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Abstract

ARCHEOLOGICAL INVENTORY AND MONITORING PLAN
FOR DINOSAUR NATIONAL MONUMENT

by

Catherine J. Smith

The personnel of Dinosaur National Monument, a unit of the National Park Service, are responsible for the protection of natural and cultural resources within its boundaries. While natural resources have received much attention in Dinosaur, cultural resources have not received the treatment they are due. A Cultural Resource Management Plan (CRMP) is currently being designed in Dinosaur to aid in the preservation and protection of cultural resources. Prior to this time, there has been no specific management plan for cultural resources within the monument. As an adjunct to the CRMP, an archeological inventory and monitoring plan has been developed by this writer. It is this inventory and monitoring plan, along with a cultural overview of Dinosaur National Monument, that comprise this thesis.

Cultural occupation at Dinosaur National Monument extends back thousands of years. It is this evidence of occupancy that comprises Dinosaur's cultural resources. Archeological and historical sites abound in the monument. Each has its own special needs in regards to preservation. The purpose of the Archeo-

logical Inventory and Monitoring Plan is the documentation and protection of archeological resources. The use of the plan enables monument personnel to document site condition, assess the site for any needed protection measures, and monitor the site to document any changes that take place.

Archeological sites are vulnerable to change; disturbance of a site can destroy its archeological value. Natural or man-caused events may lead to site disturbance. The Archeological Inventory and Monitoring Plan, through site documentation, can often enable monument personnel to modify or eliminate cause of a disturbance as the case may warrant.

The archeological resources of Dinosaur National Monument are irreplaceable. Documentation and protection efforts are necessary if the resource is to be perpetuated.

LOMA LINDA UNIVERSITY

Graduate School

ARCHEOLOGICAL INVENTORY AND MONITORING PLAN

by

Catherine J. Smith

A Thesis in Partial Fulfillment
of the Requirements for the Degree Master of Arts
in Anthropology

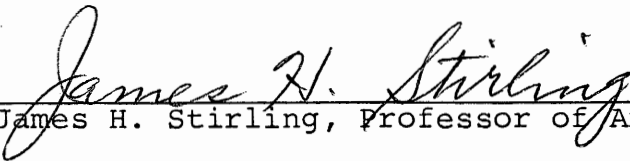
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Each person whose signature appears below certifies that this thesis in his opinion is adequate, in scope and quality, as a thesis for the degree Master of Arts.


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INTRODUCTION

Dinosaur National Monument is rich in cultural resources as it has many historical and archeological sites. While employed at Dinosaur as a seasonal park ranger, I became aware of the pressing need to further document and protect these valuable cultural resources. There was, at that time, no systematic plan for documenting cultural resources; nor was there a management plan for cultural resource protection. Archeological work had occurred in the monument, but its scope was limited. The monument archeological survey was incomplete. Excavations at some sites did occur, but site information was written by the archeologists for site reports, not for resource protection measures. The site report format varied with the archeologist, and the location of the reports varied. After the end of my employment at Dinosaur, I volunteered to assist in the preparation of a Cultural Resource Management Plan for the monument. (At that time the Plan was in an early developmental stage.) My offer of assistance led to my developing an archeological inventory and monitoring plan which provided for a systematic means of documenting, analyzing, and protecting archeological resources.

A comprehensive monitoring program conducted by the monument is necessary for the protection and preservation of its cultural resources. Historical sites differ from archeological

sites in many ways, including types of needs and legislation affecting them; a separate set of guidelines for resource management inventory and monitoring needs to be developed for each. The archeological resource procedures will be documented in this paper.

Archeological resources, as defined by the Archeological Resource Protection Act of 1979 (ARPA), mean "any material remains of past human life or activities which are of archeological interest. . . . No item shall be treated as an archeological resource . . . unless such item is at least 100 years of age." Archeological resources are interpreted as being, but not limited to,

pottery, basketry, bottles, weapons, weapon projectiles, tools, structures, or portions of structures, pit houses, rock paintings, rock carvings, intaglios, graves, human skeletal materials, or any portion or piece of any of the foregoing items (ARPA).

Lithic scatter on the ground surface, including arrowheads, does not fall under ARPA but if it lies on government property it is covered under the 1906 Antiquities Act as well as regulations covering Theft of Government Property.

The legal basis for protection of these resources has been laid down in the 1906 Antiquities Act, the National Historic Preservation Act (1966), the National Environmental Policy Act (1969), the Archeological Resources Protection Act (1979), and Executive Order 11593. All of these express concern for archeological resource management, and they have helped establish guidelines for the protection of archeological resources. In addition to these, National Park Service Reg-

ulation 28 sets forth the guidelines for archeological resource management in the National Park Service. Specific information on laws and their applications can be found also in the Code of the Federal Register (36 CFR 800).

NPS-28 sets forth the cultural sites inventory process. The purpose of the inventory is to "document the locations, descriptions, significance, threats, and management requirements for archeological resources in the Park." As such, the inventory information is an adjunct in the management planning for the monument.

Procedural guidelines not only define the inventory process but also set forth professional standards for data recovery. 36 CFR 66 is concerned with laws governing the recovery of scientific, prehistoric, historic, and archeological data, especially methods, standards, and reporting requirements. It directs "that all classes of data that give a property its significance should be recovered when recovery is called for." It sets standards for the professional qualifications of the persons doing the work.

It is made clear through these various documents that strict guidelines must be followed when dealing with cultural resources. If a "recovery" phase is reached, the individuals involved must be qualified, in the opinion of the law, and must handle the recovery according to the law.

Vandalism

Cultural resources, be they archeological or historical,

are subject to vandalism. Almost all types of cultural resources have been vandalized, especially prehistoric resources and historic buildings (Green, 1981:2). Vandalism of most types of these resources seems to be deliberate and planned. Vandalism of rock art, however, appears to be 'wantonly destructive' (Green, 1981:22). The motives behind cultural resource vandalism, according to research, are 1) the desire to collect for personal collections; 2) monetary gain; or 3) the result of ignorance, carelessness, and curiosity (Green, 1981:22). The particular methods used seem to depend on the motive, for a particular act of vandalism.

A strong deterrent to vandalism is law enforcement. Enforcing the laws and prosecuting vandals has a decided educative effect on the public. The commercial pothunter is penalized by fines and prison sentences. The would-be recreational pothunter who hears about the laws may be impressed with the significance, in situ, of a cultural resource, and thus be deterred from disturbing it. "The net result is reduced [vandalism] at all levels" (Green, 1981:63).

The numerous cultural sites at Dinosaur are truly vulnerable to vandalism. Not only much of the rock art, but surface sites as well, have already been vandalized. To preserve this non-renewable resource, a strong enforcement policy is necessary. A major component of such an enforcement policy is an inventory and monitoring system which will document site locations as well as damage that may occur to the sites.

Employees at Dinosaur National Monument have been given

a mandate to protect its cultural resources from damage resulting from natural and man-caused actions (including all monument-approved activities that disturb the ground). To accomplish this, monument personnel need to have an assessment of cultural sites, including their content, context, and significance. The assessment must be updated if and when conditions change at a site. Policies designed to protect a particular site may therefore need to be modified occasionally. A cultural resource program will provide for such activities, and at the same time bring the public a greater understanding of the cultural heritage of the monument.

PART I

CULTURAL OVERVIEW OF DINOSAUR NATIONAL MONUMENT

The Archeological Inventory and Monitoring Plan would not be complete without some information on the cultures that once inhabited Dinosaur National Monument. The meaning or interpretation of a cultural resource can only be contemplated by looking at the cultural whole that formed it. A cultural resource is not just artifacts or structures--tangible objects, but also the intangible, the cultural identity behind the formation of those objects. By attempting to identify the cultural inhabitants of an area, researchers can find artifacts and structures (found within the area) gain meaning, purpose, and function.

CHAPTER 1

ARCHEOLOGY

Geographical Description

Dinosaur National Monument, located in northeastern Utah and northwestern Colorado, is a semi-arid land with rainfall averaging 9 inches per year. The monument terrain is varied, with elevations ranging from 5,000 to 8,000 feet. Two rivers wind their way through the terrain, forming deep canyons and open park-like areas. Numerous side canyons add to the accessibility of the rivers. While having little rainfall, the area's many springs, seeps, and streams (as well as the rivers) provide water year round.

Archeological Description

The monument was established in 1915 to protect the dinosaur quarry, which had been discovered by Earl Douglass in 1909. This quarry is the largest dinosaur quarry in the world. In 1938, following official recognition of the importance of the river systems and the surrounding geology, additional land was set aside for Dinosaur National Monument. The total area came to 200,000 acres. Paleontology, geology, and the scenic concerns were the motivating factors behind the establishment of the monument.

1937 marked the dawning of public interest in the arche-

ology of the monument. Excavations and surveys in the 1940s, 1950s, and 1960s added to the cultural picture of Dinosaur. That picture today is incomplete, for no thorough survey of the monument has yet been made and archeological information is limited. Generally, the monument's occupation by Native Americans is represented by three periods: the Archaic or pre-Fremont, Fremont, and post-Fremont to Historic. As might be assumed from the delineations, the greatest amount of archeological data is on the Fremont. The pre-Fremont period and post-Fremont period are less well documented, due to lack of diagnostic sites and artifacts. Because archeologists cannot agree on their interpretations of some data pointing to the origins of the Fremont Indians, there are gaps in our understanding of the archeological picture of the area. However, what is known and generally accepted is represented in the brief cultural overview which follows.

Cultural Influences

Dinosaur National Monument is located in a geographically desirable area. Two major rivers, the Yampa and the Green, flow through the monument. Numerous springs in the side canyons create a desirable habitat for vegetation, animals, and man. Close to the rivers riparian vegetation predominates; farther from the rivers, and on the plateaus, vegetation adapted to semi-arid conditions predominates. Located on the western slope of the Rocky Mountains at the base of the Uinta Mountains and at the eastern edge of the Great Basin, the monument "is marginal to two major culture areas, the Great

Basin and the Desert Archaic, and the northwestern Plains cultures" (Leach, 1970:170). The puebloan cultures to the south are also close enough to the monument, to have had an influence on cultural development in the area. The juxtaposition of these cultural boundaries creates some confusion in our understanding of Dinosaur's cultural history.

