical nor beehive-like". Similarly, although more regular in shape, the Honey Lake Paiute of northeastern California built conical winter dwellings of willow or juniper poles, covered with tule thatch; these were sometimes, though not always, semi-subterranean (Riddell 1960:41-42). North of Honey Lake, the Surprise Valley Paiute had mat-covered conical winter homes called ka'ni; oral tradition held that they had previously lived in domed houses, but these were replaced by the conical structures, about which they learned from the Bannock many years in the past (Kelly 1932:104). Traditional houses were used well into the twentieth century at Fort Bidwell in the northern part of Surprise Valley; a superintendent of the Fort Bidwell Indian School wrote that:

> During the early years of the school, the difficulty of maintaining attendance was largely due to the parents' encouraging the children to remain home and in camps, or wickiups… ….I do not recall of any Indian family living in a house when I entered the service in 1911, as a temporary teacher. Indian wickiups were made out of wo- ven tule or mats, wrapped or thrown over small branches which were bound or tied together in an oval or round top. Some lived in tents of cotton manufacture (Gray n.d.:2, 3).

Details of conical winter house construction in western Nevada are provided in the notes of Willard Z Park (Fowler 1980). Similarly, in southern Nevada, some conical Paiute structures were constructed over pits (Harrington 1953). Among the Nevada Shoshone generally, Steward (1941:233) noted three distinct types of dwellings: gabled, as found at Lida, Death Valley, Ash Meadows and Owens Valley; conical pole structures with two-, three- and four-pole foundations; and domed. Spier (1928:180-181) had suggested that conical and domed dwellings were mere variants, but Steward rejected that notion because of functional and linguistic differentiations (see Table 3-5). Shoshone people also built horizontal log structures, but according to the Crow they preferred conical structures (Voget 1977:8).

In Utah, among the Kaibab Paiute:

> Their wickiups, about seven feet high, were merely a lot of cedar boughs, set around a three-quarter circle, forming a conical shelter, the opening towards the south. In front they had their fire, with a mealing-stone or two, and round about were their conical and other baskets, used for collecting grass seeds, piñon nuts, and similar vegetable food, which in addition to rabbits formed their principal subsistence (Lowie 1924:219).

Thatched or mat-covered conical lodges were found among Paiute people along the east side of California's Sierra Nevada, and extended west of the Sierra; they were found among the Death Valley Panamint, Saline Valley Panamint, and Owens Valley Paiute, and in the west among the Woponuch Mono, Entimbich Mono, and Kern River Tübatulabal (Driver 1937:66). Western Mono houses were often covered with slabs of bark, and similar structures were built by other California tribes including the Pomo, Wintu, Miwok and Maidu (Driver 1937:66, 113; Aginski 1941:403-405; Voegelin 1942:66; Nabokov and Easton 1989:305). "Wickiups" of various sorts continued to be preferred dwellings among some groups of Paiutes well into the twentieth century. Watkins (1945:13) described how an elderly woman convinced her daughter to build a "wickiup" because she believed she could not recover from a serious illness in "a white man's house." We have previously noted how a superintendent at Fort Bidwell Indian School in northeastern California complained about the Paiute preference for "wickiups."

Traditional Paiute architecture may have been a partial inspiration for a contemporary cultural center and museum at the Pyramid Lake Reservation northeast of Reno, Nevada. Krinsky (1996:167-168) commented that the structure, designed by Hopi architect Dennis Numkena, necessarily took "an original form …. Because the Paiutes had had only ephemeral buildings in the past". The structure, however, is shaped like "a broad cone", circular in plan. It is, in fact, a kani built of stone—an edifice not unlike the canvas- covered tule lodge at Pyramid Lake illustrated by Lowie (1924:207, Figure 6).

Pawnee. The homeland of the Caddoan- speaking Pawnee extended along the Missouri from the Kansas and Smoky Hill Rivers north to the Niobrara River in present-day Nebraska, and to the south on the Plains through present- day Oklahoma and into the upper Sabine and Colorado River drainages of Texas (Hyde 1951). Their western extent on the Plains was ill defined and undoubtedly opportunistic, but there is no indication that they were ever in northwestern Wyoming.

One account is suggestive of a conical timber lodge on the upper Platte River, but the description is vague on key details. It was stated that the "fortified Indian camp" was built of logs in "a circular form", with the wall about five feet high "and the top uncovered". Due to the location it was suggested that the structure was built by "Skeeree or Pawnee Loup Indians" (James 1905:252-253). As described, the structure sounds more like a stockade than a conical lodge. Voget (1977:8) considered the structure described by James to have been a horizontal log enclosure.

Ute.[14] Close linguistic kin to the Paiutes, Utes are also culturally similar—with the major exception that most of them adapted to equestrian life whereas their Paiute kinsmen did not. Indeed, Utes have been called "Paiutes with horses"— although this has been contentious, as some Utah Utes had few if any horses (Smith 1974:18-22; also see Jones 1954; Steward 1968, 1974; and Sučec 2007:70-71). The various Ute bands ranged widely throughout present-day Utah and Colorado, also traveling and raiding into northern Arizona and New Mexico (Callaway, Janetski and Stewart 1986).

On occasion, Utes went well beyond their usual territories. For example, in 1906 two White River Ute leaders, Appah and Red Cap, protested the opening of Uintah Valley Reservation in northeastern Utah to

14. The Shoshone National Forest consults with the Northern Ute Tribe.

homesteaders by fleeing to South Dakota. The men intended to ally themselves with Lakota and Crow people; specifically, they hoped to find land on the Pine Ridge Reservation where they could continue their traditional way of life. The party of two or three hundred Utes was intercepted by the Tenth Cavalry near Casper, Wyoming, and taken to Fort Meade, South Dakota, on the Cheyenne River Reservation; it briefly appeared they would be allowed to remain there, but they were returned to Utah in 1908 (Hodge 1907-1910 2:876, O'Neil 1968, Washburn 1973:II:780-787, Pettit 1990:136-138). Also, parties of Ute hunters regularly ranged beyond the traditional band territories, into present-day southern Wyoming, western Kansas and Oklahoma, and northernmost Texas (Marsh 1982:20, Pettit 1990:vi).

Ute shelters were generally similar to those of the Paiute, although there were geographical variations. Utes in Colorado were noted as having tipis in 1720 (Thomas 1935:171). They were using tipis as well as brush shelters in 1776 when they were visited by the Escalante expedition (Smith 1974:29). Brush shelters were still in use in the early twentieth century (Lowie 1924:220). Densmore (1922:15) stated that brush shelters were used by people too poor to have tipis, but she added that the brush shelters were common during the summer; Reagan (1931b:410) made the same claim, perhaps relying on Densmore as the source of his information, but without having cited her.

Two types of brush shelter occurred. Domed willow houses were used year-around by Western Utes, whereas the Weeminuch were the only Eastern Ute band to build them, and they used them only in summer. Conical brush structures were also used, but only among the Eastern bands (Callaway, Janetski and Stewart 1986:348-350; their Figure 9 illustrates one that was the home of Chief Tavaputs). Schmitt and Brown (1948:286) provided a photograph by W. H. Jackson, circa 1870, showing a Ute conical pole structure at Los Pinos, Colorado. Pettit (1990:16) included photographs of both conical brush shelters and canvas-covered tipis built around living juniper trees. Baker (2003:6) referred to shelters built around living trees as the "…most ephemeral and simple form of … arboreally associated wickiups." Smith (1974:35-36) provided details on construction of conical brush shelters or "wickiups"; they were built on a four-pole foundation with the poles tied together, and after the addition of more poles (12-15) the structure was layered with brush and tules, which were sometimes woven into mats. Cedar (juniper) bark provided an alternative covering for the structures. Some conical structures were built entirely of logs (Johnson 1972).

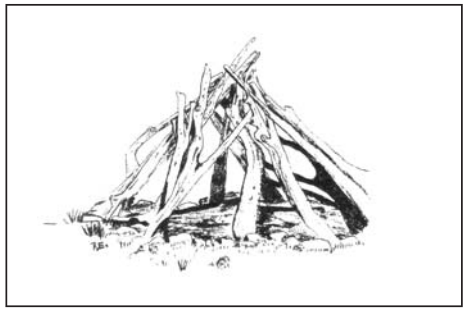


Figure 5-1. Washoe Galesdangle (from *Tuohy 1969:8*).

Ute tipis, like their conical brush shelters, were built with a four-pole foundation (Smith ibid.:37). Elk hides were more commonly used among the westernmost bands of Utes, while the easternmost bands used buffalo hides. Some bands of Utes claimed that hide-covered tipis post-dated contact with the Americans (Callaway, Janetski and Stewart 1986:348). Canvas replaced hides during the nineteenth century (Pettit 1990:18). Faunal analysis of remains at several presumably Ute "wickiup" sites in western Colorado has resulted in a hypothesis that the structures indicate cool/ cold season usage, primarily within the lower piñon-juniper vegetal zone (Cater 2003). This is consistent with ethnographic information from a Jicarilla Apache consultant, examining wickiup structures in the San Luis Valley of Colorado (territory shared with Southern Ute people); he indicated that wickiups were used in the fall and winter, in piñon-juniper woodland (White 2003).

