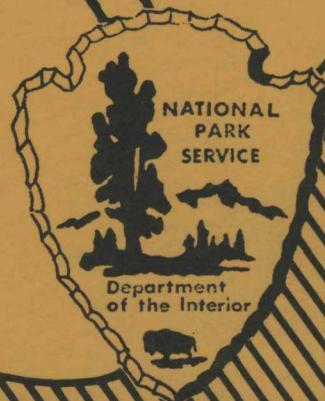


ARCHEOLOGICAL ASSESSMENT

of the
BUFFALO NATIONAL RIVER

by Daniel Wolfman

Arkansas Archeological Survey
Research Report No.18



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ABSTRACT

The establishment of the Buffalo National River along one of the few remaining large, free-flowing streams in the state of Arkansas necessitates a comprehensive study of the archeology of the park area. This study, funded by the National Park Service, is the first step in the long process of preserving the park's archeological heritage, a significant portion of which is being lost due to surface collecting and digging by "treasure hunters" at the archeological sites. This report includes a review of published references relevant to the archeology of the Buffalo National River and a summary of reports prepared by amateur and professional archeologists on the 254 known sites within the boundaries of the Buffalo National River on file with the Arkansas Archeological Survey. Past archeological research is synthesized and recommendations are made including some ideas about how future archeological investigations may be approached to provide meaningful interpretations.

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PREFACE AND ACKNOWLEDGMENTS

The establishment of the Buffalo National River along one of the few remaining large, free-flowing streams in the state of Arkansas necessitates a comprehensive study of the archeology of the park area. For more than half a century the Arkansas Ozarks have attracted national attention archeologically due to the presence of dry shelters in which well preserved remains of material culture, rarely encountered in archeological sites in other regions, have been found. Despite this rare and important feature, relatively little is known of the archeology of this region in general and almost nothing about the specific area within the boundaries of the Buffalo National River (Figs. 1 and 2).

The nonrenewable archeological resources of the Arkansas Ozarks are being slowly destroyed due to surface collecting and digging by "treasure hunters" at the archeological sites. The establishment of the Buffalo National River will increase the number of visitors to the park area many times over and will place a much greater strain on these vulnerable resources. In addition, the development of this park will require interpretation of the archeology for the interested visitor. It is morally, legally, and scientifically imperative that the archeological information on these government owned lands not be lost. This short report, the first step in the long process of salvaging the archeological information, provides the following:

- (1) Review of published references relevant to the archeology of the Buffalo National River including a discussion of past research in the Arkansas Ozarks and some ideas about how future archeological investigation may be approached to provide meaningful interpretations.

(2) A summary of reports prepared by amateur and professional archeologists on the 254 known sites within the boundaries of the Buffalo National River on file with the Arkansas Archeological Survey.

(3) Recommendations for further archeological work within the park are made with four overlapping objectives in mind:

- a. An adequate assessment of archeological resources in the park.
- b. Mitigation of the impact of the greatly increased number of tourists and of facility development within the park boundaries.
- c. Adequate scientific understanding of the total archeological resources of the park.
- d. The need to interpret these archeological resources to the public.

This report could not have been prepared without the aid of a number of individuals. The staff of the Buffalo National River provided continuous cooperation throughout the past year; particularly helpful were Donald Spalding, Superintendent; Harold Grafe, Chief Park Ranger; Tom Lucke, lawyer for land acquisition; Francis Kocis, District Ranger at Buffalo Point; and especially Steve Blackburn, cartographer, who accompanied me in the field on several occasions. Scientifically inclined amateur archeologists, including John Newton of Harrison, Steve Erwin of Fayetteville, and Gene Waters of Western Grove provided much of the basic data on site survey forms which served as the basis for Part II of this report. Personal discussions with these amateurs were also of considerable help. In addition, John Newton's manuscript (Newton n.d.) on his long-term archeological investigations in the Buffalo River drainage provided additional information. Reconnaissance of the

The Buffalo River Arkansas

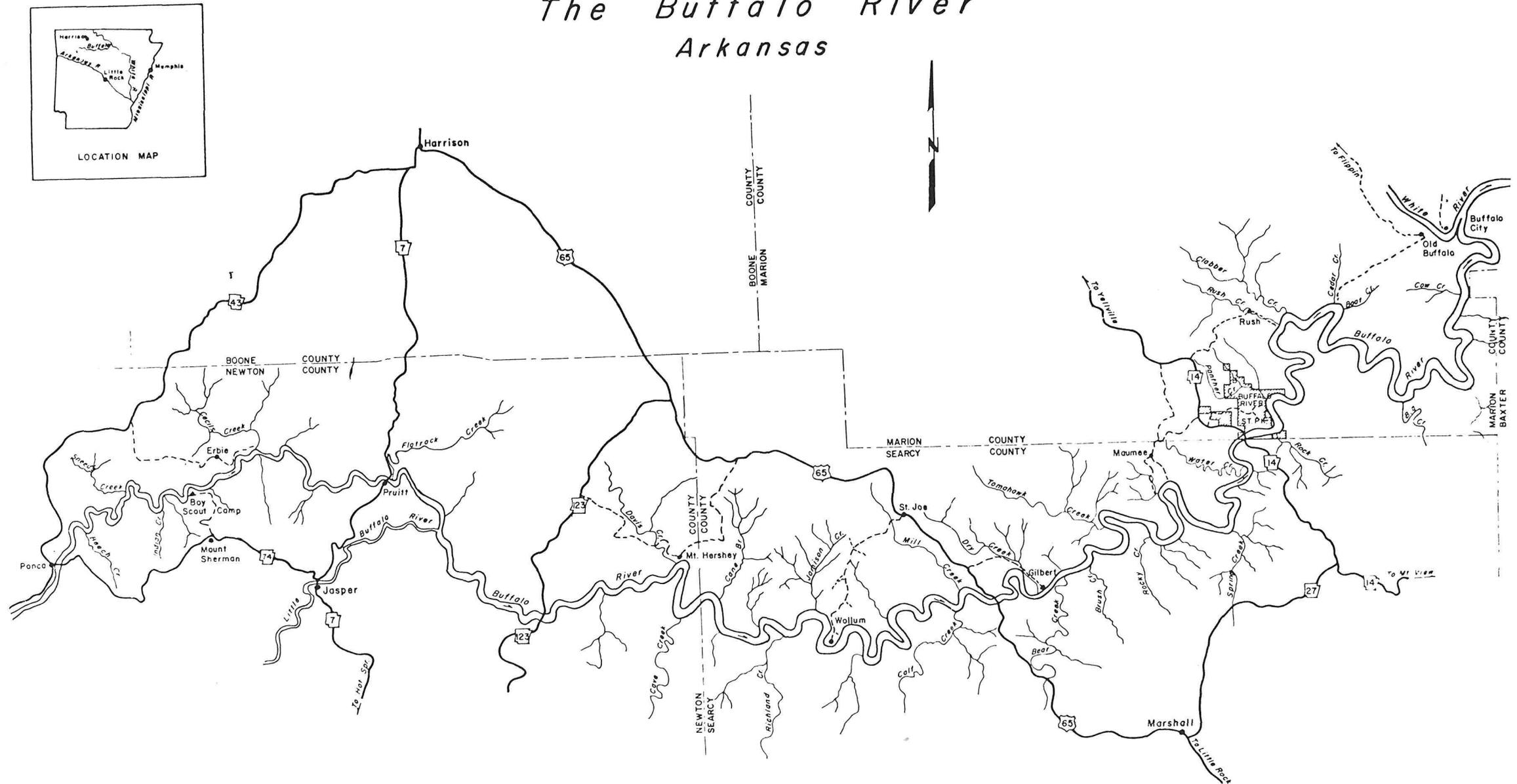


Figure 1. The Buffalo River, northcentral Arkansas (map courtesy Arkansas Game and Fish Commission 1962).