As Kroeber has described it: 'The weakest feature of any mapping of culture wholes is also the most conspicuous, the boundaries. Where the influences from two culture climaxes or foci meet in equal strength is where a line must be drawn. . . . Yet it is just there that the differences often are slight. . . . It would be desirable, therefore, to construct cultural maps without boundary lines, in some system of shading or tint variation of color' (Basso, 1979:27).

To attempt a strict delineation of the prehistoric cultures of Dinosaur is to present a skewed picture. As Kroeber has suggested, the cultural occupations of Dinosaur, as revealed through archeology, present an overlapping of styles, techniques, and artifacts from various cultures. Dominant cultures can be determined, but even these tend to show influences from other neighboring cultures. The question is, to what degree did the previously mentioned cultures affect or govern the cultural traditions of Dinosaur?

In cultural respects the monument is divided in half. The section from Castle Park to the western boundary represents a Desert Archaic affiliation, primarily; while the section east of Castle Park to the eastern boundary represents a northwestern Plains affiliation primarily. Fremont occupation, when it appears in Dinosaur, is found in Castle Park and west to the boundary. The Green and Yampa Rivers would have pro-

vided a natural corridor for Desert Archaic and Fremont peoples to follow northward and east into the monument. The Green River from the north and the Little Snake River to the east would have provided corridors for northwestern Plains movement south and west into the monument. One of the clearest (but by no means most complete) archeological pictures of the cultural traditions of Dinosaur is obtained from Deluge Shelter. It is located near the center of the monument, approximately one mile west of the Colorado State line. It was occupied, though not continuously, from approximately 5000 B.C. to A.D. 1850. There is a "blending of the 'eastern' and 'western' traditions with one or the other appearing dominant at various times" (Breternitz, 1970:160). The most common artifacts found at Deluge and other sites within the monument are lithics (projectile points, tools, and flakes). "Stone is one of the least likely materials to reflect influences and changes. These aspects of technology are very stable and resistant to change" (Leach, 1970:174). Changes in the lithics of a site may, then, reflect changes in the cultural occupations. The lithics can be an important diagnostic tool for cultural affiliations. At times lithics may also be very "undiagnostic," because they can relate to more than one culture. One point found at Deluge is found in Great Basin, Plains, and Southwestern Culture areas. The finding of an artifact then, does not necessarily lead one to identify a cultural tradition.

When the monument has been given a more complete arche-

ological survey, scholars can more readily reconstruct the cultural history.

Cultural Occupations

Plains

The Plains Culture had an influence on the cultural history of Dinosaur, particularly in the eastern half of the monument. As the artifact assemblage collected in Dinosaur demonstrates, some of the earliest artifacts are from the Plains tradition. At Deluge Shelter, the Plains evidence is contained in the lower levels of the site, dated no earlier than 5000 B.C. According to Mulloy's chronology, this time span corresponds with a definition of Early Prehistoric and Early Middle Prehistoric of the Plains (5000 B.C. to 2000 B.C.). While having an early appearance in the cultural history, the Plains influence was not

. . . as long lasting in their effect on the developments in the Dinosaur area [as was the Desert Culture]. These obvious associations, however, do indicate a period in which influences were affecting the cultural development in this area (Leach 1970:201).

We cannot say at present how much the Plains Culture was represented in the monument, or how much impact it had on the development of cultures within the monument.

Desert Archaic

Generally, all archeologists who have worked with Dinosaur data agree upon the long-lasting influence of the Desert Archaic tradition, from the Great Basin, upon monument cultural history. Dinosaur is on the eastern edge of the Desert Archaic

boundary. The archeological picture in the western half of the monument (with Castle Park as the mid-line) supports the theory of a fairly continuous Desert Archaic influence. Notwithstanding periodic breaks in this influence, by the Plains tradition, especially in the earlier time periods (5000 B.C. to 2000 B.C.), the Desert Archaic is one of the strongest and most lasting cultural traditions within the monument.

Since the Desert Archaic tradition of the Great Basin extends back 10,000 years ago, "overlapping the Paleo-Indian sites in this part of the West, it has been argued that the Desert Culture was the earliest level of cultural development here" (Cassells, 1983:77). The Desert Culture tradition is typified by a hunter-gatherer subsistence style. It co-existed with the Anasazi and the Fremont, as well as being an antecedent to them both.

The monument is on the eastern edge of the Great Basin and was affected by cultural developments within the Great Basin. The most frequently mentioned cultural element influencing this area is the Anasazi from the southwest. The "Southwestern influence on the Basin was relatively short-lived and did not equally affect all of it." Influences from the Plains and from the Plateau region farther north "also had an impact on Great Basin cultural developments" (Basso, 1979:26).

Uncompahgre

The Uncompahgre Complex is frequently referred to by archeologists attempting to discern cultural connections in

Dinosaur. Early archeologists gave much credit to the Complex for having an impact on Dinosaur cultural history. Generally, archeologists view the Uncompahgre Complex as a derivative of the Desert Culture.

Wormington and Lister . . . conclude: 'The Desert Culture was not confined to the Basin. As a result of separation of groups, by distance and geographic barriers, . . . a good many variants developed from this generalized culture. It is believed that the Uncompahgre Complex represents one of these variants' (Leach, 1970:199)

The Uncompahgre Complex maintained the Desert tradition of a hunter-gatherer lifestyle and did not adopt the horticultural practices of its neighbors farther south, the Pueblos (Cassells, 1983:91)

Archeological materials from Dinosaur tend to support the "Desert Culture derivative theory" in relation to the Uncompahgre Complex. The Complex could be seen as a regional interpretation of the Desert Culture. It always demonstrated strong Desert Culture affinity in the archeological record. As such, the Complex did not have a major effect on Dinosaur culture history, due to the continued Great Basin influence through the Desert Archaic. Being a branch of the Desert Culture, the Uncompahgre Complex cultural presence in the Dinosaur area was at least partially negated by the cultural presence of the Desert Culture in the form of the Desert Archaic.

Desert Archaic Influence in Dinosaur

The eastern half of the monument tends to show a strong affiliation with the Plains, but data is very sketchy. More

information is available on the western half of the monument. This section shows a strong affiliation with the Desert Archaic Culture. Some archeologists would call the Desert Archaic the major influencing culture (for Dinosaur) throughout the cultural record down into historic times, exerting much more influence than the Plains.

The Desert Archaic existed within Dinosaur National Monument up to Fremont occupation times, and then reappeared after the end of Fremont occupation (5000 B.C. to A.D. 950, and A.D. 1150 or 1200 to mid-nineteenth century). Swelter Shelter and Deluge Shelter, both within the monument, support the lengthy span of influence. The culture is typified by a hunting-gathering, transhumant lifestyle. The occupations within the monument were seasonal, as people moved according to their need for finding food by hunting and gathering. The Desert Archaic lifestyle is typified by localized adaptations and diversities. Patterns and tendencies are reflected throughout the Desert Archaic area, but not mirrored. As local environments shifted, people adapted some of their cultural assemblage (Breternitz, 1970:164). Throughout the Desert Archaic occupation of the monument, Plains lithics occasionally turn up, demonstrating the cultural interaction inherent in an area with fluid cultural boundaries.

As the Desert Archaic Culture aged, "growing regionalization" occurred. This led some archeologists to refer to Uncompahgre affiliations to explain the diversity of artifacts from Desert Archaic times. The Uncompahgre Complex, however,

is itself a regionalization of the Desert Archaic. Artifacts dating from 1300 B.C. to A.D. 300 present a variety of materials which are typical of the "increased local variation."

The diversity of forms recovered . . . is indicative of a widespread cultural diversity typifying this later period in Great Basin Culture history. These regional or areal diversities may represent a response to specific economic activities, or wide and varied contacts between peoples wandering about in a large territory trying to make a living for themselves and exchanging ideas and materials as they came into contact (Leach, 1970:268).

The Desert Archaic extended within the monument up to, and after, Fremont occupation. While occupation within the monument throughout its cultural history was not continuous, overlap between peoples practicing a Desert Archaic existence and peoples practicing a Fremont way of life could have occurred here.

Fremont Influence in Dinosaur

Origins

The Fremont occupation of Dinosaur extended from approximately A.D. 950 to A.D. 1150. Though more is known about this cultural occupation than all others within the monument, our information is still less than we would like. The questions of who the Fremont were, where they came from, and where they went have been debated by archeologists for years.

The ultimate source of the Fremont is still speculative, be it the Archaic foragers themselves or some outside culture or cultures . . . Fremont peoples were widely distributed across the Great Basin and the Colorado Plateau, and the interaction of Fremont with Anasazi cannot account for all the regional variations (Cassells, 1983:143).

Two main schools of thought exist on Fremont origins. one

holds to a strong regional diversification of the Desert Archaic, and the other represents the migration theory.

The archeological record suggests that the Fremont is development upon a base culture long acquainted with the area which practiced a Desert Archaic lifeway (Leach, 1970:326).

The archeology of the Dinosaur National Monument region is basically aligned with the Desert Culture, through time. Influence from adjacent and distant areas is seen coming into the Dinosaur region at different times; however, this statement does not imply 'migration' but rather items, ideas, and traits from other cultural traditions (Breternitz, 1965:142).

In general, the Fremont Culture was a horticulturally based lifeway with Southwestern affinities. It may have evolved out of local Archaic traditions in the Eastern Great Basin around A.D. 500 (Aikens, 1978:153).

In general, proponents for in situ Fremont development characterize a horticulturally based culture with some reliance on hunting-gathering activities developing out of the Desert Archaic tradition. Diffusion of ideas led to a transformation from the Archaic to the Fremont. Fremont Culture within the monument is generally agreed to have appeared no earlier than A.D. 950. Outside the monument the Fremont culture appeared as early as A.D. 400 to 500. This theory fits in with the concept of the Desert Archaic being a culture rich in diversity, with local populations responding and adapting to the local variations. The Fremont development was one such adaptation. It also reflected the diversity typifying the Desert Archaic, throughout the 250 years of the Fremont Culture.