Washoe. The linguistically distinct Washoe (D'Azevedo 1986), whose traditional territory lies around Lake Tahoe at the western edge of the Great Basin, built a tripod-foundation brush shelter known as a galesdangle (Downs 1966:39, Tuohy 1969:5, 7, 8). Downs described this as a winter house "made of tree limbs leaning together to form a peak with a door in one end." The structures were sometimes covered with earth, or thatched with tule.

Summary of tribal distribution of conical timber lodges

Conical timber lodges are documented for many of the Plains, Plateau, and Great Basin tribes associated with the Greater Yellowstone Ecosystem. These include the ArapahoAssiniboine, Blackfeet, Cheyenne, Chippewa/ Ojibwa, Coeur d'Alene, Comanche, Crow, Eastern Shoshone, Gros Ventre, Nez Perce, Salish and Kootenai, Shoshone-Bannock, and the Yellowstone Sheepeaters. The Colville and Umatilla built mat-covered conical lodges. The literature search also revealed that the Kiowas are not known to have built conical timbered lodges.

Potentially distinguishing characteristics on a tribal basis include heavy logs around the base and an angled, covered entryway (Blackfeet); poles placed with butt ends up (Blackfeet); stone slabs around the base (Crow); a jutting branch for holding a cooking vessel and/ or fences surrounding the structure (Lakota). Three- and four-pole foundations are well documented for tipis but seldom mentioned in connection with conical timber lodges; it is possible that the distinction is irrelevant to Tribal affiliation, being opportunistic or a matter of personal preference rather than cultural. Three-pole foundations for conical timber lodges have been recorded among various Paiute groups, Northern Shoshone and Plains Cree, while four-pole foundations are documented among Blackfeet, Crow, Hidatsa, certain Paiute and Shoshone groups, and Utes.

Chapter Six

Discussion

Analysis of conical timber lodge sites

Perhaps the most surprising thing about CTLs is just how difficult it is to determine what is and what is not a CTL—this, even after our refinement of the term "wickiup" above. For this reason, we have reviewed all of the timber structures within the jurisdictions, not just the unambiguous CTLs. Several different aspects of ambiguity deserve mention, and elaboration. (1) One of the biggest problems is the generally undeveloped hypothesis of "natural thinning." Although this undoubtedly occurs, the notion has been used uncritically to dismiss certain sites as having other than an anthropogenic origin. Archaeologists need to work closely with foresters, to determine objective ways of determining what is, and is not, the result of natural thinning. (2) The absence of historic references to certain sites needs to be carefully examined. Just because Martindale, Replogle and Haines failed to mention a site does not necessarily mean that the site did not exist at the time of their observations. Their data should be subject to the same scrutiny as any other archaeological survey—unless we know that a given area was systematically searched, we cannot reliably say that a particular site was not present then. (3) The process of CTL deterioration is poorly documented. When a CTL that was previously documented is found to have collapsed, the progression

is relatively clear. But what happens with subsequent weathering and deterioration? What are the characteristics that might establish a pile of poorly preserved poles to have been a CTL, rather than something else?

At the onset of this study, it was hoped that various characteristics of CTLs might allow prediction of areas where additional CTL sites might be found. This proved to be impossible, both as a result of a rather small sample of sites and because data relevant to a predictive model are often missing from site forms. Elevation is one of the most consistently reported variables, but CTLs included in Table 4-1 occur lower than 6010' (one is simply said to be between 5000' and 6000') and as high as 10,400'. A four- to five-thousand foot elevation spread clearly provides no predictive value. Landforms on which CTLs occur are highly variable, from narrow canyons to hilltops and pass summits. The various jurisdictions have varying definitions of old growth timber, and the available map is of a scale such that it is not possible to determine whether or not any particular CTL site is in old growth or not. None of the available site forms addressed this factor. Furthermore, regardless of whether site surroundings now constitute old growth, there is no apparent way to determine whether this was the case when the structure was erected (see discussion of 48FR5347, Lower Dinwoodie Wickiup, above for an example of significant vegetation changes over the years). Site forms are often vague about vistas (open or sheltered). This is also not a characteristic upon which purposive sampling might be based, as the information available on the presence of open or sheltered vistas from acknowledged wickiup sites is too variable for interpretation. Site forms often simply identify the nearest water (e.g., "Ross Lake") without indicating the distance to the water. Successful predictive modeling would require a sample of at least a few hundred sites, with clearly defined and consistently applied locational variables recorded for each of them.

Archaeologists have occasionally dismissed "wickiup" sites as having scant research value, due to the typical paucity of artifactual material found in and around the structures. This echoes early interpretations of tipi ring sites. There are thousands of such sites all through the Plains, from Edmondton, Canada, south into New Mexico (Vestal 1957:3-4) and even into southern Texas and Arizona (Seymour 2004). Mulloy (1954), because he found few artifacts in association with so-called "tipi rings", doubted their domestic function; he considered them "problematic" and perhaps "ceremonial" (Mulloy 1958a). Kehoe (1958, 1960) produced a convincing argument that tipi rings indeed resulted from stones used to weight down the edges of tipi coverings, but he has been criticized because his data came only from Blackfeet observations.[1] Hoffman (1961) defined fourteen types of stone circles, and discussed potential functions; Malouf (1961:381) confirmed the variability of the circles, but believed that most (except for very large circles, and those with spokes) were domestic rather than ceremonial. Frison (1983) showed how a variety of domestic structures could result in archaeological stone circles. Kehoe (1983) turned out an even more exhaustive treatment of stone circles, concluding that they are indeed tipi rings but that many questions about them remain to be answered.

Because of the paucity of artifacts typically found in association with tipi rings, the features have been considered to have little research value. Shifting the frame of analysis, however, can produce new approaches. Oetelaar (2000) urged a shift away from a narrowly functional/ economic frame of analysis, for tipi rings that do produce artifacts; he commented that, in addition to their practical functions, tipis are "cultural constructs which simultaneously serve the symbolic, structural, proxemic and ergonomic needs of the occupants". Oetelaar suggested that, based on ethnographic descriptions of spatial uses inside of tipis, it might be possible for archaeologists to identify features and structural characteristics such as placement of entrances (which can have both practical and cosmological connotations), positioning of interior hearths (whether in the true center of the tipi, or nearer the entrance), presence or absence of a "family altar" or "smudge hearth"

1. Other ethnographic documentation exists. Bushnell (1922:20-21) had documented Plains Cree tipi rings, based on observations by the Hind expedition of 1858; he noted also that when stones were unavailable, tipi margins were weighted with sod. Fletcher and LaFlesche (1911) and Newman (1962) document that Omaha tipis were weighted down with stones. Frison (1991:97) ha identified tipi rings in the northern Bighorn Mountains that he believes were Crow. Seymour (2004) documents Apache tipi rings in the Hueco Mountains of southern Texas.

(perhaps evidenced by a cleared space or flat stone near the fireplace), and sleeping platforms or backrests.

Dooley (2004) provided a literature review exploring recent innovations in tipi ring research. A key shift is away from chronologically-distinct deposits (which Dooley refers to as "Pompeii- type assemblages") and toward "time-averaged deposits" (Binford 1983, Stern 1994). The latter result from repetitive re-use of an area. A secondary shift is toward "non-site methods"—a seemingly absurd proposition to anyone trained in 'classical' American archaeological methods, which focus almost exclusively on sites as the primary research setting. Non-site methods shift attention away from spatially-restricted occupation or activity areas, focusing instead on settlement systems, land use, and landscapes. Dooley notes that stone circles are difficult to date, chronometrically; density of features appears to be the best indicator of sequential occupation of sites. Spatially- associated features may not be contemporaneous; specific features or places may have been used by different groups at different times, for different purposes; and dating techniques are not sufficiently fine-grained to distinguish between different occupations or use episodes of a feature or place. Following Jochim (1976), Dooley notes that hunter-gatherer camps are located according to considerations of proximity to resources, and ability to access resources (including being able to see game animals). Refinement of this premise is provided by Ebert and Kohler (1988:128), who consider three aspects of ecosystem variability: (1) economic intensification; (2) spatial heterogeneity of resources; and (3) temporary predictability of resources. Specifically, Dooley looked at proximity to and seasonal availability of water; proximity and seasonality of food resources, such as bison; availability of firewood and buffalo chips; and viewsheds (which allow seeing needed resources, as well as monitoring for enemies). (Interviews with tribal and band members and representatives for this report confirm the likelihood of such an approach being used in practice in the GYE.) Analytic complications are posed by environmental changes over time, and by differing cultural considerations in use of an area by different groups of people. The extent of siltation at sites was used for relative dating purposes; lichenometry (measuring the extent of lichen accumulation) also provided relative dating; "rock robbing" (recycling) (Deaver 1989) indicates repetitive reuse of features. Details are not pertinent here, but Dooley's analysis showed a correlation between resource predictability and persistent use of areas. The strongest correlations were with proximity to wooded areas and areas with slightly higher elevations; proximity to water was less important.