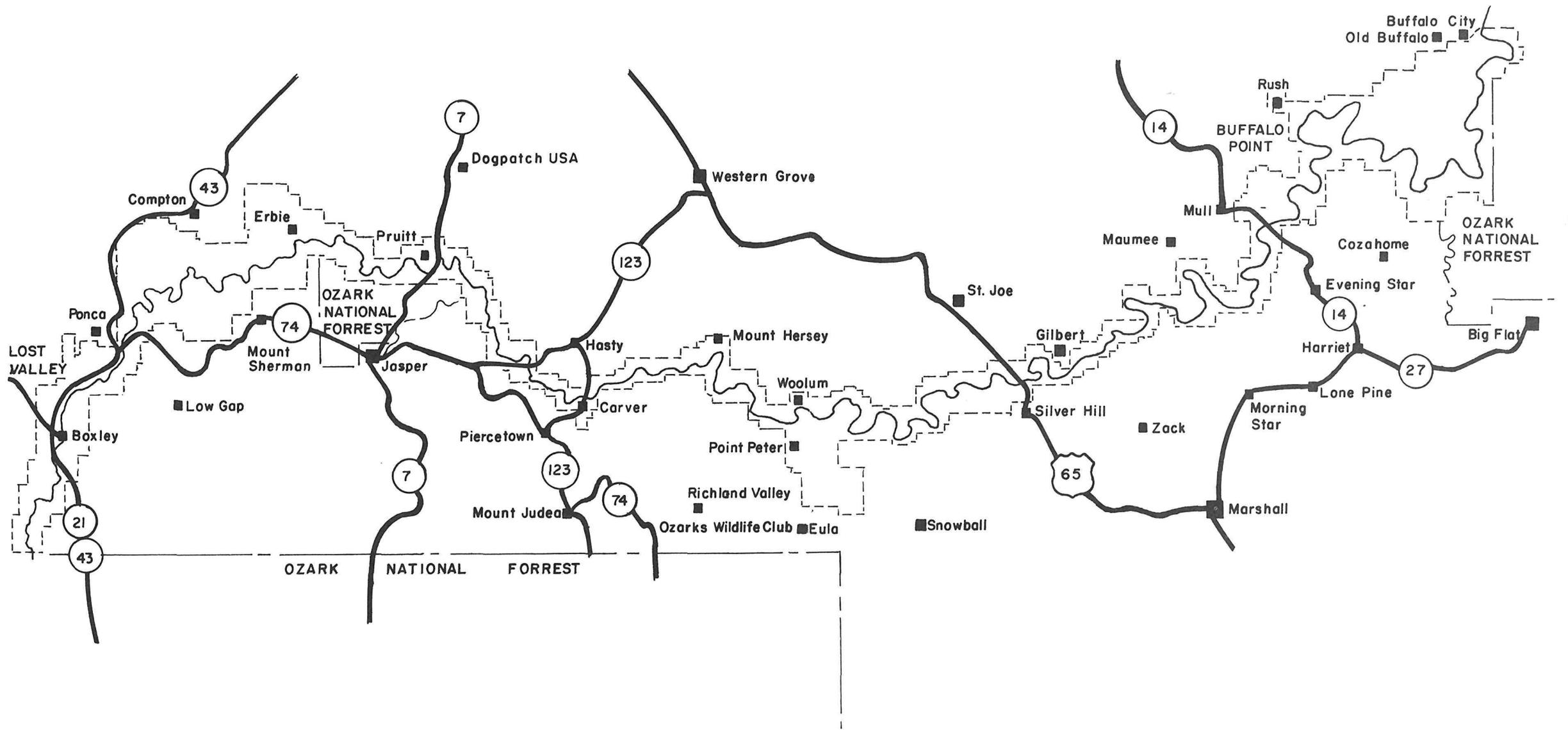


Figure 2. The Buffalo National River (map from Draft Environmental Statement, National Park Service).

area was vital to provide some idea of the problems involved in future investigations. Kenneth Cole, my predecessor as Survey Archeologist at the Russellville Station of the Arkansas Archeological Survey, provided an introduction to the river and the terrain surrounding it in August 1973. Later, Ted Lau, an amateur archeologist from Harrison, accompanied Steve Blackburn and me on several trips to locate sites in and adjacent to the park. Mrs. Jerry Williams, typist-technician at the Russellville Station, helped plot sites and tabulate much of the data presented in Part II of this report and typed several drafts of the manuscript. To all of these individuals, I offer my thanks.

July 1974

This report was written and submitted to the National Park Service in 1974. A Research Plan and Budget for an intensive field testing survey was included in the original report. The proposed work has not yet been funded. Since that time (almost 5 years ago) experience gained in contract archeology and inflation make these sections completely out of date and consequently they have been deleted from this publication.

May 1979

PART I
REVIEW OF PUBLISHED SOURCES RELEVANT TO THE ARCHEOLOGY OF
THE BUFFALO NATIONAL RIVER

History of Archeological Research in the Arkansas Ozarks

The importance of the archeological remains in the Arkansas Ozark bluff shelters was noted in the early years of this century (e.g. Peabody 1903, 1909, and 1917; Peabody and Moorehead 1904:7-9; and Bushnell 1915). Systematic archeological research in this region, however, began with the excavations and surveys undertaken by Mark R. Harrington of the Museum of the American Indian in 1922 and 1923. This work, primarily aimed at the recovery of perishable remains, led to the excavation of dry shelters along the White River and other drainages in northwest Arkansas and southwest Missouri. The results were summarized in an article published shortly after the completion of the fieldwork (Harrington 1924) and many years later in a longer monograph (Harrington 1960). Based on his work in the southern Ozarks in 1922 and 1923, Harrington defined the so-called bluff-dweller culture and a later short-lived top-layer culture. Although these terms are not widely used by professionals today, the terms have passed into the popular literature about the area. The place of these "cultures" in relation to more recent archeological syntheses is discussed in the following section. The material remains of the bluff-dweller culture include chipped stone projectile points, scrapers and knives, grinding stones, atlatls, basketry, bags, and late in its history, cultivated plants and pottery. Although Harrington was aware of some stratigraphic differences in the shelter deposits, his reports provided no detailed

information about them. As we now know from more recent excavations, the bluff-dweller culture lasted thousands of years during which many climatic and cultural changes occurred.

Perhaps the most important outcome of Harrington's work was the examination of the plant remains recovered by competent ethnobotanists. Gilmore's (1931) study of the botanical remains from these excavations is a landmark of this type of investigation. These studies showed that the occupants of the bluff shelters cultivated a great variety of plants. In addition to the presence of the often cited trinity of American Indian agriculture, corn, beans, and squash, Gilmore presented evidence that gourd, sunflower, marshelder, lamb's quarter, canary grass and giant ragweed were also cultivated. Many years ago, Linton (1924) had suggested that cultivation of other plants may have preceded corn in the eastern United States. In a recent review of the evidence, Struever and Vickery (1973) offered support for this hypothesis and defined an "Eastern Agricultural Complex" including most of the cultigens recognized by Gilmore in the Ozark bluff shelters, which they believe preceded corn, bean, and squash agriculture in the eastern United States. Given the importance of the Ozark data in this discussion it is indeed unfortunate that Harrington did not keep better stratigraphic records. Other ethnobotanical studies on this material include Blake's (1939) specialized paper on marshelder and Payne and Jones's (1962) study of giant ragweed.

Harrington's (1960:134-140) rapid reconnaissance in 1923 of the lower portion of the Buffalo River, during which he traveled by canoe up the Buffalo from the White River at least as far as Panther Creek, was the earliest archeological work within the boundaries of the Buffalo



Figure 3. View from the occupation area of Cob Cave (3NW6).



Figure 4. Young's Creek cutbank exposing site 3NW411.

National River. During this trip, a number of open sites on the terraces of the Buffalo River were recorded as well as a few shelters within the Buffalo National River some of which can be recognized today from Harrington's descriptions. Among those mentioned were 3MR35 (Indian Rock House), 3MR33, 3MR53, 3MR51, 3MR80, 3MR36, and 3MR39.