The migration theory which has been advanced to account for Fremont origins within the monument, and throughout the Great Basin as well, is based on three major thoughts: 1) the

Fremont assemblage appeared rather abruptly, in total, with no apparent build-up, and remained similar throughout its occurrence; 2) the archeological record, so far, does not support an in situ Fremont development at Dinosaur, and in most Great Basin areas; and 3) at the time the Fremont Culture started in the eastern Great Basin, the Virgin Culture in the western Great Basin already had similar traits. These three aspects led to the theory that "the Fremont Culture represents a movement of people with a Puebloan Culture into the area" (Gunnerson, 1969:170).

The Virgin Culture responsible for the Fremont development was the Virgin branch of the Kayenta Anasazi. Contact between the Virgin branch and the Anasazi is considered to have been minimal. Gunnerson refers to the relationship between the two as suggesting virtual isolation, once the Virgin branch broke off from the Kayenta group. The Virgin branch, and in turn the Fremont peoples, manifested late Basketmaker cultural assemblages and Pueblo I and Pueblo II assemblages. Lack of further development, according to this theory, is in keeping with reduced Southwestern influence and a harsher environment for the Virgin and Fremont Cultures than is found in other Southwest areas.

Populations were expanding throughout the Southwest by A.D. 900.

The single element most responsible for the Pueblo II expansion was probably the introduction of a new eight-rowed race of maiz[e], . . . into the Southwest about A.D. 700. . . . This, when crossed with the previous maiz[e], . . . resulted in a significantly increased yield of grain that was well suited to a far greater

range of environments, especially to higher latitudes or elevations (Gunnerson, 1969:180).

This new maize allowed the population to expand over a much broader territory, while still enabling the people to practice a similar pattern of culture. This is the impetus behind the migration of the Virgin peoples into the Great Basin, and into Dinosaur National Monument. The cultural assemblages changed enough to lead to a new culture, the Fremont, being established. But similarities persisted between the Virgin branch and the Fremont.

One further argument in support of the migration theory of Fremont development is based on glottochronology (the study of the development of different languages). By examining similar elements within moderately different languages, linguists may postulate whether the languages once had a similar core, and when, chronologically, the split between the languages took place. The study of Plateau Shoshone glottochronology (Numic speakers) forming a historic representation of, but not limited to, the Shoshone, Comanche, Northern and Southern Paiute, and the Ute Cultures (all of which were historically accounted for in the Great Basin) indicates a common language origin. The original language diversification or split among the five cultures began to occur at approximately A.D. 950. The "original diversification" at this time formed a three-way split: Shoshone (of which Comanche later branched off), Northern Paiute, and Ute (of which Southern Paiute later branched off). These original three splits, Shoshone, Northern Paiute, and Ute, are equated, in much of the literature, with the

Virgin expansion forming the Sevier-Fremont and the Fremont. Keeping in mind that the Virgin Culture continued to flourish while it expanded into new territory, one may discern three dominant culture groups formed from the original. This glotto-chronology sequence has been considered significant by many archeologists. The similarity in regards to time developments of the Fremont as a separate entity are striking. This theory, combined with 1) the introduction of the new maize variety, 2) evidence of Pueblويد expansion, 3) the relatively sudden appearance of the Fremont cultural assemblage, and 4) the Fremont similarity to the Virgin Culture, has led many archeologists to the conclusion that the Fremont Culture was a product of migration.

In summary of these two theories, the migration theory tends to have more persuasive evidence than the theory of in situ development. However, the cultural heritage of the Great Basin, including the Kayenta Anasazi, lies with the Desert Culture. The Desert Culture existed in a semi-arid to arid environment, a hunter-gatherer lifestyle being used by the people. It was only with the introduction of corn and beans and squash that Pueblويد development was possible. Areas with greater water availability (rainfall in particular) developed greater reliance on horticulture. Areas with less water availability maintained more of a hunter-gatherer lifestyle, in addition to practicing horticulture. These differences reflect adaptive responses to differing environmental conditions. It was not necessarily a lack of knowledge or implements that

prevented differing cultures from fully exploring the possibilities of horticulture, but a lack of environmental possibilities.

Occupation in Dinosaur

The Uinta Fremont were one of five Fremont groups. Archaeological evidence indicates they appeared in Dinosaur around A.D. 950 and existed in the monument until A.D. 1150 or 1200 at the latest. Discrepancies in the appearance of the Fremont in Dinosaur are related to dendrochronology dates and radiocarbon testing. Archeologists generally agree that the relatively few radiocarbon samples can present skewed chronology. The dendrochronology dates, placing the Fremont occupation at A.D. 750, are also believed to present a false impression. The early dates are attributed to the Fremont peoples' lack of axes. The use of dead or downed trees for construction would have made easier the Fremont task of assembling construction materials. Gunnerson (1969:169) also points out that researchers attempting to enter a Southwestern prehistoric dwelling used poles with outside dates of the 1700s. This demonstrates the "feasibility of using long-dead timbers" in a semi-arid or arid environment. Generally, then, archeologists agree upon the earliest date being A.D. 950 for Fremont occupation of the monument, with the occupation ending by A.D. 1150 or 1200.

The Fremont Culture, including the Uinta Fremont in Dinosaur, represents a combination of distinctive traits involving small village sites (with pit houses), rock art, the making of pottery, the practice of horticulture (corn, beans, and

squash), and a continued reliance on hunting-gathering. As Breternitz points out (1970:163), the continued reliance on hunting-gathering is to be expected in an agriculturally marginal region. This continued reliance also points to the continued affinity of the Fremont with a Desert Archaic lifestyle. Within the Fremont Culture many variations can be observed. These are a hallmark of Fremont adaptability to regional environmental situations, and indicate continued Fremont interaction with other cultural groups.

Fremont archeology within the monument demonstrates the diversity. Structures such as pit houses have been excavated. Rock shelters and overhangs were also utilized for shelter. The Fremont occupation within the monument is the most well documented, archeologically, of all the cultural occupations of the monument. The Fremonts never gave up their making of basketry, a Desert Culture development. There is evidence of trade from outside the Dinosaur area; olivella shells and trade pottery are two items showing this.

According to the archeological picture of Fremont occupation within Dinosaur, there appear to be two periods of occupation. The first appears to have been more intensive than the second. "The range of materials is also greater, and this might indicate a more stable, more prolonged occupation of the site. . . . The projectile points . . . reflect . . . a continuation of Great Basin influences" (Leach, 1970:282). It has been suggested that the later Fremont occupation was more mobile and less reliant on horticultural products than

earlier Fremont occupations. Supporting evidence for this is fewer "structure" sites, more isolated hearth sites, less pottery, and more points (Burton, 1970; Breternitz, 1970; Leach, 1970). A reduction in the amount of maize is noted for this later occupation; this, combined with the greater number of points, indicates more reliance on hunting as a food source. Leach suggests that this change can be attributed to either increased contact with other groups or a climatic change resulting in less favorable horticultural conditions. Gunnerson postulates that "drought was probably the major or initial cause for the disintegration of the Fremont Culture" (1969: 181). In such a horticulturally marginal area, any change in rainfall patterns could have significantly affected the Fremonts. The change in horticultural reliance between the early and late Fremont occupations supports the drought theory.

Dendrochronological evidence exists for two phases of drought in the Southwest and Great Basin: A.D. 1150 to 1166, a less severe drought; and A.D. 1262 to 1310, a severe drought. The general drought theory postulates that the Fremonts, when faced with drought conditions, reverted to a hunter-gatherer lifestyle; something they had never totally abandoned even while practicing horticulture. Gunnerson refers to this as "postulated deculturation" for the Fremonts (within and without the monument) (1969:186). Breternitz suggests the possibility of "the disappearance of a core of overriding traits marking the end of the Fremonts as a cultural entity, but the 'common people' continued to survive as they had in the past"

(1970:164). Historically, there is evidence for Gunnerson's postulated deculturation, which Breternitz also supports. The Hopi, a Pueblويد people much more reliant on horticulture than the Fremont ever were, living in much larger villages than the Fremont did, and having a more sophisticated cultural assemblage than the Fremont, demonstrated a return to hunting-gathering subsistence. A severe drought disrupted their horticultural activities and they left their pueblos and scattered throughout the countryside, in small bands, hunting and gathering. This occurrence is referred to by Gunnerson. It appears in A.B. Thomas' 1932 Forgotten Frontiers: A Study of the Spanish Indian Policy of Don Juan Bautista de Anza, Governor of New Mexico, 1777-1778.

The Fremont then, appear to have abandoned horticulture and taken up, once again, the Desert Archaic lifestyle of their past, as hunter-gatherer wanderers. People practicing a transhumance lifestyle could not be expected to utilize a very developed pottery form or to give much refinement to stone tools such as metates, manos, etc. They would not live in large groups, but small bands. Structures would be temporary constructions. The traits that made the Fremont distinctive developed from a limited horticultural dependence. The withdrawal of horticulture resulted in a recession to hunter-gatherer subsistence, and the end of Fremont uniqueness.

Drought conditions would have encouraged Fremont dispersion, necessitating a broader territory over which the people could scatter in search of food. "The dispersal of the popula-

tion would continue until the population was again in balance with its environment and technology, or until further expansion was blocked" (Gunnerson, 1969:186). Gunnerson further says that the

dispersal was effectively blocked to the south and southeast by . . . Pueblo farmers who were probably beginning to feel . . . the drought. . . . To the east, the territory could not expand very far because of the formidable Rocky Mountains. This left the west, northwest, and north as the only directions for a significant dispersal (1969:186).

Rock Art

A discussion of the Fremont, whether in general or specifically relating to the monument, would not be complete without mentioning rock art.

The Fremont tradition is characterized by the presence of a distinctive type of dominating anthropomorphic figure with a large head and a broad shouldered, basically trapezoidal torso. . . . Other large elements appearing in these panels are circular devices usually recognized as shields, although huge concentric circles and spirals are also popular. Mountain sheep are the most frequently depicted animals, although bison and deer are represented at many sites. Animal figures, often found in association with small anthropomorphic hunters, are small and simple for the most part, and both hunters and animals lack the development in design and technique manifested by the large Fremont anthropomorphs. There is also a wealth of abstract elements occurring in Fremont panels (Schaasfma, 1971:6).

As with other aspects of Fremont Culture, diversity in the rock art occurs among regions. Rock art is difficult, if not impossible, to date of and by itself. By comparing rock art motifs with cultural artifacts, specialists have identified the Fremont as the creators of what is referred to as Fremont rock art. Within the monument, rock art identifiable as Fremont disappears traveling east along the Yampa drainage.