Simms (1989) provides innovative analytic leads in the context of examining Great Basin "wickiup" sites. Importantly, instead of accepting paucity of artifacts as indicative of little or no research potential, Simms considers variability in artifact density as an indicator of behavior. At the Bustos site, absence of interior hearths and absence of interior artifacts, low density of artifacts in areas external to the structures, combined with repetitively-used external hearths and roasting pits (containing piñon cone and nut hull fragments), plus evidence of aboriginally cut juniper stumps, suggested to Simms that the site was visited repetitively for short periods of time— probably in the fall, for gathering of piñon nuts.

These analytic approaches would seem to have significant promise for research on conical timber lodge sites. A pertinent research question would be whether usage of particular conical timber lodges was short-term (as implied by the "war lodge" characterization) or longer-term (implying certain resource-extraction scenarios, or domestic usage). Simms (along with other researchers he cites) provides analytic leads for addressing this question. Low artifact density may indicate shorter-term use of a site or feature; alternatively, it may reflect longer-term use, with "secondary disposal" or removal of refuse from the immediate vicinity of the shelter. Increasing artifact diversity indicates multiple activities and longer-term usage, although it is important that areas well removed from the shelter be searched for artifacts insofar as activities associated with the shelter may have taken place away from the shelter itself. Seasonality of usage is important; colder weather requires more substantial shelters. Clear evidence (e.g., multiple layers of charcoal in hearths) or subtle clues may indicate reuse of the site; at the Bustos site, numerous metates were found, but manos were absent—apparently having been scavenged. Sites along trails have relatively few artifacts, suggesting rapid movement through the area; on the other hand, sites in protected locations have more artifacts, indicating longer-term usage (also see Loendorf

and Weston 1983). Finally, it is important to note that the apparent paucity of artifacts at many "wickiup" sites may be more illusory than real; this is demonstrated by sites 48FR5018, Burnt Wickiup, and 48PA2642, Boulder Ridge Conical Lodge, discussed above. Heavy ground cover of duff may have prevented artifacts from being observed at some sites; archaeological preconceptions of "wickiup" sites may be another factor involved.

Threats to Conical Timber Lodges

Conical timber lodges and similar structures are threatened by a variety of conditions. Fire (often started by lightning) is especially dangerous to preservation of these structures (Frison n.d. 1984?:2-3, Johnson et al. 1988; Johnson, Conner and Feyhl 1991; Frey 2002; Cox 2003:2; White 2003, Greubel 2005). Rotting is the fate of others, especially if constructed with softer woods such as balsam or spruce (Christensen 1963a, Conner 1974:34, Conner 1989:5-6). Wind damage has also been recorded (Hamilton 1973), and higher elevation sites are particularly endangered by the weight of snowpacks (Kingsbury 1986:18). Vandalism is responsible for the destruction of many others. Ranchers and other settlers salvaged poles from the structures, for various uses (Conner 1974:24, 34-35, Conner and Halverson 1969:5). Logging can damage or destroy "wickiups", as can other land uses such as oil and gas exploration. Falling trees are responsible for some damage to wickiups (Davis and Scott 1987:86). Some "wickiups" have been ruined by flooding as a result of ice break-ups (Allen 1983:16) or beaver dam construction (Conner 1966d), and damage by cattle or deer poses another threat (Johnson 1972:93, Cox 2003:2). Bison and elk may also damage the structures. Finally, it is appropriate to note Steven Baker's (1995:1) contention that ephemeral sites are compromised by a "lack of professional recognition and attention."

TCPs and Research Potential

Archaeologists who have recorded "wickiup" sites in context of federal undertakings regularly recommend eligibility of the properties for listing on the National Register of Historic Places (see, for example, Kingsbury 1986, and sites recorded by Bridger-Teton National Forest archaeologists)— usually under criterion (d), research value. This is an important step in providing for administrative protection of the resources. CTLs may also qualify as Traditional Cultural Properties (TCPs), but supporting data for CTLs in the GYE are not presently available; it is important to recognize that the absence of data (such as, e.g., observation of tobacco offerings being left at the sites) is not the same as having negative data. It might be noted that some CTLs qualify as sacred sites, e.g., eagle trapping lodges when an eagle hunting bundle or buffalo skull altar was placed inside (Beckes and Keyser 1982:202), or if used for burial (see Erdoes and Ortiz 1984:204).[2] Of the tribal members and representatives interviewed for this report, all did not consider "wickiup" sites as sacred and/or potentially eligible as TCPs.

Defining the archaeological research potential of conical timber lodge sites is outside the scope of the present study, yet a few comments seem justified. A common preoccupation of scholars concerned with conical timber lodges has been their ethnographic affiliation, and application of the direct historical method has often been couched in these terms. Are conical timber lodges in the greater Yellowstone area predominantly, or substantially, connected with Sheepeater Shoshones? Or were several tribal groups, also perhaps including Blackfeet and Crow, responsible for the structures? Ethnographic knowledge of conical timber lodges, their construction techniques and their usages, is likely to persist among a number of Plains tribes. It is clear from interviews conducted for this report that tribal and band members and representatives do hold information about the construction, uses, and meaning of conical timber lodges in the GYE. Recordation of this information is important when possible, both for intrinsic value of the data and for insights that the data can shed on other questions including resource management. It is important to note, however, that due to the number of people traveling through the area and using CTLs, ethnographic affiliation of CTLs in the GYE is difficult if not nearly impossible to conclude by physical evidence solely.

Other research questions might be fruitfully studied. There is a fairly considerable body of literature focusing on household populations at archaeological sites. Careful study of extant conical timber lodges—along with the securing of additional ethnographic data—might illuminate questions that have been raised. Naroll (1962) had hypothesized that a habitation's floor area could directly predict the number of household members; Cook and Heizer (1968) and Wedel (1979) developed more sophisticated models, but these were applied as rule-of-thumb guidelines which produced unrealistic results—e.g., lines of regression predicted relatively large household populations with zero space (see Blakeslee 1989:4). Using the number of beds in a single- room dwelling ties population to room perimeter rather than area, and this begins to take cultural variables into account rather than assuming cross-cultural uniformity in spatial utilization. Of course, archaeological identification of beds is extremely challenging if not outright impossible—and in the case of conical timber lodges, significant differences should be expected according to hypothesized functions of the structures. Thus, "war lodges" would presumably have housed many more individuals (especially if they slept sitting up, to enhance alertness) than domiciles of comparable size. Seasonal usage of shelters might also result in different household populations: people would presumably be more comfortable with fewer individuals in a small shelter in the summer, than in the winter.

2. Deaver (1992:3-24, 3-25) discusses this in some detail.

Chapter Seven

Management Recommendations

Documentation and Monitoring

Professional recommendations regarding "wickiup" sites are almost universal in putting emphasis on the need for detailed documentation of the structures and their surroundings (Frison n.d. 1984?:7, Gruebel 2005, Martin 2005, Ott 2005). Thorough consideration of pertinent structural and environmental aspects of the sites is of crucial importance in this regard. Table 4-1 provides a good indication of the uneven nature of past recordation of CTL sites. Brief perusal of the table reveals that many pertinent characteristics have been passed over without comment or with inadequate information. Specifically, archaeologists have often been vague about the type of poles used in construction; this probably is a matter of ignorance (e.g., when the site form comments is "fir or pine" or "conifer"). The number of poles in a CTL is often left uncounted, or some qualitative term such as "numerous" is given). The number of foundation poles is seldom noted; in Table 4-1, only 3 of 19 free-standing CTLs (15.8%) have notations regarding foundation. Entrance direction is more often than not ignored; 5 of 23 CTLs (including lean-tos) (21.7%) have the entrance direction specified. Dimensions of CTLs are frequently omitted from site forms, and whether the structure has an open or sheltered vista often must be extrapolated from other information. The absence of hearths seems seldom noted; presence, however, seems usually

mentioned. Also worth recordation are surveys of surrounding structures and sites, especially those located near high ridges and whitebark pine stands. Through both tribal representative interviews and ethnographic research, it is clear that CTLs may have been built by guardians who stayed while other members fasted on high ridges or collected pine nuts. When possible, tribal cultural staff should be involved in the survey, documentation, and interpretation of CTLs in the GYE.