S. C. Dellinger, Curator of the University of Arkansas Museum, undertook excavations at approximately 85 shelters in the Arkansas Ozarks between 1928 and 1935. As had Harrington before him, Dellinger directed his attention to the dry shelters and the recovery of perishable remains. Unfortunately, no site reports and only the briefest overall summary (Dellinger 1932) were ever written about this work. However, Dellinger did collaborate on articles about particular items of material culture including pottery (Dellinger and Dickinson 1942), baby cradles (Dellinger 1936), and pioneer studies on the effect of diet and disease on human skeletal remains (Wakefield and Dellinger 1936, 1940; Wakefield, Dellinger, and Camp 1937). The field records and the materials excavated are on deposit in the University of Arkansas Museum where in recent years they have provided material for two M.A. theses, one on the faunal remains in the shelters (Cleland 1960; later published as Cleland 1965), and one on cordage, netting, basketry, and fabrics (Scholtz 1970, published as Scholtz 1975). Material excavated from shelters within the boundaries of the Buffalo National River provided some of the data utilized in both theses. Material from 3NW6 (Cob Cave) and 3MR35 (the Indian Rock House) was included in the first thesis and material from 3NW6, 3NW58, and 3MR59 in the second. Other shelters within the boundaries of the Buffalo National River visited by Dellinger and/or



Figure 5. Scenic view along the middle Buffalo River, looking down on sites, 3SE43 and 3SE32.



Figure 6. General view of National Register site, 3SE33.

his assistants in the late 1920s and early 30s include 3MR33, 3SE108, and possibly 3NW59 and 3NW233.

Melvin Gilmore, who authored the excellent ethnobotanical study based on plant remains excavated by Harrington, also examined the botanical specimens recovered in Dellinger's work. Gilmore's reports on this material are on file at the University of Arkansas Museum, but unfortunately, no publication was prepared on the basis of this work. Although Dellinger was apparently aware of some stratigraphic changes in the shelter deposits, as was Harrington before him, few records were kept on this aspect of the excavations. Dellinger (Dellinger and Dickinson 1942:276) did, however, point out that the top-layer culture was more abundant than Harrington had suggested.

Aside from Harrington's and Dellinger's work, only a few archeological investigations were undertaken in the Arkansas Ozarks prior to 1957. The most important of these were:

(1) Limited excavations at the mouth of a small cave (3SE108) within the boundaries of Buffalo National River, a short distance up Bear Creek from its mouth at Buffalo River, were undertaken in 1931 by Winslow Walker (1932) of the Smithsonian Institution. In ten days of excavation, a variety of stone tools and some pottery were found there before Walker moved to a shelter on Water Creek (just outside the boundaries of the Buffalo National River) where he found richer deposits. Walker's report is noteworthy because he was the first to illustrate the variety of projectile point styles (which are the most sensitive indicator of temporal change prior to the introduction of pottery) found in his excavations.

(2) In 1950, Horace Miner (1950) published a short report on a limited excavation in a shelter near Pyatt,

Arkansas (about 16 miles northwest of the nearest point in the Buffalo National River). Although the excavations and the material recovered were limited, the report included not only a description of the artifacts found and their approximate stratigraphic position but it also included a short discussion of the relationship of the material found in this shelter to that found in other parts of the eastern United States.

(3) Reconnaissance and limited excavation undertaken in the Arkansas portions of the Bull Shoals and Table Rock Reservoirs (Howard 1951, 1956) were the first reservoir salvage projects in this region supported by the federal government.

Archeological work in the Missouri portion of the Table Rock Reservoir (e.g. Chapman 1956; Bray 1956; Marshall 1958) and in the Oklahoma Ozarks (e.g. Baerreis 1951; Baerreis and Freeman 1960) undertaken prior to 1957 provides important comparative information about the prehistory of adjacent regions.

The availability of federal funds for salvage archeology in areas to be flooded by new reservoirs, the appointment of an archeologist, Charles R. McGimsey III, as Assistant Curator of the University of Arkansas Museum in 1957 (and his subsequent promotion to Director on the retirement of S.C. Dellinger in 1960), and the rebirth of the Arkansas Archeological Society (composed primarily of amateur archeologists) in 1960 led to a great increase of archeological activity in the Arkansas Ozarks in the late 1950s and 1960s. Modern standards of excavation and reporting were introduced to the Arkansas Ozarks at this time. The first intensive survey of an area in the Arkansas Ozarks, undertaken in Beaver Reservoir (Scholtz 1967) along the White River, provided an indication of site density in this region.

The salvage situation allowed some of the shelters originally reported by Harrington to be more completely excavated and open sites (Golden 1962) were tested for the first time. The excavation at Breckenridge Shelter (Wood 1963, Thomas 1969) previously excavated by both Harrington (1960:9-22) and Dellinger, with its more than three meters of cultural deposit, was particularly important. The careful stratigraphic excavation of this site provided a clear picture of stylistic changes in projectile points and other artifacts in the Arkansas Ozarks for the first time. Unfortunately, very few perishable remains were encountered in this excavation. Several other shelters, including Bushwack Shelter (Wood 1964), excavated by Harrington in the early 1920s, Prall Shelter (Thomas and Davis 1966), and Honey Creek Shelter (Scholtz 1962) were also tested in the course of the Beaver Reservoir salvage work. Other notable archeological work during this period included the stratigraphic excavation by members of the Arkansas Archeological Society at Tom's Brook Shelter (Bartlett 1963) in Johnson County in the extreme southern Ozarks and the survey of Greers Ferry Reservoir (McGimsey 1965). This work allowed McGimsey (1963) to present a preliminary synthesis of Arkansas Ozark culture history. This was followed by Scholtz's (1969) more complete synthesis in 1969.

The establishment of the Arkansas Archeological Survey in 1967 provided funds to maintain a full time archeologist at most of the state colleges and universities. Kenneth Cole, Survey Archeologist at Arkansas Polytechnic College in Russellville, directed preliminary reconnaissance and test excavations in the vicinity of the Buffalo National River from 1968 to 1973. During this work, many new sites within the boundaries of the Buffalo National

River were located and test excavations at the Indian Rock House (3MR35) within the park and at Saltpeter Cave (3NW29) two miles south of the park's boundary on a tributary of Cave Creek were undertaken. Analysis of the material from these excavations will provide the first stratigraphic information about sites within and adjacent to the Buffalo National River. A number of amateur archeologists, most notably John Newton of Harrison, Steve Erwin of Fayetteville, and Gene Waters of Western Grove, have located many sites within the boundaries of the Buffalo National River and their survey reports which are on file with the Arkansas Archeological Survey have been most helpful in preparing Part II of this report.

Other sites which have been tested in recent years include Calf Creek Shelter (Dickinson 1970) just outside the Buffalo National River, Falling Water Falls Shelter (Gregoire 1971) in northern Pope County, and 3SE9 (McManus 1964) an open site within the boundaries of the Buffalo National River. Many articles describing professional and amateur archeological work in the Ozarks have appeared in newspapers, magazines, and other types of popular literature. Most noteworthy of these is the lengthy discussion of excavations at Bolin Cave (3NW31) and surface survey at an open site on a terrace of the Buffalo River in Kenneth Smith's book "The Buffalo River Country" (Smith 1972:110-117). Both of these sites are within the boundaries of the Buffalo National River.

Archeological Syntheses

Archeological excavations and surveys provide a wide range of cultural and natural data which can be synthesized in several different ways. Culture historical syntheses,

until recently the end result of most archeological studies in the New World, emphasized the temporal and spatial distributions of material culture and often included analyses of human skeletal remains with limited attention paid to prehistoric economy. Such studies provide some indication of the comings and goings of peoples and cultures and in the eastern United States have led to the development of a four stage evolutionary sequence of the prehistoric occupation. Although these stages, Paleo-Indian, Archaic, Woodland, and Mississippian, have sometimes been defined in broad economic terms, in practice the different stages and substages are recognized on the basis of presence and absence of particular items of material culture (usually projectile points in the earlier stages and pottery in the later stages).

The development and implementation of new methods and techniques in the natural sciences is placing paleo-environmental reconstruction on a firmer footing and in recent years, throughout the field of anthropology, cultural ecology has received increased attention. Consequently, archeological studies of past environment and man's changing adaptation to these environments are being pursued with increased vigor and past cultures are being "reconstructed" from this point of view.