The anthropomorphs at Castle Park have only a vague resemblance to Fremont rock art, and more closely resemble Basketmaker styles (Schaafsma, 1971:25). A significant absence of depiction, in the rock art, is noted for "the more mundane but significant food sources such as corn and rabbits . . ." (Burton, 1971:68).

The Fremont rock art represents a high degree of refinement and attention to detail. As had been noted by Schaafsma, the most attention is paid to the anthropomorphs. Burton has attempted a rock art chronology.

It was determined that the earliest anthropomorphs are the simple, solidly pecked figures of Cluster D, the largest single cluster of anthropomorphs in the monument. This simple, solid figure style was gradually elaborated into an intermediate style, Cluster B, composed of very complex, outlined figures with numerous elaborative designs. The final anthropomorphs drawn by the Fremont people were those of Cluster A, which are stylized, lack outline, and contain only a few of the interior elements. Through time, essentially, the Fremont figures became more stylized and less representational (1971:94).

Burton also notes that during the evolution of the Dinosaur Fremont rock art, "elaboration and stylization increased. . . . However, the amount of effort needed to produce the anthropomorph decreased" (1971:91). This coincides to a change in the subsistence pattern of the Fremonts.

Petroglyphs are the most common form of rock art in the monument. They were formed by pecking or abrading the rock surface. Pictographs also occur. They are formed by the application of pigment to the rock face. It is also not unusual to find combinations of petroglyphs and pictographs forming a completed design. Pictographs are more susceptible to weathering.

It is possible that originally more pictographs were to be found in the monument.

Burton has developed a chronological sequencing of Fremont occupation within areas of the monument, as evidenced by the rock art.

During the time the initial style [D] of anthropomorph was drawn, all areas of the monument from Castle Park westward were occupied. During the time Cluster B anthropomorphs were produced, occupation in the monument seems to have been essentially restricted to the Rainbow Park area, with a small amount of use of the other areas. . . . A slight expansion in the distribution marks the Cluster A anthropomorph style horizon during which Jones Hole and Echo Park as well as Rainbow Park and Cub Creek were occupied. Archeological data from excavations in the monument seem to support this framework (1971:94).

Temporary structures appear to have been erected near some rock art panels; very few panels are near any more permanent structure. This seems to indicate that structures by rock art panels were constructed to shelter the individual creating the art, and not to provide any long-term habitation.

Post-Fremont Occupations

Fremont dispersal is demonstrated by the archeological record, as is Fremont deculturation, though tracing the two has proved to be difficult. Evidence exists demonstrating that post-Fremont occupation did occur within the monument (Cub Creek, Deluge Shelter, Deerlodge, etc.). By combining the theory postulating the glottochronology of the Plateau Shoshone and the evidence gained archeologically and historically, culture historians have concluded that the Ute or Shoshone are the probable descendants of the Fremont. The archeological materials of post-Fremont occupation within the monument are

scarce. Lithics are the most commonly found. The majority of these lithics are undiagnostic. Similarities between post-Fremont (Desert Archaic) and Ute artifacts and lifestyles are noted by archeologists. Gunnerson believes the Fremont people to be "represented historically by the Ute-Southern Paiute . . ." (1969:19).

There is little reason to doubt subsequent accounts including that of Dominguez and Escalante in 1775-76 which portray the Utes as the sole aboriginal inhabitants of western Colorado in historic times (Cassells, 1969:191).

Breternitz believes the Fremont descendants of Dinosaur National Monument to be "either the Ute who were residing in the region at the time of earliest European contact or the Shoshone" (1970:164). Breternitz also points out that "Stewart (1958) documents the fact that the Ute occupied the region south of the Yampa and Green Rivers in Historic times while the Shoshoni [sic] lived to the north of the Yampa and east of the Green River" (1970:163). Leach, from his excavations at Deluge Shelter, suggests possible Shoshone occupation. He bases this on ethnographic data in the absence of diagnostic archeological artifacts (1979:329).

The question remains, Who were the cultural inheritors of Dinosaur after the Fremont? Clues are vague, due to the paucity of known post-Fremont sites and diagnostic artifacts. What is clear is that the Dinosaur area continued to be occupied after the Fremont left. Perhaps the true question should be phrased as, Who were the deculturated inheritors? Evidence seems to indicate that the Fremont, through deculturation and dispersal, were absorbed into the Desert Archaic cultures

surrounding them. They lost their regional location. The archeologists agree that the Fremont descendants were probably Ute or Shoshone. Definite identification of one or the other as the "descendants" is not possible. Perhaps both were descendants. Currently, no Native Americans lay claim to land within Dinosaur. It is highly probable that, due to the monument's geographic location, Dinosaur was a land frequented by both the Ute and Shoshone.

Summary

The cultural record of Dinosaur, as it relates to occupation by Native Americans, is sketchy in areas, particularly in the early and late periods. The archeological record indicates occupation of Dinosaur beginning approximately 5000 B.C. and extending to approximately A.D. 1850. The Desert Archaic is seen as the primary influencing culture, with some Plains influence. The Desert Archaic component gives way to the Fremont, a culture with strong Desert Archaic background, influenced by the Southwest and, to a lesser degree, the Plains. The Fremont Culture gives way to a return to a Desert Archaic lifestyle, with probable cultural affiliations involving the Historic Ute or Shoshone.

Due to the incomplete archeological survey of the monument as yet and the sketchy information on the pre- and post-Fremont occupations, the archeological picture in Dinosaur could change with the discovery of new, more complete information.

CHAPTER 2

HISTORY

The history of Dinosaur National Monument is best understood through the events of Browns Hole (or Browns Park as it is referred to today). While adjacent to present-day monument boundaries, Browns Hole had a significant impact on events within the monument; and it figured prominently in the historical settlement of the Dinosaur National Monument region. Most of the historical activity originated outside the present-day monument boundaries and directly or indirectly influenced events within the monument region.

Located at the southeastern edge of the Uintah Mountain range, Browns Hole had less snowfall than other areas and thus provided a good wintering area for man and wildlife alike. It was, and is today, a verdant, fertile area. The Green River, flowing year round, provided a permanent water source for the abundant wildlife. The open, park-like expanse was in direct contrast to the surrounding rise of mountains, rugged plateaus, and deep canyons. This rugged geography, adjacent to Browns Hole, represented some of the most inaccessible terrain in that section of Utah and Colorado. A further advantage (in the eyes of some) of Browns Hole was its proximity to the boundary lines of three states, Utah, Colorado, and Wyoming. This was especially convenient to people evading lawmen. Many of the

explorers, trappers, traders, travelers, and settlers, as well as the rustlers, train and bank robbers, and others of questionable character, were drawn to the area by the conditions of Browns Hole and the surrounding terrain. The land within what is now the monument was part of the rugged terrain surrounding Browns Hole. It was primarily used for summer range by ranchers or for hiding places by law breakers. Located between Mormon settlements to the west, and encroaching settlements from the Rocky Mountains to the east, Browns Hole represented one of the last frontiers of the "Old West."

The Native American occupation of the territory in Dinosaur National Monument was described in the preceding chapter. Indian occupation did extend into the Historic period, but the archeological record has been sparse. The explorers and fur traders mention the Shoshone as being in the Browns Hole area; and Utes are mentioned as being in the western section of the present-day monument. Reference is also found to Cheyenne, Navajo, Sioux, and Snake. Most of these latter are referred to in reference to trading visits into the area, wintering in the Browns Hole area, or traveling through the area.

The Spanish exploration of the Southwest extended up into Colorado and Utah. The Dominguez-Escalante expedition gives the first historical account of the Dinosaur National Monument region. Leaving Santa Fe on July 29, 1776, the expedition's purpose was

to penetrate the unexplored wilderness of the right bank of the Colorado; the expedition was inspired and directed by the Franciscan friars Francisco Atanasio Domingues and and Francisco Silvestre Velez de Escalante The

friars hoped to locate a road through the Spanish settlements, posts, and missions among the Indian tribes (Crampton, 1952:361).

The Dominguez-Escalante expedition

was the first comprehensive traverse of the plateau province of the Colorado River and of a considerable portion of the Great Basin, and the reports and maps are the basic historical documents for most of the area explored. The diary kept by Escalante and the maps made by Bernardo Miera y Pacheco, who went along as topographer, belong among the best of historical literature of the West (Crampton, 1952:301).

The expedition arrived in the Dinosaur area in September of 1776. Landmarks identified in the expedition's journal are identifiable today.

Fur trappers were the first explorers into the monument area after the Dominguez-Escalante expedition. It was possible that trapping in the area occurred as early as 1807, but the earliest documented record of trapping is in 1823 or 1824. Trappers and traders were attracted to the Browns Hole area by its abundance of wildlife and its proximity to the Uintah Mountains. General William H. Ashley, along with other traders and trappers, floated down the Green River in May of 1825. Ashley and his party were searching for a location for the first rendezvous, the purpose of which was to provide a gathering place for the trappers wishing to sell skins and traders wishing to buy skins. The site chosen for the rendezvous was just outside what is now the northern boundary of Dinosaur National Monument. In the course of Ashley's search for the rendezvous site, he and his men became the first explorers of the Green River, from Red Canyon, through what is now the monument, to the current location of Green River, Utah. While

not as well documented as Powell's later expeditions, Ashley, through his journals and his inscription in Red Canyon, left a record of the voyage.

After Ashley's passage through the Dinosaur area in 1825, word undoubtedly spread among the furmen of the amenities of life in Browns Hole, particularly as a winter camp. During the flourishing years of the fur trade west of the Rockies, Browns Hole became well known to its adherents (Sarles, 1969:28).

In 1837 Fort Davy Crockett was established as a fur trading post in Browns Hole. It was abandoned in 1840; but in 1842 it was the site of a rendezvous. Kit Carson is one of the historical characters who refers to the existence of the fort. Its ruins were later observed by John C. Fremont. He "passed through Browns Hole on the return leg of his second western exploration of 1843-44" (Sarles, 1969:40).

The exact location of some portions of the Cherokee Trail are unknown, and such is the case where it crossed near Browns Hole. In 1849, portions of the Cherokee nation petitioned for permission to travel to California. Being dissatisfied with life in the east, they hoped to find a better life in the gold rush boom of California. The trail they followed is referred to as the Cherokee Trail. In actuality, the trail is part of the old Santa Fe Trail (Purdy, 1959:15).