A comprehensive CTL feature form has been developed for the specifc structures and landscapes of the GYE (see Appendix C). The feature form, which was largely based on the Colorado Culture Resource Inventory Project, has been modified to incorporate the various feature characteristics, tribal input, and photo documentation standards that reflect the specific nature of CTLs in the GYE.

Interpretation

The preponderance of unique CTLs in the GYE suggests that interpretation of such cultural sites are prime for interpretation to the general public. Such cultural sites provide additional information to the corpus of GYE knowledge about the long-standing and continued Native American presence and utilization of the landscape. Tribal representatives interviewed for this report echo this recommendation and support any interpretive endeavors related to CTLs, but caution that such endeavors should not reveal specific site locations to the general public.

GYE CTL information could be incorporated into existing jurisdictional media as well as new media (e.g., for wayside signage, museum exhibits, brochures, intrepretive talks, and video). In addition, tribal representatives suggested that one CTL be preserved for interpretion. YELL's Gardiner Road Wickiup is an ideal CTL for preservation considering its realtively easy accessibility (and lack of cultural sensitivity due to questionable authenticty). Tribal representatives expressed a keen interest in being involved in the production and implementation of any interpretion about CTLs in the GYE.

Protection

Considering the ephemeral nature of CTLs in general and the specific climate and landscapes of the GYE, it is unreasonable and even undesirable to recommend the complete protection of CTLs in the GYE. Threats to CTLs are numerous (see "Threats to Conical Timber Lodges" in Chapter 6) and it is expected that such structures will eventually succumb to natural processes and disappear from the landscape. However, measures should be taken on behalf of respective jurisdications to prevent any unnatural deterioration or vandalism of CTLs in the GYE.

Measures can include sharing CTL geospatial information across and within land jurisdictions so that respective park and forest activities and planning avoid disturbing CTLs on the landscape. With the exception of any CTLs preserved for interepreation, it is also of utmost importance to keep CTL locations confidential from the general public. Informing and educating park and forest employees about the existence and cultural importance of CTLs within each jurisdiction also serves to protect the structures from unintentional destruction.

Fencing of sites, and posting of warning signs, may be effective in preventing certain sorts of damage, especially in areas easily accessed by the public. Specific measures should be developed for specific sites, however; threats to particular properties are peculiar to those properties and generalized measures are less likely to be effective. Multiple measures are likely to be needed in order to optimize site protection. Kingsbury (1986) provides a good example of recommendations tailored to specific threats to conical timber lodges. For instance, placement of rebar datum points was recommended for sites particularly susceptible to fire damage or deterioration through natural weathering; antiquity sign placement was recommended for sites with ready public access; avoidance by oil and gas roads was recommended in exploration areas; archaeological monitoring was recommended for a site where construction activities were being planned; and additional site and feature description was recommended for sites with inadequate existing documentation (Kingsbury 1986:16-20).

Coordinated Management of CTLs

Considering current staffing and funding, it is clear that formal and coordinated management of CTLs across the various jurisdictions of the GYE is neither feasible nor particularly desirable. Notwithstanding, it is prudent to share information regarding CTLs across the various jurisdications of the GYE. Utilization of the CTL feature site form (Appendix C) will greatly aid in the uniformity of data collection and site recordation standards across GYE parks and forests. Storing GYE CTL information in one database could also provide additional security for site locations and a comprehensive source for future study on CTLs in the GYE.

Continued contact with other individuals and organizations who manage CTLs across the nation is also recommended as it encourages the free transfer of new ways to manage and understand the significance of such structures on the landscape. Such information can only benefit CTL resources and future management decisions.

Further Tribal Relations

Tribal and band representatives and members expressed a great deal of interest in the CTLs of the GYE. Of those interviewed for this report, all were encouraged by their involvement in the report and expressed desire to be continually informed about and involved in future management decisions regarding the structures and their surrounds.

In addition, it is likely that various tribal and band members will seek to perform ceremonies and other cultural activities at CTL sites. In such circumstances, coordination with and facilitation by each respective land jurisdiction is imperative to ensure that tribal members can locate and access each site. If time, staffing, and funding are available, hosting a meeting of all GYE tribes and bands to visit various CTLs in order to exchange stories and cultural information would also be valuable in learning more about the significance of CTLs to associated tribes and bands.

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APPENDIX A

Scopes of Work: Phases 1-3

Final Scope of Work (9/29/04) - PHASE ONE
Ethnographic Research on Wickiups within Bridger-Teton National Forest, Grand Teton National Park, and Yellowstone National Park
(2004-2005)

Literature Search Only, No Travel

Submitted to Rosemary Sučec
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August 2004

Overview

This Scope of Work is predicated on a successful proposal by Applied Cultural Dynamics (dated 8/25/04) which led to a contract award (P158040592, September 7 2004). The Scope of Work has been put into final form following a conference call on September 27, 2004, involving David White, Rosemary Sučec, Merry Haydon, and Jacquelin St. Clair.

The Scope of Work begins by discussing the background of Bridger-Teton National Forest, Grand Teton National Park and Yellowstone National Park, and management needs related to the proposal. It briefly notes the proposer's understanding of deliverables requested by the DOI/USDA. A section on the ethics of fieldwork was included in the proposal, but it is deleted here as it pertained exclusively to consultations with Tribal organizations and members. A detailed discussion of proposed methodology for carrying out the necessary studies is provided. Important subsections of the methodology discussion focus on Native American ethnography and different sources of information pertinent to study goals. Next, theoretical orientation is briefly noted, along with the proposer's understanding of peoples to be referenced in the study. Qualifications of the proposer's organization and personnel are noted. The proposed budget is provided separately.

Background

The Bridger-Teton National Forest (BRTE) consists of 3.4 million acres adjacent to the Grand Teton National Park and the National Elk Refuge; these lands have been under federal protection since the late nineteenth century. Grand Teton National Park (GRTE), established by Congress in 1929, was combined with Jackson Hole National Monument in 1950 to include more than 300,000 acres. Yellowstone National Park (YELL), the nation's first national park, was established in 1872, including 2.2 million acres. The study area as a whole incorporates nearly 6 million acres of land, while the Greater Yellowstone Ecosystem includes 18 to 20 million acres. Management of lands within the national parks and national forest has focused primarily on protection of unique geological features and wildlife. Archaeological sites have received a fair amount of study but ethnographic considerations have been a relatively recent consideration.

Wickiup sites comprise an interesting sort of resource, being simultaneously archaeological and ethnographic in nature; the opportunity exists to provide methodology for developing objectively defined management techniques that incorporate subjective evaluation criteria.

Ethnographic information generally, and information on Native American resource usage in particular, is important in order for NPS to comply with various policies as described in NPS-28. The USFS is also in need of ethnographic information for their management purposes, and this is potentially more urgent for USFS than for NPS given the USFS mandate for multiple-use management of lands.

An NPS Solicitation dated July 12, 2004 (RFQ-Q1580040592) reflects a goal to produce a study on wickiups, both known and potentially occurring, within Bridger-Teton National Forest, Grand Teton National Park and Yellowstone National Forest. Such a report will facilitate park and forest planning, environmental assessments, and other resource-related management decisions, and will contribute substantially toward agency obligations to consult with American Indian tribes having known affiliation with lands administered by these agencies.

The proposal upon which this Scope of Work is based addressed the subject Request for Proposal (RRP), with modifications as suggested by an NPS letter (Patty Oestreich to David White, August 11, 2004). To briefly summarize, the modification letter requests three alternatives: (A) a scope and budget to conduct a literature search only, and prepare a report thereon; (B) a scope and budget to conduct a literature search and consult with three Tribes only, and preparea report thereon; and (C) a scope and budget to conduct a literature search and consult with five Tribes only, and prepare a report thereon. This final Scope of Work is based on Alternative A, the literature search only, and a report thereon.

Deliverables

Solicitation RFQ-Q1580040592 (modified by NPS letter of August 11, 2004) requests various work products. The modification letter suggested three alternatives; only Alternative A is discussed here. It includes:

1. Write a report on wickiups within the study area (lands of BRTE, GRTE, and YELL), to include results of investigations further de- tailed below;

2. Consult with agency cultural resource man- agement personnel, as identified in the RFP and as may be further suggested through contact with those individuals;

3. Consult with a number of knowledgeable in- dividuals, as identified in the RFP and as may be further suggested through contact with those individuals;

4. Review various existing published and unpub- lished information, as identified in the RFP and as may be further identified by searching regionally appropriate data repositories;

5. Provide an inventory of known wickiups within and near BRTE, GRTE and YELL, with maps, photographs discovered during research, site forms and other written descrip- tions, environmental contextual information, names for wickiups in English and native lan- guages, Tribal affiliation with wickiups and criteria for evaluating tribal affiliation, as- sessment of traditional uses of wickiups and evaluation of their significance both in terms of the National Register of Historic Places (i.e., through provision of an historic context) and broader general criteria as may be cultur- ally meaningful to the affiliated Tribes, and discussion of management options from both federal agency and Tribal perspectives.