Based on archeological investigations in the Arkansas Ozarks, culture historical syntheses have been developed (McGimsey 1963, Scholtz 1969) and in broad outlines this region shows strong similarity to the rest of the eastern United States. Attempts to reconstruct changing climatic patterns for different parts of the eastern and midwestern United States have been made (e.g. Bryson and Wendland 1967) and a few studies at specific archeological sites have attempted to correlate climatic change with changes in

other aspects of the environment. Virtually no work of this type has been accomplished within the Arkansas Ozarks. Although of increasing importance, only a few detailed cultural ecological studies (e.g. Winters 1969) have been completed, and no study of this type has been undertaken in the Arkansas Ozarks.

In the following discussions syntheses of Arkansas Ozarks archeology from the culture historical point of view are reviewed and some suggestions for future lines of research in this region are made. Paleoenvironmental and cultural ecological reconstructions accomplished in the eastern United States and elsewhere and ways in which these types of syntheses can be developed in the Arkansas Ozarks are discussed.

Culture Historical Syntheses of the Arkansas Ozarks

Area wide culture historical syntheses of eastern North American archeology apply within certain limits to the Arkansas Ozarks, which is a marginal region on the western edge of this broad area. Based on archeological work in the Arkansas Ozarks, McGimsey (1963) and later Scholtz (1969) proposed syntheses of this region which follow the general outline others have suggested for the eastern United States as a whole (e.g. Griffin 1967). In another publication, McGimsey (1969) did the same for the entire state of Arkansas (including the Ozark region). Although the same general stages are recognized in the Arkansas Ozarks as in the entire eastern United States, cultural development probably lagged somewhat in this region, particularly in the later stages, probably due to its marginal location and rugged mountain terrain.

Thus far, only 18 radiocarbon dates from the Arkansas Ozarks have been reported (Crane and Griffin 1968:88-93).

Seventeen of the samples were recovered from shelters and one from an open site. The dates range from 40 B.C. \pm 140 to A.D. 1810 \pm 100 (these dates are uncorrected using the 5570 year half life). Two-thirds of the samples were collected by University of Arkansas Museum personnel in the 1930s. The remaining six samples were collected during University of Arkansas Museum excavations in the early 1960s. Generally, the results are consistent with those obtained elsewhere in the eastern United States. Included in this group is one sample from a shelter (3MR35) within the boundaries of the Buffalo National River. This sample, which is dated at A.D. 1350 \pm 110 (M-1708), is significant because it was found in association with corn cobs.

The absolute ages assigned to the various Arkansas Ozark cultural stages discussed below are based on the few radiocarbon dates from this region as well as locations throughout the eastern United States. These dates are only convenient estimates since stages began and ended at different times in different regions as new innovations reached them.

The first synthesis of southern Ozark prehistory, suggested many years ago by Harrington (1924), divided the prehistoric occupation of the region into two periods, the bluff-dweller and top-layer cultures (with the suggestion of an earlier pre-bluff-dweller culture). This scheme, which is generally rejected by professionals today but still found in popular literature about the region, is correlated with more recent culture historical syntheses at the end of this section.

Modern Syntheses

The following culture historical synthesis follows the general outline suggested by Griffin (1967) for the entire eastern United States and McGimsey (1969) for the state of Arkansas but varies slightly from the northwest Arkansas synthesis of Scholtz (1969).

Paleo-Indian Stage (10,000 - 8,000 B.C.). This stage, which is identified on the basis of the presence of fluted lanceolate projectile points, was first discovered in the western United States where projectile points of this type have been found associated with extinct megafauna, particularly mammoth and mastodon. For that reason the Paleo-Indians in the West have often been referred to as the big game hunters despite the fact that most authorities now believe that these large animals supplied only a small portion of the diet. There is as yet no direct evidence that the extinct megafauna were hunted in the eastern United States.

Discussions of the Paleo-Indian stage always emphasize the fluted lanceolate projectile points, but a wide variety of other stone tools for cutting, scraping, drilling, and graving have also been found at Paleo-Indian campsites.

Radiocarbon dates in the western United States place fluted lanceolate projectile points between 10,000 and 8,000 B.C. On stylistic grounds, it has long been assumed that fluted lanceolate projectile points in the eastern United States date in this approximate range. Geomorphological evidence and radiocarbon dates for the early Archaic in this area support this hypothesis.

Archaic Stage (8,000 B.C - A.D. 1). This is the earliest stage for which there is definite knowledge of human occupation within the Buffalo National River. The Archaic in the eastern United States was a time when man was adapting a hunting and gathering economy with increasing efficiency to a variety of environments. To judge by evidence elsewhere in the eastern United States there was an increased use of nuts and seeds as shown by the presence of grinding stones in the earliest part of the Archaic stage. However, on the basis of present evidence, grinding stones

do not appear in the Arkansas Ozarks until the middle of this stage. Culture historical syntheses of the Archaic pay a great deal of attention to changes in projectile point styles (to which a great variety of names have been applied) and on this basis it is possible to define early, middle, and late substages. Archaic stage projectile points are all large (approximately 3 to 9 cm in length) and were undoubtedly used on the ends of spears and darts which were at times propelled with the aid of a spear thrower (or atlatl). Some points incorrectly classified under this broad term were used as knives rather than as spear or dart points (e.g., Ahler 1971). It was not until some time during the following Woodland stage that the bow and arrow, with associated smaller projectile points, were introduced.

The early Archaic is recognized in the eastern United States by the presence of lanceolate points without flutes and the distinctive concave base Dalton point which occurs both with and without flutes. Scholtz (1967:176) has noted that even though there is considerable areal variation and temporal overlap of projectile point styles there was a general trend of lanceolate, side-notched, straight-stemmed, corner-notched, and contracting stemmed points during the Archaic at different locations in the eastern United States including the Ozarks.

Although it is not entirely clear from the published reports, some of the great quantity of perishable material including bags, basketry, moccasins, cloth skins, etc. excavated by Harrington and Dellinger may date to the late Archaic substage. Most of the perishable material excavated in the dry shelters, however, apparently dates to the following Woodland and Mississippian stages.

Woodland Stage (A.D. 1 - 1,000). Along many of the major river valleys in the eastern United States,

pottery and burial mounds appeared almost simultaneously at about 1,000 B. C. Pottery was probably introduced into the Ozarks somewhat later. Although the evidence now seems strongly in favor of mixed economies with limited dependence on agriculture in the early and middle portions of the Woodland stage (and perhaps as far back as the late Archaic substage) there are still some (e.g. Vickery 1970) who argue for heavy dependence on agriculture, in at least some regions, in middle Woodland times. As mentioned above, there is some disagreement as to the source of agriculture in the eastern United States with some (e.g. Jennings 1974:211) arguing that agricultural practices diffused northward from Mexico while others (e.g. Struever and Vickery 1973) suggest the possibility of an indigenous agricultural development with lamb's quarter, pigweed, marshelder, sunflower, and giant ragweed, which are native to the eastern United States, being the first cultigens in this area. Evidence from the Arkansas Ozarks, a region that throughout most of its history was marginal to the main developments in the eastern United States, has played an important role in some of these discussions. The remains of plants from the dry shelters excavated by Harrington and studied by Gilmore (1931) provide strong evidence for the cultivation of some of these native eastern species. Unfortunately, the exact stratigraphic position of these plant remains is unknown. The discovery and careful excavation of undisturbed deposits in dry shelters (hopefully within the Buffalo National River) could provide a solution to this fascinating problem.

Elsewhere in the eastern United States (and beyond) during the middle Woodland substage (ca. 200 B.C. - A.D. 400)elaborate trading systems developed and the grave goods found in the burial mounds reached a very high level of sophistication. Items indicating long-distance trade

found in graves in Ohio, where the greatest elaboration of the Hopewell culture is found, include obsidian from Wyoming, chalcedony from North Dakota, marine shells from Florida, copper from the shores of Lake Superior, silver from Ontario, and mica and quartz from the southern Appalachians. Beginning at about A.D. 400 there was an apparent decline of the elaborate trading systems and mortuary complexes of the middle Woodland substage and little is known about the poorly studied, less elaborate, late Woodland substage which lasted from about A.D. 400 to 700 in the major river valleys.