William L. Manly and fellow forty-niners were on their way to California to reap some of the riches of the gold boom. Hoping to find a short cut to California, Manly and his cohorts floated down the Green River. After hazarding the risks of Lodore, Whirlpool, and Split Mountain Canyons of the Green River (all located within the present day monument) they decided

that the Green was too much to handle. Near the current town of Jensen, Utah, (just outside the monument's boundary) Manly and his party struck out for Salt Lake City. They were going to go by land, not by river, to seek their fortune. Apparently Manly was one not to learn by past mistakes. It was during the attempt to find another "short-cut" that Manly and other forty-niners became stranded in Death Valley. While making it out alive, it was their experience that supposedly led to the naming of the Valley.

The expeditions of John Wesley Powell are probably the best known, and certainly the best documented, of all the explorations on the Green River. Powell was a geology professor and a former Union Army officer. He later became the first director of the Smithsonian Institution's Bureau of American Ethnology and the second director of the Geological Survey, both largely due to his western explorations (Sarles, 1969: 59).

The first expedition, in 1869, that John Wesley Powell led, was comprised of four boats (which had been shipped out from Chicago) and eleven men, including himself. Drawing army rations and getting some assistance from the Smithsonian, the expedition set out from Green River, Wyoming. Floating the Green River through the canyons within the present-day monument, the expedition continued on the Green down to its confluence with the Colorado River. They continued on the Colorado through Cataract Canyon and the Grand Canyon. In 1871, Powell repeated this voyage. He had a new crew, including

a photographer. Powell's accomplishments had a large impact on the territory he traversed. He thoroughly recorded in his journal the sights and wonders of his travels, commenting on the geology and flora and fauna, as well as ethnological observations of Indians encountered. The records of the two Powell expeditions were the first scientific reports on this territory. Many of the names Powell and his men gave to the features along the way remain in common usage today.

Browns Hole was a favored settling area. The adjacent areas (within the monument boundaries) were settled later.

Permanent settlement of the Dinosaur area apparently began in the early 1850's. Samuel Clark Bassett, a 'forty-niner' from New York, first visited Browns Hole in 1852 and returned to make his home two years later (Sarles, 1969:96).

Browns Hole attracted many settlers over the years. The cattle business gradually grew to become an important factor on the Browns Hole ranches. As larger cattle outfits began to expand into the Browns Hole area, some of the cattle ranchers turned to raising sheep to avoid competition. An uneasy time existed between the small "local" ranchers and the larger ranchers. Sheep and cattle do not mix; so while stopping the spread of the larger cattle outfits onto the land the sheep grazed, the sheep men did not stop the growth of animosity between cattle ranchers and sheep ranchers. One of the last "wars" of this period of western settlement was the Colorado-Utah Sheep War. Occurring in 1920, its effect was felt throughout Browns Hole.

Like Hole-in-the-Wall to the north, Browns Hole early became a favorite hangout for cattle rustlers, horse

thieves and, later, train and bank robbers. It was in the early days, and remains today, to a lesser extent, very inaccessible. Its numerous side canyons were capable of hiding large herds of cattle . . . (Purdy: 1959:20)

"Partly because of its isolation, partly because of the jurisdictional confusion arising from its location at the junction of three states" (Sarles, 1969:98) the area gave those that needed it, an edge over law enforcement officials. Perhaps the most famous occupants of Browns Hole were the "Wild Bunch," led by Butch Cassidy. As one writer has said, legend and truth have become so entwined that it can be difficult to decipher what really occurred in relation to the Wild Bunch. Butch Cassidy hid out in Browns Hole after robbing a bank in Telluride, Colorado. Coming back in 1896, he, and the Wild Bunch, had a hide-out on Diamond Mountain (adjacent to the current monument boundary) (Sarles, 1969:100). Butch Cassidy was reported to have died in South America.

An old cattleman in the Flaming Gorge area [near the monument] (name withheld) when confronted with this information said . . . 'maybe he was killed in South America, but I still had a drink with him in Lander, Wyoming ten years after he was dead' (Purdy, 1959:22).

Cattle continued to play an important role in the ranching activity in Browns Hole. By the last part of the 19th century, cattle rustling had grown to be a problem in Browns Hole. Tom Horn was hired by the Wyoming Cattle Growers Association to collect evidence of rustling. Horn made a few arrests and

repeatedly the accused were exonerated. Horn then made a public announcement that he would deal justice himself. This he did, and so effectively that a mere rumor that he was in the neighborhood was reason enough to move to a healthier climate Three men were killed by Horn in Browns Hole, and the remainder of the residents

moved en masse . . . the days of large-scale cattle rustling came to an end (Purdy, 1959:20).

There is debate whether Horn really killed all three men, but Horn had a reputation for being a hired killer. Many people chose to attribute all three deaths to him because of his reputation.

Browns Hole was a frontier area. Many explorers, trappers, traders, travelers, outlaws, and settlers contributed to the lore of the area. Life was hard on the frontier. People were self-sufficient, but, more often than not, they were willing to lend a hand when it was needed. Their lifestyle contributed to an openness among the residents in Browns Hole. Everybody knew everybody else. The wanderings of Butch Cassidy and his gang, Tom Horn and his activities, as well as the activities of other "travelers" were common knowledge to Browns Hole inhabitants.

One "local" who contributed much to the legend of the area was Pat Lynch. He resided in various caves and shelters within what is now Dinosaur National Monument during the last part of the 19th century. Living as a hermit, he decorated the walls of his shelters and caves with his brand and drawings of ships. Seldom did he venture out of the canyon country. Castle Park and Echo Park were favorite haunts of his. The canyon country was one of the last areas to be settled. So, for most of Lynch's years in the area he had the canyons to himself.

Many descendants of the settlers are still in the area. While most of the families no longer occupy the lands their forebears did, they remain in the vicinity contributing to

the remembrance of times past. It is by tapping these passed-along recollections that historians preserve the past. Visitors to the monument can experience only dimly the colorful past of that frontier.

PART II

THE INVENTORY AND MONITORING OF ARCHEOLOGICAL RESOURCES

Cultural resources are subject to damage through time. Natural as well as man-caused effects may be detrimental to these nonrenewable resources. The inventory and monitoring plan provides a systematic means of mitigating these effects.

Documentation of a given resource for use in civil or criminal suits is essential if it is to be protected to the full extent of the law, and if prosecution of vandals is to be successful. The documentation must follow specific procedures if it is to be presented and upheld in a court of law. The inventory and monitoring procedures are designed to facilitate this.

The inventory and monitoring plan is comprised of three components: inventory, evaluation, and monitoring. Each has an important function in the documentation and protection of cultural sites. Site inventory is concerned with the gathering of data; the work is done at the site. The site evaluation is a review and assessment of the inventory information for the purpose of assigning a monitoring frequency and type; this is done in the office. Monitoring occurs according to evaluation decisions. The inventory information is used as a resource base for comparative work during the monitoring process. Thus

the inventory and monitoring plan is a comprehensive tool for cultural resource management, guiding the collection, evaluation, comparison, and updating of information on sites.

CHAPTER 1

RESPONSIBILITY FOR PLAN IMPLEMENTATION AND RECORDS KEEPING

The Cultural Resource Management Specialist (CRMS) is responsible for the inventory and monitoring plan. The CRMS may delegate duties, but all procedures and evaluations relating to cultural resources should have the concurrence of the CRMS. When needed, qualified staff specialists in the field of cultural resources or associated areas may assist the CRMS in site evaluations. At present the monument does not have a field position associated with cultural resources. Until it does, most site monitoring responsibility will lie with the District Rangers, who have more field personnel than do other units or divisions at Dinosaur.

Site Inventory and Monitoring

Site inventory and monitoring should only be done by the CRMS, District Rangers, or personnel approved for cultural resource work by the CRMS. The regulations relating to cultural resource field workers are specific in establishing "qualifications" for these workers. Some cultural sites should only be accessible to cultural resource personnel (i.e. sites of a sensitive nature). It is recommended that to be approved for site inventory and monitoring, personnel receive instruction

on cultural resource laws, regulations, and inventory and monitoring procedures.

All work done by a site monitor (including the inventory) should be turned in to the individual's immediate supervisor, who checks the work for thoroughness and accuracy. The supervisor, once the work is cleared, should pass it on to the CRMS. The supervisor "clearance" is primarily applicable to seasonal employees. The CRMS is ultimately responsible for the caliber of the monitoring report. The District Rangers work with the CRMS in setting acceptable standards for reports.

Site Evaluations

The CRMS, staff specialists, and other approved individuals are eligible to evaluate sites. Specialists are defined as individuals with specific skills and knowledge relating to cultural resources or a specific type of cultural resource and its needs. For a given site, specialists should have knowledge or skills relating to the type of cultural resource or resource problem in question. By "approved individuals" is meant individuals who are considered to be valuable for the decision-making process.

Cultural Resource Files

The CRMS is responsible for maintaining the master cultural resource files of the monument, which include all inventory and monitoring data. The District Rangers are sent files pertaining to the sites in their districts as well. The CRMS forwards pertinent updated or new information about cultural

resources, as well as all information pertaining to law enforcement activities, to the District Rangers, and they in turn forward all new or updated cultural resource information they get to the CRMS. The District Rangers, who are responsible for law enforcement within the monument, should be informed of anyone who has access to sensitive information regarding cultural sites and their location.

Site information should be arranged in individual site files, organized according to quadrangle designations, and then placed in numerical sequence according to pre-existing site numbers. The quadrangle groupings should be arranged alphabetically within each district. Contained within each site file should be the following: inventory form, evaluation, monitoring form and schedule, and all other related materials pertaining to the site such as photographs, maps, case incident reports, etc.

CHAPTER 2

DESCRIPTION OF THE INVENTORY AND MONITORING PROCESS

Site Inventory

Inventory is the initial data gathering and recording that occurs at a site, the primary information base of the inventory and monitoring system. The site evaluation is formulated from this information, and the information becomes a reference for comparison in future monitoring activities. The information provides a record of the site surface, factors likely to have an impact on the site, a sketch map, and photographs. All field information is obtained by standardized procedures to ensure legitimacy of data and legitimacy of future comparative work. A standardized form is provided for site inventory (the same form is used for monitoring). A standardized form for the recording of rock art is provided as well. It should be filled out in addition to the inventory and monitoring form at sites where rock art is present.