The study will achieve broad results through cost-effective research methodology. No travel will be undertaken during the authorized study phase, and consultation with American Indian Tribal members will be deferred until such time as additional funding may become available. Consultation with agency personnel and knowledgeable EuroAmerican individuals will be initiated, and continued whenever possible, by means of telephone conversations, email and surface mail. Pertinent information will be sought for all areas within the Greater Yellowstone Ecosystem, although in-depth study will be limited to the study area as identified in the RFP.

Published and unpublished information will be sought either through locally-available resources (Zimmerman Library, the Southwest Research Center and the Clark Field Archive of the University of New Mexico, Albuquerque, and the nationally-known library of the Laboratory of Anthropology in Santa Fe), through interlibrary loan (the Laboratory of Anthropology has exceptional success in securing obscure materials in this manner), from the knowledgeable Euroamerican individuals consulted by telephone, and from agency personnel who have copies of 'gray literature' documents. Explorers' journals will be examined, as these often include pertinent information that may be overlooked in published anthropological literature. Visits to regional repositories with materials otherwise unavailable will be deferred until such time as additional funding may become available, but reasonable attempts will be made to identify repositories that may have such materials.

The literature search will include attention to the full range of Native American Tribes currently being consulted by BRTE-GRTE-YELL on archaeological and ethnographic concerns, in order to reliably identify those American Indian Tribes with the greatest potential connection to the wickiups. This will guide future consultations, in the event that additional funding becomes available. If and when there is a decision to proceed with consultation, this will be initiated as an official government-to-government notification by the appropriate YELL personnel (presumably the Contracting Officer's Technical Representative, COTR), with assistance from the contractor if authorized to provide such assistance.

Alternative A provides for a videotape to be provided by federal representatives, showing the wickiup sites. It is intended that this will be provided to the tribes at agency expense, once a decision is made to proceed with tribal consultation. The videotape is intended to help Tribes in determining whether site visits to the wickiups would be desirable, and this in turn would help BRTE, GRTE and YELL in determining appropriate levels of funding for further work.

The Wickiup Study Report will be formatted to include concise ethnographic summaries of cultural groups and their use of wickiups—both past and present. The extent of such information will be somewhat limited under Alternative A, as it is anticipated that much of this information will be unavailable from published and unpublished literature. The report will also include overview sections, comparing and contrasting usage and importance of wickiups to the various Tribes. Alternative A will produce no Tribal management recommendations.

The report will include evaluation of data gaps, and recommendations on appropriate future research, especially as regards intensive interviews and/or field visits. It will be written in language understandable to an educated lay public, as well to specialists in fields such as history and anthropology. Sensitive information, as identified by Tribal consultants, will be included in confidential appendices or otherwise dealt with according to Tribal recommendation.

The Principal Investigator (PI) will carry out the literature review, prepare the draft and final reports, and carry out the authorized consultations. The four-chapter format suggested in the RFP, plus references cited and appendices, will be followed unless changes are approved in advance by the COTR. A minimal index will be provided if this feature of Word performs as well as the 'help' manual suggests. Appendices will include any confidential material, material provided primarily for administrative or management purposes, and extensive documentation material that does not belong in the body of the report.

The report will be in American Anthropologist format, with no oversized material; five copies of the draft report will be submitted (identified in a header or footer as DRAFT) and distributed as suggested in the RFP for NPS and USFS review. The final report, addressing NPS/USFS comments on the draft, will be submitted with one initial approval copy, to be followed by three unbound camera-ready originals and ten (10) bound copies. The final report will also be submitted electronically in MS Word 2000 and, should the Contracting Officer's Technical Representative (COTR) so desire, also in pdf format.

Proposed Methodology

The proposed work is organized on the basis of what Finan and van Willigen call "stepwise research" (1991, "The Pursuit of Social Knowledge: Methodology and the Practice of Anthropology"). In other words,

related components of work are carried out in discrete increments in order to avoid duplication of effort.

Alternative A. The proposed schedule for Alternative A includes one data collection phase and a research design refinement phase, one analysis phase, and one report preparation phase. The schedule is shown in terms of months from startup for a total of 12 months of study resulting in a final report. It is assumed, following the RFP modification letter of August 11, 2004, that this will probably be from October 1, 2004, until the end of September, 2005. Work is not proposed to begin until fiscal year 2005.

1. Data Collection Phase (Literature/Archival Study – Months 1-6). Research will begin upon authorization. Within one month of authorization, a telephone consultation (conference call) will be held involving key personnel at BRTE, GRTE and YELL, in- cluding the COTR and as many of the cul- tural resource management personnel as are available, to resolve any necessary details on the scope of work and to secure appropriate documentation from the parks and national forest. Any agency individuals not availableat the time of this conference call will be con- tacted as soon as possible thereafter. Phase 1 of data collection will consist of literature and archival work. The PI will secure perti- nent data from park and forest files, begin- ning at the time of the first meeting. Much of the initial literature review will be conducted at the Laboratory of Anthropology library in Santa Fe, and the Zimmerman Library and associated libraries in Albuquerque NM. Interlibrary loans through the Laboratory of Anthropology will be used to minimize the need for travel to distant repositories. A progress report (#2, see research design phase report #1 below) will be submitted to the COTR as a deliverable for this step. No visits will be made to BRTE, GRTE or YELL for examination of their files; federal personnel will provide pertinent information directly to the contractor. Particular atten- tion will be devoted to the historical litera- ture pertaining to exploration of the Upper Missouri River Valley, including journals from early exploration, beginning with the Lewis and Clark expedition and continuing with journals of trappers, mountain men, and later government exploration parties (e.g., for development of the railroads).

2. Research Design Refinement (Months 2-4) will incorporate new data developed during Phase 1 of Data Collection. A refined Re- search Design will be provided to the COTR following the initial conference call, and fur- ther refinement will continue as appropriate. A progress report (#1) detailing research de- sign refinement will be provided as a deliver- able for this step.

3. Data Analysis (Months 5-8). The PI will conduct data analysis for the project. This will involve organizing information (e.g., ref- erences, library notes and interview notes) from Phases 1 and 2 of data collection. In- formation will be compiled and assessed for validity. Data pertaining to wickiups and re- lated resources in BRTE-GRTE-YELL will be assessed in terms of regulatory criteria for potential eligibility to the National Register of Historic Places, as "Traditional Cultural Properties" or another appropriate qualifying status. Photographs will be processed and la- beled, and maps of wickiups will be prepared (only general maps will be used in the report; maps showing specific resource locations will be provided in a confidential appendix to the report).

The known universe of BRTE-GRTE- YELL wickiups is quite small. The parame- ters of environmental contexts within which these occur will be carefully studied, and if possible a predictive model for occurrence of presently unknown wickiups will be de- veloped. This should be readily possible at a very gross level, in terms of factors such as site slope and proximity to permanent water sources. A more discriminating model would depend on acquiring data for a larger sample of wickiup sites; this may or may not be available as a result of consultation with various agencies. A progress report (#3) will be sub- mitted in month 8.

4. Report Preparation (Months 9-10). The fully edited draft report will be written, printed, and submitted to the NPS by the PI. The transmittal letter will serve as progress report #4. Upon receipt of NPS comments on the draft report (Month 11), appropriate re- visions will be made and the final report will be submitted to NPS within thirty days after receipt of comments (Month 12).

Progress Reports will be submitted along with invoices, upon completion of deliverable steps (as detailed in the proposed budget). It is expected that these will be brief and that they will focus on correlating actual progress with the Work Schedule.

Native American Ethnography: General Considerations. For each Native American group considered, there will be a brief ethnographic profile written. This will deal with language, residential and subsistence patterns, and traditional architecture, at a minimum. The profile will focus on traditional resource use and activities likely to leave archaeological remains including wickiups and other temporary shelters. The ethnographic profile will deal with contemporary practice of traditional culture, as well, both in general and as it potentially applies to wickiup resources.

Topics to be discussed in interviews with Native American groups, if such are possible in the future as a result of additional funding, include identification of and/or concerns about the following:

1. shelters of various sorts (with particular attention to the matter of how cultural affilia- tion to the particular group might be recog- nized);

2. trails and shrines, insofar as these might be associated with shelters;

3. burial practices and whether these might ever relate to wickiups or remains that could be mistaken for wickiups (e.g., how might deteriorated scaffold burials be mistaken from, or distinguished from, wickiups);

4. ethnobotanical resources and the probabil- ity of wickiups being located in proximity to the resources;

5. ethnozoological resources and their poten- tial relationship to wickiups (e.g., are wicki- ups more likely to be associated with certain sorts of hunting activities?);

6. places of power or places with religious significance or ceremonial locations and whether wickiups might be associated with such places;

7. access issues or problems regarding any of the places or resources listed above; and

8. how contemporary life may or may not re- late to concerns about wickiup sites, including USFS/NPS management of such sites.