The Arkansas Ozarks were marginal to the main Woodland stage developments. Burial mounds were never introduced into this region and pottery was not used in great quantity. The Woodland stage in the Ozarks is defined by the presence of thick clay-tempered and occasionally grit-tempered pottery associated with contracting stemmed projectile points. Since pottery was not abundant during Woodland times in the Ozarks many deposits dating between A.D. 1 and 1,000 do not contain any pottery. The pottery was apparently introduced from the Mississippi Valley region and the projectile points continued in use from the preceding late Archaic substage. On the basis of current evidence it is impossible to distinguish between early, middle and late Woodland substages in this region.

Mississippian Stage (A.D. 1,000 - 1541). Temple mounds (mounds on which religious and/or political structures were placed), shell-tempered pottery, large villages, and increased dependence on agriculture appeared at about A.D. 700 in the middle part of the Mississippi Valley and later in other parts of the eastern United States. The widespread replacement of the atlatl with the bow and arrow (begun in the preceding stage) led to the increased production of small projectile points at this

time as well. The peak of cultural development was reached between A.D. 1200 and 1500 and apparently a decline had started before the first Europeans reached the area (Hall 1973). In most of the Arkansas Ozarks this stage is thus far recognized only in a shift to shell-tempered pottery and the almost complete replacement of large spear points by the small arrow points. In the extreme eastern Ozarks along the White River a few large village sites have been located but within the boundaries of the Buffalo National River and the rest of the western Arkansas Ozarks not one prehistoric house (much less a village) has yet been excavated.

Proto-historic and Historic Stages (A.D. 1541 -). Virtually nothing is known of the Arkansas Ozarks between the end of the Mississippian stage and the early 19th century. There are a few historic references to Osage Indians hunting (and presumably camping) in the region, and between 1818 and 1828 the Cherokee reservation covered a large portion of the Arkansas Ozarks including all of the Buffalo National River. Thus far, archeological remains of these historic Indian groups have not been definitely identified in this region. Perhaps the most valuable source of information about the region at this time is Henry R. Schoolcraft's (1821) journal of his travels in the Ozarks in 1818 and 1819.

The number of white settlers in the region was quite small until the beginning of the 19th century, at least in part due to the hostile attitude of the Osage. Archeological studies of early white settler sites would undoubtedly greatly amplify the written historic record about the lives of these people.

Harrington's Synthesis

The first synthesis of Arkansas Ozark prehistory was a twofold sequence of a bluff-dweller culture followed by

a top-layer culture proposed by M.R. Harrington in 1924. From Harrington's descriptions of the material associated with each of these "cultures" it appears that the bluff-dweller culture included both the Archaic and Woodland stages, and the top-layer culture was equivalent to the Mississippian stage. It might be tempting to equate Harrington's (1960:181-82) pre-bluff-dweller people, the existence of which he hypothesized on the basis of a very few artifacts, with the Paleo-Indian stage but there is no reason to believe that the artifacts he described as water worn with some bearing a resemblance to paleolithic finds from Europe are of Paleo-Indian age. Coming, as they did, from open stream beds, they may be of any age.

Future Culture Historical Investigations

More basic archeological work is needed to amplify the culture historical sequence discussed above. For example, although the sequence of projectile points styles is fairly well established for the general area, little is known about the evolution of other items of material culture. The approximate absolute dating of the cultural sequence in the Arkansas Ozarks is based on cross-dating with the Mississippi Valley. Before questions about the direction of influences can be answered, independent determination of absolute dates using radiocarbon and other methods must be accomplished.

Paleoenvironmental Reconstruction

Meteorological, macrobotanical, palynological, micro- and macro-faunal, pedological, geomorphological, and other types of data are being studied with increasing frequency throughout the world to effect paleoenvironmental reconstruction. Such studies are leading to models of climatic

change of increasing complexity. In a series of papers, Antevs (1948, 1953, and 1955) developed a simple, continent-wide, three stage model of climatic change since the end of the Pleistocene (perhaps 10,000 years ago). This model of an anathermal stage, when the climate was colder and wetter than today, followed by an altithermal stage when the climate was warmer and dryer than the present and, finally, a medithermal stage beginning about 3,000 years ago during which modern conditions have prevailed, was widely accepted. Greater precision in dating and refinements in the methods of paleoenvironmental reconstruction have demonstrated regional variation of climatic change and many more than three episodes of climatic change since the end of the Pleistocene. The Antevs model has been rejected by archeologists (e.g. Bryan and Gruhn 1964) and climatologists (e.g. Baerreis and Bryson 1964a:214-15) as overly simplistic. Specifically, Baerreis and Bryson (1965a:213) have stated that "when it is colder in one region the atmospheric mechanics may require that it be warmer in another." In a series of articles, Bryson and his associates (e.g. Bryson and Wendland 1967) have noted that climatic change in one region is indicative of climatic change throughout the world and, based on a consideration of many types of data, a series of climatic episodes for the time period since the end of the Pleistocene has been defined. The effect of each episode, of course, differed regionally around the world.

The episodes defined by Bryson and Wendland (1967), which are supported by regional studies in the upper midwest (Bryson and Wendland 1967) and the Plains (Baerreis and Bryson 1965b; Bryson, Baerreis and Wendland 1970), are as follows:

<u>Episode</u>	<u>Approximate Dates</u>
Late Glacial	11,000 - 8,000 B.C.
Boreal	8,000 - 6,000 B.C.
Atlantic	6,000 - 3,000 B.C.
Early Sub-Boreal	3,000 - 1,500 B.C.
Late Sub-Boreal	1,500 - 550 B.C.
Sub Atlantic	500 - A.D. 400
Scandic	A.D. 400 - 900
Neo-Atlantic	A.D. 900 - 1200
Pacific I	A.D.1200 - 1450
Pacific II	A.D.1450 - 1550
Neo-Boreal	A.D.1550 - 1850
Recent	A.D.1850 - 1960

Independently, Cleland (1966) considered a great variety of paleoenvironmental evidence from the upper Great Lakes region and proposed a similar episodic sequence.

These investigations, while not providing the details of climatic history in the Arkansas Ozarks, do give the approximate dates when climatic changes probably occurred. (Sophisticated meteorological models may eventually suggest some hypotheses for this region). Cleland's (1965) study of the faunal remains excavated from shelters by Dellinger's crews in the 1920s and 1930s is the only study thus far undertaken where paleoenvironmental evidence from archeological sites in the Arkansas Ozarks have been analyzed. Unfortunately, the material studied was not excavated stratigraphically and we have no idea on what basis faunal remains were saved; therefore it is impossible to hypothesize paleoenvironmental changes from this data.

Important paleoenvironmental studies on the northern edge of the Missouri Ozarks at Graham Cave (Klippel 1971a, 1971b) and on the western edge of this region at Rodgers Shelter (McMillan 1971) have been undertaken. Faunal studies from the deposits of these two sites (supplemented by pedological studies at Graham Cave) showed good

agreement in the time periods represented with episodic changes suggested by Bryson and his associates. It should be interesting to compare data from these sites on the edges of the Ozark environmental zone, where climatic changes are most rapidly reflected in changes in flora and fauna, with data from the Buffalo National River area in the heart of the Ozarks where climatic changes are perhaps more weakly reflected in the total environmental record.

Prehistoric Cultural Ecology

Paleoenvironmental studies are often part of broader investigations of the changing relationship between culture and environment. In addition to analyses of nonartifactual remains which provide information about past environment and diet, such cultural ecological studies emphasize total site systems rather than individual sites and functional rather than stylistic significance of artifacts. A concise statement of the aims and methods of this approach has been presented by Struever (1968:285-288). The delineation of subsistence-settlement systems which provide an understanding of the "kinds, quantities, and spatial configuration of material items that represent the skeleton of an extinct system for exploiting, processing, and storing of food and other resources" (Struever 1968:285) is an important objective of this type of research.