In the process of conducting the inventory the field worker tries not to disturb the site with excavation or digging. Site features and artifacts are to remain undisturbed. Only surface-visible site components are recorded. Conjectures on site content may be discussed in the site narrative (in the inventory and monitoring form). Inventory data, maps, and photographs

are part of the permanent site record. This site information is to be considered sensitive and handled according to guidelines established earlier in this report. Amendments to inventory data may appear in the form of monitoring reports. No changes are to be marked on the inventory form or associated documents. The value of inventory is threefold: 1) it serves as a documentation of archeological sites, their contents and contexts; 2) it provides data for future comparative work at the site; and 3) it provides a basis for the formulation of a system to safeguard the site and its contents.

Site Evaluations

The site evaluation is the review and assessment of site inventory or monitoring data. Its purpose is to establish a monitoring type and frequency, determine if any site stabilization measures are needed, and to revise (if necessary) any previous site treatment plans (including monitoring frequency and type). Most recommendations for site stabilization should first be cleared with the NPS Regional Archeologist before stabilization is attempted. Stabilization is understood to mean the attempt to stop further deterioration at a site.

The monitoring frequency and type for each site will be determined by evaluating the site inventory or updated monitoring data. The evaluation should be done by the CRMS. Recommendations from archeologists for site treatment should also be considered in establishing a site monitoring frequency and type. Dr. D. A. Breternitz surveyed much of Dinosaur National Monument in 1965. He recommended a site "treatment" for many of the

405 sites that were recorded. Other archeologists have worked in Dinosaur since Dr. Breternitz, but on a much smaller scale. The professional (archeological) assessments of sites should be used in helping to determine monitoring frequency and type.

It is recommended that the monitoring frequency be one of the following six categories: weekly, monthly, semi-annually, or annually monitored; no monitoring; or, other (frequency to be stated). The frequency determines how often a site should be visited for monitoring purposes. The determination of how frequently monitoring should occur will depend on a variety of factors: the amount of public visitation to the area; evidence of possible vandalism; site visibility, accessibility and condition; the type of site or type of artifacts present at the site; and any previous recommendations by archeologists for site treatment. These factors should be considered before a monitoring schedule is decided upon. Sites with greater potential for change due to human impact should be considered for more frequent monitoring. Sites with little potential for change due to human impact should be considered for less frequent monitoring. Overriding both of these considerations would be determinations by an archeologist in regard to frequency of monitoring (e.g. a site of little or no significance may require no monitoring conversely, a site may be of such a significant nature that it requires more frequent monitoring).

Monitoring "type" defines the procedure that should be used in conducting the monitoring process. In most instances it should involve site visitation, and comparison of the site to previously collected inventory or monitoring information.

Another monitoring type might be a recommendation of site observation but not site visitation. This would be especially applicable for sites with difficult access, or sites that need frequent but unobtrusive checking. If a site was determined to need intensive monitoring, the use of specialized surveillance equipment might be recommended. The use of such specialized equipment, or a high rate of monitoring frequency, may require the assistance of the District Rangers. The CRMS, while responsible for site evaluations, may collaborate with others in making evaluation decisions. Individuals with specialized background in archeology, law enforcement, etc, may be of great assistance to the CRMS.

After reviewing the site inventory, or updated monitoring report, the CRMS may decide that stabilization is needed to preserve the current integrity of an archeological site. Decisions for stabilization should be approved by the regional archeologist. A site might need stabilization to preserve it, but the site contents might not warrant preservation. Also, improperly done stabilization can diminish the archeological value of a site. Site stabilization procedures vary from site to site. Procedures may be as simple as trimming vegetation away from rock art or as complex as re-routing drainage areas. The key factor to remember when considering stabilization measures is that stabilization attempts to prevent further site deterioration. It does not attempt to reconstruct or rebuild any portion of the site.

The site evaluation will be routinely done after the site inventory is completed. It will need to be redone after site monitoring only if change at the site is observed. If the

monitoring procedure turns up no site changes, the site evaluation can remain as is.

A summary of the evaluation should be completed and placed in the site file. The summary should include the frequency and type of monitoring, as well as any specialized instructions for site treatment or monitoring, or both; e.g., at some sites it may be necessary to record deterioration of a feature or the whole site at each monitoring visit. Specialized instructions for monitoring should be placed in the front of the site file.

Site Monitoring

The purpose of site monitoring is to detect and document change at an archeological site. Change at the site may occur from a variety of natural or man-caused events. By being able to detect change at a site, park personnel may slow down or stop negative impacts. The monitoring of each archeological site should comply with the frequency and type of monitoring recommended during the evaluation of the most current site inventory or monitoring report. The monitoring procedure is a follow-up of the inventory procedure. The monitor will compare current site conditions with the site conditions at the time of inventory or the last monitoring visit, as the case may be. If no change is noticed at the site, the monitoring form will be labeled as such. If change is noted, then the monitoring form should be completed. The monitoring information should include site photography (including the "item" of change), measurements of the area affected by the change, and the addition of the change to the site map (when applicable). The

monitor, when filling out the site monitoring form, should make a brief note of what the site change is, at the top of the form. This will facilitate the office review of the monitoring report.

Some of the archeological sites may have a specified area of monitoring "intensity." The site might have an area experiencing progressive deterioration, or an impact study might be in process. The monitor should record thoroughly, at each visit, the intensity areas. Methodology would involve photography, measurements, and possible re-mapping. If the rest of the site is unchanged, the monitoring form would not have to be completed to encompass the entire site.

In summary, the monitor should note on the top of the form that it is a monitoring report (the same form is used for site inventory); note whether change has occurred, and, if yes, note where it has occurred (in brief at the top of the form, and in detail in the body of the report). If no change is noticed the monitoring form will be turned in with just the site number, date, and monitor's name filled in (unless other work, to be specified by the CRMS, is to be done).

CHAPTER 3

METHODOLOGY FOR SITE INVENTORY
AND MONITORING

Site Inventory and Monitoring

Form

1. Site #: _____ 2. Site name: _____ 3. Date: _____
4. Quad: _____ 5. Recorder: _____
6. Site location: map ____ $\frac{1}{4}$ of ____ $\frac{1}{4}$ of ____ $\frac{1}{4}$ of section ____
T ____ R ____ 7. Compass orientation: _____
8. Geographic location: _____
9. Site vegetation: _____
10. Surrounding vegetation: _____
11. Cultural affinity: _____
12. Site type: _____
13. Dimensions: _____ 14. Base point: _____
15. Features and measurements: _____

16. Associated artifacts: _____

17. Vandalism: Type _____ Location _____
Type _____ Location _____

Tools

The tools needed to perform site inventory and monitoring are varied. It is recommended that the field inventory and monitoring kit should include the following items: the inventory and monitoring form, clipboard, graph paper, pencils, erasers, ruler, tape measure, compass, photographic equipment (see photography list in photography section), and maps of the monument (quads). When going to specific sites, the monitor may take copies of previous site reports (originals should remain in the cultural resource files).

Inventory and Monitoring Instructions

The use of systematic procedures in the gathering of site information helps to ensure reliability and consistency of data. The same procedures should be used at all sites whenever possible. Any deviation from these procedures should be reported.

A standardized form is supplied for site inventory and monitoring (see page 49). The following is an explanation of the form and data gathering methods.

1. Site number: Identify the site by its archeological reference number, e.g. 5MF1 or 42UN1.
2. Site name: Record the site name, if one has been assigned.
3. Date: Record the date the information is gathered.
4. Quad listing: Record the name of the quad in which the site is located.
5. Recorder: Record the name of the individual gathering the data.
6. Site location: Record the quad coordinates of the site

location, map $\frac{1}{4}$ of $\frac{1}{4}$ of $\frac{1}{4}$ of section T R .

7. Compass orientation: Specify the direction which the site is orientated towards. When taking directional readings on rock art the "recorders" back should be turned to the rock art. If there is more than one orientation record each one.
8. Geographic location: Define the site relationship to the surrounding geography, e.g. on a low hill, 100 yd. E. of Cub Creek.
9. Site vegetation: List the vegetation on the site, identify the primary vegetation.
10. Surrounding vegetation: List the vegetation surrounding the site, identify the primary vegetation.
11. Cultural affinity: Some sites are identified by archeologists as being the product of a particular culture. Other sites are culturally recognized by content, e.g. Fremont trapezoidal figures. Record site cultural affiliation if identification is positive. Designate as probable or unknown what you lack information on.
12. Site type: Define the type of site, e.g. pictograph, petroglyph, chipping site, campsite, pithouse, storage cairn, midden, etc. If a site is comprised of several types record all types.
13. Dimensions: Record the dimensions of the site.
14. Base point reference: Record the point from which all general photographs are taken. The base point should also be indicated on the site map.

15. Features and measurements: Record all site features and their dimensions individually. "Feature," for the purpose of this report, will be defined as a surface-visible structural, natural (such as a cave), or rock art component. A rock art panel may be treated as one entity.
16. Associated artifacts: Record all surface-visible artifacts and their dimensions individually. "Artifact" is defined, for the purpose of this report, as an object of human workmanship, other than a structure or rock art. Lithic scatter should be described as one unit.
17. Vandalism: Describe the type and location of any site vandalism.
18. Site disturbances: Define the type of disturbance and its location in the site. A "site disturbance" is defined, for the purpose of this report, as a condition threatening the integrity of the site. Disturbance excludes all human-caused incidences (they are covered under vandalism). It includes all "natural" disturbances: rockfall, erosion, animal burrows, vegetation, etc.
19. Site visibility: This is recorded according to two considerations: 1) degree of visibility from traveled areas (roads, rivers, trails); and 2) the degree of visibility of the site in relation to the general terrain (surface visibility). These questions may be answered with responses of high, moderate, or low visibility. Low visibility includes the category of not visible.
20. Site accessibility: Record site accessibility in relation

to accessibility by road, river, or trail. Levels of accessibility are 1) very accessible (easy access) by road, river, or trail; 2) moderate accessibility by hiking off of a road, river, or trail; and 3) difficult accessibility (includes inaccessible) by hiking or climbing off of a road, river, or trail.