In all contacts with American Indian people, it would be made clear that information that should not be divulged will in fact be protected. The focus of the BRTE-GRTE-YELL Wickiup Study will be to provide identifications and evaluations of wickiup-related sites and resources, in order to enhance park/forest management actions and to make the parks and forest more responsive to Native American concerns for wickiups.

Sources of Information

Human Relations Area Files (HRAF) bibliographies, now available online (WinSPIRS1989-present), will be utilized for identification of primary "classic" ethnographic monographs and articles pertaining to the Tribes under consideration, as well as recent secondary sources providing overviews. Contact will be made with contractors presently involved in production of an Ethnographic Overview Study for GRTE and the National Elk Reserve, for recommendations of other pertinent data sources.

Ethnographic "gray literature" will be utilized when readily available; this would include ethnographic overviews and assessments produced for other land-managing agencies in the vicinity of BRTE, GRTE and YELL. Future funding may allow archival data repositories to be sampled for information not otherwise available. Libraries at the University of Wyoming, in Laramie, could be a major source of information; other repositories that would bear investigation are at the SHPO offices in Idaho, Montana, Wyoming and Colorado. Historical collections at the Denver Public Library could also prove useful.

Theoretical Orientation

A Study of Wickiups does not require extensive theorizing, as the goal is straightforwardly descriptive. Yet

theory finds its place into any study, whether implicitly or explicitly, and it is likely to substantially influence decisions about what will be chosen for description and what will be dismissed as being of little or no concern. Hence it is appropriate to make theoretical orientations explicit. The study will have dual theoretical bases.

First, Ecological Theory in anthropology presumes that human life is meaningfully organized in relation to natural resources. Such relations are often easily observed by means of archaeological data. Exploitation of resources occurs by means of available technology and according to ideological presumptions of appropriate behavior, and political governance (whether internal or through intergroup dynamics) guides access to resources. Shelters (including but not limited to wickiups) can potentially tell a great deal about the relationship between people and the environments they exploit; conversely, historical understanding of differing Tribal relations to the environment may be helpful in identifying Tribal affiliation with specific wickiups.

Second, Social Construction Theory (see Peter Berger and Thomas Luckman, 1967, The Social Construction of Reality) explains how social groups construct culturally specific views of reality. This approach, combined with traditional anthropological perspectives on the concept of culture, is important in developing a coherent representation of processes involved in the development of cultural landscapes.

Taken together, the two theoretical approaches suggest appropriate questions for better understanding tribal uses of the natural environment and its resources, in both practical and symbolic contexts. The ideal result will be a study presenting an integrated view of wickiups and their place within the natural and cultural environment of BRTE, GRTE and YELL, as filtered through different cultural perceptions and as addressed either potentially or in actuality through both archaeological and ethnographic research methods.

Peoples to be Included in the Study

The BRTE-GRTE-YELL RFP identifies at least five Tribes known to have information about wickiups within the study area. These are (1) the Blackfeet Tribe of northwestern Montana, (2) the Confederated Salish and Kootenai Tribes of western Montana, (3) the Crow Tribe of northern Montana, (4) the Shoshone-Bannock Tribe of the Fort Hall Reservation (Idaho), and (5) the Eastern Shoshone Tribe of the Wind River Reservation (Wyoming). A total of 26 Tribes are consulted on various cultural issues, by the agencies. Alternative A, as proposed herein, does not include consultation with any of these Tribes, but the literature review will encompass them insofar as possible.

Final Scope of Work (07/08/08) - PHASE TWO
Research on Wickiups within Bridger-Teton National Forest, Grand Teton National Park, and Yellowstone National Park
(2008-2011)

Second Phase: Consultation
Rocky Mountain Cooperative Ecosystems Unit (RM-CESU)
Agreement Number: H1200040001 (IMR)

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Objective and Rationale

The overall objective of this project is to produce a report that includes information gleaned from the first phase of research (already completed) as well as from work with tribes required in this phase. The report will identify likely tribal affiliations (currently unknown) of wickiups, their significance to tribal peoples, their actual and potential locations within Bridger-Teton National Forest (BRTE), Shoshone National Forest (SHOS), Grand Teton National Park (GRTE), and Yellowstone National Park (YELL), and management recommendations based on input from the tribes.

Wickiups in BRTE, SHOS, GRTE, and YELL are recognized as rare and ephemeral cultural resources that date from the protohistoric or very early historic period. Though several hundred were documented in early historical accounts, particularly for YELL, only a few are known to remain. Up until the first study phase, no formal survey and documentation of wickiups had taken place in BRTE, SHOS, GRTE, and YELL. Of the 29 wickiup sites recorded to date in the study area, many of these structures are in fragile condition and deteriorating. Also, tribes have not been thoroughly spoken with about these resources. Before the wickiup study began, at least five tribes (Blackfeet Tribe, Crow Tribe, Eastern Shoshone Tribe, Confederated Salish and Kootenai Tribes, and Shoshone-Bannock Tribes) formally acknowledged the significance of these structures and had knowledge to convey about them. The extensive ethnographic literature search completed during the first phase of the wickiup study has now expanded that number of tribes to include all 26 potentially affiliated tribes with the Greater Yellowstone Ecosystem. In formal government-to-government consultations with forest- and parks-associated tribes, oral agreements were made by the parks to research and develop a management strategy for these rare and endangered structures. To date, no conscious management strategy exists despite the impending resource dangers and the significance of these structures to tribes.

The two forests and two parks have entered into a written agreement to conduct research to enable management of wickiups within their jurisdictions. Culminating from the first phase of the wickiup study, there now exists an extensive literature review. What is missing now is the information gleaned from the tribes. Their knowledge is pertinent to capture the most complete and accurate information about these structures, as well as to assist jurisdictions in their management of the structures in a culturally-informed manner.

Desired Outcome:

During this second phase of study, knowledge from the tribes will be collected and incorporated into information gathered during the first study phase to provide conscious and culturally informed management options for all jurisdictions. These management options will be included in the report due as part of this study. The report will also include information to locate additional wickiups within all jurisdictions, contribute information to cultural (archeological and ethnographic) resource management databases, and provide information helpful in forests and parks planning and visitor education efforts. It will include a section on data gaps and suggestions for further research. This report will be distributed to Greater Yellowstone managers, archeologists and ethnographers in the NPS Intermountain Region, and to tribes and their representatives.

Objectives in Research with Tribes:

Communication with tribes will include contact by letter, phone calls, interviews, and field visits. Communication will determine the actual and potential locations of wickiups within the study area, their significance to tribal people, along with their functions, meaning, and likely affiliation (currently unknown), and their recommendations for management. From this report, the four jurisdictions can make conscious and culturally informed decisions based on input from the tribes about their management, including determining their National Register eligibility. From this information,

the four jurisdictions will determine whether a coordinated management of wickiups is feasible or desirable. To this end, the researcher is expected to:

- Interview the identified knowledgeable members of American Indian tribes about wickiups as specified by tribal governmental offices. In some cases, interview may be conducted by members of those offices. The Ethnography Office is willing to assist in obtaining the names of tribal members to be interviewed through a formal government-to-government process. Questions that might be asked include whether tribal members still visit wickiup sites on federal lands, and, if so, whether the structures are added to or changed in any way; if the tradition of building wickiups is still being practiced on federal lands; who used wickiups in the past and who may continue to use them; whether specific wickiup locations are known and where they would customarily be located; if wickiup structures are tied in with seasonal migration routes and, if so, what activities; and whether the tribes have knowledge of traditional uses of wickiups. The researcher will be provided a video production to share with tribal members. The video is a compilation of all the wickiup sites video-recorded in the study area as of 2008.