The focus of archeological investigations in times past was often an individual site. Increasing interest in cultural reconstruction has necessitated consideration of the total range of sites occupied by particular groups of people at a particular time. These considerations are especially important when dealing with hunting and gathering cultures, such as those which occupied the Arkansas Ozarks during most of the past 10,000 years. On the basis

of historic evidence, these hunter-gatherers moved seasonally to best take advantage of different resources in their territory. A variety of nonartifactual data including deer tooth eruption (Severinghaus 1949), antler development (Chaplin 1971:89), migratory water fowl (Winters 1969:111-114), fish vertebra (Casteel 1972), and shells (Coutts and Jones 1973; Weide 1969) are indicators of seasonal variation in the use of environmental resources.

For many years, artifacts were primarily used as "index fossils" but in recent years there have been an increasing number of studies of stone tools from a functional point of view. Microscopic studies of wear patterns (Semenov 1964) and edge angles (Wilmsen 1968) as well as functional studies of tool use (Ahler 1971) have provided insight into the use of chipped stone tools. From such studies, inferences about past utilization of resources can be made. One innovative study (Thomas 1973) demonstrated significant clustering of groups of stone tools of different functional types at sites in different ecological zones which supported an hypothesis of a pattern of seasonally differentiated exploitation of the zones.

During the past decade many papers on prehistoric and historic seasonality in the Great Lakes region have been published (summarized in Fitting 1971), and Winters (1969) recently reported on seasonality during the late Archaic in the Wabash Valley in Illinois. Smith (1974) has used the same kind of evidence to identify seasonal scheduling of economic activities at Mississippian sites in southeast Missouri, northeast Arkansas, and western Tennessee which were occupied throughout the year.

Cultural ecological studies aim not only at establishing the relationship of culture to environment at particular points in time but also try to describe and explain changing adaptations. Within this paradigm the development

of a temporally ordered series of subsistence settlement systems accompanied by paleoenvironmental reconstructions and sometimes a consideration of interaction with other cultures provide the basis for explanation of such change.

Archeological investigations in the Arkansas Ozarks can be used to test a variety of cultural ecological hypotheses. Of particular interest would be data relating to the question of the ecological zone(s) where plant domestication was likely to have originated. Struever and Vickery (1973:1214-1215) have suggested that this transition in the eastern United States occurred in the major river valleys. In a more general discussion, Binford (1968) had previously suggested just the opposite, that it was in the regions on the margins of such optimal zones where plant domestication first occurred. Flannery (1969) has reviewed evidence from the Near East which supports Binford's hypothesis. Dated cultivated plant remains from dry shelters in the Arkansas Ozarks could be crucial to deciding between such conflicting hypotheses.

Studies such as these require rigorous sampling procedures and time consuming analysis of a large variety of data; however, they provide greater insights about prehistoric life and can be expected to increase in number in coming years. Much could be learned by the application of this approach in the Buffalo National River.

PART II
SUMMARY OF SITE SURVEY DATA

Introduction

Two hundred and fifty-four archeological sites have been located to date within the boundaries of the Buffalo National River. Site survey forms from all of these sites are on file at the Arkansas Archeological Survey Station at Arkansas Tech University in Russellville. The great majority of these were located by amateur archeologists. In addition, other sites were located and a few tested by M.R. Harrington in 1922 and 1923, University of Arkansas Museum crews under the direction of S.C. Dellinger between 1928 and 1935, Kenneth Cole of the Arkansas Archeological Survey, Russellville Station, between 1968 and 1973, and a few during the present study.

The locations of 205 surface collections from 154 different sites within the boundaries of the Buffalo National River are recorded on the site survey sheets. Surface collections from 69 of them are stored at the Arkansas Archeological Survey station at Arkansas Tech University in Russellville. Surface and excavation collections from seven sites are stored at the University of Arkansas Museum in Fayetteville. In addition to the collections stored at Arkansas Tech University and the University of Arkansas Museum, surface collections from 129 sites are known to be in the hands of 35 amateur archeologists in the area. A small amount of material from the Buffalo National River area is stored at the Museum of American Indian in New York City. The following portion of this report was compiled from the site survey sheets and the collections stored at Arkansas Tech University and the University of Arkansas Museum.

It should be emphasized again that most of these sites were located by amateurs and in most cases surface material was either not collected or, if collected, has not been examined by the Arkansas Archeological Survey. Intensive surface survey of the area and of individual sites has not been undertaken. Consequently, the summaries of site data given below must be considered as very preliminary.

Types of Sites

Within the boundaries of the Buffalo National River two types of sites predominate: open sites on the terraces and shelters in the bluffs along the Buffalo River and its tributaries. In addition, six sites were found at the mouths of caves (although the caves and shelters are geologically very different features, on the basis of present evidence, archeologically the cave mouths and shelters seemed to serve the same purpose). Also, one open site on a high slope and one pit (or sink hole) in which there was an Indian skeleton with no associated artifacts were found.

Chipping debris and other archeological material are scattered along the second terraces of the Buffalo River. There probably is not a second terrace field along the river within the boundaries of the park where some chipping debris could not be collected after plowing. In addition there are definite concentrations of material indicative of intensive human activity at many locations. Based on preliminary surveys and excavations within the Buffalo National River and evidence from elsewhere in the eastern United States, it would appear that the second terrace fields along the Buffalo River and its tributaries served as temporary camp sites throughout prehistory and perhaps

as the site of year-round houses and small villages during Mississippian times. Other transient activities such as hunting, gathering, manufacture and sharpening of tools probably left their mark as well. The alluvial and colluvial deposition of silt on these second terrace fields has undoubtedly buried much archeological material and it is possible that many stratigraphic cultural deposits interlaced with sterile silt remain to be found. At this time, only two stratified sites on these terraces (3NW411 and 3NW434) have been recognized within the boundaries of the Buffalo National River. Test excavations and careful examination of terrace edges should reveal more buried material.

The shelters and cave mouths within the Buffalo National River served as ideal locations for prehistoric habitation. Deposits in excess of three meters in some of the shelters attest to their long and intensive use. Archeologically, these sites are important because the deep, stratigraphic deposits provide information about change through time. More important, dry deposits in a few of the shelters (no more than six are known presently within the park and these are badly disturbed) preserve normally perishable material rarely found in archeological sites which adds greatly to our knowledge of prehistoric life. Occupational debris in shelters varies greatly from a few chips to more than three meters of artifact bearing deposits. It would seem that the shelters served both as temporary camp sites as well as more permanent, perhaps year-round, base camps throughout the Archaic, Woodland, and Mississippian stages in the Buffalo National River.

Spatial Distribution of Sites

To provide some indication of the spatial distribution of known sites, the park has been divided into six sections: Marion County, two sections in Searcy County (Newton County line to Highway 65, and Highway 65 to the Marion County line), and three sections in Newton County (southern boundary of the park to Highway 74, Highway 74 to Highway 7, and Highway 7 to the Searcy County line). The distribution of sites in each of these six sections is shown in Table 1. Although there are some apparent patterns in the data, the unsystematic means by which it was obtained precludes the possibility of drawing any conclusions at this time. However, it can be stated that the relatively few sites thus far located in Marion County is at least due in part to the greater distance of this portion of the Buffalo National River from modern towns and consequently less attention by amateur archeologists.