21. Site condition: Define site condition in relation to extant portions of the visible surface of the site. The categories of definition are 1) pristine condition (little if any deterioration or damage to the site); 2) moderate condition (at least half of the site intact with little or no deterioration); and 3) poor condition (extensive deterioration to over half the site). Deterioration and damage refer to anything lessening the integrity of the site regardless of the cause.
22. Vegetation trend plot: Specify whether a trend plot is in process. If yes, describe the area where the trend plot is. Trend plots may be done to aid in monitoring human or animal traffic and impact at a site.
23. Site map: Specify whether a site map has been made (most inventory work will include a site map). The map should be to scale and should include site features, artifact locations, base point reference, and vegetative trend plot locations. The cardinal directions should be indicated on the map. The map should be attached to the inventory form. The site map should only need to be revised during the monitoring process if change has occurred at the site.

24. Photographs: Specify whether site photographs have been taken (in most instances, photographs will be taken). A photo log should be kept of all photographs taken. Information on what comprises the log and photography guidelines may be found in the photography section of this report.
25. Narrative: The narrative is used, as necessary, to elaborate any previous remarks.

Rock Art Documentation

Special Considerations

Due to the nature of rock art, usual inventory or monitoring methods are inadequate to record it properly. A rock art recording form has been developed to aid field personnel in its documentation. The form should be used in addition to the inventory and monitoring form at all rock sites. The recorder should bear in mind that not only is rock art presence being documented, but also rock art content, style, technique, color, and context. Photographic work will need to be thorough in the recording of these aspects. Color film will be used as a secondary medium in the film recording of the art. Sketches or tracings may be necessary in addition to the photography. The completed Rock Art Recording Form will be a supplement to the Inventory and Monitoring Form.

Rock Art Recording Form

1. Site #: _____ 2. Name: _____ 3. Date: _____
 4. Rock: _____ 5. Facing: _____ 6. Recorder: _____
 7. Panels: _____ 8. Technique: _____

9. Design elements: _____
10. Colors: _____
11. Superimposition: _____
12. Patination: _____ 13. Lichen: _____
14. Weathering: _____
15. Tracing or sketch: Y or N (if present, attach to form)
16. Photographs: Y or N (if taken, attach to form)
17. Narrative: (use to explain or further describe items above,
as necessary) _____
- _____
- _____
- _____
- _____
- _____
- _____
- _____
- _____
- _____
- _____

Note: Fill out this form in addition to the Inventory and Monitoring Form. This form should be attached to the appropriate Inventory and Monitoring Form.

Tools

The recording of rock art requires some special tools. These tools should be part of the field equipment inventory attendant to inventory and monitoring work. Following is a listing of recommended tools for the recording of rock art: the rock art form, color chart, meter stick or ruler, pencils,

graph paper, note paper, tracing paper, and photographic equipment. Refer to the photography section of this report for more information on photographic methods and equipment for the recording of rock art.

Rock Art Recording Instructions

A specialized form is used to record rock art. The form is separate from the Inventory and Monitoring Form. The Rock Art Form should be filled out for all rock art sites, in addition to the Inventory and Monitoring Form. Instructions for completing the Rock Art Form are as follows:

1. Site #: Identify the site by its archeological reference number, ex. 5MF1 or 42UN1.
2. Name: Record the site name, if one has been assigned.
3. Date: Record the date the information is gathered.
4. Rock: Identify the type of rock the rock art is on.
5. Facing: Record the compass facing for the rock art orientation.
6. Recorder: Record the name of the individual gathering data.
7. Panels: Identify how many panels compose the rock art grouping (many have only one, some have more). A panel is a cluster of rock art (it may also be singular); a gap of undecorated rock between groupings of rock art identifies a panel division.
8. Technique: Record the type of method used to decorate the rock. A petroglyph is rock art that is formed by incising the design by chipping, drilling, scraping, pecking, etc. If possible, describe the petroglyph method. A pictograph

is created by coloring the rock with pigment (no incising). Rock art may be composed of both petroglyph and pictograph elements; if so, identify as such.

9. Design elements: Identify the design elements, circles, animals (type if known), anthropomorphs, shields, lines, etc.
10. Colors: Record the pictograph colors. Use a color chart to get the closest approximation possible.
11. Superimposition: Record if superimposition exists (rock art overlaying rock art). If it does exist, identify which section of the panel is involved, as well as the design elements.
12. Patination: Identify whether patination overlays any of the rock art; include, if patination exists, which section of the panel is affected.
12. Lichen: Identify whether any of the rock art is covered by lichen. If lichen is present, identify which section of the panel is affected.
14. Weathering: Record whether the rock art is affected by weathering (include erosion). If possible, identify possible cause of the weathering such as flaking, water erosion, etc.
15. Tracing or sketch: A tracing or sketch of the rock art is desirable, especially if one has not previously been done. Procedures for design copying should be cleared with the CRMS.
16. Photographs: Procedures for photographing the rock art

are discussed in the Photography section of this report; refer to that section for guidelines.

17. Narrative: This should be used to further describe or discuss any of the previous subjects, as well as any other pertinent information.

Photography Techniques and Record Keeping

Photography is important in recording archeological information. It provides a visual record of the site, its features, artifacts, and condition. This comprehensive record is a reference which serves to document site change. To this end, guidelines have been established to provide for consistency and accuracy in photographic work. These guidelines will result in a reliable, consistent record of each site for future evaluations and comparisons. This record will help to provide appropriate documentation of the site for use in civil or criminal suits.

Guidelines for photographic equipment, procedures, and storage have been formulated. The necessary equipment should include the following: 2 camera bodies, 1 50 mm 1.8 lens, 1 wide-angle lens, 1 telephoto lens, black-and-white PX135 film (slides), color film (prints), meter stick, tripod, color chart, photo log book, compass, and photographic file drawers for the filing of slides, prints, and negatives.

Before the site is photographed a base point should be established. This point or location serves as a standard location for all general photographs. By using the base point for photographic documentation of the site, each photo taken

at that point becomes a standardized reference which can be used for future comparative purposes.

Two types of photography ought to be taken at a site, general and specific. The general photographs serve as documentation of the site as a whole. Specific photographs document features and artifacts of a site. General photographs should be taken from the base point. (The base point should be included in the photographic log). The total site should be encompassed in one frame, if possible. If the distance needed to accomplish this will greatly diminish the site and site features a series of photographs taken from left to right, encompassing the whole site, may be substituted. The series should be numbered in sequence. In addition to the "series," a wide-angle lens may be used to document the site as a whole. Due to distortion however, wide-angle lens photos may not substitute for the "series" or any other general photographs.

Specific photographs of site features and artifacts serve to further define and record the site. All site features and artifacts, or artifact groupings, may be documented in this manner. Also warranting specific photographs are vandalism and other conditions having impact on or posing as a threat to the site (erosion, vegetation, animal burrowing, etc.). Rock art panels, if photographed in a series, should be photographed from left to right, and the panels numbered according to sequence. Specific photographs do not need to be taken from the base point.

Black-and-white slide film should be the primary film used

in the photo-documentation of sites. Color print film may be used as auxiliary documentation of pictographs. The use of two camera bodies facilitates site photography by having one loaded with black-and-white film and one with color. If two camera bodies are used the lens should be interchangeable between the two. A 50 mm 1.8 lens should be the primary lens used; if another lens is used it should be documented on the photograph and in the photo log. For detail or panoramic site photos the telephoto or wide-angle lens can supplement the 50 mm 1.8 lens. The tripod may be needed in low-light areas to provide an acceptable quality of photograph. A meter stick should appear as size documentation in photographs or else the "subject" should be measured and its size recorded. Auxiliary photographs of already documented sites, features, or artifacts may not need the meter stick. (Due to distortion all wide-angle photos should have the meter stick in the photo). The color chart should be used to record the color of pictograph pigment. Color photos lose color as they age; they do not provide accurate color representation as a result.

All photographs should be recorded in the photo log book; this should be included with the inventory and monitoring report. The photo log should include the following information for all photographs: date, time, photographer, site name and number, number of photograph on the roll, identification of what is being photographed, base point reference (if one is being used), distance from object being photographed, color chart colors (if pictographs are being recorded), type of film,

film speed, lens, and shutter speed.

The film should be processed by the supervisor directing the work. After the supervisor approves the processed film for clarity, it is passed on to the CRMS. Copies should be made available upon request for the District Ranger's files for future site reference material.

A master file should be kept of all site photos. They should be accessioned with the site number, date of photograph, and subject of photograph, and kept in a secure and acid-free environment. The master file should be kept as a permanent reference, its contents should not be available for distribution or field or interpretive use. Copies of the photos may be arranged through the CRMS. Access to this file, as with other cultural resource material, ought to be controlled.

The District Rangers should maintain an up-to-date representative duplicate collection of site photos for comparative field work. These photos should also be kept in a secure manner and placed in plastic sheeting for field work purposes.

All photo files should be organized in a coherent manner and according to site designations. General photos precede specific photos; and photos should be placed in chronological order, according to the dates when taken.

Law Enforcement Procedures

The CRMS and District Rangers should be notified if there is evidence of vandalism, pot hunting, etc. at an archeological site. Field personnel should take care to not disturb the site or the evidence of illegal or questionable activities (this

includes tire tracks and foot prints). Documentation of illegal activities for use in criminal or civil suits should be left for those with proper training, such as the District Rangers. When coming upon a scene of suspected vandalism or pot hunting, field personnel should contact the CRMS or the District Ranger for instructions on how to proceed.

CONCLUSION

Dinosaur National Monument has a rich and varied cultural history, evidence of cultural occupancy extends back to 5000 B.C. This cultural record is a valuable resource, and it this record which is in need of preservation today. Vandalism has occurred at many sites and degradation of sites due to natural conditions is ongoing.

The implementation of the Inventory and Monitoring Plan is crucial if the archeological resources of the monument are to be perpetuated. Through inventory, evaluation, and monitoring the plan provides for the continuation of these resources. And, in implementing the Inventory and Monitoring Plan, the monument is complying with federal standards for cultural resource protection.

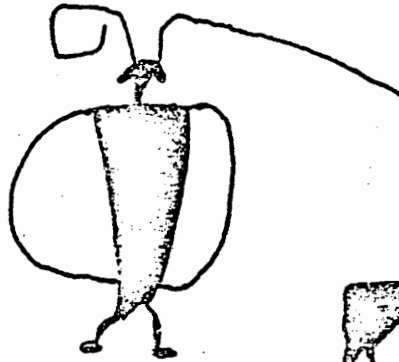
The inventory provides comprehensive documentation of the site and site conditions. The evaluation seeks to identify negative impacts on the site, and provide for mitigation of these impacts, if necessary; as well as establishing a monitoring schedule. Monitoring compares current site conditions with previous site reports, thus attempting to identify any changes at the site. If change is observed the evaluation re-occurs. The Inventory and Monitoring Plan may also serve as a deterrent for vandalism or pot hunting by providing a site record that would stand up in a civil or criminal suit,

if necessary.

The cultural resources are a link with the past, a record that is irreplaceable. The Archeological Inventory and Monitoring Plan is a valuable tool for the preservation and perpetuation of these resources of Dinosaur National Monument.



42UN40



42UN89



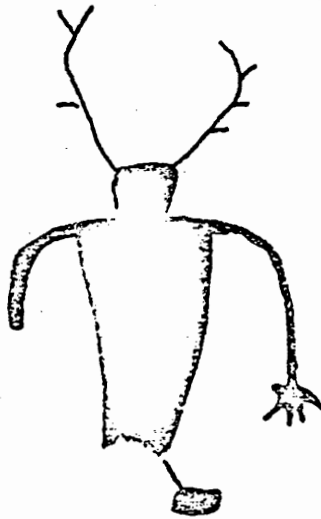
42UN89



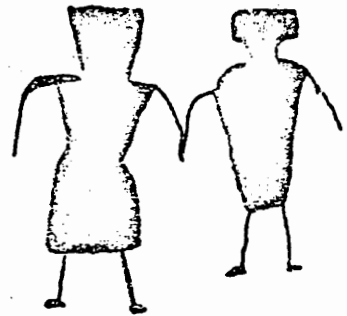
42UN40



42UN59



42UN54



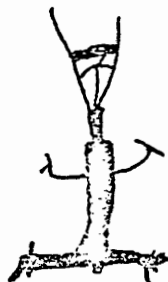
42UN99



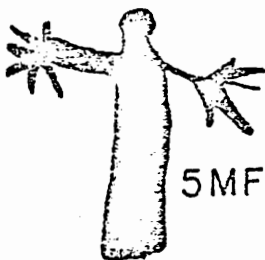
42UN89



42UN89



42UN54



5MF72



5MF9



42UN117

Illustration 2: Rock Art--Cluster D, (Burton, 1971:46).

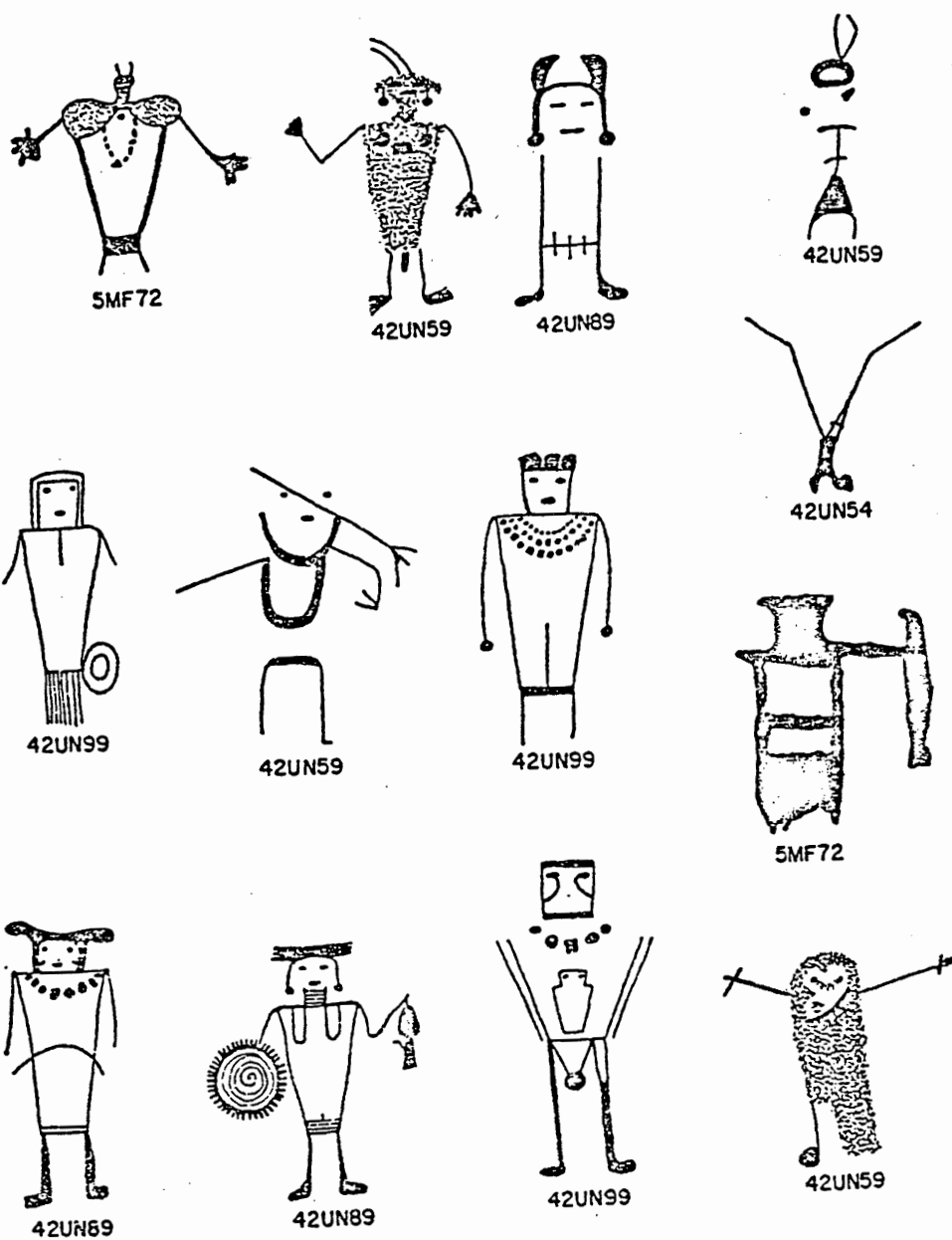


Illustration 3: Rock Art--Cluster B, (Burton, 1971:46).

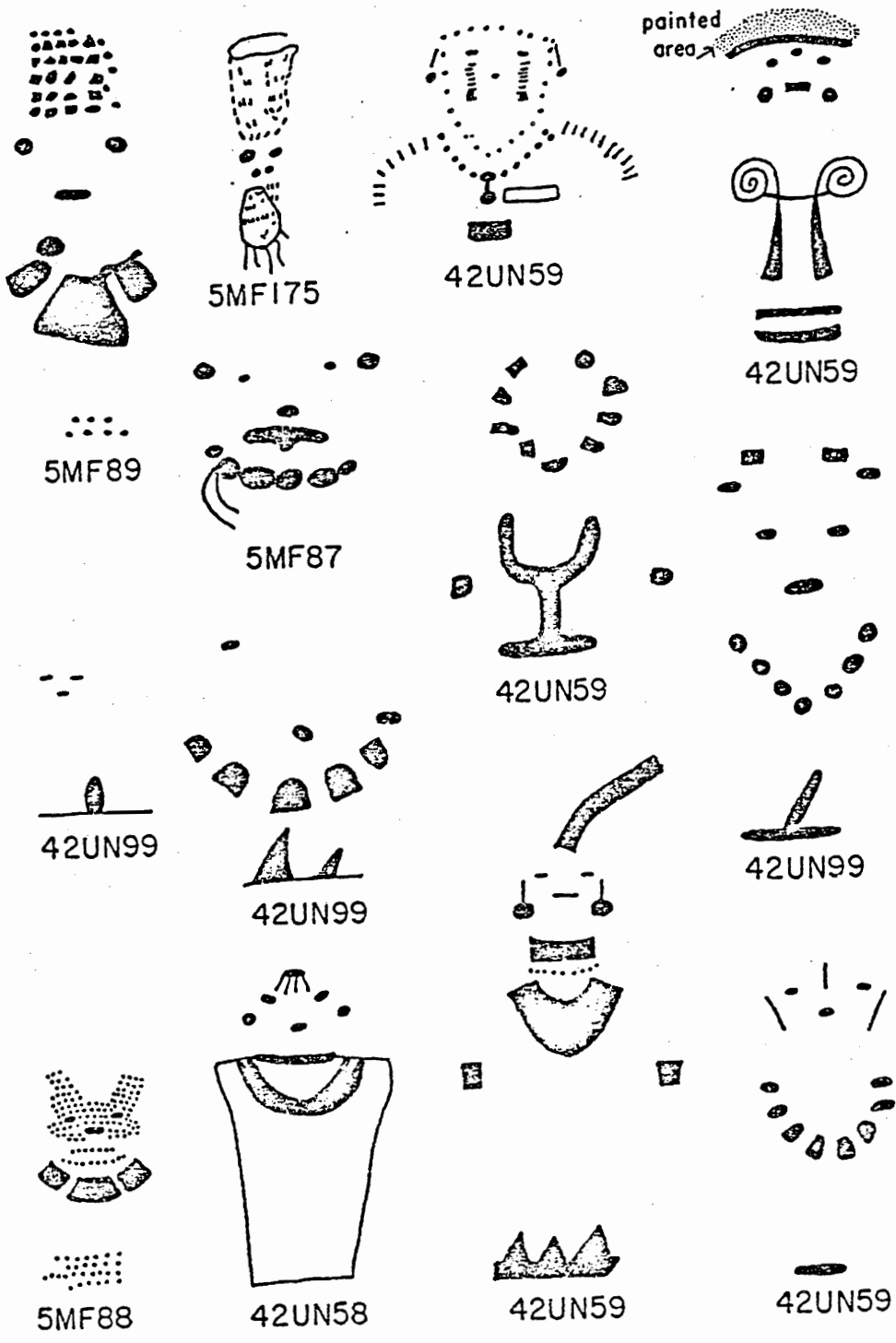


Illustration 4: Rock Art--Cluster A, (Burton, 1971:41).

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