- If unrecorded wickiup sites are identified during communication with tribes, as much information as possible will be collected to record them onto the appropriate Wyoming Cultural Property Forms. If photographs are available of these structures, include copies of them to attach to the site form. Also provide a map showing all the new wickiup site locations. This information will be placed in an appendix that will be submitted under separate cover to protect the location of the sites;

- We estimate three elders from approximately six tribes will wish to make field visits to wickiup locations. The researcher together with the NPS Key Official will arrange those visits. The visits will be coordinated with the appropriate federal land managers. The visits will be paid for by the University of Montana project budget. Information gleaned from these visits will be incorporated into the report;

- Incorporate information gathered during research with tribes with the topographical attributes collected from the first study phase to provide a narrative about the potential locations of wickiups in the four jurisdictions. This information will be used in planning and for compliance purposes;

- If native names of wickiups are gathered during work with tribes add those names to the list of wickiup names (in English and in native languages) that was developed during the first study phase;

- Incorporate information gleaned during work with tribes to identify the likely tribal affiliation of wickiups and incorporate that information into the report. For example, do they know of indicators of ethnicity, for example, through construction? In the use of materials? In features on the landscape associated with the wickiups?, and so on;

- Identify the traditional uses of wickiups from conversations with tribal members and incorporate that information into the report. Were they used as shelters? For ceremonial purposes? As sweat lodges? Or?;

- Identify the significance of wickiups to each of the potentially associated tribes and/or tribal member;

- Identify each tribe's preferred management actions for the wickiups;

- Incorporate information gathered from tribal communication to develop culturally informed management strategies for wickiups. Make recommendations (separately and collectively) for management options to BRTE, SHOS, GRTE, and YELL. Options may include stabilization, restoration, interpretive recreation, preservation in a museum collection, and/or consciously allowing them to decay or be otherwise naturally destroyed. For example, should wickiups be nominated as Traditional Cultural Properties under Bulletin 38 and, if so, what criteria should be used to make that determination? Is there additional archeological work that should be done in association with the wickiups? For example, are there hearths that could be excavated? Can the timber poles be dated? Should there be a survey of the landscape surrounding the wickiups to locate associated features? Should data be placed at all known wickiup sites so that the location can be preserved though the structure has deteriorated? Should they be monitored? Should a fire protection plan be developed or does it exist? Does it seem feasible for the forests and parks to coordinate their management? Is it appropriate for existing wickiups to be removed from their location and reconstructed within USFS or NPS museums? What do participating tribes think about this? Wyoming and Colorado historical societies have moved and reconstructed wickiups inside their institutions. Are there wickiups in the four jurisdictions that would be appropriate to let the public visit in order to interpret wickiups?;

- Incorporate information gathered from research with tribes to provide an historical context that will help evaluate the eligibility of wickiups to the National Register and include information from the tribes as to whether they can or should be considered traditional cultural properties. If so, what attributes of wickiups make them traditional cultural properties?;

- Photos will be collected from tribes, if available. Compile photographs taken of wickiups in the study area that are shared by tribal members during communication and site visits with tribes. Photographs should be identified by site number, if available;

- If time and funding permits, develop a site form for recording wickiups. Or, at a minimum, list the factors (including ones relevant to the tribes) that should be included in a site form for the recordation of wickiups. For example, factors should include those that may contribute to cultural affiliation. Do site forms exist for Idaho, Montana, and Wyoming? Forms can be downloaded from their websites if they exist. The USFS and NPS do know of a site form that has been developed for the state of Colorado and do have that example in our possession to provide it to the researcher. Is the form sufficient or should it be amended based on the synthesis of research? What ethnographic factors or issues might be missing from such a form?

Report Objectives:

The researcher will supplement the first phase documentary review with the content of interviews conducted with tribal members. (A copy of that report will be provided to the researcher.) The identification and documentation obtained from tribes will focus on the traditional bases for the wickiup uses, the ascription of value and significance placed on these resources by the tribal communities or community members, information about cultural affiliation, if possible, and tribal management recommendations. The interviews will serve to augment the literature search by adding to and/or updating the data derived from the literature review. Topographical information will be synthesized to provide information about potential locations within the four jurisdictions. A list of native and non-native names used to describe wickiups will be provided and will augment that provided in the first phase study.

Research results will describe, to the extent possible, specific past as well as contemporary uses and meanings of wickiups within the study area. This description will focus on the integration of resource uses and meanings with other selected aspects of tribal community cultural patterns. The researcher will identify existing or potential conflicts between tribal group wickiup uses/traditional practices and current USFS and NPS management of these resources. Along with this inventory, the researcher will recommend potential mitigation of these conflicts.

The researcher will also provide management recommendations to the USFS and NPS as identified in the specific objectives above. The researcher will provide an historic context that will help to evaluate the eligibility of wickiups to the National Register of Historic Places and that should be considered for nomination to the National Register, if applicable, as Traditional Cultural Properties (see National Register Bulletin 38).

The researcher will identify data gaps that indicate the need for additional research.

Methodology and Procedures:

The researcher must gain adequate permission and/or permits from official tribal representatives or organizations to conduct research. In working with American Indian tribes, consent must be obtained by communicating with the appropriate governmental representatives. Representatives from BRTE, SHOS, GRTE and YELL will provide the names, addresses, other contact information, and suggestions to the researcher.

The researcher will provide to official representatives of the tribes copies of the final draft report for review. Reviews by tribal community representatives are to provide opportunities for input into and evaluation of the reports regarding the accuracy of the information obtained from tribal interviews and field visits, as well as the appropriate presentation of information considered culturally sensitive. Reviews also provide input into whether the course of the study should be adjusted. The researcher, along with USFS and NPS, will defer to communities' wishes regarding the appropriate means and methods of presenting in the final report any information related to the religious or sacred beliefs and practices associated with wickiups. This may mean that some information is omitted altogether, or is orally relayed to public land managers.

The researcher will not retain copies of the list of wickiups, descriptions of specific uses, and their locations, use that information in scientific publications or presentations, or otherwise make the information public in any way without explicit permission from the tribal communities as well as the USFS and NPS.

The researcher will establish and use a set of codes for the names of the tribal members who do not wish to be individually identified. All individuals interviewed must sign a consent form indicating their permission to use information and the purposes for which that information will be used. Constraints on the use of information must also be indicated. The researcher will not include direct quotes from any tribal member in the narrative unless:

- The tribal member insists on direct quotes, fully understands the potential effects of being identified, and signs a release form; or

- The identity of the tribal member is kept confidential and indicated only with a code where relevant.

The researcher will retain original field notes. Selected portions of especially important data, with tribal contact names deleted or the code name substituted, may be provided to the USFS or NPS managers.

The researcher will provide to the USFS and NPS tapes of the interviews conducted. If video recording of interviews is permitted, the USFS and NPS also will receive copies of those videos.

The researcher will be familiar with USFS and NPS policies and guidelines on ethnography and Native Americans.

Final Scope of Work (06/10/09) - PHASE THREE
Research on Wickiups within Bridger-Teton National Forest, Grand Teton National Park, and Yellowstone National Park (2009-2011)

Third Phase: Final Report Printing
Rocky Mountain Cooperative Ecosystems Unit (RMCESU)
Agreement Number: H1200090004 (IMR)

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Objective and Rationale:

The overall objective of this project is to produce a report that includes information gleaned from the first phase of research (already completed) as well as from work with tribes required in this phase. The report will identify likely tribal affiliations (currently unknown) of wickiups, their significance to tribal peoples, their actual and potential locations within Bridger-Teton National Forest (BRTE), Shoshone National Forest (SHOS), Grand Teton National Park (GRTE), and Yellowstone National Park (YELL), and management recommendations based on input from the tribes.

Wickiups in BRTE, SHOS, GRTE, and YELL are recognized as rare and ephemeral cultural resources that date from the protohistoric or very early historic period. Though several hundred were documented in early historical accounts, particularly for YELL, only a few are known to remain. Up until the first study phase, no formal survey and documentation of wickiups had taken place in BRTE, SHOS, GRTE, and YELL. Of the 29 wickiup sites recorded to date in the study area, many of these structures are in fragile condition and deteriorating. Also, tribes have not been thoroughly spoken with about these resources. Before the wickiup study began, at least five tribes (Blackfeet Tribe, Crow Tribe, Eastern Shoshone Tribe, Confederated Salish and Kootenai Tribes, and Shoshone-Bannock Tribes) formally acknowledged the significance of these structures and had knowledge to convey about them. The extensive ethnographic literature search completed during the first phase of the wickiup study has now expanded that number of tribes to include all 26 potentially affiliated tribes with the Greater Yellowstone Ecosystem. In formal government-to-government consultations with forest- and parks-associated tribes, oral agreements were made by the parks to research and develop a management strategy for these rare and endangered structures. To date, no conscious management strategy exists despite the impending resource dangers and the significance of these structures to tribes.

The two forests and two parks have entered into a written agreement to conduct research to enable management of wickiups within their jurisdictions. Culminating from the first phase of the wickiup study, there now exists an extensive literature review. The second phase of the study will incorporate traditional knowledge and recommendations from the associated tribes. What remains is the final editing of the report, professional layout and printing of the report, as well as distribution to partners and tribes.

Desired Outcome:

During this third and final phase of the project the report will be finalized, printed, and distributed. Final writing of the report will be accomplished based on comments from the review cycles to tribes and federal affiliates. The report will be edited, laid out and designed by a professional. It will include photographs, maps, and some color pages. The researcher will oversee the layout and design of the report by the chosen professional. Approximately 700 copies of the report will be printed. Once finalized and printed, the researcher will coordinate the distribution of the report to partners, tribes and their representatives, archeologists and ethnographers in other NPS IMR parks, and to those repositories required by NPS-28. Mailing will require the researcher to travel to YELL in order to utilize the park's mailing center.