Temporal Distribution of Sites

As discussed above, there is evidence of human occupation within the Buffalo National River for the past 10,000 years. The prehistoric occupation can be divided into three stages: Archaic (ca. 8,000 B.C. - A.D. 1), Woodland (ca. A.D. 1 - 1,000), and Mississippian (ca. A.D. 1,000 - 1541), and each can be recognized on the basis of diagnostic artifacts. Many types of large projectile points are diagnostic of the Archaic stage (including the early Archaic Dalton point, found at six sites within the Buffalo National River), clay- or grit-tempered pottery, diagnostic of the Woodland stage, and shell-tempered pottery of the Mississippian stage. Two easily

TABLE 1
SPATIAL DISTRIBUTION OF SITES IN THE BUFFALO NATIONAL RIVER

	Open site on terrace	Shelter	Cave Mouth	Open sites on high slope and hill top	Pit	Total
<u>Newton County</u>						
B.R. S. Boundary to Hiway 74 (ca. 11 mi.)	11	2	0	1	0	14
Clark Creek		2				2
B.R. - Hiway 74 to Hiway 7 (ca. 24 mi.)	44	19			1	64
Beech Creek		2				2
Sneed's Creek	1	2				3
Hemmed-in-Hollow		1				1
Bear Cave Hollow		1				1
Cecil Creek	1	2	4	1		8
B.R. - Hiway 7 to Cty Line (ca. 21 mi.)	41	4				45
Mill Creek	2					2
Little Buffalo River	1					1
Big Creek	7					7
Mill Branch	1					1
Cave Creek	1	3				4
<u>Searcy County</u>						
B.R. - Cty. Line to Hiway 65 (ca. 22 mi)	51	3				54
Richland Creek	5					5
B.R. - Hiway 65 to Cty Line (ca. 26 mi.)	13					13
Bear Creek		1	1			2
Water Creek	1					1
<u>Marion County</u>						
B.R. - Cty. Line to White R. (ca. 32 mi.)	16	1				17
Panther Creek	2					2
Rush Creek	1					1
Big Creek	3					3
Cow Creek		1				1
	202	44	5	2	1	254

identifiable types of projectile points overlap temporally adjacent stages: Gary points made in late Archaic and Woodland times and arrow points in the Woodland and Mississippian stages. Any, all, or none of these diagnostics may be found at a particular archeological site and thus may provide some idea of the time range during which the site was occupied. According to the site survey sheets, most of the sites did not yield temporally diagnostic artifacts; at many no more than chert flakes were found. Since many of the sites within the boundaries of the Buffalo National River have already been visited by amateur collectors searching for projectile points and since many of the second terrace fields, where most of the sites are found, are covered with high grass and silt, this result is not terribly surprising. Intensive survey and test pitting will provide considerably more temporal (as well as cultural and environmental) information. The temporal information for each of the three counties is summarized in Table 2. It is interesting to note that the percentage of Mississippian sites is much higher in both Searcy and Marion counties than in Newton County. This may indicate that cultural influences were moving up the Buffalo River from the White River during the latest stage of prehistoric occupation in the area.

TABLE 2
TEMPORAL DISTRIBUTION OF SITES IN THE BUFFALO NATIONAL RIVER

	<u>Newton</u>	<u>Searcy</u>	<u>Marion</u>	<u>Total</u>
Not enough information	97	36	11	144
Archaic	27	11	6	44
Woodland		2		2
Mississippian	10	11	4	25
Gary Point(s)	2	4	1	7
Arrow Point(s)	5	2		7
Woodland or Mississippian	1			1
Archaic and Woodland	1			1
Woodland and Mississippian	1	3		4
Archaic and Mississippian	4			4
Archaic and Gary Point(s)	1			1
Archaic and Arrow Point(s)	2	3	1	6
Gary Point(s) and Mississippian	1			1
Woodland and Arrow Point(s)	1			1
Archaic, Woodland and Mississippian	1	3		4
Archaic, Gary Point(s) and Mississippian			1	1
Gary Point(s) and Arrow Point(s)	<u>1</u>	<u>—</u>	<u>—</u>	<u>1</u>
	155	75	24	254

PART III
RECOMMENDATIONS FOR FURTHER ARCHEOLOGICAL WORK
IN THE BUFFALO NATIONAL RIVER

Introduction

Further archeological research in the Buffalo National River is specifically called for by the National Environmental Policy Act of 1969, Executive Order No. 11593, the National Historic Preservation Act of 1966, and the Reservoir Salvage Act of 1960 as amended in 1974 (PL 93-291).

In a recent paper entitled "Guidelines for the Preparation of Statements of Environmental Impact on Archeological Resources" by Scovill, Gordon, and Anderson (1972) of the National Park Service's Arizona Archeological Center, two stages of archeological research necessary for an environmental impact statement are discussed. The first stage which they call "Preliminary Reconnaissance" is roughly equivalent to the work undertaken to prepare this report; the second stage, "Intensive Field Testing Survey" is yet to be accomplished. On the basis of the work completed, recommendations of work needed for the the Intensive Field Testing Survey is given below. It should be emphasized that the program recommended here simply provides the data necessary for the development of a long range plan for the protection and development of the archeological resources in the Park.

As Scovill et al. (1972:10) have noted, the first stage should have been completed during the preliminary planning of the park. The second stage should have been completed before the Environmental Impact Statement was prepared so that the results of the intensive field testing survey and resulting recommendations for mitigating the impact could have been included in that document. However, the Buffalo

National River is now a reality. Before this preliminary reconnaissance report was completed and before the intensive field testing survey had even begun, an Environmental Impact Statement was drafted. (Note added March 1979: The Environmental Impact Statement was approved in September 1975. And 3½ years later an intensive field testing survey has not yet been funded).

A third stage of archeological research discussed by Scovill et al. (1972:14-15) which goes beyond the intensive field testing survey is mitigation of impact. This will be necessary in the Buffalo National River due to increased site destruction (already begun) by the great number of visitors to the area. However, until the intensive field testing survey is completed, a proposal for mitigation research and a realistic estimate of the cost of such studies cannot be made.

A fourth stage, interpretation of the results of archeological research to the public, is often not part of government sponsored environmental impact archeology where the archeological resources are to be destroyed or inundated. In a National Park, of course, this stage of archeological work is of great importance. Ideally, such interpretations should be made after the completion of stage three. However, since the Buffalo National River is now a reality and the number of visitors to the area is increasing greatly, some preliminary interpretations about prehistoric life in the area should be made available to the public as soon as possible. As understanding of the archeology of the Buffalo National River increases through the intensive field testing survey and the mitigation studies, such interpretations can be modified and amplified.

Intensive Field Testing Survey

Objectives

On the basis of preliminary reconnaissance and a records check completed for this report, it is now possible to make recommendations for the intensive field testing survey.

The three main objectives of an intensive field testing survey are location of sites, intensive survey of site surfaces, and excavation of test pits in representative sites.

(1) Location of Sites. To properly evaluate the impact of the park on the archeological resources, as complete an inventory of archeological sites within the Buffalo National River as possible should be obtained. To do this, the entire park needs to be surveyed on foot. Particularly important in this phase of the research will be the walking of hundreds of miles of bluff in an attempt to locate all of the shelters occupied by the prehistoric inhabitants of the park and, hopefully, find additional shelters with dry deposits. The heavy ground cover (grass, leaves, etc.), silt deposit on the terraces, and the stripping of cultural material from the surface by amateur collectors will, of course, make it impossible to locate all of the sites. The possibilities of remote sensing of archeological sites in this difficult situation utilizing air and satellite photos made with different types of film and taken at different times of the year should be explored. (See Gumerman and Neely [1972] and Gumerman and Lyons [1971] for a discussion of some of the possibilities of this approach for locating sites.)

Site location information supplemented by preliminary test excavation results are also needed so that nomination

of appropriate archeological sites to the National Register of Historic Sites and an attempt to provide some protection for these and other important sites from vandalism can be made.

(2) Intensive Survey. As sites are located, systematic collections will be made of cultural material on the surface. Such material when analyzed will give the chronological position(s) of the site and may provide some indication of the cultural activities carried out there.

(3) Test Excavation. Material found on the surface of sites provides only a small portion of the archeological information that may be recovered in any area. Even in the best of circumstances most of the archeological record is below the ground. In an area such as the Buffalo National River where the ground cover is heavy and which has already been subjected to continual surface collecting by relic hunters the sample of archeological material visible on the ground surface is especially limited. Test pits at a great variety of sites both shallow and deep in all ecological zones are therefore needed to provide meaningful samples of all types of archeological data. The importance of the discovery of stratified sites with superimposed cultural deposits which will provide important temporal control for future studies cannot be overemphasized. Test pits at sites with heavy concentrations of cultural material on the surface as well as examination and cleaning of terrace edges should reveal such sites. The cultural material from the test pits at both single and multiple component sites when analyzed will help refine the culture historical sequence for the region. As noted in Part I of this report Bryson and Wendland (1967) have defined nine climatic episodes in the eastern United States during the time of prehistoric occupation within the boundaries of the

Buffalo National River. Material recovered from the test excavations should be analyzed to see if these episodes (or others) are reflected in the environment and cultural adaptations in this region. An attempt should be made to date and culturally define all environmental, adaptive, and cultural historical stages and substages. Specific problems should also be investigated during this phase of the research. Examples of such problems include: (1) Sites located with heavy concentrations of Mississippian and/or Woodland pottery should be tested to see if prehistoric houses (which have never been excavated in the western Arkansas Ozarks) can be found; (2) If undisturbed dry deposits are found in shelters, an attempt to recover data relating to the antiquity of plant cultivation in this region should be made and the exact temporal cultural placement of the perishable remains established.

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APPENDIX A

ANNOTATED BIBLIOGRAPHY OF PUBLISHED MATERIAL AND IMPORTANT
UNPUBLISHED MANUSCRIPTS ABOUT ARCHEOLOGY WITHIN THE
BOUNDARIES OF THE BUFFALO NATIONAL RIVER

by Mary Printup

Cleland, Charles E.

- 1960 Analysis of the animal remains in the
 prehistoric Ozark bluff-dwellings of northwest
 Arkansas. M.S. thesis, University of Arkansas.

Animal remains from 58 bluff shelters were analyzed to reconstruct the prehistoric ecology of the period of their occupation, to determine which animals were selected for food, and to investigate the use of animal material for the manufacture of tools and apparel. Floral and faunal content of the sites as compared to the present indicates that there have been no major changes in the environment of the area since the shelters were occupied. Deer was the principal food animal, and many tools were made from the bones of deer. Sites studied in the Buffalo River valley were Hale Cave (3NW4), Thompson Shelter (3NW5), Cob Cave (3NW6), Marble Bluff (3SE1), and the Rock House (3MR35).

Cleland, Charles E.

- 1965 Faunal remains from bluff shelters in north-
 west Arkansas. *The Arkansas Archeologist* 6
 (2-3):39-63.

Analysis of faunal material recovered from 57 bluff shelters excavated by the University of Arkansas Museum, 1928-1934, indicates that the 42 species identified are dominated by those that preferred a deciduous forest-edge habitat and that no major changes have taken place in the composition or distribution of biotic communities here since the major occupation of the bluff shelters.

The five shelters in the Buffalo River watershed from which faunal collections were made furnished combined totals of 171 deer, 73 turkey, 12 raccoon, 32 common box turtle, 2 box turtle, 1 ornate box turtle, 6 woodchuck, 8 woodrat, 5 beaver, 2 coyote, 1 elk, 1 bison, 4 black bear, 6 gray fox, 2 opossum, 1 cottontail, 1 skunk, 2 slide turtle, 1 long-nosed gar, 1 mallard, and 1 turkey vulture.

Dellinger, Samuel C.

1932 The bluff shelters of Arkansas. National Research Council, Birmingham Conference on Southern Prehistory, Committee on State Archeological Surveys, pp. 31-34.

This paper contains a brief discussion of surface geology of the region in which dry shelters are formed and an imaginative description of bluff shelter life based on artifacts recovered and their provenience in the shelters.

Dellinger, Samuel C.

1936 Baby cradles of the Ozark bluff dwellers. *American Antiquity* 1(3):197-214.

In this paper construction details of a variety of cradle types found in Ozark bluff shelters are described. They range in material from stiff cane to soft and flexible fibers, with bindings of deerskin and braided cords. Several cradles including one from Cob Cave (3NW6), were made from stems of a wild sunflower (Helianthus tuberosa) twined with strips of bark over a wooden frame.

Dellinger, Samuel C. and Samuel D. Dickinson
1942 Pottery from Ozark bluff shelters. *American
Antiquity* 7(3):276-318.

Sherds from what is called the bluff dweller culture are compared with Marksville and Coles Creek wares. One such rim sherd from 3NW5, in the Buffalo River valley, is described and pictured. Shell tempered pottery is ascribed to the "top layer" culture.

Dickson, Don R.
1970 Excavations at Calf Creek Cave. *The Arkansas
Archeologist* 11(3-4):50-82.

A deeply stratified site in Searcy County (3SE7) contained evidence of occupation from early Archaic until late prehistoric times. Two undisturbed midden strata, found beneath deposits extensively altered by pothunters, produced one unfinished fluted point and a series of finely worked, basally notched dart points above it. The latter have been named Calf Creek points.

Gregoire, Thelma L.
1971 Falling Water Falls site. *The Arkansas
Archeologist* 12(2):21-38.

This bluff shelter (3PP40) in extreme northern Pope County, is in the Buffalo River watershed. The Sandals, cordage, basketry, lithic artifacts, and ceramics, both clay tempered and shell tempered, found there indicate that the principal occupation was late Woodland, with both earlier and later occupation in evidence.

Harrington, Mark R.
1924 The Ozark bluff-dwellers. *American Anthropologist* 26:1-21.

This is a preliminary report on an expedition conducted mostly in extreme northwest Arkansas and southwest Missouri to collect cultural materials from dry bluff shelters. Evidence was found for two distinct cultures, called "bluff dweller" and "top layer." The Buffalo River valley is mentioned only as "probably near their eastern boundary."

Harrington, Mark R.
1960 The Ozark bluff-dwellers. *Museum of the American Indian, Indian Notes and Monographs* 12.

Written from field notes many years after Harrington's two seasons in the Ozarks, this book includes an account of explorations of bluff shelters and bottomland sites along the lower Buffalo and several of its affluent tributaries in Marion County, Arkansas. The Charles Cole place (3MR59) yielded a hank of fiber cord, twined fabric, worked sticks, cane, deerskin, pottery, flint chips, a celt, and mussel and snail shells. The largest shelter, Panther Creek Rock House (3MR35), where most of the deposits had been washed away, yielded only mussel and river snail shells and two notched flint points. Village and camp sites along the river, particularly at the mouths of creeks, had black soil middens with large points, very small arrow points, a double-grooved ax, flint blades, a long pointed celt, hammer and grinding stones, a notched net sinker, a mano, a chipped ax blade, and pottery both with and without shell temper. Harrington saw evidence of two distinct cultures.

McManus, J. W.

1964 A burin and burin-faceted projectile points from Searcy County, Arkansas. *The Arkansas Archeologist* 5(3):41-42.

An Archaic assemblage from 3SE9 near the Buffalo River contains one true burin and several modified projectile points with burin facets at the distal ends. The burin facets appear to be intentional products of the burin technique. Identifiable projectile point types with burin facets are Big Sandy and Marshall.

Newton, John P.

n.d. A preliminary archeological survey of the upper Buffalo River basin. Unpublished manuscript on file with the Arkansas Archeological Survey.

Descriptions of sites were recorded by the author over several years of personal exploration.

Scholtz, Sandra C.

1975 Prehistoric plies: a structural and comparative analysis of cordage, netting, basketry and fabric from Ozark bluff shelters. *Arkansas Archeological Survey Research Series* 9.

Perishable materials were collected by the University of Arkansas Museum in the 1930s from 42 bluff shelters in nine northwest Arkansas counties. Four of these shelters are in the Buffalo River valley. At Charlie Cole shelter in Marion County (3MR59), Walter Arbaugh shelter in Newton County (3NW58), and Marble bluff in Searcy County (3SE1), specimens of cordage were collected. The University of Arkansas collection from Cob Cave in Newton County (3NW6) contains 16 examples of cordage, a coiled basket, 26 specimens of interlaced basketry, 10 of twined fabric,

and portions of a comb and a sandal. The classification of structures of fabrics presented includes appropriate terminology for describing basket weaves which have not been described previously in print. In addition to the well known weaves, a major category of interlaced weaves, called complicated float weaves, is defined and used for describing four basic weaves, some examples of which came from Cob Cave (3NW6).

Smith, Kenneth L.

1967 *The Buffalo River country.* Ozark Society,
Fayetteville.

A conservationist describes the river and its environs giving details of its history and resources, natural and human, with many beautiful photographs.

Walker, Winslow M.

1932 *The cave cultures of Arkansas.* In *Explorations and Field Work of the Smithsonian Institution in 1932*, pp. 159-168.

In seven weeks of work in 16 bluff shelters in Marion and Searcy counties, Walker found stone and bone tools, mussel and snail shells, animal food remains, human burials, and both petroglyphs and pictographs.