APPENDIX B

Phase Two Materials:
Wickiup Letter to Tribes

N1427(YELL)
Redacted

Redacted

Phase Two Materials:
Wickiup Flyer to Tribal Representatives

Redacted

Redacted

Phase Two Materials:
Interview Questions for Wickiup Interviews with
Tribal Representatives

Redacted

Phase Two Materials:
Distances to Wickiups in the GYE
(continued)

Redacted

APPENDIX C

Conical Timber Lodge Feature
Component Site Form

The following CTL Feature Component Site Form was adapted from the Colorado Wickiup Project for use by land managers in the GYE.

CONICAL TIMBER LODGE FEATURE COMPONENT FORM

Greater Yellowstone Ecosystem

YELLOWSTONE NATIONAL PARK • GRAND TETON NATIONAL PARK • SHOSHONE NATIONAL FOREST • BRIDGER-TETON NATIONAL FOREST
CUSTER NATIONAL FOREST • LEWIS AND CLARK NATIONAL FOREST

1. Site No.: _____ **Temporary Site No.:** _____ **Feature No.:** _____

2. Previous/Temporary Feature Nos: _____ **3. Related CTL(s)/Feature(s) Nos:** _____

4. Location (UTM): NAD _____ ; Zone _____ ; _____mE; _____mN **5. Elevation** _____m/ft

6. Location Description: (Landscape features, vegetation, viewshed, orientation, nearest water, open/sheltered area) _____

_____

_____

_____

7. Type of Feature

☐ Conical timber lodge ☐ 1-2 pole leaner
☐ Unstructured poles ☐ Tree platform
☐ Other (describe) _____

_____

_____

8. Inferred Function of Feature

☐ Habitation ☐ Storage Cache ☐ Hunting blind
☐ Utility pole/rack ☐ Windbreak ☐ Pole cache
☐ Burial platform ☐ Corral ☐ Animal Pen
☐ Sweatlodge ☐ Other (describe) _____

_____

9. Justification for Inferred Function: _____

_____

10. Feature/Structure Format: ☐ Freestanding ☐ Leaner ☐ Suspended in tree ☐ Other (describe) _____

_____

11. Condition: ☐ Standing ☐ Partially collapsed ☐ Collapsed; Comment: _____

12. Total No. of Poles: _____ ; No. standing/leaning _____ ; No. collapsed _____ ; No. completely suspended by tree/poles _____

13. Pole Ends: (No. of each) Decayed _____ ; Broken _____ ; Axe-cut _____ (*Metal axe?* ___ *Stone axe?* _____); Sawn _____ ; Uprooted _____ ; Burned _____ ; Comment: _____

14. Range of Pole Length (s): _____ to _____ m **15. Range of Mid-pole Diameter(s):** _____ to _____ cm

16. Is one pole significantly longer than the others (extending away from structure as a rack or hanger)**?** ☐ No ☐ Yes
If yes: Length _____ m; Mid-pole diameter _____ cm; Comment: _____

17. Pole(s) Modification: ☐ Completely limbed ☐ Partially limbed, some branches present ☐ Unlimbed ☐ Split/Shaped
Comment: _____

18. Interlocked Forked Poles as Structural Supports: Number _____ ; Description _____

19. Pole Wood: (No. of each) Lodgepole _____ ; Whitebark pine ___ ; Aspen _____ ; Cottonwood _____ ; Juniper _____ ; Fir _____ :
Other _____

20. Pole Condition: (Check all that apply) ☐ Cracking across grain ☐ Lengthwise grain separation ☐ Sagging ☐ Crumbling ☐ Lichens ☐ Moss ☐ Highly decomposed Comments: _____

21. If platform/horizontal beam: Height(s) above ground: _____ m
Comment: _____

22. If 1-2 pole leaner:
Top end of pole(s) (height above ground) _____ ; _____ m
Base of pole(s) (distance from support tree) _____ ; _____ m
Angle of pole(s) (relative to ground) _____ ; _____ °

23. Floor/Platform Plan: ☐ Circle ☐ Semi-circle ☐ Oval ☐ Triangle ☐ Rectangle ☐ Square ☐ Irregular ☐ Indeterminate
Comments: _____

Sketch, if needed

(continued on next page)

Site no. _____ Temporary Site No. _____ Feature No. _____

24. Dimensions of Floor/Platform: Interior height (headroom): _____ m; Diameter: _____ m
OR Length: ____ m; Direction: _____ º; Width _____ m; Direction: _____ º; Other sides/dimensions (length/direction): _____
_____

25. Floor/Platform Area: _____ m^2 [Circle = 3.14 x radius-squared; Oval = length x width x 0.785; Triangle = 0.5 x base x height]

26. Floor Treatment: ☐ Excavated basin (Length) _____ cm; (Width) _____ cm; (Depth) _____ cm
☐ Bark Mat (Length) _____ cm; (Width) _____ cm; (Thickness) _____ cm
☐ Packed soil ☐ Other (Describe) _____

27. Trowel Tested? (Describe) _____

28. Degree of Slope at Structure: _____ º; Direction _____ º; Comment: _____

29. Nature of Entry If Discernable: (e.g., space between poles? Lintel or sill?) _____
_____

30. Entry Orientation: (Direction) _____ º **31. Entry Dimensions:** (Height) _____ cm; (Width) _____ cm

32. Evidence of Covering? (e.g., Suspended cross-beams or small branches? Rocks, branches, brush or bark at base of poles?)
_____

33. Species of Support Tree(s):
(Number) Lodgepole _____ ; Whitebark pine _____ ; Aspen _____ ; Cottonwood _____ ; Juniper ____ ; Fir _____

34. Condition of Support Tree(s): ☐ Living ☐ Dead **35. Diameter of Support Tree(s) Near Base:** ____ ; _____ ; ____ cm

36. Compass Direction(s) of Support Tree(s) Relative to Structure/Feature: _____ ; _____ ; _____

37. Cultural Modification of Support Tree: ☐ Limbed within interior of structure ☐ Limbed structure ☐ Axe-cuts ☐ Peeled-bark
☐ Horizontal circumference cut marks ☐ Other (Describe) _____

38. Parts of Support Tree Utilized by Feature: ☐ Trunk(s) ☐ Limb(s) ☐ Limb(s) & trunk ☐ Poles supported by other poles
☐ Partially broken bent down limbs ☐ Other (Describe) _____

39. Hearth Type: (If discernable) ☐ Basin ☐ Ash stain ☐ FCR concentration ☐ Slab-lined ☐ Rock-filled
(Describe) _____

40. Visible Dimensions of Hearth: _____ x _____ cm

41. Estimated Potential for C-14 Date: ☐ Indeterminate without testing ☐ Poor ☐ Good; Material _____

42. Location of Hearth: ☐ Interior ☐ Exterior Comment: _____

43. Location of *Interior* Hearth: ☐ Center of structure ☐ Other (e.g., "inside entry", "adjacent to wall", "base of support tree")
(Describe) _____

44. Location of *Exterior* Hearth Relative Center of Structure/Feature: Distance _____ m; Direction _____

45. Rocks Associated with Feature: (Number) Interior _____ ; Exterior perimeter (e.g., base of poles) _____ ; Other _____
Describe type, form, size (e.g., "two 15cm diameter river cobbles" or "one 14x12x8cm sandstone slab" _____
_____
Inferred Purpose _____ Comments _____

46. Associated Artifacts: (Describe, give numbers) Inside structure _____
_____
Diagnostics on site _____
_____

(continued on next page)

Site no. _____ Temporary Site No. _____ Feature No. _____

47. Collections at Structure/Feature: (Describe, give numbers) Artifacts _____

_____

_____

☐ Dendrochronology (☐ Metal axe-cut ☐ Other) ☐ Radiocarbon ☐ Soil ☐ Thermoluminescent ☐ Other

(Describe) _____

_____ On file at _____

48. Estimated Age of Structure: _____ (Give reason) _____

49. Noteworthy or unusual characteristics of feature(s): (Describe, give reason)_____

_____

_____

_____

50. Imminent Threats to Structure: ☐ Collapse ☐ Decay ☐ Erosion ☐ Fire ☐ Vandalism ☐ Construction ☐ Grazing

Comments _____

Mitigation recommendations: ☐ Additional recording ☐ Hearth excavation ☐ Other _____

_____

51. Site documentation: ☐ Digital photos ☐ Color/B&W prints/negs/slides ☐ Video

Roll/Disk/File Location(s): _____

_____

_____

52. Recorded by: _____ **Date:** _____

53. Off-site Investigation: Consultation with Associated Tribes.

Date Tribe Name/Title of Individual Notes

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

54. Off-site Investigation: Background Research.

Date Repository/Collection/Location Notes

_____

_____

_____

_____

_____

_____

_____

(continued on next page)

Site no. _____ Temporary Site No. _____ Feature No. _____

55. Additional Notes: